Thi Thu Thuy Tran

Project title: Acupuncture as an adjunct therapy to Counselling for Refugee Survivors at NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS)

Doctor of Philosophy

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Certificate of Original Authorship

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

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Abstract

Exposure to high levels of cumulative trauma such as war, torture and human rights violations places refugees at significant risk of psychological complications. In addition, subsequent refugee and resettlement experiences have a substantial impact on the physical and psychological health and wellbeing of those affected. This study used a randomised, repeated measure design in a pragmatic setting to evaluate the effectiveness of Acupuncture as an adjunct therapy to Cognitive Behavioural Therapy (CBT) for refugees attending NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS).

Participants were randomised into three treatment groups: Acupuncture, CBT, and Combined (Acupuncture and CBT). Participants received treatment in eight weekly sessions, at STARTTS, by experienced counsellors and/or an acupuncturist. Primary outcome measures from Hopkins Symptoms Check List 25 (HSCL-25), Harvard Trauma Questionnaire (HTQ), Credibility and Expectancy Questionnaire and a Numeric Pain Scale (NRS) as a secondary measure were applied at baseline pre-treatment, post-treatment assessment and a two-month follow-up.

The HSCL-25 was used for measuring anxiety and depression in refugee participants. The HTQ was used for measuring degrees of trauma in refugee participants. The Credibility and Expectancy Questionnaire was used for measuring beliefs and expectancy each refugee participant had for the treatment therapy they were receiving. As indiscriminate pain was a common presentation amongst refugees suffering with PTSD, the NRS was used to score the participants level of pain during the study.

The study found that on average there were signs of improvements in PTSD, anxiety and depression within each treatment groups – Acupuncture, CBT and Combined. CBT group showed significant improvements in PTSD. Both Acupuncture and Combined groups showed significant improvements not only in PTSD but also in anxiety, depression and pain. Psychometric measures (PTSD, anxiety and depression) improvements were significant in the Combined group occurred at 2-month follow-up. The data from this study show initial

trends that indicate acupuncture may be an effective standalone therapy or adjunct therapy to CBT, particularly in respect of the treatment of pain, retention of participants in CBT when combined with acupuncture and may be a more culturally acceptable practice for segments of the sub-population of refugee clients at STARTTS. Results indicated that a combination of modalities yielded significant results and improved treatment compliance, suggesting the value of integrating alternative and conventional treatment modalities to maximise psychological gain and pain reduction. Larger studies of refugee populations are required to determine definitive results.

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1.0 Chapter 1: Introduction

1.1 Global Refugees

As defined by the Office of the United Nations High Commissioner for Refugees (UNHCR)

> A refugee, according to the Convention, is someone who is unable or unwilling to return to their country of origin owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion. (UNHCR 2010, p. 3)

The epidemic of Post-Traumatic Stress from the UNHCR Global Trends 2017 in the 2018 report has shown that:

> Globally, the forcibly displaced population increased in 2017 by 2.9 million. By the end of the year, 68.5 million individuals were forcibly displaced worldwide as a result of persecution, conflict, or generalized violence. As a result, the world's forcibly displaced population remained yet again at a record high. (UNHCR 2018, p. 1)

Of the 68.5 million forcibly displaced individuals, 25 million were refugees, 40 million were internally displaced people and 3.1 million were asylum seekers (UNHCR 2018). Of the 25 million refugees, 19.9 million refugees were under UNHCR's mandate and 5.4 million Palestine refugees were under UNRWA's mandate (UNHCR 2018).

In 2017, there was an estimated 16.2 million newly displaced people, 11.8 million individuals were displaced within the borders of their own countries and 4.4 million individuals were newly displaced refugees and new asylum-seekers (UNHCR 2018). That is about 44000 individuals displaced each day in 2017 (UNHCR 2018). Eighty five percent of the 19.9 million refugees under UNHCR's mandate were hosted in the developing regions, with

Lebanon hosting the largest number of refugees relative to its national population (1 in 6 under UNHCR's mandate; 1 in 4 when Palestine refugees under
UNRWA's mandate were also included) (UNHCR 2018).

Five countries, Syrian Arab Republic (6.3 million), Afghanistan (2.6 million), South Sudan (2.4 million), Myanmar (1.2 million) and Somalia (986,400) are where most of the refugees came from, totalling about two thirds (68%) of the refugees worldwide (UNHCR 2018). There were about 173,800 unaccompanied and separated children and about half of the refugees (52%) were children under 18 years of age (UNHCR 2018). 'By the end of 2017, about 3.1 million people were awaiting a decision on their application for asylum, about half in developing regions' UNHCR 2018, p. 2).

1.2 Australian Refugees

> Australia is a signatory to the United Nations Convention Relating to the Status of Refugees and has accepted approximately 750,000 people under its Humanitarian Program since around the time of World War II'. (STARTTS 2018-a)

While UNHCR recommends or refers people for resettlement, the Australia's Immigration Department determines visa grants for Australia. Australia has a refugee visa including Refugee (visa subclass 200), In-Country Special Humanitarian (visa subclass 201), Emergency Rescue (visa subclass 203) and Woman at Risk (visa subclass 204). An additional visa called SHP visa includes subclass 202 (Global Special Humanitarian Program) (Information and Reporting Section of the Department of Home Affairs 2017). Australia's offshore Humanitarian Program: 2016–17 report revealed that Australia had increased the number of humanitarian intakes from 10,981 (refugee: 5,985; SHP: 4,996) in 2014-2015 to 15,552 (refugee: 8,284; SHP: 7,268) in 2015-2016 to 20,257 (refugee: 9,653; SHP: 10,604) in 2016-2017 (Information and Reporting Section of the Department of Home Affairs 2017). The increase in the humanitarian intake in 2015-2016 and 2016-2017 includes the additional

12,000 places for people displaced by conflict in Syria and Iraq (Information and Reporting Section of the Department of Home Affairs 2017).

Amongst all refugee populations, mental health has been identified an important factor that needs to be considered as post-traumatic stress disorder and depression are the two most prevalent disorders in refugee populations that have been identified in epidemiological studies (Steel et al. 2002). Mental illness reduces over time for those with no trauma exposure but it remains a high risk for those who had been exposed to more than three trauma events.

1.3 NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS) Refugees

STARTTS is a non-profit organisation, founded in 1988, as a specialist for the purpose of providing psychological treatment and culturally appropriate support to help people and communities heal their scars of torture and refugee trauma as well as to rebuild their lives resettling in Australia. Many refugees coming to Australia had been exposed to traumatic events and experienced multiple traumas, including war and violence, deprivation, death or disappearance of loved ones, torture and severe human rights abuse. Physical symptoms ranging from chronic pain to heart problems and psychological symptoms ranging from depression and anxiety to family breakdown and conflict were present in the refugee survivors.

STARTTS has been highly committed to working with refugee survivors in rehabilitation to help them heal their deep physical and psychological wounds. STARTTS counsellors are extensively trained in cultural awareness, on refugee issues relating to religion, politics, ethnic background and how to work with the refugee survivors. STARTTS employs various interventions and services such as, culturally appropriate counselling and therapy for individuals and groups, group work, health education, psychiatric assessment and treatment, physiotherapy, therapeutic massage, pain management, exercise groups, camps, excursions, Capoeira, case referral and management, community liaison and consultation, community

development projects, training in awareness and working strategies of refugee issues. It has engaged in research innovation and evaluation of many treatment therapies and has been investigating the value of acupuncture as a therapeutic intervention or potential adjunct therapy since 2007.

STARTTS is actively engaged with the UNHCR for the protection for human rights and prevention of war, violence and displacement. STARTTS receives refugees arriving in Sydney from refugee camps in collaboration with various agencies including the Department of Immigration, NSW Refugee Health Service, Settlement Services International (SSI), Centrelink, Villawood Detention Centre, doctors, psychiatrists, hospitals and community leaders. Clients can also self-refer to STARTTS. As of 13 August 2018, a total of 62,015 clients have been seen by STARTTS for treatment services since 1988.

When a client has been allocated to a STARTTS counsellor by STARTTS Intake via an allocation meeting, the counsellor must make initial contact with the client within a 2-week timeframe. As a standard procedure, STARTTS uses the Harvard Trauma Questionnaire and Hopkins Symptoms Check List 25, to diagnose if the client has PTSD symptoms. These diagnostic tools are mandatory in STARTTS as they provide vital information on the client's mental health on PSTD symptoms, trauma, anxiety and depression.

1.3.1 STARTTS' Vision

STARTTS' vision is that the

Services for torture and refugee trauma survivors in NSW are:

- Of excellent standard, informed by, and contributing to national and international best practice
- Valued and supported by informed and empowered communities.
- Proactive in supporting appropriate and effective services for torture and trauma survivors in Australia and elsewhere in the world.

- Committed to culturally congruent, evidence-based service provision and ongoing improvement through development and innovation in the field. (STARTTS 2018-b)

1.3.2 STARTTS' Mission

STARTTS' mission is:

> To develop and implement ways to facilitate the healing process of survivors of torture and refugee trauma and to assist and resource individuals and organisations who work with them to provide appropriate, effective and culturally sensitive services. (STARTTS 2018-b)

1.4 Post-Traumatic Stress Disorder (PTSD)

Post Traumatic Stress Disorder (PTSD) is the most common clinical presentation of refugees seeking treatment at the NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS).

PTSD is a common response in a person who has been exposed to trauma. According to the Diagnostic and Statistical Manual of Mental Disorder IV (DSMIV), the first criterion for a diagnosis of PTSD is the exposure to an event that threatens one's physical integrity and causes feelings of intense horror, helplessness or fear (American Psychiatric Association 2002). PTSD symptoms are grouped in three types of phenomena: intrusive, avoidance and hyper arousal. If these are present immediately after a traumatic experience, the syndrome is termed as an "Acute Stress Reaction". This can be considered "a normal reaction to an abnormal situation". Only when the symptoms persist for longer than a month can a diagnosis of PTSD be verified.

PTSD has a wide variety of symptoms ranging from: chronic pain; depressed mood, depressive disorders, anxiety; disturbed sleep, insomnia and nightmares; concentration or

memory problems; hyper vigilance and hyper arousal including anger and aggressive outbursts, flashbacks of past events, intrusive memories and avoidance of activities that remind sufferers of past events. This study concentrated on testing treatment protocols for three of the most commonly presenting posttraumatic stress symptoms noted in STARTTS's clients. These are chronic pain, anxiety and depression.

The underlying premise of investigation for this study was that acupuncture may be of benefit to the treatment of PTSD in the STARTTS refugee population. It was anticipated that the information and data gathered in this study would contribute to the existing knowledge and literature on this topic. If the results were to prove positive, in the longer term, it is possible that STARTTS could permanently incorporate Acupuncture into its therapeutic repertoire, to improve its clients' mental health, pain management, and quality of life.

1.5 Chinese Medicine (CM) at STARTTS

As part of its treatment modalities, STARTTS introduced acupuncture as early as 1989. Dry needle targeting trigger points along with physiotherapy modality was used as acupuncture is known to and welcomed by the Cambodian, Laos and Vietnamese clients.

1.6 CM Channel Theory

Chinese acupuncture is based on a system of meridians or pathways for qi or energy to circulate through the body. Each part of the musculoskeletal system is related to a main meridian as well as its associated sub-meridians. There are seventy-two meridians of therapeutic importance including the twelve Primary Meridians, twelve Tendinomuscular Meridians, twelve Transversal Lo Vessels, twelve Longitudinal Lo Vessels, twelve Distinct (Divergent) Meridians, eight Extra (Ancestral) Vessels, three Extra Longitudinal Lo Vessels and one Huato Channel (Rogers & Rogers 1989; World Health Organization 1991).

The twelve Primary Meridians are the main meridians that play a very crucial role in circulating qi, providing the avenue for the majority of therapeutic intervention. The twelve Primary Meridians, consisting of six yang and six yin meridians, are Hand Yin Lung Meridian (LU), Hand Yang Large Intestine Meridian (LI), Foot Yang Stomach Meridian (ST), Foot Yin Spleen Meridian (SP), Hand Yin Heart Meridian (HT), Hand Yang Small Intestine Meridian (SI), Foot Yang bladder Meridian (BL), Foot Yin Kidney Meridian (KI), Hand Yin Pericardium Meridian (PC), Hand Yang San Jiao Meridian (SJ), Foot Yang Gall Bladder Meridian (GB) and Foot Yin Liver Meridian (LV) (Rogers & Rogers 1989; World Health Organization 1991).

In addition to the twelve Primary Meridians, there are two Extra Vessels called Governing or Du Vessel (DU) and the Conception or Ren Vessel (REN) as they act as reservoirs of qi. These fourteen meridians were identified in in the Standard International Acupuncture Nomenclature proposal by World Health Organization (WHO) (1991). The acupuncture points, which influence the qi are located along the channels. There are 365 main acupoints standardised in location and function by the WHO. Only points selected from these standardised points and channels were used for treatments in this study.

Each part of the body is associated with a given internal organ connected to the meridians. An imbalance of that organ can affect or be affected via the main meridian. With an understanding of the energy regulation of the meridians, acupuncture can treat the vital organs by manipulating the acupuncture points. This forms the basis of meridian therapy and diagnostics. Acupuncture points are held to have specific functions and the more appropriate the selection of acupuncture points in relation to the pattern of symptoms, then generally the better the treatment outcomes. For this particular study, due to the wide range of symptom patterns that might have presented based on the type of torture or trauma experienced by STARTTS clients, a pragmatic study design (Schwartz & Lellouch 1967) was adopted. In other words, it was not possible to standardise the presentation of symptoms and hence have a standardised treatment protocol. Instead, the most relevant acupuncture points were

selected based on the presentation of the client and what was most appropriate to access given the history of trauma.

1.6.1 Acupuncture Diagnosis

For acupuncture treatments in this study, eight principle diagnosis and channel theory was used. In accordance to the conditions of the ethics approval of the South Western Sydney Local Health District of NSW Health, every participant was informed of the Chinese medical diagnosis along with an explanation in layman's terms.

The eight principle diagnosis (hot/cold; internal/external; yin/yang; excess/deficiency) was applied in the context of the four pillars of diagnosis:

- Inspection: observation of face, skin features and temperature.
- Auscultation: listening of the five major types of sounds such as shouting, laughing, singing, weeping and groaning. There is also further analysis to olfaction to analyse the smell of body odours a broader CM diagnosis.
- Palpation: the CM techniques of pulse diagnosis particularly in the wrist, and palpation of the abdomen and targeted meridian points to determine patterns of pain.
- Inquiry: CM practitioner analysis through asking questions that include past health, habits, diet, sleeping pattern, pain etc.

The four pillars diagnostic method using eight principle diagnosis was considered the most practical and effective way to diagnose the refugee participants of this study. These methods could be easily applied in a non-invasive way and could be easily overlayed on any western medical approach and explained in a common language (requiring translation into the clients first language) in layman's terms that can be understood by the participants in this study.

1.7 Aim

The aim of this study was to clinically evaluate the effectiveness of acupuncture treatment for chronic pain, depression and anxiety in a group of survivors of torture and refugee trauma from various cultural backgrounds, who suffer from PTSD due to exposure to imprisonment, torture, war, and other human rights violations in the context of organised violence.

The study aimed to answer the following questions:
Is there a statistically significant improvement in presenting symptoms of PTSD when using
• acupuncture alone?
• counselling alone?
• acupuncture and counselling combined?

1.8 Hypothesis

The combination of acupuncture and counselling will be of greater clinical benefit in the treatment of PTSD symptoms and associated clinical features in a subpopulation of refugee clients from STARTTS than counselling or acupuncture alone.

The null hypothesis states:
That there is no statistically significant difference in treatment outcomes when using

- acupuncture alone
- counselling alone
- acupuncture and counselling combined

as an intervention for PTSD in a sub population of STARTTS refugee clients.

1.9 Primary objectives

The primary objectives of this study were:

- To develop an experimental design to test acupuncture as a treatment method for refugee clients of STARTTS suffering from PTSD.
- To determine the effectiveness of acupuncture for specific PTSD symptoms including, chronic pain, depression and anxiety within the specified subpopulation.

1.10 Secondary objectives

The secondary objectives of this study were:

- To determine if there is a significant difference in the presentation of PTSD symptoms after intervention between (1) acupuncture and counselling compared to (2) acupuncture alone or (3) counselling alone.
- To test the applicability of the Harvard Trauma Questionnaire and Hopkins Symptoms Check List as measurement tools for PTSD in acupuncture studies.
- To determine any relationships that may exist due to therapeutic alliance as measured by the Credibility/expectancy questionnaire.

1.11 Benefits of this research

The study will provide new information on the effectiveness (or ineffectiveness) of acupuncture as an adjunct to counselling for PTSD for patients, practitioners and the wider academic community such as:

- Establishing the potential for the use of acupuncture for PTSD outside of refugee populations.
- Evaluating the appropriateness of acupuncture services for STARTTS clients.
- Providing evidence to STARTTS management for the possible establishment of permanent acupuncture services in STARTTS to benefit clients.

This may change clinical practices.

The study may also provide direct benefits to participants including:

- Relief from a major PTSD symptom, i.e. chronic pain which may further assist with the management of related depression and anxiety.
- Increase in quality of life.

1.12 Summary

The evidence of global displacement of peoples is growing continually over time as evidenced through various UNHCR reports. Epidemiological studies show that this is associated with an increasing level of trauma amongst refugees including PTSD characterised primarily by depression, anxiety and often associated with physical symptoms of pain. As Australia continues to meet its obligations under UN conventions and accepts more refugees, there is a growing need for health services to support these refugees. The work undertaken at STARTTS is a key foundation for such services. As STARTTS expands its services, it also seeks to expand culturally relevant health services. Acupuncture is seen as one of the relevant modalities used by STARTTS and the purpose of this study is to validate the effectiveness of Acupuncture for its population of clients. As such, this study was designed to determine whether there is a statistically significant improvement in presenting symptoms of PTSD in acupuncture alone, counselling alone and acupuncture as an adjunct therapy to counselling for STARTTS refugee clients. The outcomes of the study will potentially benefit the patients, practitioners, refugee community, and wider academic community. The following literature review, will examine existing clinical trials of acupuncture in refugee populations and seek to place this study into context, including examination of the major elements that affected the design of this study such as the outcome measures and factors that led to the decision to undertake a pragmatic trial.

2.0 Chapter 2: Literature Review

A literature review was undertaken using the following data bases up to 22 Oct 2019: PubMed and Hindawi. The keywords searched were “acupuncture post-traumatic stress disorder pain refugee”, “acupuncture post traumatic stress disorder pain”, “acupuncture post-traumatic stress disorder refugee”, “acupuncture pain refugee”, “acupuncture ptsd” and “acupuncture post traumatic stress disorder”, returning 2, 22, 4, 4, 96 and 77 papers respectively. After applying “Abstract”, “Humans” and “Adult: 19+ years” filters to each searches, 1, 12, 2, 3, 39 and 28 papers returned respectively. Forty one duplicate publications were removed. The remaining 44 publications were then screened on the titles and abstracts. A further 41 publications were excluded as not relating to PTSD, not being focused on acupuncture, being commentary/review publications, case reports, descriptive studies, or non-English or relating PTSD to other factors such as earthquakes and natural disasters. The final screening resulted in 3 publications that were relevant to the study and were included for review. The flow chart of the literature selection process is shown in Figure 1. There were no published systematic reviews at the time of the original review conducted during 2008 to 2010. Also, there were insufficient published RCTs of good quality dealing with acupuncture for PTSD in refugee populations to allow for a meta-analysis. Hence a critical analysis of the papers available has been presented.

A retrospective update of the literature was undertaken in 2019. There remained a limited number of studies on acupuncture treatment of PTSD in refugee populations, with only two additional trials published since the original review. As such there was insufficient data to undertake a systematic review of clinical trials in this field. Consequently, a critical review of the papers has been presented.

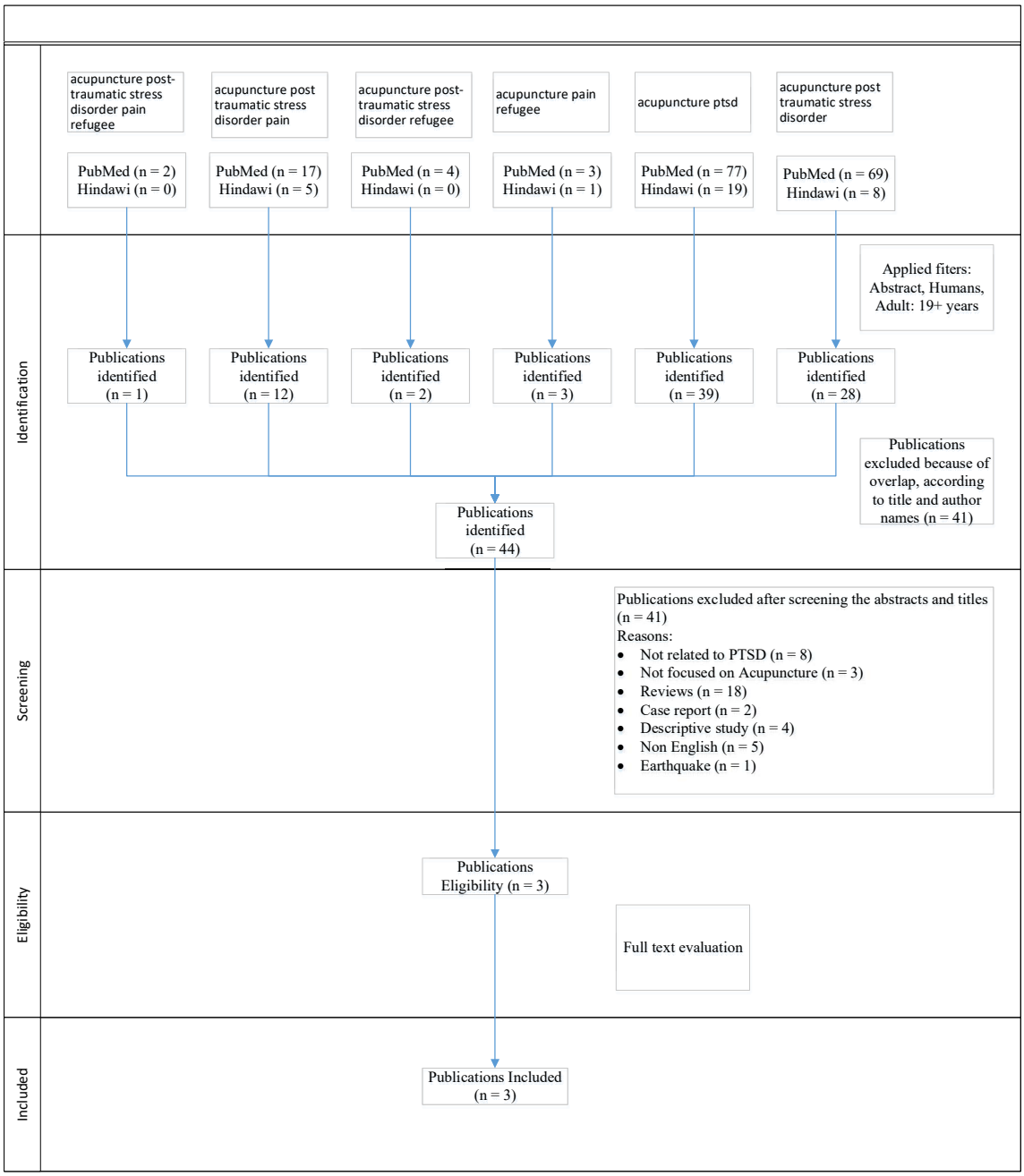

Figure 1: Flow chart of the literature selection process.

2.1 Refugees and the treatment of Post Traumatic Stress Disorder

Refugees have been categorised to fall into one of the largest at-risk groups of PSTD globally (Nickerson et al. 2011). Nickerson et al. (2011) undertook a critical review of a number of studies and has suggested that Cognitive Behaviour Therapy (CBT), as a trauma-focused approach, has some effect in reducing post-traumatic stress symptoms in refugees. The authors also noted that a multimodal intervention may be more effective for treating refugees to address the complexity of psychological reactions resulting from multiple traumatic symptoms.

Multimodal intervention is the primary focus for STARTTS in treating refugee clients with post-traumatic symptoms (Aroche & Coello 2004). Some of the interventions at STARTTS include: psychiatry, focus solution therapy, narrative therapy, Eye Movement Desensitization and Reprocessing (EMDR), art therapy, Cognitive Behaviour Therapy (CBT), mindfulness, psychotherapy, music therapy, group therapy, psychosocial counselling. This study will formally evaluate if acupuncture is a beneficial therapy to add to current STARTTS protocols.

PTSD can be associated with a wide range of symptoms but chronic pain is among the most common. Reviews conducted by Liedl & Knaevelsrud (2008) on the co-morbidity of PTSD and chronic pain have shown that when PTSD occurs, there is an increase in hyper arousal, avoidance, depression and anxiety, resulting in increased body pain. Based on their research, they developed the “Perpetual Avoidance Model” (PAM) as a process to explain PTSD co-morbidities. It is common for STARTTS clients to experience flashbacks of past traumatic events that trigger physical pain that then act as reminders of their past trauma. Liedl & Knaevelsrud (2008) PAM model helps explain the impact on refugee survivors and the relationship between PTSD and chronic pain after a trauma event.

2.2 Acupuncture and Post Traumatic Stress Disorder

The link between PTSD manifesting as chronic pain, depression and anxiety has been widely reported in the literature (Mukaino et al. 2005; Steel et al. 2002; Wilson & Drozdek 2004). Two key studies include Ahman & Stalnacke (2008) and Roth, Geisser & Bates (2008). The use of acupuncture for PTSD however is relatively new with only one study being published at the time of the original literature review. Upon subsequent review, two further studies were found and reviewed. Whilst these later studies did not contribute to informing the design of this study, they did provide a point for comparison and context for the outcomes of this study. A summary of the studies is noted in Table 1 and Table 2 below.

Table 1: Summary of randomised trials of acupuncture for post traumatic stress disorder.

(Abbreviations: ACU=Acupuncture; CBT: Cognitive Behaviour Therapy; WLC: Waitlist Control).

Author	Population	Study design	Sample size / N analysed	Intervention/control group (regime)	Treatment session	Main outcomes	Intergroup difference	Comments
Hollifield et al. (2007)	83% of the participants traumatised in childhood. One third experienced recurrence of childhood abuse.	3 parallel arms, randomised control trial	84 / 73	(A) ACU (n = 28) (B) CBT (n = 28) (C) WLC (n = 27)	24 sessions	(1) PTSD: PSS-SR (2) Depression: HSCL-25 (3) Anxiety: HSCL-25 (4) Impairment: SDI	PTSD: (1) ACU vs. CBT: F (1, 47) = 1.16; p = 0.29. (2) ACU vs. WLC: F (1, 46) = 12.60; p < 0.01. (3) CBT vs. WLC: F (1, 47) = 12.45; p < 0.01 Depression: (1) ACU vs. CBT: F (1, 47) = 0.08; p = 0.77. (2) ACU vs. WLC: F (1, 46) = 8.95; p < 0.01. (3) CBT vs. WLC: F (1, 47) = 10.84; p < 0.01 Anxiety: (1) ACU vs. CBT: F (1, 47) = 1.09; p = 0.30. (2) ACU vs. WLC: F (1, 46) = 19.43; p < 0.01. (3) CBT vs. WLC: F (1, 47) = 13.30; p < 0.01	ACU group significantly improve in PTSD, depression, anxiety and impairment as compared to WLC group. CBT group significantly improve in PTSD, depression, anxiety and impairment as compared to WLC group. No significant difference between ACU group and CBT group.

							Impairment: (1) ACU vs. CBT: F (1, 43) = 0.05; p = 0.83. (2) ACU vs. WLC: F (1, 43) = 7.28; p = 0.01. (3) CBT vs. WLC: F (1, 44) = 7.76; p < 0.01	
Engel et al. (2014)	Military	2 parallel arms, randomised controlled trial	55 / 43	(A) UPC + ACU (B) UPC	8 sessions	PTSD: PCL, CAPS	A vs B: PCL△ = 19.8 ± 13.3 vs. 9.7 ± 12.9, p < 0.001; CAPS△ = 35.0 ± 20.26 vs. 10.9 ± 20.8, $P < 0.0001$	Adjunct group receiving acupuncture significantly had greater improvements in depression, pain, and physical and mental health functioning than UPC group alone.
Feng et al. (2019)	Hospital – Chinese outpatients & inpatients experience various traumatic events	4 parallel arms, randomised controlled trial	240/240	(A) Simulated TEAS + sertraline (B) Simulated TEAS + CBT (C) Active TEAS + CBT (D) Active TEAS + sertraline + CBT	12 sessions	PTSD: CAPS, PCL-C Depression: 17-item Hamilton Rating Scale for Depression (HAMD-17)	PTSD and depression: Groups C and D had greater improvement than groups A and B. Groups C and D also had a significantly higher rate than groups A and B on clinical response (85.0% and 95.0% vs 63.3% and 60.0%, P < 0.001) and on remission (15.0% and	Acupuncture as an adjunct therapy to sertraline or CBT significantly improve PTSD and depression.

	25.0% vs 3.3% and 1.7%, P < 0.001)

Table 2: Summary of the limitations of the randomised controlled trials of acupuncture for post traumatic stress disorder.

Author	Limitations	Comments
Hollifield et al. (2007)	• Each intervention was delivered by one practitioner. • Small sample size. • Highly educated treatment-seeking participants.	Further larger study with multiple therapists and a placebo control group may help to alleviate nonspecific effects and include less motivated PTSD suffers.
Engel et al. (2014)	• Small sample size. • No control/waitlist group	Further larger multisite with longer follow-up is needed. Control/waitlist and Acupuncture groups would allow for better comparison between type of treatments.
Feng et al. (2019)	• No simulated TEAS combined with sertraline and CBT group. • No controlled/waitlist group. • Average Dose taken (approx. 96 mg/day) and maximum dose (100 mg/day) for the Chinese population as compared to an average dose 153 mg/day and maximum dose 200 mg/day for the treatment of PTSD. • Adults recruited from local Chinese communities may have distinctive perceptions of acupuncture therapy. • No follow-up measurements.	Further study to include controlled/waitlist group and simulated TEAS combined with sertraline and CBT group, include other communities, and conduct follow-up measurements to monitor the therapeutic effectiveness duration of each treatment modality.

Hollifield et al. (2007) undertook a randomised pilot trial to evaluate the potential effectiveness and acceptability of acupuncture for PTSD. The study compared: acupuncture, cognitive-behavioural therapy (CBT) and waiting list groups. A total of 209 contacts were made for the study. Of the 209 contacts, 72 were excluded, 42 were not interested, 8 were uncontactable and 3 withdrew pre-randomisation. The remaining 84 participants were for randomised into Acupuncture (n=29), CBT (n=28) and Wait-list (n=27). A total of 10 participants (5 before and 5 during treatment) withdrew from Acupuncture group, leaving 19 participants completed the treatment in the group. A total of 7 participants (3 before and 4 during treatment) withdrew from CBT group, leaving 21 completed the treatment in the group. A total of 6 participants (3 before and 3 during treatment) withdrew from the Wait-list, leaving 21 participants completed the assessments in the group. The results indicated that acupuncture may be effective in treating PTSD. The Acupuncture group showed PTSD symptom improvement over the Waiting List group ($F[1, 46] = 12.60$; $p < 0.01$; Cohen's $d = 1.29$). Similar results were reflected in the CBT group over the Wait List group ($F[1, 47] = 12.45$; $p < 0.01$; Cohen's $d = 1.42$). There was no significant difference between acupuncture and CBT groups ($F[1, 47] = 1.16$; $p = 0.29$). Hence both intervention groups improved over the non-intervention group. These positive outcomes should be treated with caution however, as the sample size may not allow inferences about participant characteristics to predict long term benefit. The large effect size of the interventions might be partly due to nonspecific therapist factors and there was no indication that these were measured. Furthermore, acupuncture in combination with CBT was not undertaken. Despite these limitations, these data provide initial evidence that acupuncture may be effective for the treatment of PTSD and warrants further investigation.

Outside of the specific study mentioned above, there have been no other studies of acupuncture specifically relating to PTSD comparing acupuncture to other intervention.

In an extension of his 2007 study, Hollifield (2011), postulated the general neural mechanisms of acupuncture model to explain how acupuncture is most likely to affect the neural pathway systems in relation to the treatment of PTSD.

> ...marginal cells (M) in the spinal cord project to somatosensory cortex via spinothalamic tracts; stalked cells (St) are responsible for enkephalin-induced segmental analgesia; and projections to the mPFC travel by spinoreticular tracts, reticular formation, and thalamus. Lamina I also projects to the locus coeruleus (LC) [125], the adrenergic control center of the brain. In addition, downward projections via the frontoarcuate connection to the hypothalamus extend to the descending inhibitory pathways directly to the LC and to serotonin and noradrenergic systems. Acupuncture causes a broad matrix of CNS response involving the mPFC, ACC, amygdala, hippocampus, hypothalamus, cerebellum, basal ganglia, and insula, assessed by multiple imaging techniques [126,127]. In both animals and humans, the response in various CNS targets are dependent on acupuncture type and frequency of stimulation [127–129]. (Hollifield 2011, pp. 773-4)

Acupuncture may downregulate limbic functions in a coordinated way for treating PTSD Hollifield (2011).

> Acupuncture has been found to have broad effects on HPA and ANS functions regulating blood pressure [130]. Studies in humans have assessed the effects of acupuncture on peripheral cortisol levels, which would be expected to change in different directions dependent on the clinical condition and the acupuncture technique used …In the depression study, cortisol was decreased with acupuncture similar to with the medication maprotiline and to normal levels seen in nondepressed controls. (Hollifield 2011, pp. 774-5)

Hollifield (2011) further claims that:

> Electroacupuncture may alter ANS function through multiple neurotransmitter systems relevant to PTSD in an opioid-dependent manner [138,139]. Acupuncture is also generally sympathoinhibitory in humans, and may have both reflexive and direct effects on the ANS and indirect effects via opioid (and perhaps other) systems. Acupuncture attenuates the blood pressure increase normally seen during mental

> stress [136], and coactivates cardiac vagal and muscle sympathetic nerves, depending on needle location and type of acupuncture [140–142]. (Hollifield 2011, p. 775)

A retrospective review of the literature found additional supporting studies from Madsen, Vaughan & Koehlmoos (2017), who claim that acupuncture has been one of the most prevalent modalities used in US Military Health System since 2005 as it has a potential to relieve chronic pain and treat PTSD. According to the authors, acupuncture stimulates the somatic afferent nerves, differentially modulating neurotransmitters and triggers myofascial release points. Differential activation of the brain's pain-controlling regions is demonstrated on functional MRI, indicating that acupuncture affects localised neuromuscular and neurotransmitter release (Madsen, Vaughan & Koehlmoos 2017).

2.3 Acupuncture as an Adjunct Therapy

A number of studies indicate the benefits of acupuncture when used as an adjunct therapy for the treatment of pain and PTSD (Richardson & Vincent 1986; Engel et al. 2014; Feng et al. 2019). Acupuncture combined with codeine produced a significantly greater effect in pain as compared to acupuncture alone or codeine alone (Richardson & Vincent 1986). In a more recent study conducted by Engel et al. (2014) it was shown that acupuncture is effective in treating PTSD in an adjunct setting of usual PTSD care (UPC), resulting in better improvements in pain and PTSD in the adjunct group than the usual PTSD care group. The mean PTSD Checklist (PCL) score significantly reduced in the acupuncture with UPC group at 4 weeks follow-up (58.1 ± 11.4 vs. 38.8 ± 11.6; $t_{241} = 13.4$, $p < 0.0001$) and maintained at 8 weeks follow-up (37.8 ± 15.0; $t_{153}=11.0$, $p < 0.0001$) and 12 weeks follow-up (38.7 ± 15.9; $t_{158}=10.5$, $p < 0.0001$) while PCL scores in UPC alone group less dramatically declined as compared to the acupuncture with UPC group from baseline to 4 weeks (55.4 ± 12.0 vs. 51.5 ± 12.2; $t_{268}=2.7$, $p < 0.01$), at 8 weeks (53.8 ± 14.7; $t_{219}=0.9$, $p = 0.35$) and 12 weeks (45.8 ± 13.9; $t_{237}=6.0$, $p < 0.001$). The mean Numeric Rating Scale (NRS) score of acupuncture with UPC group reduced significantly from baseline to 4 weeks follow-up (4.3 ± 2.6 vs. 3.4 ± 2.0; $t_{252}=3.3$, $p < 0.001$) and stabilised at 8 weeks follow-up (2.5 ± 2.0; $t_{216}=6.0$, $p < 0.0001$) and

at 12 weeks follow-up (2.8 ± 2.2; t_{211}=4.9, $p < 0.0001$) while the mean NRS score in the UPC alone group increased significantly (3.7 ± 2.4 vs. 4.6 ± 2.5, $t_{267} = -2.8$, $p < 0.01$; 3.8 ± 2.5, $t_{237}= -0.35$, P= 0.74; 4.6 ± 2.6, $t_{242} = -2.7$, $p < 0.01$ at post week 4, week 8 follow-up and week 12 follow-up respectively). If acupuncture is effective for the care of usual PTSD, it is possible that it may also be effective for PTSD caused by trauma in a refugee population.

A very recent published study by Feng et al. (2019) had shown that acupuncture is effective in treating PTSD in adjunct settings of 4 groups, resulting in better improvements in depression and PTSD in the adjunct groups with active acupuncture treatment than adjunct groups with simulated acupuncture treatment. The 4 groups of that study were: group A - simulated transcutaneous electrical acupoint stimulation (TEAS) combined with sertraline, group B - simulated TEAS combined with CBT, group C - TEAS combined with CBT, and group D - TEAS combined with CBT plus sertraline. Clinician-Administered PTSD scale (CAPS), PTSD Check List-Civilian Version (PCL-C) and 17-item Hamilton Rating Scale for Depression (HAMD-17) were the outcomes of the study. There were significant improvements in PTSD (PCL-C) in group B at week 8 ($p = 0.038$; effect size = 0.346) and 12 ($p = 0.002$, effect size = 0.509). However, there was no significant difference between group A and group B in the CAPS and HAMD-17 at week 4, 8 and 12. Group C had significantly greater reduction in PTSD (CAPS & PCL-C) and depression (HAMD-17) as compared to group A and group B for all time points week 4, 8 and 12 ($p \leq 0.038$; effect sizes: 0.484 - 1.447). Group D significantly had further reductions in PTSD (CAPS & PCL-C) and depression (HAMD-17) as compared to any other 3 groups (A, B & C) ($P \leq 0.05$; effect sizes 0.359 - 2.244). The study also found there was a significant difference between the 4 groups in the clinical response rate ($\chi2 = 28.102$, $p < 0.001$) and in remission rate ($\chi2 = 21.492$, $p < 0.001$), with both groups C and D had significantly higher rates than groups A and B in both clinical response (85.0% and 95.0% vs 63.3% and 60.0%, $p < 0.001$) and remission rate (85.0% and 95.0% vs 63.3% and 60.0%, $p < 0.001$). However, there were no significant differences between groups A and B in both clinical response ($\chi2 = 0.035$, $p = 0.851$) and remission rate ($\chi2 = 0.000$, $p = 1.000$). Although groups C and D had higher clinical responses and remission rates over both groups A and B, there were no significant

differences between group C and group D in clinical response ($\chi 2 = 2.315$, $P = 0.128$) and in remission rate ($\chi 2 = 0.511$, $P = 0.475$). If acupuncture is effective for the care of usual PTSD, it is possible that it may also be effective for PTSD caused by trauma in a refugee population.

Hence there is reasonable evidence to support the supposition that acupuncture may enhance the therapeutic effects of other interventions when treating PTSD. When this proposition is extended to examine the major symptoms of PTSD, i.e. pain, depression and anxiety, further evidence can be found to suggest that acupuncture would constitute a suitable adjunct therapy for this study. For example, Hamza et al. (1999) and He et al. (2004) reported improvement in pain related activity impairment, sleep quality and quality of life. There are other studies that also indicate positive improvement from acupuncture in relation to specific symptoms. A systematic review of reviews into trauma spectrum response (TSR) found that treating anxiety, depression, pain, headache and sleep problems with acupuncture seems to be effective (Lee et al. 2012). Hence, it is reasonable to assume that acupuncture will have an effect on the symptoms of chronic pain, depression and anxiety identified as the primary variables for the population in this study.

Unfortunately, even to date, there are a very limited number of studies on acupuncture as an adjunct treatment for refugees with PTSD. In addition to Hollifield et al. (2007) study, a retrospective review found only two additional directly relevant studies, Highfield et al. (2012) reviewed an acupuncture clinic at Boston Medical Centre providing acupuncture treatment to refugees and trauma survivors and reported that acupuncture treatment may be effective for alleviating chronic pain. In the same year, Longacre et al. (2012) published a review into complementary and alternative medicine treatment for refugees and survivors of torture and indicated that acupuncture can potentially reduce their chronic pain and PTSD.

Consequently, this study will seek to add new information on the effectiveness of acupuncture for three primary PTSD co-morbidities in refugees, both as a standalone therapy and as an adjunct to CBT. The outcomes of this study may change clinical practice, particularly in the delivery of acupuncture as an integrated treatment for STARTTS clients.

2.4 Outcome measures

PTSD and its co-morbidities can be measured through a number of instruments. Other studies utilised multiple measures for their outcomes and this study is no exception as it required multiple measures to clinically evaluate the effectiveness of acupuncture treatment for chronic pain, depression and anxiety in a group of survivors of torture and refugee trauma.

Åhman & Stålnacke (2008) used the Impact of Event Scale (IES), a valid measuring post traumatic stress reactions, for screening post traumatic stress disorder; the Hospital Anxiety and Depression Scale (HAD) for measuring anxiety and depression; and the Visual Analogue Scale (VAS) for rating pain intensity.

Hollifield et al. (2007) study used Posttraumatic Symptom Scale-Self Report (PSS-SR) consisting of 17 items comprising the DSM-IV-TR PTSD diagnostic criteria; the self-rated Hopkins Symptom Checklist-25 (HSCL-25) for assessing symptoms of anxiety and depression; and the Sheehan Disability Inventory (SDI), used extensively in research, has 3 10-point rating scales for assessing impairment in the areas of work, social, and home/family life.

Engel et al. (2014) used PTSD Checklist (PCL); the Clinician-administered PTSD Scale (CAPS) for estimating changes in PTSD symptom severity; Beck Depression Inventory-II (BDI-II) for depression symptoms; the Beck Depression Inventory-II (BDI-II) for measuring severity of depression symptoms; the SF-36-Revised Health Survey for evaluating the physical (PCS) and mental (MCS) component summary measures of health functioning; and Numeric Rating Scale for pain intensity.

The variety of measures indicate that there is no particular standard when choosing an instrument to measure PTSD and comorbidities in a refugee population. The Harvard Trauma Questionnaire and Hopkins Symptoms Check List 25 are standard measures in

STARTTS. They were also used in some of the studies above. One of the secondary objectives of this study was to evaluate the relevance of these outcome measures, hence it ws deemed appropriate that these established STARTTS measures be used in this study. Two more measures, Numeric Rating Scale for pain intensity and Credibility/Expectancy questionnaire were also been used in this study. These measures were chosen as the outcomes could provide data that would validate the outcomes of the other instruments and also provide additional important data on patient practitioner interactions not measured in any other published studies.

The Numeric Rating Scale (NRS) is deemed a more responsive scale than other pain measures and had been selected as it is one of most commonly used validated measuring tools for pain intensity among other pain scales such as the Visual Analogue Scale (VAS), Verbal Rating Scale (VRS), and the Faces Pain Scale-Revised (FPS-R) in clinical and research settings (Ferreira-Valente, Pais-Ribeiro & Jensen 2011). The Credibility/Expectancy questionnaire was used in this study to determine whether there is a correlation between intervention outcome and the credibility of the intervention versus the expectancy of the participants. This was deemed important to measure as other studies e.g. Borkovec & Mathews 1988; Goossens et al. 2005; Smeets et al. 2008 have shown that treatment has a greater outcome with higher credibility/expectancy.

A detailed review of each of the instruments chosen for this study is presented below.

2.4.1 Harvard Trauma Questionnaire and Hopkins Symptoms Check List 25

In the late 80's and early 90's, a team of experts working in the Harvard Program in Refugee Trauma (HPRT), pioneered the development of two psychometric scales for the assessment of the psychological state and traumatic symptoms of refugee trauma survivors These were the Hopkins Symptoms Check List 25 (HSCL-25) and Harvard Trauma Questionnaires (HTQ) which subsequently became standards for assessment of interventions and treatments in refugee populations.

The HPRT had developed a training program in mental health care known as the Harvard Training Program in Cambodia (HTPC) to provide skills to primary health care physicians in the kingdom of Cambodia to assess and detect trauma symptomatology and mental health condition among the survivors of war, and to deliver culturally appropriate treatment and intervention. The HTPC program introduced to refugee camps along Cambodia-Thailand border to recruit Khmer Mental Health Care workers from 1988 to 1991 in preparing to serve and support for the repatriation of Khmer refugee population to Cambodia society.

In 1998, HPRT invited the Psychiatry & Ingham Institute of UNSW Australia / Psychiatry Research and Teaching Unit of Liverpool Hospital to conduct 'A Mid Term Evaluation' of The Harvard Training and Certificate Program for Primary Care Physicians in the Kingdom of Cambodia. In a program directed by HPRTHTPC, (Surin Project, Thailand 1999), and in collaboration with Chulalongkorn University, Bangkok Thailand, the Hopkins Symptoms Check List 25 (HSCL-25) and Harvard Trauma Questionnaires (HTQ) were extensively studied and validated (Silove et al. 2007).

These psychometric scales have since been widely used in assessing populated affected by various conflict and natural disasters around the world including in Bosnia, Japan, African continent, East Timor and Cambodia.

2.4.2 Credibility and Expectancy Questionnaire

One of the short comings identified in the literature related to the number of studies that failed to measure any effects of the therapeutic relationship. Understanding the patient's view on how they think about a particular treatment and how they feel about that intervention can provide important information relating to their treatment outcomes. Insights into these psychometric properties can be obtained by the Credibility and Expectancy Questionnaire (Devilly & Borkovec 2000). These two factors have shown to have high internal consistency as well as good test-retest reliability (Devilly & Borkovec 2000).

Studies have shown that expectancy is more likely to be associated with positive treatment outcome than credibility (Devilly & Borkovec 2000). A study on comparative treatment study of nonphobic anxiety disorders found that expectancy was significantly correlated to fourteen measures while credibility correlated significantly with three measures (Borkovec & Mathews 1988). Another study also produced similar results and found that expectancy was associated with thirteen out thirty outcome measures whilst credibility was not significantly correlated to any of the outcome measures (Borkovec & Costello 1993). Kalauokalani et al. (2001) suggested that participants with higher expectations improved significantly than those with lower expectations, whilst Goossens et al. (2005) found that treatment expectancy at pre-treatment significantly predicted each of the four outcome measures (pain coping and control, motoric behaviour, negative affect, and quality of life) at post-treatment and at follow-up. A 3-arm study (active physical therapy, CBT, and combined therapy) in the chronic low back pain by Smeets et al. (2008) furhter confirmed that that expectancy and credibility are two separate constructs in that the treatment expectancy was a predictor in active physical therapy while the treatment credibility was a predictor for the combined therapy

These studies have shown that these two factors are separate concepts, that play an important part in the outcome of an intervention. It was consequently deemed valid to assess these factors as part of the treatment effect in this study.

2.4.3 Numeric Pain Scale

Pain and chronic pain are strong comorbidities associated with PTSD. Furthermore, there have been many studies that have shown acupuncture to be effective for pain (Loh et al. 1984; Richardson & Vincent 1986; Lee et al. 2012). Whilst the Harvard trauma questionnaire provides a measure of trauma symptoms and Hopkins Checklist 25 provides a measure PSTD, anxiety and depression symptoms, it was deemed appropriate to provide a simple measure of pain as part of this study, given the prevalence of presentation of this symptom

in the study population. Numerical rating scales help patients to communicate their pain experience and their response to their treatment in a simple manor that is easily translatable across cultural barriers.

The commonly used pain intensity rating scales are Visual Analogue Scale (VAS), Numerical Rating Scale (NRS), Verbal Rating Scale (VRS), and the Faces Pain Scale-Revised (FPS-R). Ferreira-Valente, Pais-Ribeiro & Jensen (2011) validated the responsiveness of subjects to each of these rating scales and though the differences were relatively small, they found that NRS was the most responsive, followed by VAS, followed by VRS and then the FPS-R.

Chanques et al. (2010) compared the responsiveness between the Visual Analog Scale (horizontal (VAS-H) and vertical (VAS-V) line orientation), the Verbal Descriptor Scale (VDS), the 0–10 oral Numeric Rating Scale (NRS-O) and the 0–10 visually enlarged laminated NRS (NRS-V) for pain assessment in critically ill patients in an intensive care unit (ICU). They found that the responsiveness was significantly higher in NRS-V (91%) than compared to NRS-O (83%), VDS (78%), VAS-H (68%) and VAS-V (66%), making NRS-V is the most feasible and discriminative self-report rating scale measuring pain intensity in critically ill patients..

Williamson & Hoggart (2005) completed a review into the three commonly used pain rating scales: the Visual Analogue Scale, the Verbal Rating Scale and the Numerical Rating Scale had found that they are valid and reliable and that the Numerical Rating Scale is not only easy to administer but also has good sensitivity in detecting a change in pain, providing interval data that can be statistically analysed for audit and research purposes, making it probably preferred over the VRS or VAS as the pain assessment tool ().

Given the face validity of the NRS across multiple studies, this outcome measure was chosen as the most valid for use in this study.

2.5 Pragmatic Design

In designing an acupuncture clinical trial, consideration has to be given to the peculiarities of the intervention and the appropriateness of the protocol to the population under study. There are two types of designs, pragmatic and explanatory, that are broadly used in clinical trial by health sciences communities when testing and evaluating treatment interventions (Schwartz & Lellouch 1967; Patsopoulos 2011). The explanatory design aims to evaluate the efficacy of a treatment intervention under optimal, controlled and well defined laboratory conditions while the pragmatic design aims to evaluate the efficacy of a treatment intervention with normal conditions in a clinical practice setting (Schwartz & Lellouch 1967; Patsopoulos 2011). Pragmatic design is useful in settings where placebo control is problematic (MacPherson 2004). Due to the nature and complexity of the presenting conditions of STARTTS clients, an inability to standardise the types of trauma suffered by participants, and hence the inability to provide a standardised diagnosis and treatment protocol, it was determined that a pragmatic approach was the most appropriate design for this study. A pragmatic design allowed for the practitioner to determine the most relevant diagnosis and given the limitations to treatment based on trauma e.g. some client may not allow access to certain part of the body, an appropriate acupuncture treatment protocol could be devised. Whilst the selection of points could not be standardised, the diagnostic process be controlled. STARTTS protocols as well as conditions placed upon the study ethics approval by the South Western Sydney Local Health District of NSW Health, prevented the used of a control group, as withholding of an intervention to an at-risk population was not appropriate. Equally the use of a waitlist control was deemed unethical. Consequently, the most advantageous approach was to adopt a protocol the mimicked the actual clinical environment as closely as possible, making the pracgmatic clinical design the most appropriate approach for this study.

2.6 Summary

Refugees have been categorised to fall into one of the largest at-risk groups of PSTD globally. The limited literature indicates that a multimodal intervention may be more effective for treating refugees to address the complexity of psychological reactions resulting from multiple traumatic symptoms. (Nickerson et al. 2011) The use of acupuncture for PTSD however, is a relatively new approach with only one study being published at the time of the original literature review and two subsequent recent publications. The original Hollifield et al. (2007) study compared: acupuncture, cognitive-behavioural therapy (CBT) and waiting list groups and despite limitations in the study in respect of sample size and effect size, found that acupuncture may be effective in treating PTSD. This was supported by the two later studies by Engel et al. (2014) and Feng et al. (2019). Hence there was reasonable evidence to support the supposition that acupuncture may enhance the therapeutic effects of other interventions when treating PTSD. When this proposition was extended to examine the major symptoms of PTSD, i.e. pain, depression and anxiety, further evidence was found to suggest that acupuncture would constitute a suitable adjunct therapy for this study.

As noted in the literature review, a pragmatic clinical design was deemed the most appropriate for this study and the characteristics of its population. An important element of the design was the selection of appropriate instruments to measure the intervention outcomes. The studies reviewed used a number of instruments to measure PTSD and its co-morbidities. Each of the instruments were deemed valid and the selection of the Harvard Trauma Questionnaire and Hopkins Symptoms Check List 25 as the standard measures for this study was determined primarily through STARTTS protocols. The study design however, called for the use of secondary measures for pain and the literature review indicated that the Numeric Rating Scale for pain intensity was the most appropriate tool for this study. The RCT review process also showed the importance of measuring Credibility/Expectancy due to the influence of these factors on intervention outcomes. This aspect had not been measured in previous acupuncture/PTSD studies and so the credibility and expectancy questionnaire was chosen as a secondary measure for this study.

The following chapter will further explore the design elements of this pragmatic clinical trial and will expound on issues including recruitment, randomisation and the intervention protocols.

3.0 Chapter 3: Method

This chapter covers the method of this study. It discusses the ethics approval, design, intervention and procedure including recruitment, independent review, risk assessment, induction and training of co-investigators, and use of interpreters for the study.

3.1 Ethics Approval

This study was granted approved by the Human Ethics Committee at the University of the Technology, Sydney (approval number: 2011-470A) and the Human Ethics Committee at the South Western Sydney Local Health District of NSW Health (HREC reference: HREC/12/LPOOL/443; SSA reference: SSA/12/LPOOL/444; Project number: HE12/263).

Prior to taking part in the study, all Co-investigators/ employees of STARTTS services and academic supervisors were required to provide their curriculum and photo IDs, sign a confidentiality agreement, have a criminal record check and be approved by the South Western Sydney Local Health District of NSW Health Ethic Committee Panel at Liverpool Hospital.

The CBT manual developed as part of this study was approved by the STARTTS research Coordinator and the South Western Sydney Local Health District of NSW Health Ethics Committees Panel at Liverpool Hospital prior to commencing the eight CBT treatment sessions.

The South Western Sydney Local Health District of NSW Health conducted a site inspection at the STARTTS' Carramar site in 2012. It involved an assessment of the acupuncture room, general facility, hygiene and OHS procedures and medical record room security. Relevant procedural documents and checklists can be found in Appendix 1.

An acupuncture stopping rule was required by the South Western Sydney Local Health District of NSW Health Ethics committee. The purpose was to screen for any adverse effects of acupuncture treatment. The acupuncture stopping rule was conducted at week 2 by independent reviewers in the Acupuncture group and the Combined group. If the acupuncture treatment was deemed to be inappropriate for the client or resulting in harm, the Direct Services Coordinator was to be consulted on the matter and the participant referred to appropriate services. The approved rule form can be found in the Appendix 5.

3.2 Design

This study was designed as a pragmatic trial. Based on the literature review (Schwartz & Lellouch 1967; MacPherson 2004; Patsopoulos 2011) this was deemed the most appropriate design given that the presentation of symptoms in the study population could not be standardised, and consequently a standardised treatment protocol could not be used. A repeated measure design was employed with assessments occurring pre and post intervention and at follow-up. Subjects were randomised into three arms: an acupuncture only arm, a CBT only arm and an acupuncture and CBT arm. A control or waitlist group could not be used in this trial due to the nature and severity of the participants presenting symptoms and the type of population under study. This decision had been determined by the Ethics Committees panel during an interview with the South Western Sydney Local Health District of NSW Health. STARTTS, is also not in a legal position to deny legitimate clients treatment. Consequently, as clients were screened, if they agreed to participate in the research they were allocated to one of the study groups, otherwise they were immediately waitlisted for standard STARTTS intervention. Participants received treatment in eight weekly sessions, at STARTTS, by experienced counsellors and/or an acupuncturist.

3.2.1 Inclusion Criteria

In order to participate in the study, the STARTTS client needed to meet the following inclusion criteria:

- Be aged 18 years or above
- Have lived through refugee trauma/torture experiences (Assessment)Assessment)
- Experienced symptoms of PTSD (nightmares, flashbacks, sleep/concentration difficulty, memory problems, avoid talking about trauma)

3.2.2 Exclusion Criteria

The STARTTS client was excluded from the study if the client met any of the exclusion criteria:

- Currently in community detention
- Moderate to high suicide risk (ie. has a plan & accessibility to means)
- Brain injury not associated with Torture & Trauma experiences
- Epilepsy
- Psychotic disorder
- Current Drug/Alcohol abuse
- Current domestic violence
- Current child protection issues
- Criminal Law issues (charges pending or currently on probation/parole)
- Acute/recent injury causing pain
- Past experience includes torture using needles

3.2.3 Sample Size and Randomisation

A review of the literature was undertaken to determine the effect size from similar studies as the basis for a sample size calculation. A power analysis with moderately large effect of Cohen's $d = 0.80$ (Thomas 2000) was used to determine the sample size based on the effect size of intervention of 0.41 (Porter & Haslam 2005) with alpha level (type I error) of 0.05 for the study design.

Power analysis for ANOVA designs
3x 3 layout Ha: T1=GM-Delta/2, T2=T3=...=T(k-1)=GM, Tk=GM+Delta/2 tested at Alpha= 0.050

DELTA (in units of sigma=Std. Dev.)

N	0.250	0.410	0.500	0.750	1.000	1.250
2	0.060	0.078	0.093	0.152	0.240	0.355
3	0.068	0.101	0.128	0.239	0.397	0.579
4	0.076	0.124	0.163	0.323	0.534	0.738
5	0.083	0.147	0.199	0.404	0.648	0.844
6	0.091	0.170	0.235	0.481	0.740	0.911
7	0.099	0.194	0.271	0.551	0.812	0.950
8	0.107	0.218	0.308	0.616	0.866	0.973
9	0.115	0.242	0.344	0.673	0.906	0.986
10	0.124	0.266	0.379	0.724	0.935	0.992
12	0.140	0.315	0.448	0.808	0.970	0.998
14	0.157	0.363	0.513	0.869	0.987	0.999
16	0.175	0.410	0.573	0.912	0.994	0.999
18	0.192	0.456	0.629	0.942	0.997	0.999
20	0.210	0.499	0.679	0.962	0.999	0.999
25	0.255	0.600	0.782	0.988	0.999	0.999
30	0.300	0.686	0.856	0.996	0.999	0.999
35	0.345	0.757	0.907	0.999	0.999	1.000
40	0.389	0.815	0.942	0.999	0.999	1.000
50	0.474	0.896	0.978	0.999	0.999	1.000

Figure 2: Power analysis in determining the sample size.

From the power analysis in Figure 2, for the effect size of 0.41, the minimum sample size required to achieve statistically valid results is 40 (power is 0.815). This study had fulfilled Cohen's power value as it involved an estimated total sample size of 60 and a final sample size of 40.

Study participants were randomised into three treatment groups using a permuted block method by a member of the team that was not associated with STARTTS intake or the intervention team. A block size of 6 was used, coded as RT1 for Acupuncture group, RT2 for Combined (Acupuncture & CBT) and RT3 for CBT group. Ten blocks were generated for an estimated study group population of 60, assuming 20 participants in each group. The outcomes of the randomisation were noted in sealed envelopes ordered 1 to 60 and given to the STARTTS receptionist. Upon completing the registration initial assessment process for the trial, the participant was provided with an envelope, assigning them to one of the intervention groups.

3.2.4 Outcome Measures

Based on a determination of the best outcome measures for this study as noted in the literature review and based upon STARTTS protocols, the following outcome measures were administered.

- Hopkins Symptoms Check List 25
- Harvard Trauma Questionnaire
- Credibility and Expectancy Questionnaire
- Numeric Pain Scale

These outcomes were applied at baseline pre-treatment, after the completion of eighth session and a two-month follow-up by Clinical Interns.

The Hopkins Symptoms Check List 25 was used for measuring anxiety and depression in refugee participants. The Harvard Trauma Questionnaire was used to measure trauma in refugee participants. The Credibility and Expectancy Questionnaire measured the impact of belief and expectancy of each participant on the treatment and its outcome. The Numeric Pain Scale was used as a secondary measure for pain.

3.2.5 Harvard Trauma Questionnaire and Hopkins Symptoms Check List 25

As was noted in the literature review, Hopkins Symptoms Check List 25 (HSCL-25) and Harvard Trauma Questionnaires (HTQ) were considered the most appropriate measurement outcome for this study and are commonly used in the field. These Psychometric scales (HSCL-25 and HTQ) are self-reporting questionnaires for individuals to reflect on past traumatic experiences and traumatic events affecting their psychological, physical and social condition. The measures are available in multiple languages. Participants are scored, and the scores are used to gauge the level of traumatic stress and the participants mental state. In particular, depression and anxiety in the context of psychosocial functioning of survivors of mass violent and displacement person is examined.

For the Hopkins Symptoms Check List 25 (HSCL-25), individuals with total scores on anxiety and/or depression greater than 1.75 are considered symptomatic. For the Harvard Trauma Questionnaire (HTQ -Trauma Symptoms), individuals with total scores greater 2.5 are considered symptomatic for PTSD.

The HSCL-25 & HTQ were conducted in all three groups: pre-treatment, after the completion of eighth session and at follow-up 2 months after conclusion of the treatment phase.

3.2.6 Pain Scale

From the literature review, the Numeric Rating Scale is one of the commonly used validated rating scales for measuring pain intensity. The Numeric Rating Scale is easy to administer, responsive and sensitive in detecting a small change in pain. These characteristics of the Numeric Rating Scale made a suitable choice to measure pain intensity in refugee clients.

Numeric Rating Scale is a 11-point scale from 0 to 10, with 0 for no pain and 10 for worst imaginable pain. Pain intensity rating of about 8 or greater is considered as a severe pain with higher degree of problems with movements.

The Numeric Rating Scale (NRS-11) was conducted in all three groups: pre-treatment, after the completion of eighth session and at follow-up 2 months after conclusion of the treatment phase.

3.2.7 Credibility and Expectancy Questionnaire

The study design included an investigation of the relationship between the client's belief and thinking about the intervention and the outcome of the treatment. This was deemed particularly relevant given that some cultural groups in the study would have substantially different levels of knowledge and acceptance of acupuncture and CBT

The Credibility and Expectancy Questionnaire has six questions, consisting of two sets of questions. Set I contains four questions on "think" and Set II contains two questions on "feel". The first three questions relate to the credibility (three "think" questions) while the remaining three questions relates to the expectancy (one "think" and two "feel" questions) (Devilly & Borkovec 2000).

It uses two rating scales: one ranging from 1 (not at all) to 9 (very much) and another ranging from 0% (not at all) to 100% (very much). The percentage rating scale was linear and for purposes of statistical analysis was transformed to a minimum of 1 and a maximum of 9, resulting total score for each factor (credibility and expectancy) rating with a minimum of 3 and a maximum of 27 (Smeets et al. 2008).

The questionnaire was conducted in all three groups: pre-treatment, after the completion of eighth session and at follow-up 2 months after conclusion of the treatment phase.

3.3 Interventions

All interventions where undertaken by STARTTS staff. CBT was administered by counsellors listed as co-investigators on the study. Acupuncture was administered by one of the chief investigators who is a STARTTS staff member, fully qualified as a counsellor and registered as an acupuncturist with Chinese Medicine Registration Board.

3.3.1 Cognitive Behaviour Therapy (CBT)

Cognitive Behaviour Therapy is an evidenced based approach for treating Post Traumatic Stress Disorder (PTSD) amongst other psychological disorder. Cognitive Behaviour Therapy combines talk therapy and behavioural therapy where a therapist tailors an effective and personalised coping mechanism for patients to help them identify and manage their thoughts, emotions, flashbacks, dreams and behaviours in their daily lives.

Over a 30-year period, STARTTS has developed a holistic approach to counselling that is culturally appropriate and sensitive to the needs of a diverse refugee population. CBT is one of the standard therapies. STARTTS clients are complex as they are refugees who have experienced traumas themselves or witnessed their family members being tortured, raped, murdered, or otherwise traumatised. Some clients are illiterate in both their native language and English. Some have little or no education and some were born in the refugee camps or detention centres.

To deal with the complexity of this client base as a study population for this project, a significant amount of resource and time was invested in the development of a CBT manual. This manual, attached in Appendix 14, provided a standardised approach to training of counsellors and delivery of CBT to refugee participants in this study. The process to create the CBT manual involved an appropriate blend of literature research, and blending of theoretical models with the lived experience of STARTTS counsellors. Revisions were undertaken by eminent experts in the fields including senior editors: Mariano Coello, John O'Connor, Robert Holt, Shakeh Momartin, Gary Thornell, Thuy Tran and Indira Haracic-Novic; with contributions from Gordana Hol Radicic, Susan Maddrell, Adana Zagic, Esber Melhem, Mirjana Askovic, Melanie Leemon, Nooria Mehraby, Shaheen Kohsar, Emma Boles, Meng Thai, Neeraja Sanmuhanathan, Heyam Haddad, Tajana Opacic, Deborah Gould, Carolyn Garabedian, Daniel Zu, Carmela Morano, Claudia Herrero, Tshimanga Beya and David Ajang. Particular attention was paid to the clinical experiences and bilingual skills of staff that advised on how to best approach CBT techniques that are culturally sound and maintain integrity of interpretation of in respect of how different cultures explain or report their pain experience, grief and loss, dreams and so on. The manual emphasises how the client's interpretation provides a deeper meaning and understanding on what they are expressing, conveying and experiencing and how this provides valid and valuable information for the therapist to assist them in healing their deepest wound.

The CBT manual was developed based on DSM-IV criteria but modified to tailor for the refugee population for this study through numerous consultative sessions with STARTTS

counsellors and expert clinical psychologists. The DSM-IV-TR criteria for post traumatic stress disorder can be found in the Appendix 9.

The development of the finalised version of the Cognitive Behavioural Therapy manual is a product of STARTTS experiences combining the evidence-based CBT approaches to culturally sensitive practice, providing best outcomes for STARTTS clients. The manual contains significant CBT principles in combination with treatment strategies, psycho-education, spiritual imperatives, anthropological and historical background and understanding of settlement needs that are essential for the treatment and recovery of the clients.

The CBT manual was submitted to and approved for use by the South Western Sydney Local Health District of NSW Health. The research study could only commence once approval on the CBT manual was granted by the South Western Sydney Local Health District of NSW Health. All co-investigators were inducted with the CBT manual in this study. Further discussion of CBT manual creation and the CBT manual itself can be found in the Appendices.

3.3.2 Acupuncture

As part of this study, STARTTS adopted an acupuncture referral form which was used to record diagnostic and treatment information. The referral form also consisted of personal, social information about each refugee's origin, their nationality, the refugee status of their visa e.g. permanent residency, temporary asylum protection visa or Australian citizenship, in addition to their psychological assessment of trauma symptoms and pain scale.

As noted earlier, channel theory formed the basis of diagnosis and treatment with point selection being based upon the relevant diagnosis and a selection of acupuncture points based on what was most appropriate to access given the history of trauma provided by the participant.

Each acupuncture session lasted around 1.5 hours and involved: a 15 minute diagnostic interview; 15 minutes for draping and positioning of the patient dependant a upon the nature of torture suffered by the patient, and the practitioner's need to be mindful of which part of the body was to be used for treatment; 15 minutes for administration of the acupuncture needles; 20 minutes with the needle in situ; and 15 minutes for getting dressed and 10 minutes for patient to recoup and inquiring the patient to ensure the patient is well and safe and ready to leave the treatment room. Acupuncture was administered using 0.25 gauge needles that varied in length from 1cun to 4cun. Stimulation was gentle based on scratching the tip of the needle and slight rotation so that the patient won't feel any pain. These were standardised techniques as noted by Shanghai College of Traditional Medicine (1981). A tens machine was not utilised because some patients had been electrocuted and the tens machine may have triggered flashbacks. Each participant in the Acupuncture group and Combined (Acupuncture & CBT) group had eight sessions of acupuncture treatment.

For the Combined (Acupuncture & CBT) group, the order of administration varied according to the availability of each individual counsellor's availability and schedule. Acupuncture may have been administered first, followed by CBT or vice versa.

3.4 Procedures

As part of the study design, several procedures where developed to help standardise processes, thereby controlling as many variables as possible. This includes process for recruitment, assessment, treatment, and stopping orders as described below.

3.4.1 Recruitment

Numerous meetings were held to formulate a procedure to access clients from STARTTS waiting list. This procedure formed the basis for recruitment and required approval from South Western Sydney Local Health District of NSW Health. The recruitment process is

shown as a flow chart in Figure 3. The process started with the client being referred to STARTTS and the Intake team inquiring with the client as to their interest in participating in the study. If the client was interested, their details were provided to a Counsellor to undertake a Telephone Screening based on the inclusion and exclusion criteria. If the client answered "Yes" to any of the exclusion criteria, they were allocated to the normal STARTTS service framework.

If the client responded to any of the exclusion criteria with "NOT KNOWN" then further screening was undertaken to determine eligibility. Upon checking against the inclusion criteria, if any response recorded a "no", the client was returned to the STARTTS intake team for allocation of standard services.

3.4.2 Assessment procedures

Where a client fulfilled the inclusion criteria the Telephone Screening Counsellor provided the Clinical Project Officer with the details of the client eligible for allocation to the assessment phase. The client's file was marked with a sticker for differentiation and potential inclusion in the study. The complete assessment process described below can be seen in Figure 3.

Prior to inclusion, the Clinical Project Officer allocated the client to a Clinical Physiologist Intern for a 1-2 session assessment. The clients were interviewed and given information about the research study. The client was then screened for serious mental illness using Harvard Trauma Questionnaire, Hopkins Symptoms Check List 25 diagnostic tools. Assuming no stopping conditions were met e.g. the participant did not express suicidal ideation, the client was admitted as a participant. The participant then completed the assessment phase for the study, which included the additional administration of the Credibility and Expectancy Questionnaire, and the Numeric Rating Scale for any identified pain. All of these assessments can be found in the Appendices.

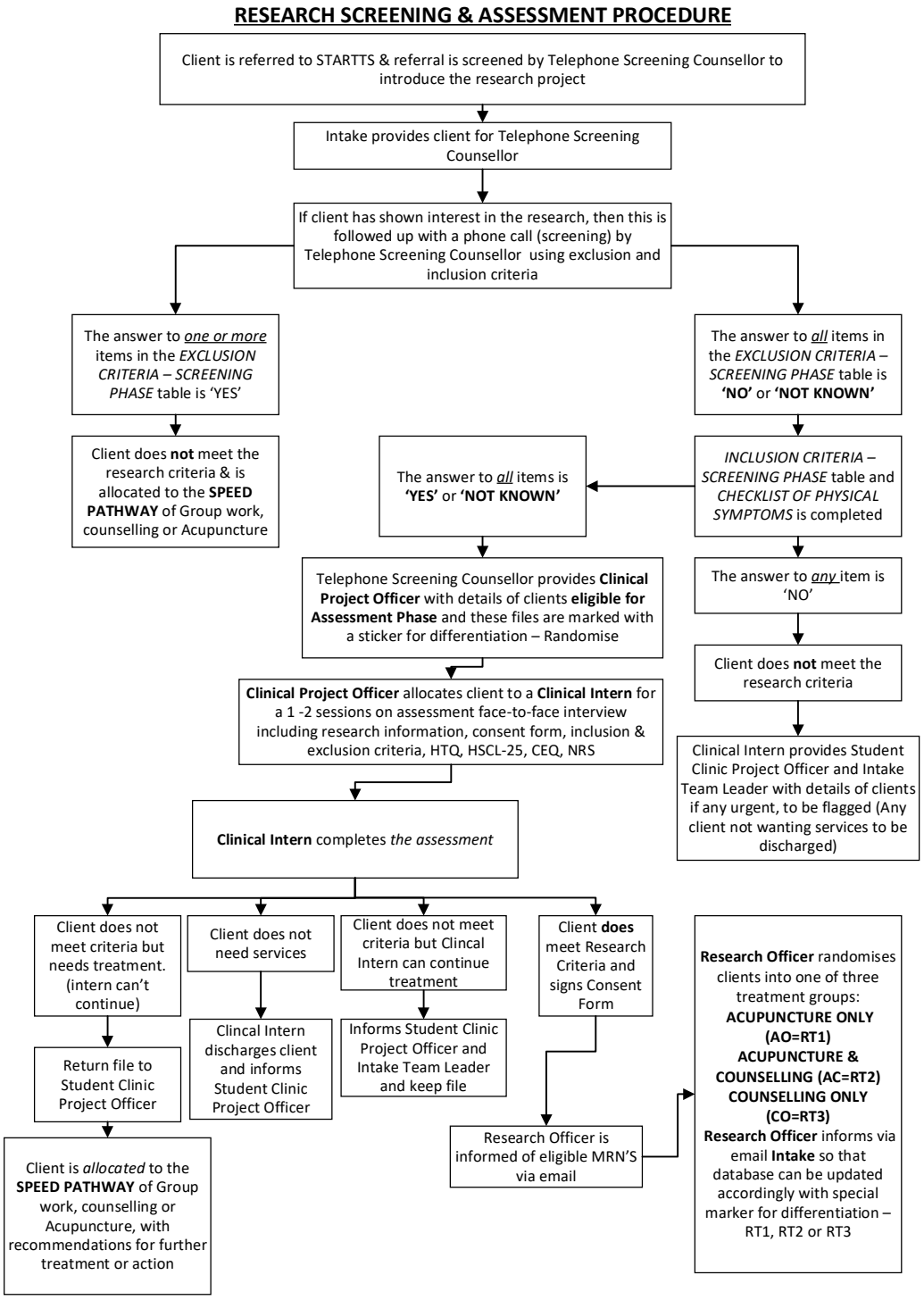

Figure 3: Flow chart showing the study recruitment and assessment procedure.

During this process, the participants were requested to sign a Consent Form. They were assigned a unique Medical Record Number (MRN), which is part of the standard STARTTS client process procedure. The Research Officer, however. was informed via email of the participants' eligibility for the study, identifying the MRN of the participant. The Research Officer then additionally marked the file using the codes RT1, RT2 and RT3 after randomly allocating them as per the earlier described process. Co-investigators were blinded as to which participant was allocated to which group. The Research Officer informed Intake via email so that the database could be updated accordingly with special marker (RT1, RT2 or RT3) for differentiation.

There were however, three other alternative outcomes from this assessment phase where the client many not be registered as a participant in the study. If after assessment, the client did not fulfil all the study's criteria but required treatment (but the Clinical Physiologist Intern could not continue), the client's file was returned to the Clinic Project Officer. The client was then allocated to the normal STARTTS service framework. The second alternative outcome was that the client did not require services as determined by the Clinical Physiologist Intern, who then discharged the client and informed the Student Clinic Project Officer. The third alternative outcome was that the client did not fulfil all of the study's criteria but the Clinical Physiologist Intern could continue treatment, in which case the Clinical Physiologist Intern informed the Student Clinic Project Officer and Intake Team Leader and kept the client's file.

3.4.3 Treatment procedures

Whilst the trial was pragmatic in design to accommodate for different levels and types of trauma, the treatment procedures were standardised where possible. Figure 4 shows the treatment and post-treatment assessment procedure as a flow chart. Upon the participant being randomly allocated to one of the intervention groups, the team leader would allocate the participant to a co-investigator. All of the co-investigators (STARTTS Counsellors) who delivered CBT, were trained to employ the standard developed in the CBT manual as part of

this project. For the Acupuncture groups, there was only one practitioner. Each study group conducted eight treatment sessions, with Combined group having eight acupuncture and eight counselling sessions, in no particular order.

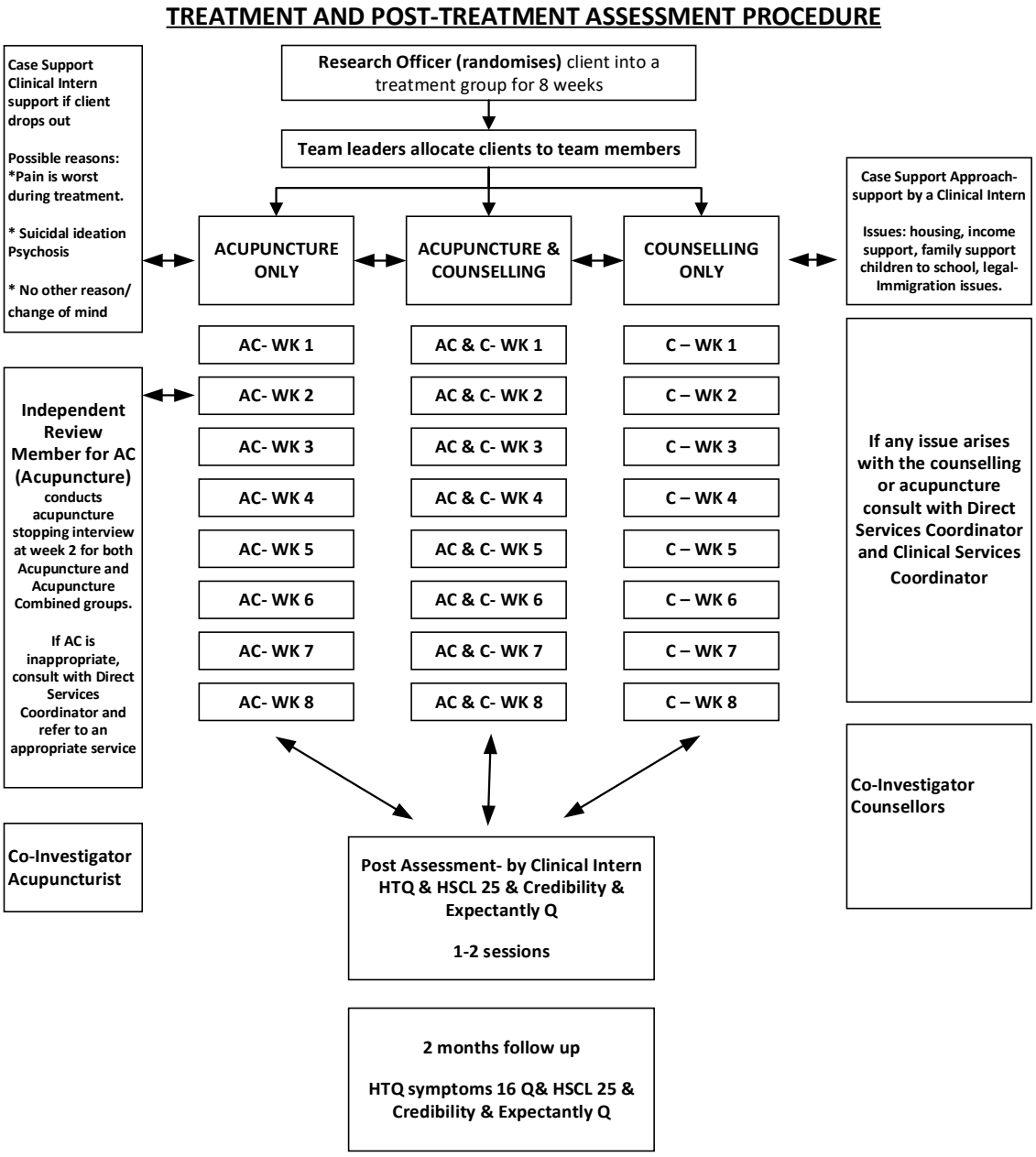

Figure 4:Flow chart showing the treatment and post-treatment procedure of the study.

3.4.4 Stopping Procedures

A general acupuncture stopping rule was in place with a stopping interview conducted at week 2 of the acupuncture treatment in both the Acupuncture group and Combined (Acupuncture plus Counselling) group. It was administered by Independent Reviewers. The acupuncture stopping interview consisted of five questions:

- "Have you suffered a severe worsening of pain due to the acupuncture?",
- "Have you experienced any serious side effects from treatment? (includes serious medical complications)?",
- "Have you experienced any psychological effects from treatment? (includes suicidal ideation, psychosis, drug/alcohol/substance abuse)?",
- "Do you have any concerns about the study or the practitioners?" and
- "Do you wish to withdraw from the study?".

If the acupuncture treatment was deemed to be inappropriate for the participant or resulting in harm, the Direct Services Coordinator was to be consulted on the matter and the participant referred to appropriate services. A diagrammatic representation of the acupuncture stopping rule can be found in Figure 5. The acupuncture stop rule form can be found in the Appendices Appendix 5:.

Participants could also drop out of the study at any time. Case support for participants dropping out would be provided by a Clinical Physiologist Intern. This Intern could also provide case support on resettlement issues such as housing, income support, family support children to school and legal Immigration issues should the participant require assistance during the research study period, regardless of whether they chose to drop out or remain in the study. Should any issue arise for the participant during their participation in any of the study groups, the Direct Services Coordinator and Clinical Services Coordinator would be consulted.

3.4.5 Independent Review

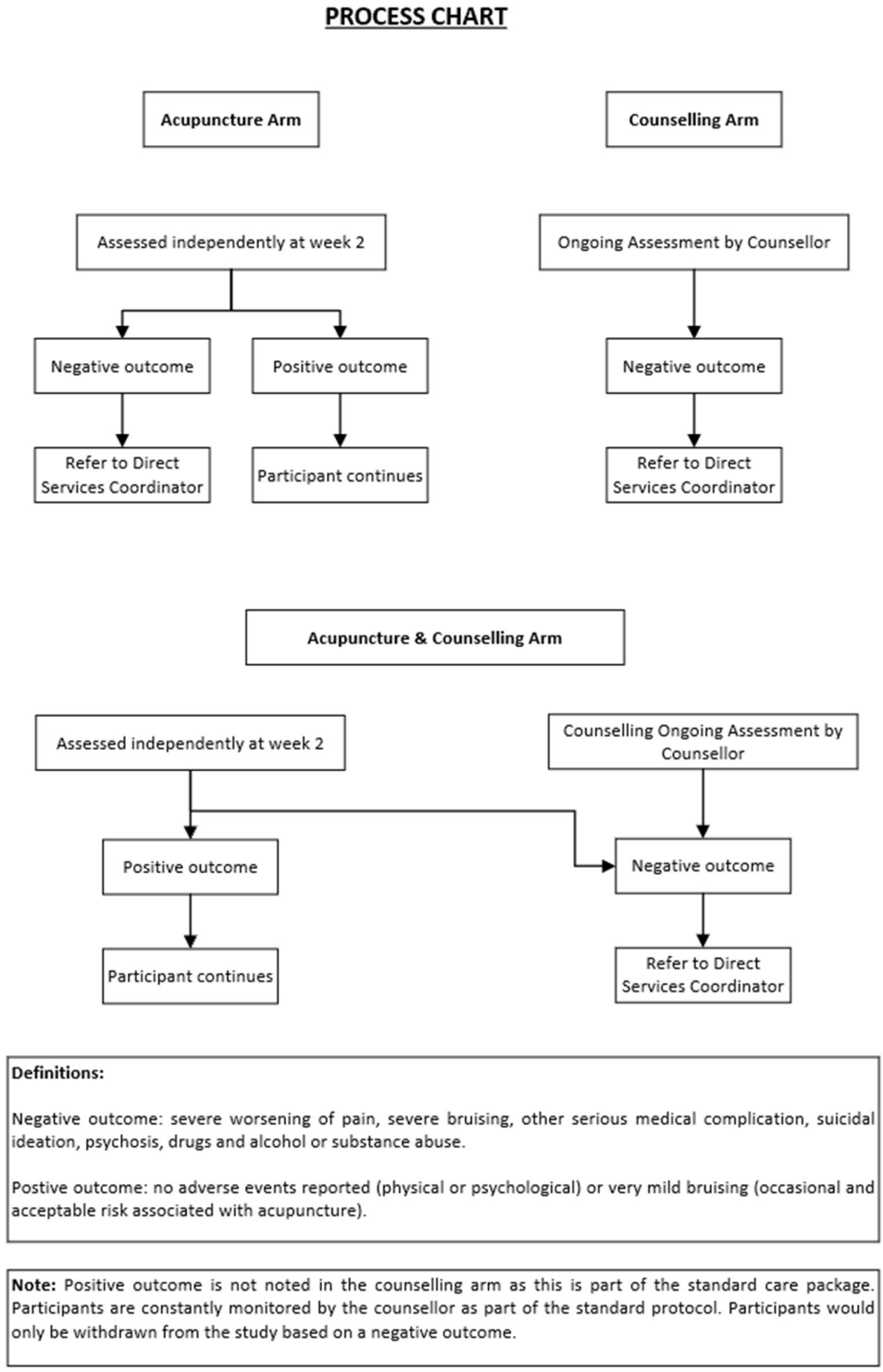

Figure 5: Process flow chart of independent review.

3.4.6 Medical Records and Data Storage

As noted above, the intake and treatment procedures generated medical records which were formatted and processed according to standard STARTTS protocols. Each participant was allocated a Medical Record Number (MRN) and their files were stored in secured filing cabinets within a secured area of the STARTTS facility. The STARTTS Health Information Service Manager, managed all files and ensured their security. Files were only accessed by the treating professionals. Where computer-based data was generated, e.g data files from survey for outcome analysis, these data were stored in encrypted files on a secured computer. Only de-identified and aggregated data were shared for statistical analysis and only with relevant researchers. All records, medical and data were appropriately administered under the relevant legislation including the 1988 Privacy Act, and followed the relevant Health Privacy Principles as noted in the Health Records and Information Privacy Act 2002. All data handling storage and management was also compliant with the National Health and Medical Research Council Guidelines for Management of Data and Information in Research.

3.4.7 Special Conditions

The study population of this project was considered as high risk. Consequently, in addition to standard safety protocols and intervention stopping orders, additional precautions and safeguards were built into the study design such as the risk assessment, induction and training of co-investigators, and utilisation of qualified interpreters.

3.4.7.1 Risk Assessment

STARTTS has a Risk Assessment Policy and Procedure to assess and report Suicidal Thoughts and Ideation and other serious health risks. In such instances, the Team Leader completes a Risk Assessment Report, provides it to the Clinical Supervisor and Clinical Service Coordinator, and makes a referral to Fairfield-Liverpool Mental Health Crisis Team at Liverpool Hospital. If at any stage during an assessment, a client/participant indicated on

their score on Hopkins Symptoms Check List 25 (HSCL-25) as 'extremely' to the question "*Thoughts of ending your life*", there was a requirement for thorough assessment and immediate intervention under the Risk Assessment Policy and Procedure regardless of the level of other symptoms (Measuring T&T p. 118). In addition, if a client/participant scored "*Extremely*" to the questions such as "*Feeling hopeless about the future; Feeling of worthlessness or Feeling irritable or having outburst of anger; Feeling on guard*" further exploration into these was required to provide appropriate support as part of the safety provisions.

3.4.7.2 Induction and training of co investigators

All of the Co-investigators (Clinical Physiologist Interns) involved in this study were inducted on the research procedure, including an explanation the research study aims and objectives, the project information sheets, consent forms and uses of the outcomes assessments. Counsellors were trained in the use of the CBT manual to ensure as much as possible, a standardised delivery of CBT.

Due the ethnic diversity of STARTTS clients and the study's population, particular attention was paid to cultural sensitivity. This applied to both the CBT and acupuncture groups. However, in relation to the acupuncture group in particular, the investigator providing the acupuncture treatment, had to be highly sensitive to the cultural appropriateness in terms of removal of clothing and sensitivity to touch. In addition to written consent for the study, verbal consent was obtained from each participant prior to undertaking any acupuncture procedure. In a session presented to STARTTS in 2014, Professor Bessel van der Kolk made the statement "the body keeps the score" in relation to the interoception of awareness between the brain and body when discussing treatment of patients after the 9/11 events. Patients could be easily aroused into a state of panic or faint to a disconnect through the sensation of touch, based on an association with past traumatic events. He spoke about the use of acupuncture as one of the treatments of choice for 9/11 trauma victims, but cautioned on the need to provide a degree of safety and trust within the treatment environment. In a

sub population of refugees who may have witnessed the death of their own family member and friends, had experienced torture and trauma of varying degrees including imprisonment, rape and starvation these issues could be exacerbated. Overlayed further with cultural issues relating to particular ethnic groups, considerable care was taken to ensure that participants were treated with respect and sensitivity.

3.4.7.3 Interpreters

To provide accuracy in understanding the nature of the trauma experienced and recording the participants symptomatology, two interpreting services where uses as required. These service providers are commonly used in STARTTS:

1. Translating and Interpreting Service (TIS National)
2. South Western Sydney Local Health District (SWSLHD) Health Care Interpreter Service (HCIS) is the major provider of interpreting and translating services for health care professionals in South Western Sydney Local Health District (LHD)

The interpreters were made aware of the working time frame and the type of treatment that required them to interpret for the co-investigator. There were many challenges when working with the interpreters. Some interpreters were from the same community background and trauma experience, as those of the participants receiving treatment, having themselves suffered trauma. This resulted in the need for STARTTS counselling intervention for the interpreters and the development of safety protocols for interpreting services.

3.5 Statistical Analysis

The statistical analysis was conducted using IBM SPSS Statistics version 25.

As presented in the next chapter, it will be noted that the population in this study in not normally distributed. Hence a standard 2-way mixed ANOVA , which would be the usual

statistical test for this type of research study design is not applicable. The alternative statistical test for non-normally distributed data used in this study is a non-parametric statistical test called the KRUSKAL-WALLIS H TEST for comparison between groups data and FRIEDMAN TEST for comparison within the group data.

The nature and complexity of the refugee population may explain why these data are not normally distributed. The presentation of symptoms can be complex and severity can be highly variable, though normally scoring on the higher end of outcome scales. The distribution was also likely complicated by the uneven nature of participant drop out, being very high in the CBT group.

3.6 Summary

The design and execution of this clinical trial was complex and was met with several challenges. The study had to be designed as a pragmatic trail due to the complexity of presenting symptoms of the participants, complicated by the nature of those symptoms stemming from incidents of torture and trauma. As such, at any stage, an intervention could have triggered any number of cascading mental or physical health issues. Consequently, great care was taken to ensure appropriate stopping orders were in place for the acupuncture intervention and that counsellors were properly trained according to the CBT manual developed for this study, and that they followed the procedures outlined in that manual.

A simple set of inclusion and exclusion criteria were developed, and these were applied according to a particular process designed for this study. Each step of the process was handled by separate units within STARTTS e.g. the intake team, clinical project officers, clinical intern psychologists etc all of whom were either specialists in their areas or trained to follow the procedures for this study. Special precaution were put in place to ensure client/participant safety including additional independent review and risk procedures. The resulting outcomes are reported in the following chapter.

4.0 Chapter 4: Results

The following chapter presents the research results. Demographic and descriptive data are presented first, followed by analyses of each of the outcome measures. A description of the relevant statistical test applied in each instance is explained. Both within group and between group analysis for repeated measures was undertaken.

4.1 Participation and Dropout Rates

As part of this study, three hundred and thirty-two participants were assessed as eligible to participate. Two hundred and ninety-two of these participants were excluded due to not meeting inclusion criteria, declining to participate, not being contactable, being allocated to normal services, or being assessed as requiring no further assistance based on STARTTS service protocols. This left forty participants that were randomised into one of the three treatment intervention groups. Sixteen participants were allocated to Acupuncture group, thirteen to the CBT group, and eleven to the Combined (CBT plus Acupuncture) group as shown in Table 3 below.

Table 3: Number of participants.

Assessed for eligibility	332
Randomised	40 (Acupuncture=16; CBT=13; Combined=11)
Dropped out	9 (Acupuncture=1; CBT=7; Combined=1)
Completed	31 (Acupuncture=15; CBT=6; Combined=10)

Six participants dropped out of the CBT group between session two and five stating they could not proceed any further as three participants reported having new work commitments while another three participants reported feeling overwhelmed with Centrelink job search/compulsory study requirements. One participant dropped out of the Acupuncture group due to a fear of needles. One participant dropped out of the Combined (Acupuncture

& CBT) due to reported feeling overwhelmed with Centrelink job search/compulsory study requirements, as noted in Table 4.

Table 4: Dropped out reasons.

Participants relocated to another state	1 (CBT=1)
Participants reported having new work commitments which rendered them unable to attend sessions	3 (CBT=3)
Participants reported feeling overwhelmed with Centrelink job search/compulsory study requirements and being unable to attend sessions	4 (CBT=3; Combined=1)
Fear of needles	1 (Acupuncture=1)

Consequently, fifteen participants completed the Acupuncture intervention. Six participants completed the CBT intervention. Ten participants completed the Combined (Acupuncture & CBT) intervention. All participants in all intervention groups completed the Post-treatment assessments. All participants in all intervention groups completed the post 2-month treatment assessments. A summary of this process can be seen in Figure 6.

Due to the high dropout rate in this study in one particular group (CBT) as noted above, a separate investigation was undertaken to try and better understand the motivations of the participants. In total, nine participants dropped out of the study (CBT – 7; Acupuncture – 1, Combined – 1). As part of the study protocol, four counsellors independent to the research group, interviewed the drop out participants to ensure that they were at no further risk of mental health and, if required, referred them to appropriate services. To encourage sincere responses, the interview counsellors liaised with the clients' community leaders and ensured confidentiality. In addition to assessing the need for support services, the interviewers also sought the reasons of dropping out of study.

For the CBT group, the detailed reasons given for dropping out included the following:

- participants felt they may not be able to commit to a long process of CBT due to prolonged trauma;
- the extra work required between sessions was not convenient,;
- they had learning difficulties or limited literacy, even in their own language due to prolong periods in refugee camps;
- participants felt CBT to be emotionally confrontational with treatment focused on the participant's ability to change themselves (feeling, behaviour or thoughts), but it did not address system, family and wider community issues.
- Some ethnic groups preferred acupuncture over CBT, as acupuncture was perceived to better deal with physical pain as a more biological-based treatment.

As per the study protocol, the Acupuncture stopping rule was applied at week 2 by Independent Reviewers for all twenty-five participants participating receiving acupuncture treatment in the Acupuncture (fifteen participants) and Combined (Acupuncture & CBT) (ten participants) intervention groups. No participants reported an adverse effect and all participants continued in the relevant intervention protocol to their conclusion.

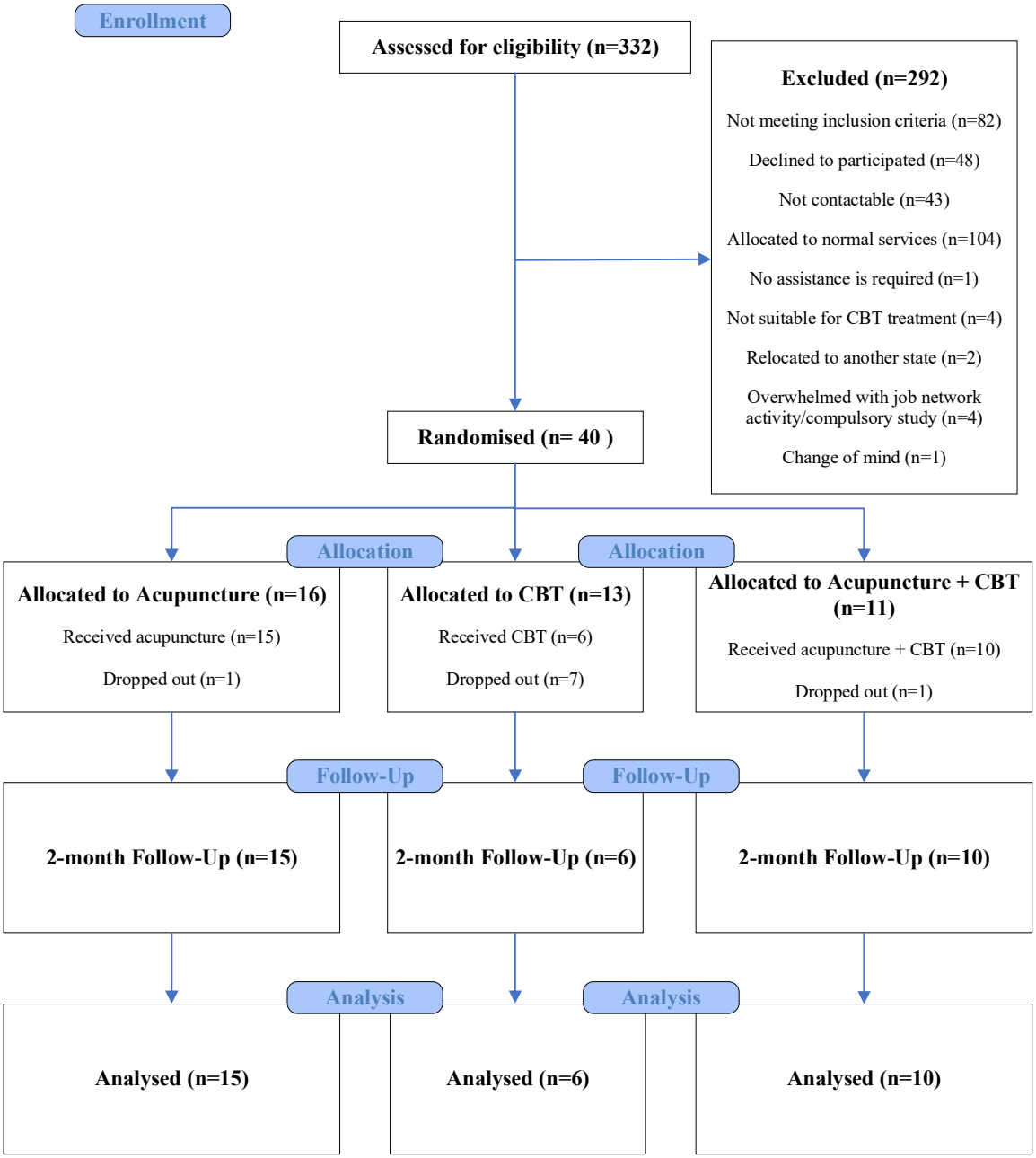

Figure 6. Participant enrolment and allocation process.

4.2 Demographics

The thirty one participants in the study, ranged in age from 30 to 78 years old, with a mean age of 55.94 years old and a standard deviation of 11.71 as shown in Table 5. For the age range, there were thirteen participants (41.94%) in the Boomer category, nine clients (29.03%) in the Gen X category, five participants (16.13%) in Silent category and four participants (12.90%) in the Millennial category as shown in Table 6. There were twenty two female participants (70.97%) and nine male participants (29.03%) as shown in Table 7.

Table 5:Age distribution.

	N	Minimum	Maximum	Mean	Std. Deviation
Age	31	30	78	55.94	11.71

Table 6: Age range.

		Frequency	Percent
	Millennial (18-34)	4	12.90
	Gen X (35-50)	9	29.03
	Boomer (51-69)	13	41.94
	Slient (70-87)	5	16.13
	Total	31	100.00

Table 7: Gender distribution.

	Frequency	Percent
Male	9	29.03
Female	22	70.97
Total	31	100.00

Of the thirty one participants in the study, the distribution of participants ethnicity was 64.52% were Asian (seven Nepalese; five Vietnamese; three Bhutanese; three Cambodian, two Karen), 19.35% were Middle Eastern (two Iraqi; one Chaldean; one Kurdish; one Syrian; one Assyrian), 9.68% were Hipanic (three Spanish), and 6.45% were African (two Burundian), as shown in Table 8.

Table 8: Participant ethnicity.

	Frequency	Percent
Asian	20	64.52
Middle Eastern	6	19.35
Hispanic	3	9.68
African	2	6.45

There is a similarity in percentage of the country of birth as the ethnicity is related to the country of birth. Of the thirty one participants in the study, 67.74% were born in Asia(eleven participants were born in Bhutan; five participants were born in Vietnam; three participants were born in Cambodia; two participants were born in Burma), 19.35% were born in Middle East (four participants (12.90%) were born in Iraq; two participants (6.45%) were born in Syria), 9.68% were born in Central America (three participants were born in El Salvador) and 3.23% were born in Africa (one was born in Burundi) as shown in Table 9.

Table 9: Country of birth.

	Frequency	Percent
Asia	21	67.74
Middle East	6	19.35
Central America	3	9.68
Africa	1	3.23

Of the thirty one participants in the study, ten participants (32.26%) were Hindu, nine participants (29.03%) were Buddhism, eight participants (25.81%) were Christian, and the remaining four participants (12.90%) with each (3.23%) were Muslim, Seventh Day Adventist, Assyrian Church of the East and Orthodox Christian as shown in Table 10.

Table 10: Religious Affiliation.

Religion	Frequency	Percent
Christian	8	25.81
Muslim	1	3.23
Buddhism	9	29.03
Hindu	10	32.26
Seventh Day Adventist	1	3.23
Assyrian Church of the East	1	3.23
Orthodox Christian	1	3.23
Total	31	100.00

Of the thirty one participants in the study, eighteen participants (58.06%) were living with partner & children, eight participants (25.81%) were living with partner, three participants (9.68%) were living with children, one participant (3.23%) was living with a relative and one participant (3.23%) was living alone as shown in Table 11.

Table 11: Marital and Family status.

Living with	Frequency	Percent
Alone	1	3.23
Partner	8	25.81
Partner & Children	18	58.06
Children	3	9.68
Relative	1	3.23
Total	31	100.00

Of those participants with children, Table 12 and Table 13 show the distribution of the number of children of each participant.

Table 12: Mean number of children of participants.

	N	Minimum	Maximum	Mean	Std. Deviation
No_Of_Children	31	0	6	2.32	1.22

The participants in study had a minimum of no children and a maximum of six children with a mean of 2.32 and standard deviation of 1.22 as shown in Table 12. Thirteen participants (41.94%) had three children, ten participants (32.26%) had two children, three participants 9.68%) had only one child, three participants (9.68%) had no children, one participant (3.23%) had four children and one participant (3.23%) had six children as shown in Table 13.

Table 13: Frequency of children of participants.

No_Of_Children	Frequency	Percent
0	3	9.68
1	3	9.68
2	10	32.26
3	13	41.94
4	1	3.23
6	1	3.23
Total	31	100.00

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4.3 Descriptive Statistics

4.3.1 Credibility and Expectancy Questionnaire

A high score in total credibility score correlates to a high belief that a particular treatment intervention will be successful while a low score correlates to a low belief that a particular treatment intervention will be successful. A high score in the total expectancy score correlates to a high expectancy that a particular treatment intervention will be successful while a low score correlates to a low expectancy that a particular treatment intervention will be successful. The score ranges from 0 to 27 for both Credibility and Expectancy total scores, with 0 is the minimum score and 27 is the maximum score.

4.3.1.1 Acupuncture Group

The distribution of credibility and expectancy total scores for the Acupuncture group at pre, post and 2-month follow-up are shown in Table 14. Box plots on of the distribution of credibility and expectancy total scores for Acupuncture group at pre, post and 2-month follow-up are shown in Figure 7 and Figure 8 respectively.

Table 14: Credibility and Expectancy total scores (Acupuncture group).

Acupuncture Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Credibility									
Pre	15	21.20	23.00	6.44	5	27	22	19.00	27.00
Post	15	25.20	26.00	1.90	23	27	4	23.00	27.00
Follow-up	15	25.20	26.00	1.94	22	27	10	23.50	27.00
Expectancy									
Pre	15	21.33	22.00	5.23	9	27	18	18.50	26.00
Post	15	23.80	24.00	3.08	19	27	8	21.50	27.00
Follow-up	15	23.40	24.00	3.40	17	27	10	21.00	26.50

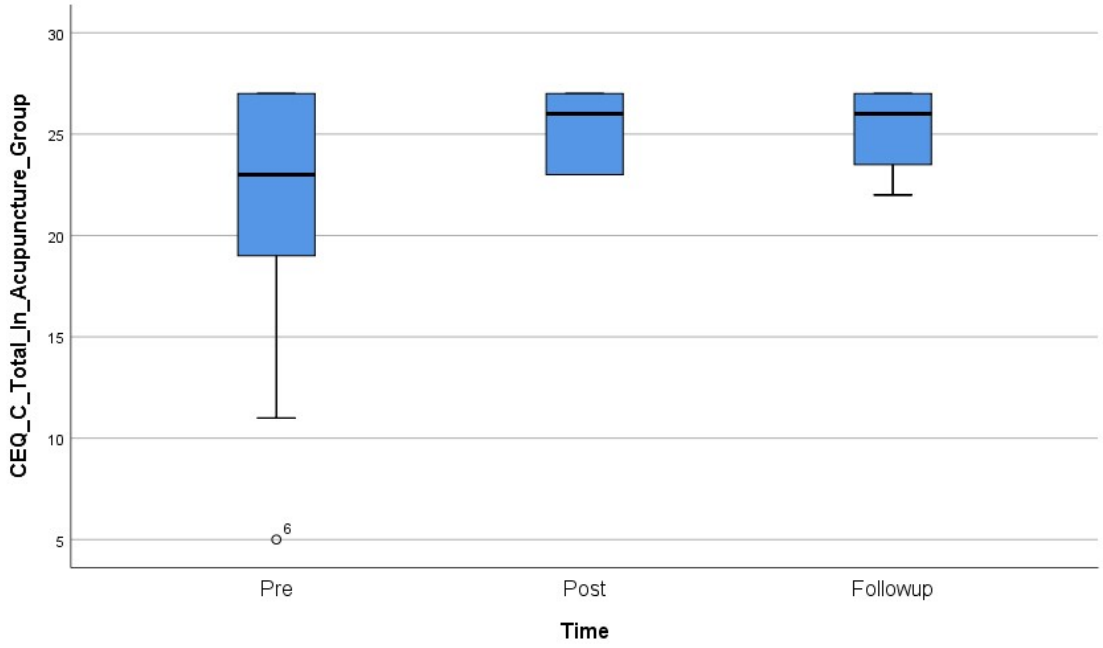


Figure 7: Box Plot of Credibility total score (Acupuncture group).

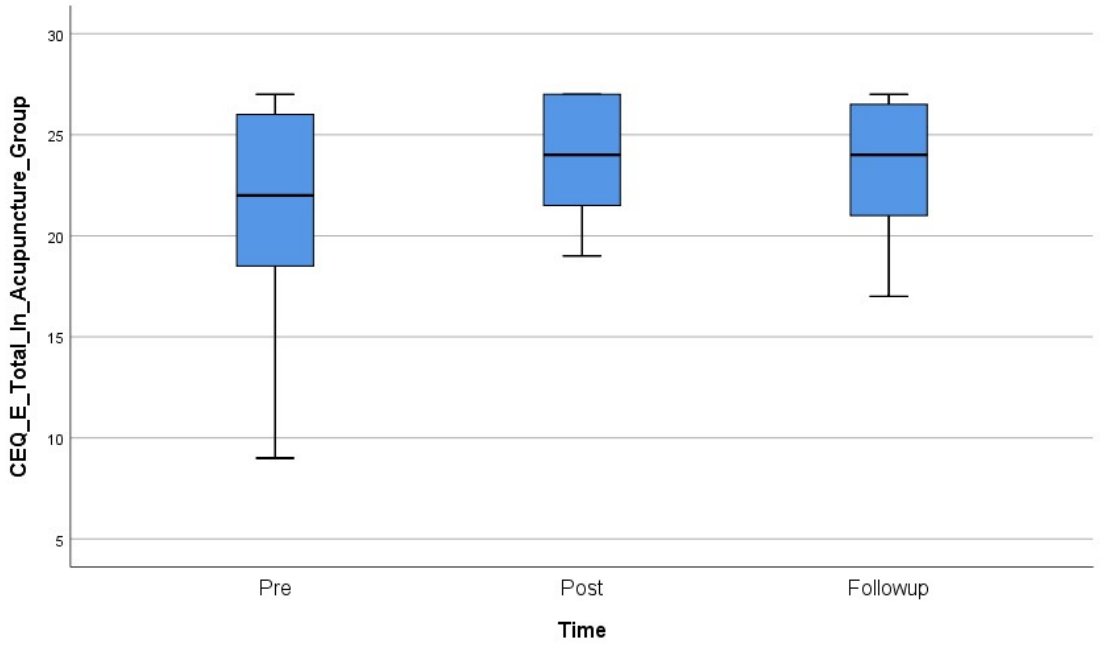


Figure 8: Box Plot of Expectancy total score (Acupuncture group).

In the pre-treatment phase, the Acupuncture group had a mean credibility total score of 21.20 with a standard deviation of 6.44, a minimum credibility total score of 5 and a maximum credibility total score of 27, resulting a range of 22. In the post-treatment phase, Acupuncture group had a mean credibility total score of 25.20 with a standard deviation of 1.90, a minimum credibility total score of 23 and a maximum credibility total score of 27, resulting a range of 4. In the 2-month follow-up, the Acupuncture group had a mean credibility total score of 25.20 with a standard deviation of 1.94, a minimum credibility total score of 22 and a maximum credibility total score of 27, resulting a range of 5.

In the pre-treatment phase, the Acupuncture group had a mean expectancy total score of 21.33 with a standard deviation of 5.23, a minimum expectancy total score of 9 and a maximum expectancy total score of 27, resulting in a range of 18. In the post-treatment phase, the Acupuncture group had a mean expectancy total score of 23.80 with a standard deviation of 3.08, a minimum expectancy total score of 19 and a maximum expectancy total score of 27, resulting a range of 8. In the 2-month follow-up, the Acupuncture group had a mean expectancy total score of 23.40 with a standard deviation of 3.40, a minimum expectancy total score of 17 and a maximum expectancy total score of 27, resulting in a range of 10.

4.3.1.2 CBT Group

The distribution of credibility and expectancy total scores for the CBT group at pre, post and 2-month follow-up are shown in Table 15. Box plots on credibility and expectancy total scores for the CBT group at pre, post and 2-month follow-up are shown in Figure 9 and Figure 10 respectively.

In the pre-treatment phase, the CBT group had a mean credibility total score of 16.17 with a standard deviation of 3.87, a minimum credibility total score of 10 and a maximum credibility total score of 22, resulting in a range of 12. In the post-treatment phase, the CBT group had a mean credibility total score of 21.33 with a standard deviation of 4.03, a minimum credibility total score of 15 and a maximum credibility total score of 27, resulting in a range of 12. In the 2-month follow-up, the CBT group had a mean credibility total score of 19.67 with a standard deviation of 4.41, a minimum credibility total score of 11 and a maximum credibility total score of 23, resulting in a range of 12.

In the pre-treatment phase, the CBT group had a mean expectancy total score of 15.33 with a standard deviation of 3.88, a minimum expectancy total score of 9 and a maximum expectancy total score of 19, resulting in a range of 10. In the post-treatment phase, the CBT group had a mean expectancy total score of 18.33 with a standard deviation of 3.93, a minimum expectancy total score of 14 and a maximum expectancy total score of 25, resulting in a range of 11. In the 2-month follow-up, CBT group had a mean expectancy total score of 17.33 with a standard deviation of 4.23, a minimum expectancy total score of 11 and a maximum expectancy total score of 23, resulting in a range of 12.

Table 15: Credibility and Expectancy total scores (CBT group).

CBT Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Credibility									
Pre	6	16.17	16.50	3.87	10	22	12	15	17
Post	6	21.33	21.50	4.03	15	27	12	20	23
Follow-up	6	19.67	21.00	4.41	11	23	12	20	22
Expectancy									
Pre	6	15.33	16.00	3.88	9	19	10	13	19
Post	6	18.33	18.00	3.93	14	25	11	15	20
Follow-up	6	17.33	17.50	4.23	11	23	12	15	20

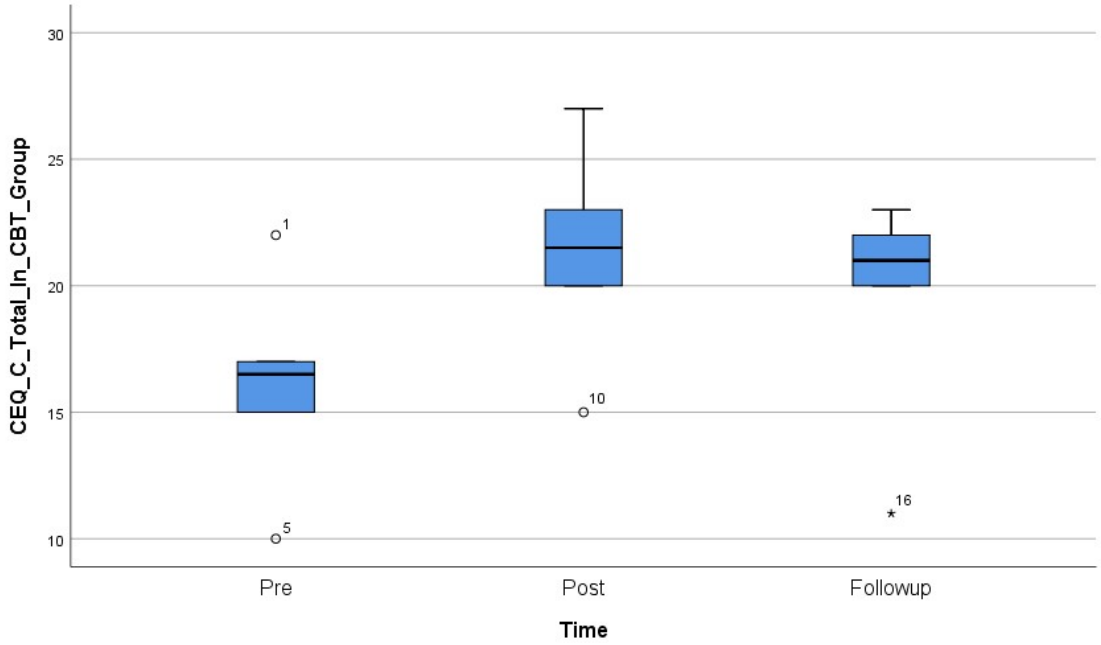


Figure 9: Box Plot of Credibility total score (CBT group).

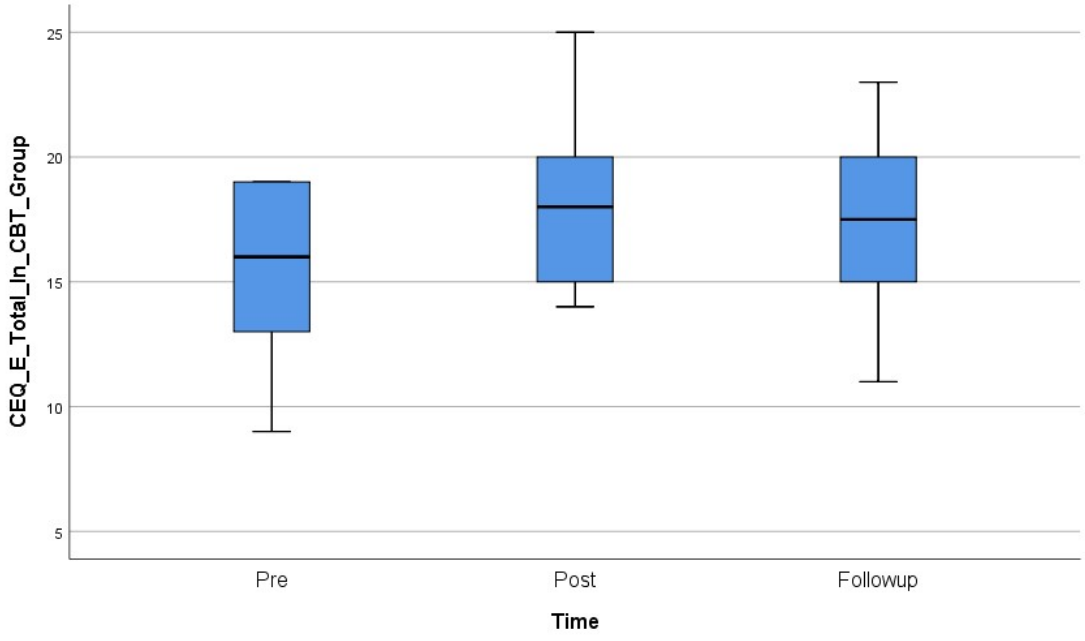


Figure 10 Box Plot of Expectancy total score (CBT group).

4.3.1.3 Combined (Acupuncture & CBT) Group

The distribution of credibility and expectancy total scores for the Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up are shown in Table 16. Box plots on credibility and expectancy total scores for the Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up are shown in Figure 11 and Figure 12 respectively.

In the pre-treatment phase, the Combined (Acupuncture & CBT) group had a mean credibility total score of 21.90 with a standard deviation of 3.25, a minimum credibility total score of 17 and a maximum credibility total score of 27, resulting in a range of 10. In the post-treatment phase, the Combined (Acupuncture & CBT) group had a mean credibility total score of 24.80 with a standard deviation of 3.12, a minimum credibility total score of 18 and a maximum credibility total score of 27, resulting in a range of 9. In the 2-month follow-up, the Combined (Acupuncture & CBT) group had a mean credibility total score of 24.20 with a standard deviation of 4.05, a minimum credibility total score of 15 and a maximum credibility total score of 27, resulting in a range of 12.

In the pre-treatment phase, the Combined (Acupuncture & CBT) group had a mean expectancy total score of 18.70 with a standard deviation of 3.68, a minimum expectancy total score of 15 and a maximum expectancy total score of 27, resulting in a range of 12. In the post-treatment phase, the Combined (Acupuncture & CBT) group had a mean expectancy total score of 22.40 with a standard deviation of 4.95, a minimum expectancy total score of 10 and a maximum expectancy total score of 27, resulting in a range of 17. In the 2-month follow-up, Combined (Acupuncture & CBT) group had a mean expectancy total score of 22.30 with a standard deviation of 4.52, a minimum expectancy total score of 13 and a maximum expectancy total score of 27, resulting in a range of 7.

Table 16: Credibility and Expectancy total scores (Acupuncture & CBT group).

Acupuncture + CBT Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Credibility									
Pre	10	21.90	21.50	3.25	17	27	10	19	25
Post	10	24.80	26.50	3.12	18	27	9	24	27
Follow-up	10	24.20	26.50	4.05	15	27	12	21	27
Expectancy									
Pre	10	18.70	17.50	3.68	15	27	12	16	19
Post	10	22.40	25.00	4.95	10	27	17	20	25
Follow-up	10	22.30	25.00	4.52	13	27	14	19	25

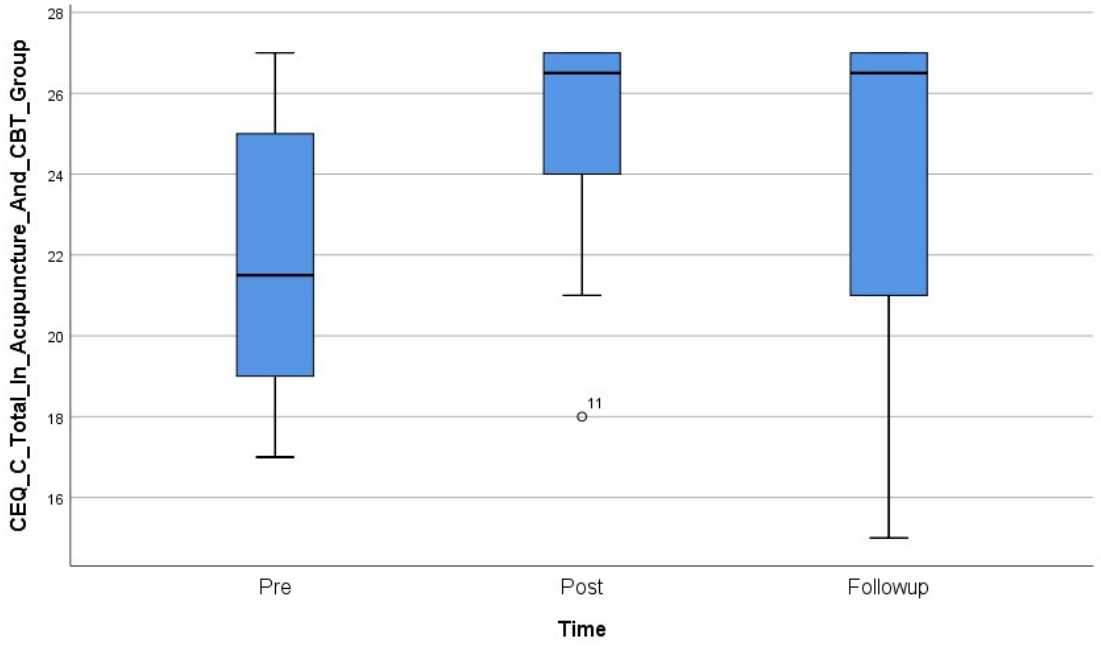


Figure 11: Box Plot of Credibility total score (Acupuncture & CBT group).

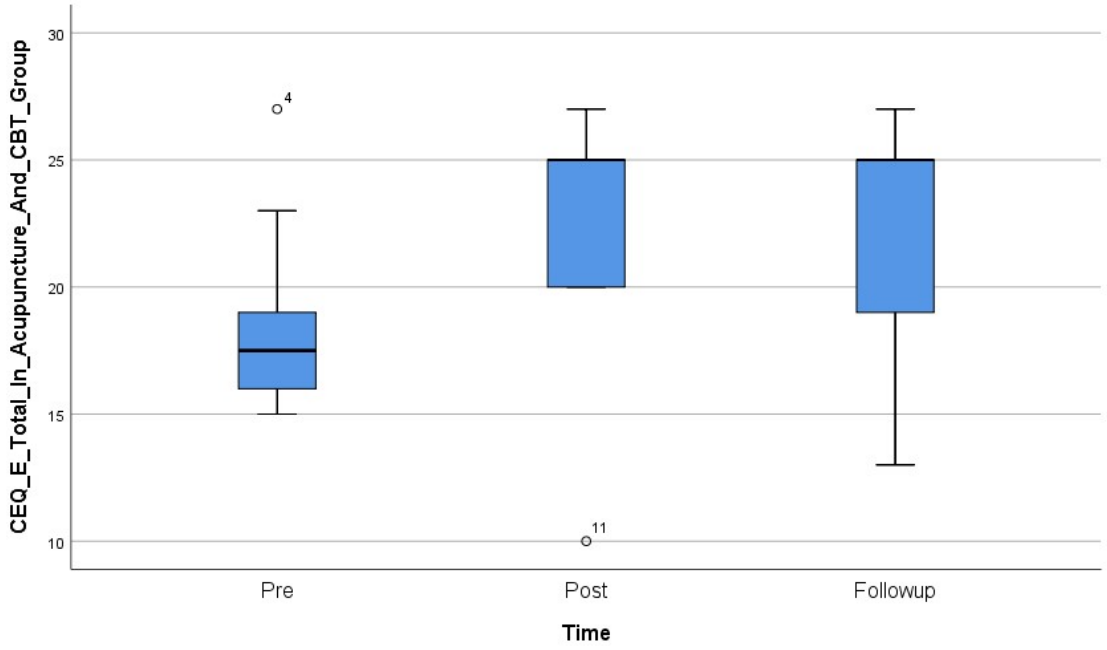


Figure 12: Box Plot of Expectancy total score (Acupuncture & CBT group).

4.3.2 Hopkins Symptoms Check List 25 (HSCL-25)

For Hopkins Symptoms Check List 25 (HSCL-25), individuals with scores on anxiety and/or depression and or total >1.75 are considered symptomatic.

4.3.2.1 Acupuncture Group

The distribution of Hopkins anxiety, depression and total scores for the Acupuncture group at pre, post and 2-month follow-up are shown in Table 17. Box plots on Hopkins anxiety, depression and total scores for Acupuncture group at pre, post and 2-month follow-up are shown in Figure 13, Figure 14 and Figure 15 respectively.

In the pre-treatment phase, the Acupuncture group had a mean Hopkins anxiety score 2.07 with a standard deviation of 0.47, a minimum Hopkins anxiety score of 1.30 and a maximum Hopkins anxiety score of 2.80, resulting in a range of 1.50. In the post-treatment phase, the Acupuncture group had a mean Hopkins anxiety score of 1.41 with a standard deviation of 0.36, a minimum Hopkins anxiety score of 1.10 and a maximum Hopkins anxiety score of 2.30, resulting in a range of 1.20. In the 2-month follow-up, the Acupuncture group had a mean Hopkins anxiety score of 1.35 with a standard deviation of 0.42, a minimum Hopkins anxiety score of 1.10 and a maximum Hopkins anxiety score of 2.80, resulting in a range of 1.70.

In the pre-treatment phase, the Acupuncture group had a mean Hopkins depression score of 2.15 with a standard deviation of 0.41, a minimum Hopkins depression score of 1.60 and a maximum Hopkins depression score of 2.87, resulting in a range of 1.27. In the post-treatment phase, the Acupuncture group has a mean Hopkins depression score of 1.41 with a standard deviation of 0.25, a minimum Hopkins depression score of 1.07 and a maximum Hopkins depression score of 1.93, resulting in a range of 0.86. In the 2-month follow-up, Acupuncture group had a mean Hopkins depression score of 1.43 with a standard deviation of 0.40, a minimum Hopkins depression score of 1.07 and a maximum Hopkins depression score of 2.73, resulting in a range of 1.66.

In the pre-treatment phase, the Acupuncture group had a mean Hopkins total score of 2.11 with a standard deviation of 0.40, a minimum Hopkins total score of 1.48 and a maximum Hopkins total score of 2.80, resulting in a range of 1.32. In the post-treatment phase, the Acupuncture group had a mean Hopkins total score of 1.41 with a standard deviation of 0.23, a minimum Hopkins total score of 1.12 and a maximum Hopkins total score of 2.04, resulting in a range of 0.92. In the 2-month follow-up, the Acupuncture group had a mean Hopkins total score of 1.40 with a standard deviation of 0.40, a minimum Hopkins total score of 1.12 and a maximum Hopkins total score of 2.76, resulting in a range of 1.64.

Table 17: Hopkins anxiety, depression and total scores (Acupuncture group).

Acupuncture Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Hopkins Anxiety									
Pre	15	2.07	2.00	0.47	1.30	2.80	1.50	1.85	2.50
Post	15	1.41	1.30	0.36	1.10	2.30	1.20	1.20	1.45
Follow-up	15	1.35	1.20	0.42	1.10	2.80	1.70	1.20	1.30
Hopkins Depression									
Pre	15	2.15	2.13	0.41	1.60	2.87	1.27	1.80	2.27
Post	15	1.41	1.47	0.25	1.07	1.93	0.86	1.20	1.57
Follow-up	15	1.43	1.40	0.40	1.07	2.73	1.66	1.20	1.50
Hopkins Total									
Pre	15	2.11	2.08	0.40	1.48	2.80	1.32	1.84	2.40
Post	15	1.41	1.44	0.23	1.12	2.04	0.92	1.22	1.52
Follow-up	15	1.40	1.32	0.40	1.12	2.76	1.64	1.16	1.44

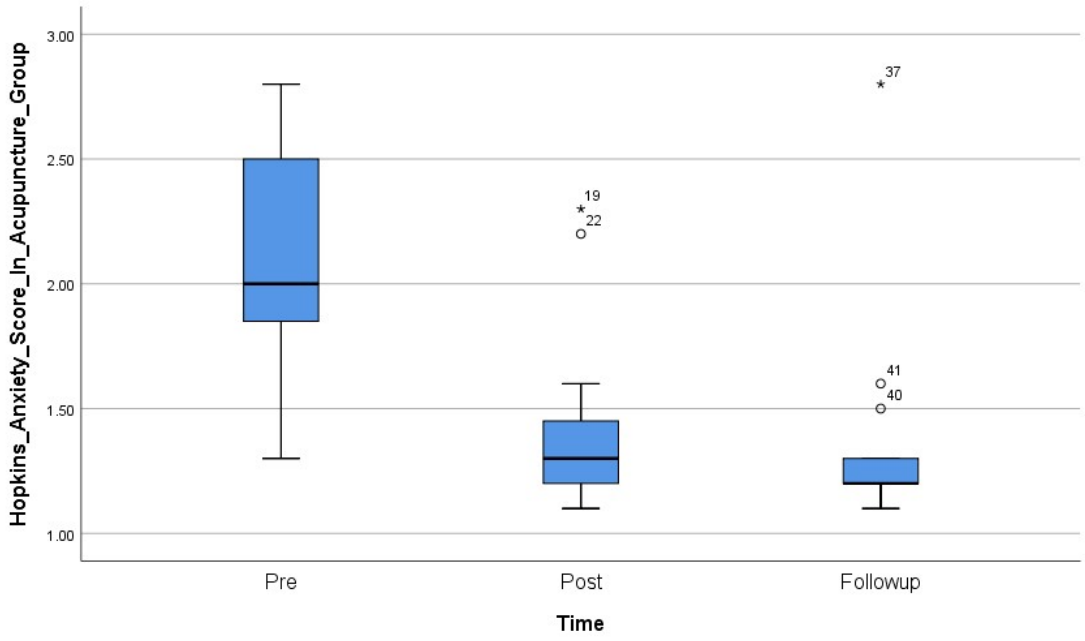


Figure 13: Box Plot of Hopkins anxiety score (Acupuncture group).

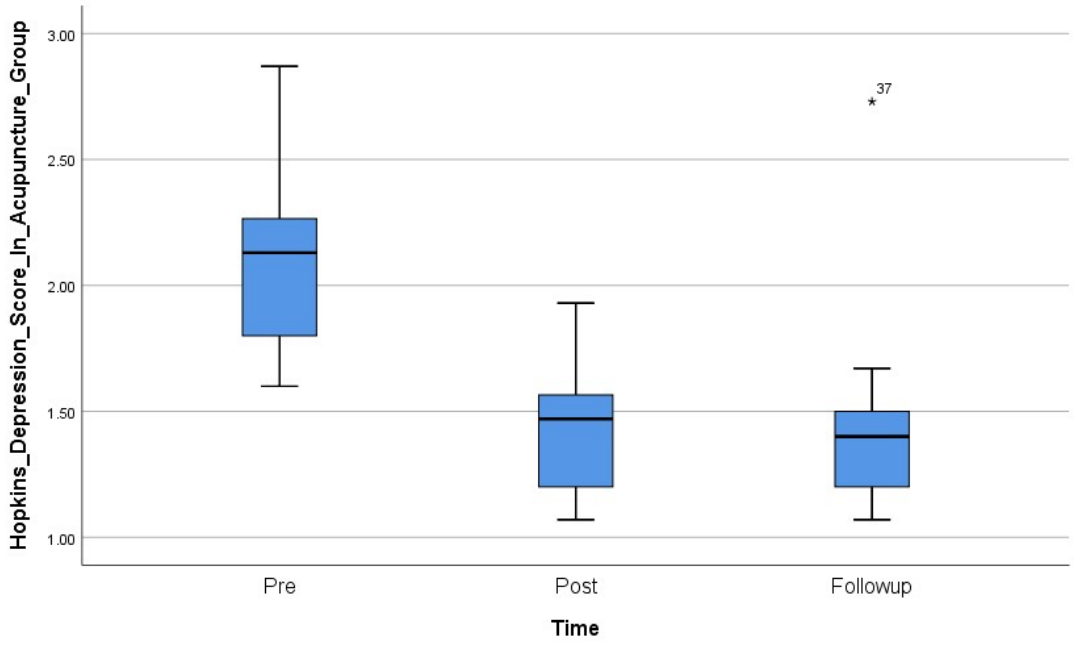


Figure 14: Box Plot of Hopkins depression score (Acupuncture group).

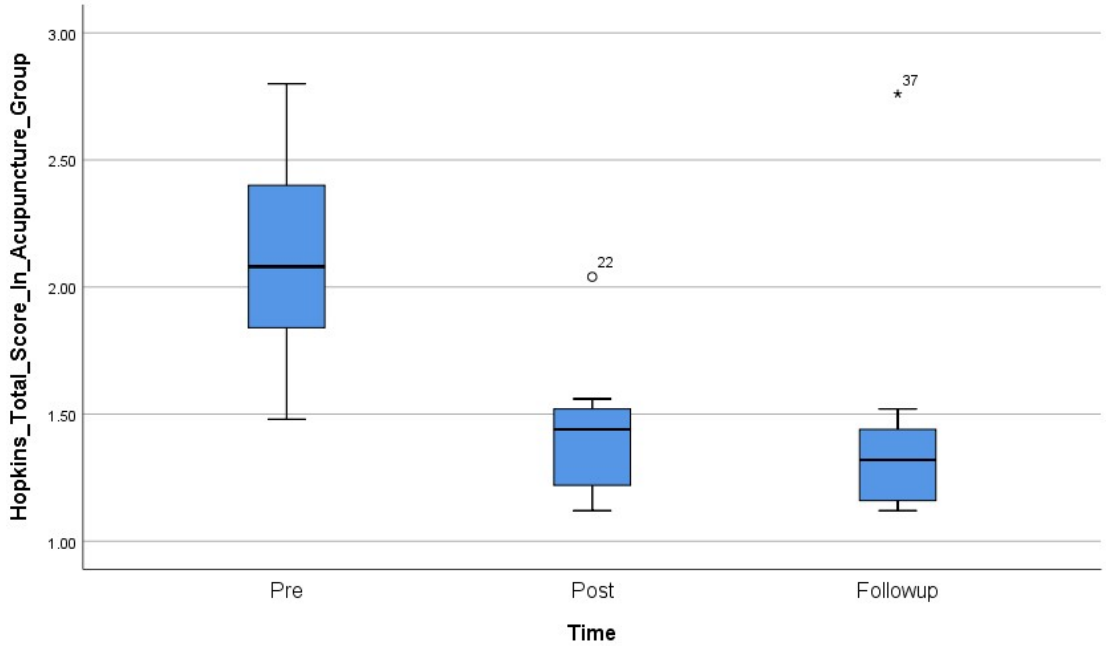


Figure 15: Box Plot of Hopkins total score (Acupuncture group).

4.3.2.2 CBT Group

The distribution of the Hopkins anxiety, depression and total scores for the CBT group at pre, post and 2-month follow-up are shown in Table 18. Box plots of the Hopkins anxiety, depression and total scores for the CBT group at pre, post and 2-month follow-up are shown in Figure 16, Figure 17 and Figure 18 respectively.

In the pre-treatment phase, the CBT group had a mean Hopkins anxiety score of 2.22 with a standard deviation of 0.81, a minimum Hopkins anxiety score of 1.10 and a maximum Hopkins anxiety score of 3.60, resulting in a range of 2.50. In the post-treatment phase, the CBT group had a mean Hopkins anxiety score of 1.77 with a standard deviation of 0.73, a minimum Hopkins anxiety score of 1.00 and a maximum Hopkins anxiety score of 2.90, resulting in a range of 1.90. In the 2-month follow-up, the CBT group had a mean v of 1.93 with a standard deviation of 0.60, a minimum Hopkins anxiety score of 1.10 and a maximum Hopkins anxiety score of 3.30, resulting in a range of 2.20.

In the pre-treatment phase, the CBT group had a mean Hopkins depression score of 2.41 with a standard deviation of 0.81, a minimum Hopkins depression score of 1.33 and a maximum Hopkins depression score of 3.67, resulting in a range of 2.34. In the post-treatment phase, the CBT group had a mean Hopkins depression score of 2.19 with a standard deviation of 0.45, a minimum Hopkins depression score of 1.73 and a maximum Hopkins depression score of 3.00, resulting in a range of 1.27. In the 2-month follow-up, the CBT group had a mean Hopkins depression score of 1.85 with a standard deviation of 0.70, a minimum Hopkins depression score of 1.07 and a maximum Hopkins depression score of 3.07, resulting in a range of 2.00.

In the pre-treatment phase, the CBT group had a mean Hopkins total score of 2.33 with a standard deviation of 0.80, a minimum Hopkins total score of 1.24 and a maximum Hopkins total score of 3.64, resulting in a range of 2.40. In the post-treatment phase, the CBT group had a mean Hopkins total score of 2.02 with a standard deviation of 0.54, a minimum Hopkins total score of 1.52 and a maximum Hopkins total score of 2.96, resulting in a range of 1.44.

In the 2-month follow-up, the CBT group had a mean Hopkins total score of 1.88 with a standard deviation of 0.72, a minimum Hopkins total score of 1.08 and a maximum Hopkins total score of 3.16, resulting in a range of 2.08.

Table 18: Hopkins anxiety, depression and total scores (CBT group).

CBT Group	N	Mean	Median	Std. Deviation	Minimum	Maximum	Range	25 Percentile	75 Percentile
Hopkins Anxiety									
Pre	6	2.22	2.10	0.81	1.10	3.60	2.50	2.00	2.40
Post	6	1.77	1.65	0.73	1.00	2.90	1.90	1.20	2.20
Follow-up	6	1.93	1.90	0.76	1.10	3.30	2.20	1.40	2.00
Hopkins Depression									
Pre	6	2.41	2.27	0.81	1.33	3.67	2.34	2.00	2.93
Post	6	2.19	2.17	0.45	1.73	3.00	1.27	1.80	2.27
Follow-up	6	1.85	1.84	0.70	1.07	3.07	2.00	1.27	2.00
Hopkins Total									
Pre	6	2.33	2.18	0.80	1.24	3.64	2.40	2.04	2.72
Post	6	2.02	1.90	0.54	1.52	2.96	1.44	1.60	2.24
Follow-up	6	1.88	1.86	0.72	1.08	3.16	2.08	1.32	2.00

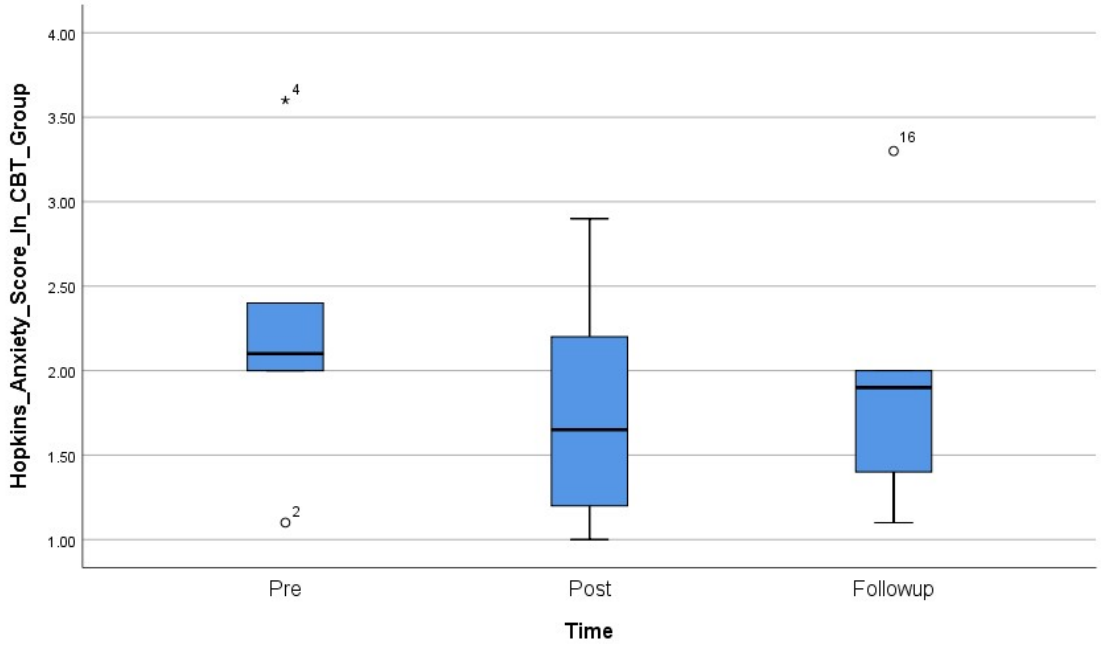


Figure 16: Box Plot of Hopkins anxiety score (CBT group).

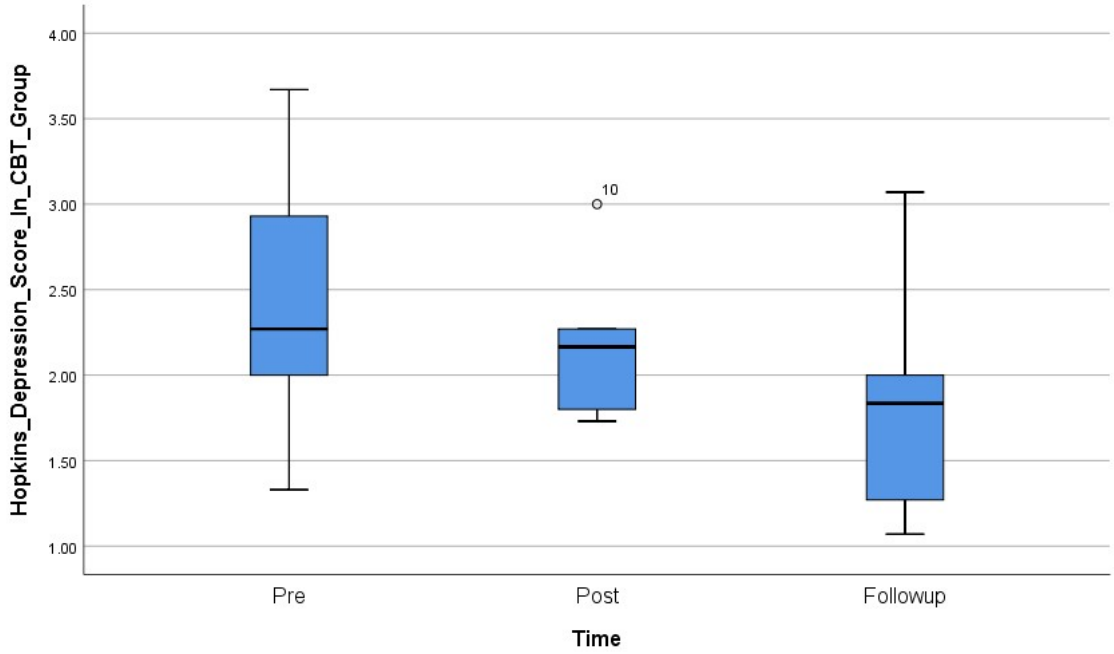


Figure 17: Box Plot of Hopkins depression score (CBT group).

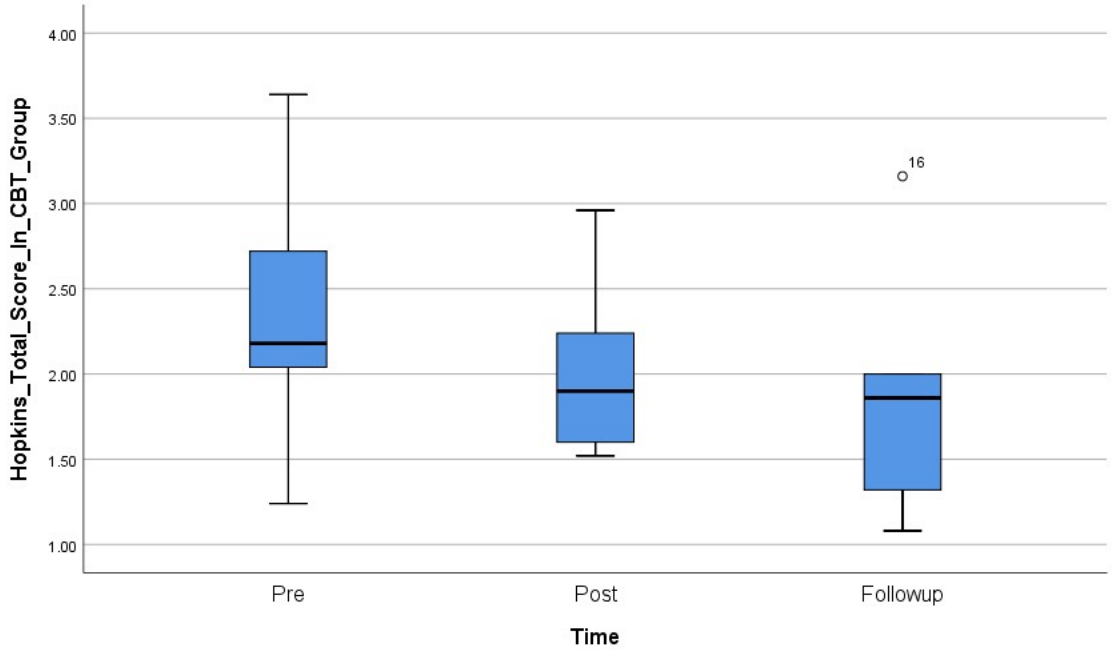


Figure 18: Box Plot of Hopkins total score (CBT group).

4.3.2.3 Combined (Acupuncture & CBT) Group

The distribution of the Hopkins anxiety, depression and total scores for Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up are shown in Table 19. Box plots on Hopkins anxiety, depression and total scores for the Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up are shown in Figure 19, Figure 20 and Figure 21 respectively.

In the pre-treatment phase, the Combined (Acupuncture & CBT) group had a mean Hopkins anxiety score of 2.58 with a standard deviation of 0.81, a minimum Hopkins anxiety score of 1.10 and a maximum Hopkins anxiety score of 3.60, resulting in a range of 2.50. In the post-treatment phase, the Combined (Acupuncture & CBT) group had a mean Hopkins anxiety score of 1.73 with a standard deviation of 0.60, a minimum Hopkins anxiety score of 1.00 and a maximum Hopkins anxiety score of 2.90, resulting in a range of 1.90. In the 2-month follow-up, the Combined (Acupuncture & CBT) group had a mean v of 1.93 with a standard deviation of 0.60, a minimum Hopkins anxiety score of 1.10 and a maximum Hopkins anxiety score of 3.30, resulting in a range of 2.20.

In the pre-treatment phase, the Combined (Acupuncture & CBT) group had a mean Hopkins depression score of 2.39 with a standard deviation of 0.63, a minimum Hopkins depression score of 1.33 and a maximum Hopkins depression score of 3.27, resulting in a range of 1.94. In the post-treatment phase, the Combined (Acupuncture & CBT) group had a mean Hopkins depression score of 1.83 with a standard deviation of 0.61, a minimum Hopkins depression score of 1.20 and a maximum Hopkins depression score of 2.87, resulting in a range of 1.67. In the 2-month follow-up, the Combined (Acupuncture & CBT) group had a mean Hopkins depression score of 1.77 with a standard deviation of 0.69, a minimum Hopkins depression score of 1.13 and a maximum Hopkins depression score of 3.27, resulting in a range of 2.14.

In the pre-treatment phase, the Combined (Acupuncture & CBT) group had a mean Hopkins total score of 2.47 with a standard deviation of 0.67, a minimum Hopkins total score of 1.40 and a maximum Hopkins total score of 3.48, resulting in a range of 2.08. In the post-treatment

phase, the Combined (Acupuncture & CBT) group had a mean Hopkins total score of 1.79 with a standard deviation of 0.57, a minimum Hopkins total score of 1.16 and a maximum Hopkins total score of 2.76, resulting in a range of 1.60. In the 2-month follow-up, the Combined (Acupuncture & CBT) group had a mean Hopkins total score of 1.72 with a standard deviation of 0.64, a minimum Hopkins total score of 1.08 and a maximum Hopkins total score of 3.04, resulting in a range of 1.96.

Table 19: Hopkins anxiety, depression and total scores Combined (Acupuncture & CBT) group.

Acupuncture + CBT Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Hopkins Anxiety									
Pre	10	2.58	2.50	0.76	1.50	3.80	2.30	2.10	3.20
Post	10	1.73	1.75	0.60	1.00	2.90	1.90	1.20	2.00
Follow-up	10	1.65	1.50	0.60	1.00	2.70	1.70	1.10	2.20
Hopkins Depression									
Pre	10	2.39	2.43	0.63	1.33	3.27	1.94	2.07	2.87
Post	10	1.83	1.57	0.61	1.20	2.87	1.67	1.40	2.47
Follow-up	10	1.77	1.63	0.69	1.13	3.27	2.14	1.20	2.20
Hopkins Total									
Pre	10	2.47	2.50	0.67	1.40	3.48	2.08	2.12	2.98
Post	10	1.79	1.60	0.57	1.16	2.76	1.60	1.36	2.28
Follow-up	10	1.72	1.56	0.64	1.08	3.04	1.96	1.16	2.20

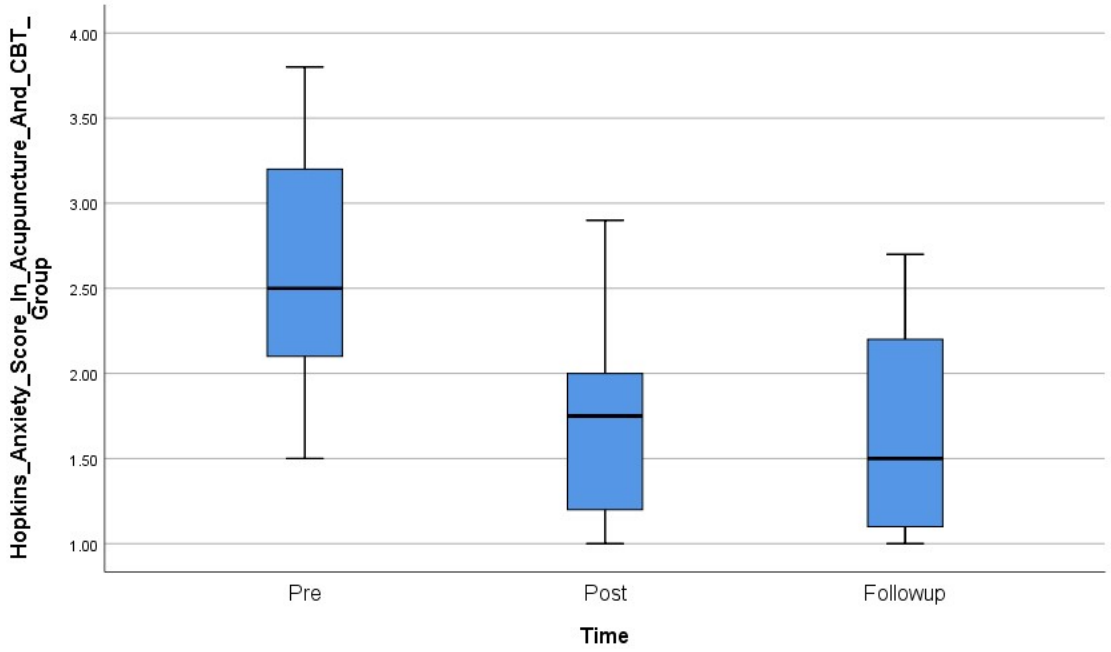


Figure 19: Box Plot of Hopkins anxiety score Combined (Acupuncture & CBT) group.

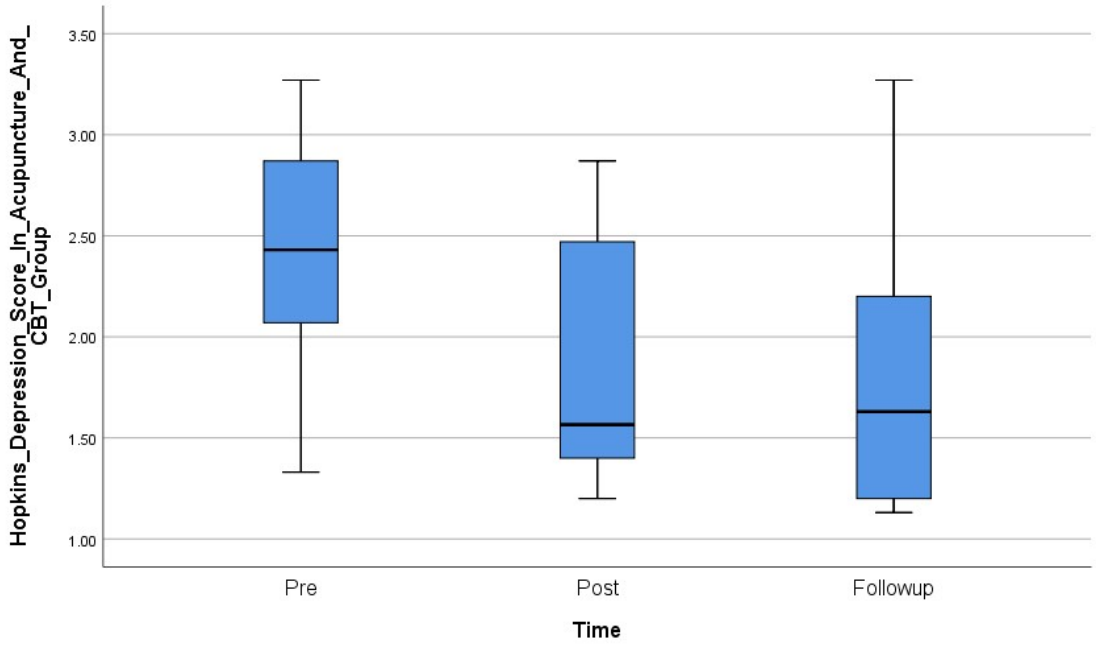


Figure 20: Box Plot of Hopkins depression score Combined (Acupuncture & CBT) group.

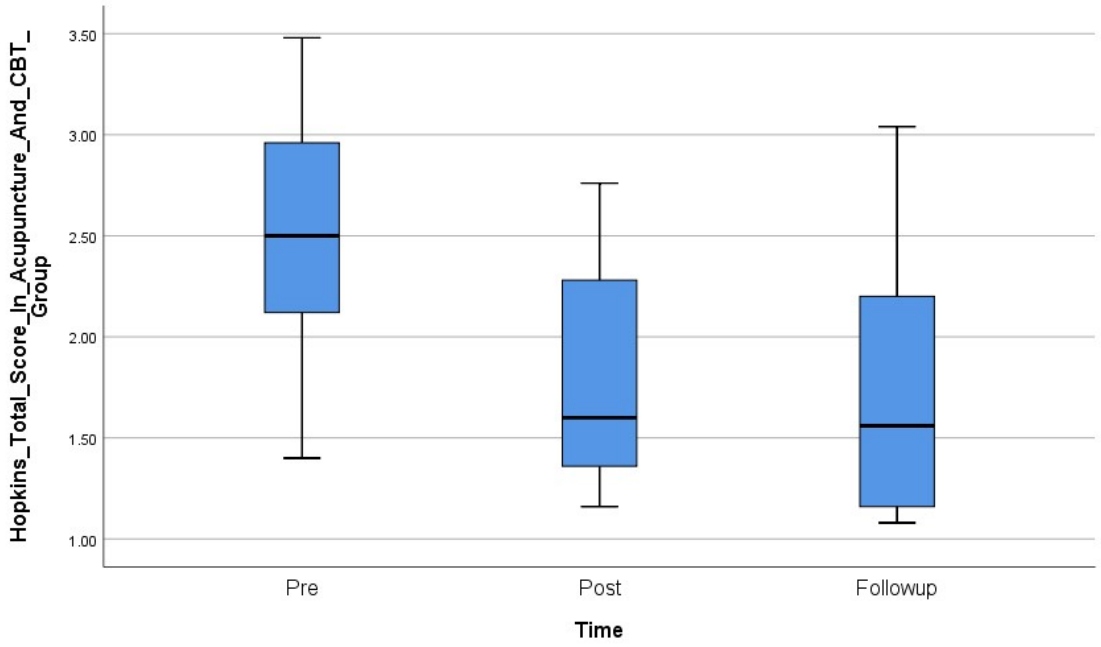


Figure 21: Box Plot of Hopkins total score Combined (Acupuncture & CBT) group.

4.3.3 Harvard Trauma Questionnaire (HTQ)

For Harvard Trauma Questionnaire (HTQ -Trauma Symptoms), individuals with scores on DSM-IV and/or total >2.5 are considered symptomatic for PTSD.

4.3.3.1 Acupuncture Group

The distribution of Harvard DSM IV scores for the Acupuncture group at pre, post and 2-month follow-up are shown in Table 20. A Box plot of the Harvard DSM IV scores for the Acupuncture group at pre, post and 2-month follow-up is shown in Figure 22.

In the pre-treatment phase, the Acupuncture group had a mean DSM IV Score of 2.00 with a standard deviation of 0.59, a minimum DSM IV Score of 1.19 and a maximum DSM IV Score of 3.00, resulting in a range of 1.81. In the post-treatment phase, the Acupuncture group had a mean DSM IV Score of 1.35 with a standard deviation of 0.24, a minimum DSM IV Score of 1.06 and a maximum DSM IV Score of 1.81, resulting in a range of 0.75. In the 2-month follow-up, the Acupuncture group had a mean DSM IV Score of 1.42 with a standard deviation of 0.48, a minimum DSM IV Score of 1.00 and a maximum DSM IV Score of 2.94, resulting in a range of 1.94.

Table 20: Harvard DSM IV scores (Acupuncture group).

Acupuncture Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Harvard Symptoms									
Pre	15	2.00	2.00	0.59	1.19	3.00	1.81	1.60	2.41
Post	15	1.35	1.31	0.24	1.06	1.81	0.75	1.22	1.47
Follow-up	15	1.42	1.25	0.48	1.00	2.94	1.94	1.160	1.47

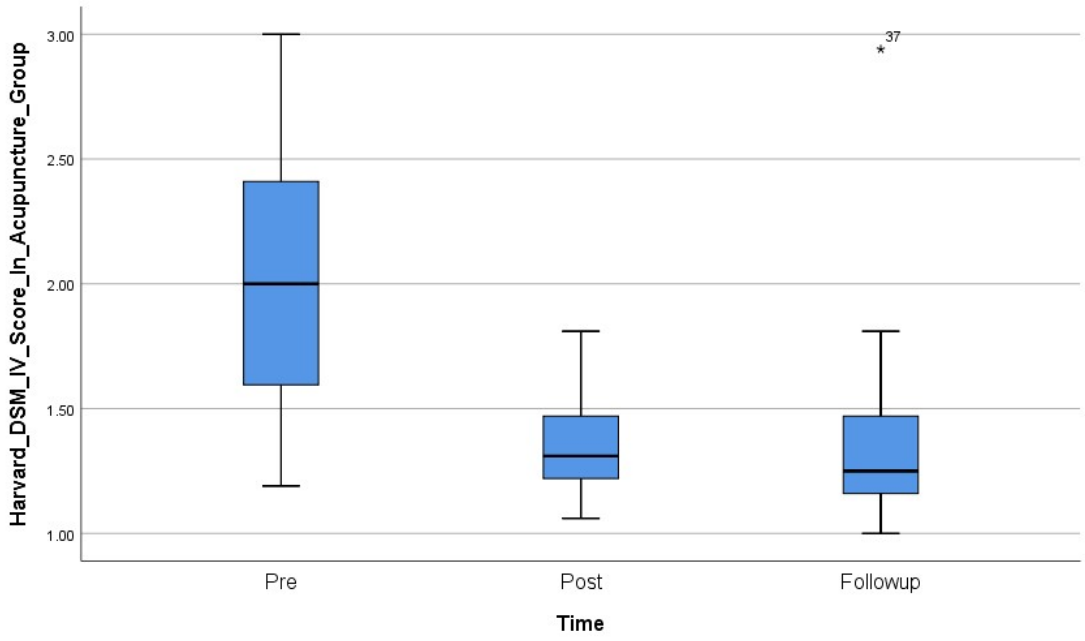


Figure 22: Box Plot of Harvard DSM IV scores (Acupuncture group).

4.3.3.2 CBT Group

The distribution of Harvard DSM IV scores for the CBT group at pre, post and 2-month follow-up are shown in Table 21. A Box plot of the Harvard DSM IV scores for CBT group at pre, post and 2-month follow-up is shown in Figure 23.

In the pre-treatment phase, the CBT group had a mean DSM IV Score of 2.66 with a standard deviation of 0.69, a minimum DSM IV Score of 1.94 and a maximum DSM IV Score of 3.88, resulting in a range of 1.94. In the post-treatment phase, the CBT group had a mean DSM IV Score of 2.36 with a standard deviation of 0.59, a minimum DSM IV Score of 1.81 and a maximum DSM IV Score of 3.25, resulting in a range of 1.44. In the 2-month follow-up, the CBT group had a mean DSM IV Score of 1.89 with a standard deviation of 0.69, a minimum DSM IV Score of 1.19 and a maximum DSM IV Score of 3.19, resulting in a range of 2.00.

Table 21: Harvard DSM IV scores (CBT group).

CBT Group	N	Mean	Median	Std. Deviation	Minimum	Maximum	Range	25 Percentile	75 Percentile
Harvard Symptoms									
Pre	6	2.66	2.51	0.69	1.94	3.88	1.94	2.19	2.94
Post	6	2.36	2.26	0.59	1.81	3.25	1.44	1.88	2.69
Follow-up	6	1.89	1.78	0.69	1.19	3.19	2.00	1.44	1.94

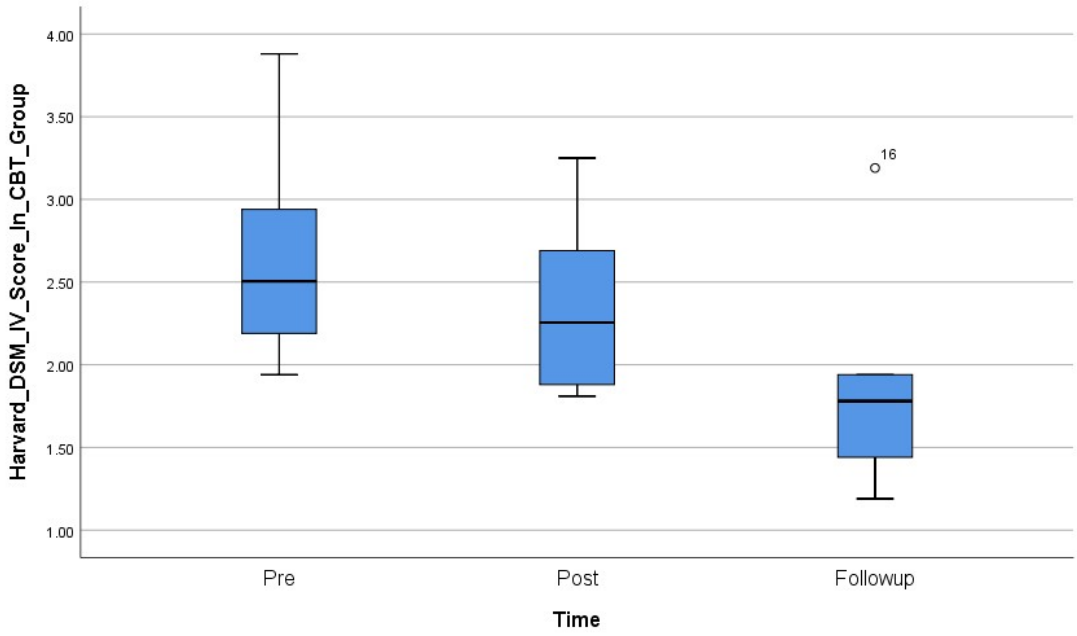


Figure 23: Box Plot of Harvard DSM IV scores (CBT group).

4.3.3.3 Combined (Acupuncture & CBT) Group

The distribution of Harvard DSM IV scores for the Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up are shown in Table 22. A Box plot of the Harvard DSM IV scores for the Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up is shown in Figure 24.

In the pre-treatment phase, the Combined (Acupuncture & CBT) group had a mean DSM IV Score of 2.49 with a standard deviation of 0.72, a minimum DSM IV Score of 1.25 and a maximum DSM IV Score of 3.50, resulting in a range of 2.25. In the post-treatment phase, the Combined (Acupuncture & CBT) group had a mean DSM IV Score of 1.86 with a standard deviation of 0.63, a minimum DSM IV Score of 1.06 and a maximum DSM IV Score of 2.81, resulting in a range of 1.75. In the 2-month follow-up, the Combined (Acupuncture & CBT) group had a mean DSM IV Score of 1.73 with a standard deviation of 0.67, a minimum DSM IV Score of 1.00 and a maximum DSM IV Score of 2.81, resulting in a range of 1.81.

Table 22: Harvard DSM IV scores for Combined (Acupuncture & CBT) group.

Acupuncture + CBT Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Harvard Symptoms									
Pre	10	2.49	2.54	0.72	1.25	3.50	2.25	2.06	3.00
Post	10	1.86	1.63	0.63	1.06	2.81	1.75	1.38	2.63
Follow-up	10	1.73	1.60	0.67	1.00	2.81	1.81	1.06	2.19

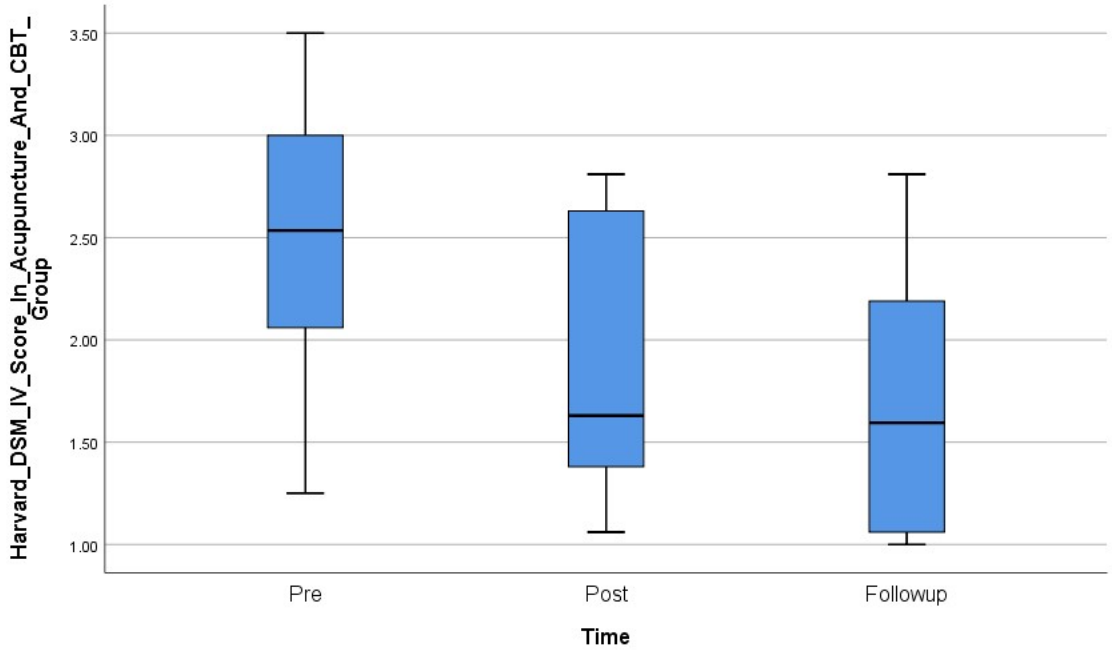


Figure 24: Box Plot of Harvard DSM IV scores for Combined (Acupuncture & CBT) group.

4.3.4 Numeric Pain Scale

Numeric Rating Scale is a 11-point scale from 0 to 10, with 0 for no pain and 10 for worst imaginable pain. Pain intensity rating of about 8 or greater is considered as a severe pain with higher degree of problems with movements.

The distribution of Pain scores for the Acupuncture group at pre, post and 2-month follow-up are shown in Table 23. A Box plot of the Pain scores for the Acupuncture group at pre, post and 2-month follow-up is shown in Figure 25.

4.3.4.1 Acupuncture Group

Table 23: Pain scores (Acupuncture group)

Acupuncture Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Pain									
Pre	15	9.13	9.00	0.99	7	10	3	8.50	10.00
Post	15	2.80	3.00	0.78	2	4	2	2.00	3.00
Follow-up	15	2.73	3.00	0.80	2	4	2	2.00	3.00

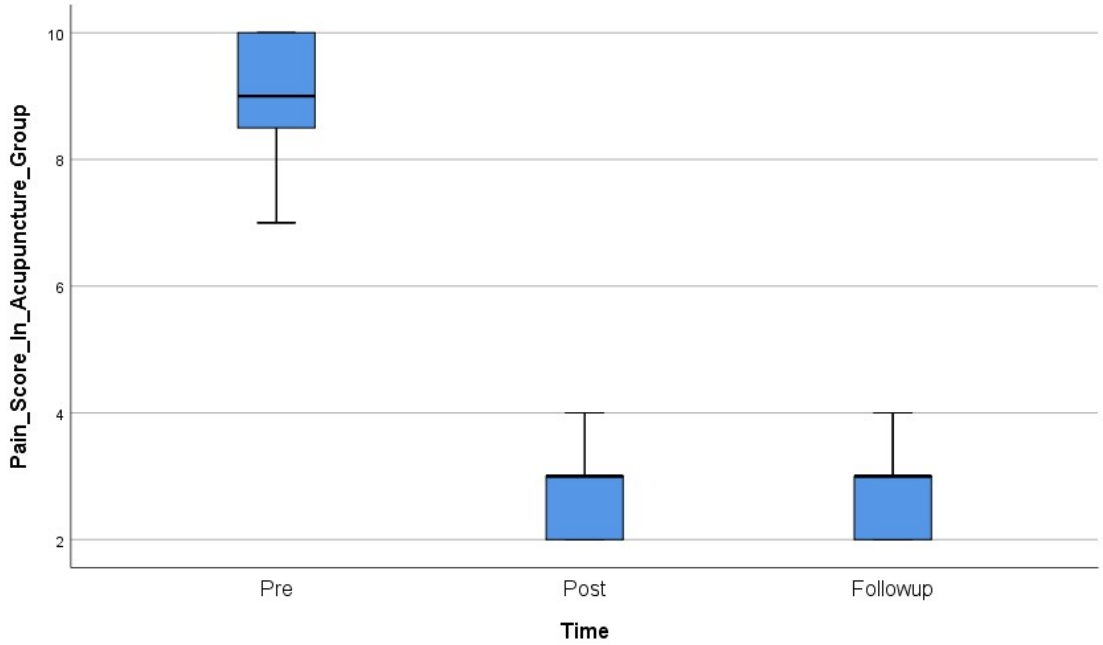


Figure 25: Box Plot of Pain scores for Acupuncture treatment group in comparison over time.

In the pre-treatment phase, the Acupuncture group had a mean Pain score of 9.13 with a standard deviation of 0.99, a minimum Pain score of 7 and a maximum Pain score of 10, resulting in a range of 3. In the post-treatment phase, the Acupuncture group had a mean Pain score of 2.80 with a standard deviation of 0.78, a minimum Pain score of 2 and a maximum Pain score of 4, resulting in a range of 2. In the 2-month follow-up, the Acupuncture group has a mean Pain score of 2.73 with a standard deviation of 0.80, a minimum Pain score of 2 and a maximum Pain score of 4, resulting in a range of 2.

4.3.4.2 CBT Group

The distribution of Pain scores for the CBT group at pre, post and 2-month follow-up are shown in Table 24. A Box plot of the Pain scores for the CBT group at pre, post and 2-month follow-up is shown in Figure 26.

Table 24: Pain scores (CBT group).

CBT Group	N	Mean	Median	Std. Deviation	Minimum	Maximum	Range	25 Percentile	75 Percentile
Pain									
Pre	6	8.00	7.50	1.27	7	10	3	7.00	9.00
Post	6	8.17	8.00	1.17	7	10	3	7.00	9.00
Follow-up	6	8.17	8.00	1.17	7	10	3	7.00	9.00

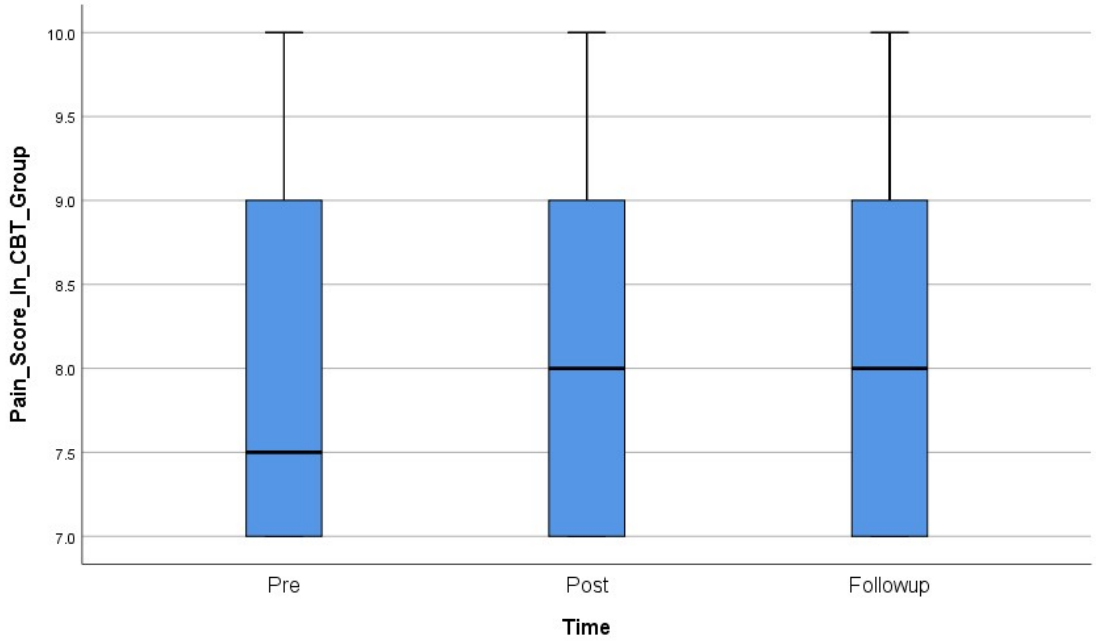


Figure 26: Box Plot of Pain scores (CBT group).

In the pre-treatment phase, the CBT group had a mean Pain score of 8.00 with a standard deviation of 1.27, a minimum Pain score 7 and a maximum Pain score of 10, resulting in a range of 3. In the post-treatment phase, the CBT group had a mean Pain score of 8.17 with a standard deviation of 1.17, a minimum Pain score of 7 and a maximum Pain score of 10, resulting in a range of 3. In the 2-month follow-up, the CBT group had a mean Pain score of 8.17 with a standard deviation of 1.17, a minimum Pain score of 7 and a maximum Pain score of 10, resulting in a range of 3.

4.3.4.3 Combined (Acupuncture & CBT) Group

The distribution of Pain scores for the Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up are shown in Table 25. A Box plot of the Pain scores for the Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up is shown in Figure 27.

Table 25: Pain scores Combined (Acupuncture & CBT) group.

Acupuncture + CBT Group	**N**	**Mean**	**Median**	**Std. Deviation**	**Minimum**	**Maximum**	**Range**	**25 Percentile**	**75 Percentile**
Pain									
Pre	10	8.90	8.50	0.99	8	10	2	8.00	10.00
Post	10	2.80	2.00	1.99	1	8	7	2.00	3.00
Follow-up	10	2.90	2.00	2.08	1	8	7	2.00	3.00

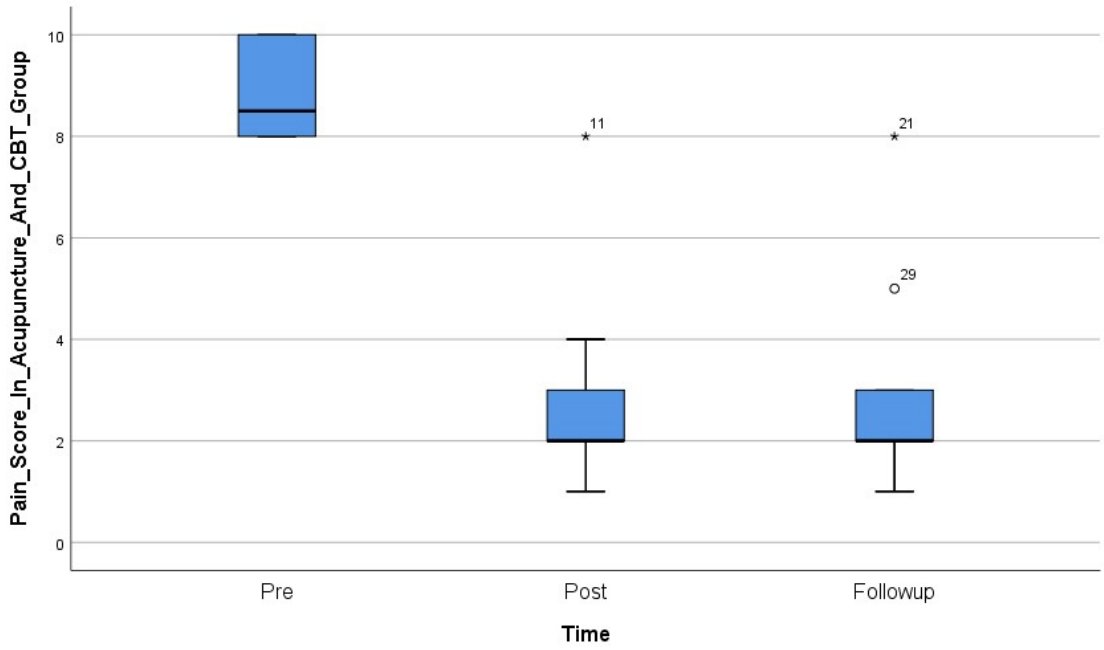


Figure 27: Box Plot of Pain scores for Combined (Acupuncture & CBT) group.

In the pre-treatment phase, the Combined (Acupuncture & CBT) group had a mean Pain score of 8.90 with a standard deviation of 0.99, a minimum Pain score of 8 and a maximum Pain score of 10, resulting in a range of 2. In the post-treatment phase, the Combined (Acupuncture & CBT) group had a mean Pain score of 2.80 with a standard deviation of 1.99, a minimum Pain score of 7 and a maximum Pain score of 8, resulting in a range of 7. In the 2-month follow-up, the Combined (Acupuncture & CBT) group had a mean Pain score of 2.90 with a standard deviation of 2.08, a minimum Pain score of 1 and a maximum Pain score of 8, resulting in a range of 7.

4.4 Within Group Comparisons

A within group comparison was undertaken using a Friedman two way analysis of variance by ranks test to determine if there were differences in the scores for the outcome measures between the three time points (pre-treatment, post-treatment and 2-month follow-up). Where the test rejected the null hypothesis, post hoc pairwise comparisons were performed using a Bonferroni correction for multiple comparisons. This test was deemed appropriate as these data met the four basic assumptions for using a Friedman test i.e.

- Each group was measured on three or more different occasions
- The group was a random sample of the population
- The dependant variable was ordinal or continuous; and
- The sample was not normally distributed.

The results for each of the outcome measures is presented below.

4.4.1 Credibility and Expectancy Questionnaire

4.4.1.1 Credibility Total Score

4.4.1.1.1 Acupuncture Group

A Friedman test was performed on the Acupuncture group for the credibility total score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 26)
- Two-way ANOVA (Figure 28)
- The median score (Table 27) and
- Post Hoc pairwise comparison (Figure 29)

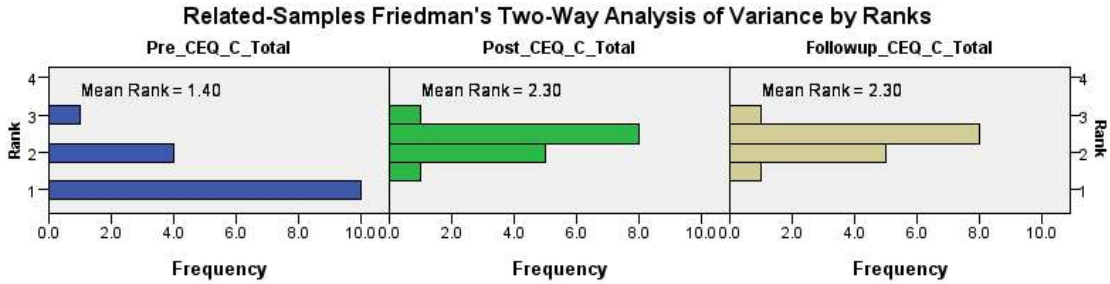
Table 26: Credibility score: Friedman hypothesis test summary (Acupuncture group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_CEQ_C_Total, Post_CEQ_C_Total and Followup_CEQ_C_Total are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of credibility total score at pre-treatment (1.40), post-treatment (2.30) and 2-month follow-up (2.30) phases is shown in Figure 28. The median of the credibility total score at pre-treatment (23.00), post-treatment (26.00) and 2-month follow-up (26.00) is shown in Table 27.



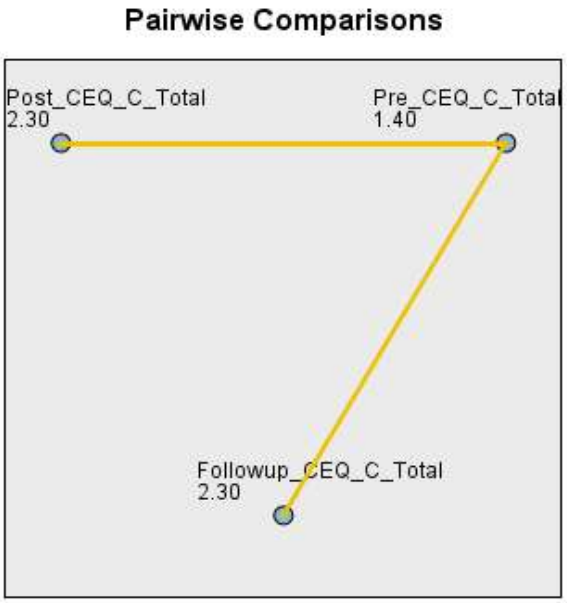
Total N	15
Test Statistic	13.886
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.001

Figure 28: Credibility total score: two-way ANOVA (Acupuncture group).

Table 27: Credibility total score: median (Acupuncture group).

	Pre_CEQ_C_Total	Post_CEQ_C_Total	Followup_CEQ_C_Total
Median	23.00	26.00	26.00

The Friedman test rejected the null hypothesis that the distribution of the credibility total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the credibility total score for the Acupuncture group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of credibility total score between three time points for the Acupuncture group is shown Figure 29.



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Pre_CEQ_C_Total-Post_CEQ_C_Total	-.900	.365	-2.465	.014	.041
Pre_CEQ_C_Total-Followup_CEQ_C_Total	-.900	.365	-2.465	.014	.041
Post_CEQ_C_Total-Followup_CEQ_C_Total	.000	.365	.000	1.000	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 29: Credibility total score: Post Hoc pairwise comparison (Acupuncture group).

The Friedman test showed the credibility total score was statistically significantly different at the different time points for Acupuncture group, $\chi 2(2) = 13.89$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in the credibility total score from pre-treatment (Mdn = 23.00) to post-treatment (Mdn = 26.00) ($p = 0.04$) and pre-treatment to 2-month follow-up (Mdn = 26.00) ($p = 0.04$), but not post-treatment and 2-month follow-up.

4.4.1.1.2 CBT Group

A Friedman test was performed on the CBT group for the credibility total score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 28)
- the two-way ANOVA (Figure 30)
- the median score (Table 29)

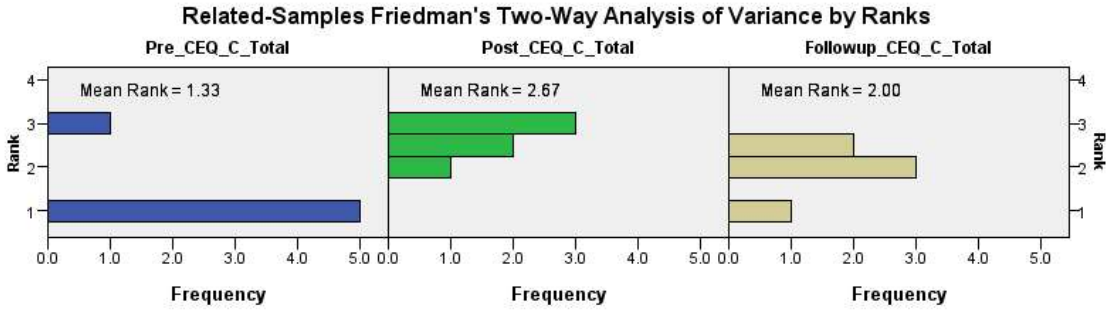
Table 28: Credibility total score: Friedman Hypothesis test summary (CBT group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_CEQ_C_Total, Post_CEQ_C_Total and Followup_CEQ_C_Total are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.055	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of credibility total score at pre-treatment (1.33), post-treatment (2.67) and 2-month follow-up (2.00) phases is shown in Figure 30. The median of the credibility total score at pre-treatment (16.50), post-treatment (21.50) and 2-month follow-up (21.00) is shown in Table 29.



Total N	6
Test Statistic	5.818
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.055

1. Multiple comparisons are not performed because the overall test retained the null hypothesis of no differences.

Figure 30: Credibility total score: two-way ANOVA (CBT group).

Table 29: Credibility total score: median (CBT group).

	Pre_CEQ_C_Total	Post_CEQ_C_Total	Followup_CEQ_C_Total
Median	16.50	21.50	21.00

The Friedman test did not reject the null hypothesis that the distribution of the credibility total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the credibility total score for the CBT group.

The Credibility total score in the CBT group was higher at post-treatment (Mdn = 21.50) and 2-month follow-up (Mdn = 21.00) than at pre-treatment (Mdn = 16.50) phase, but the differences were not statistically significant, $\chi 2(2) = 5.82$, $p = 0.06$. Hence, a post hoc analysis was not required.

4.4.1.1.3 Combined (Acupuncture & CBT) Group

A Friedman test was performed on the Combined (Acupuncture & CBT) group for the credibility total score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment, and 2-month follow-up) Table 30)
- Two-way ANOVA (Figure 31)
- The median Score (Table 31)

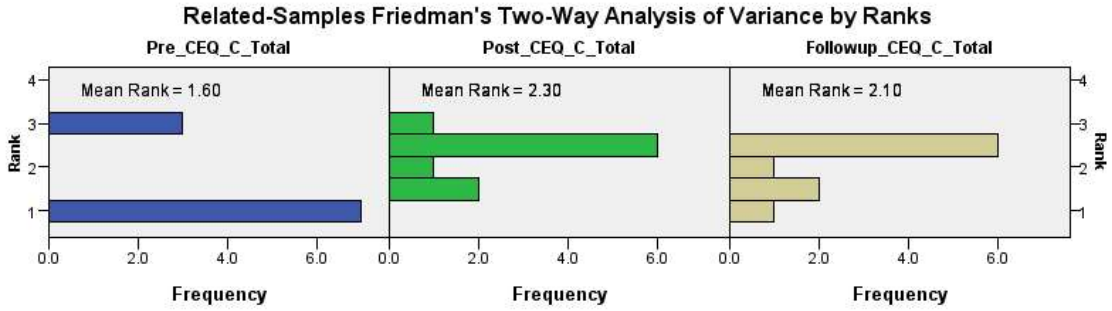
Table 30: Credibility total score: Friedman Hypothesis test summary (Combined (Acupuncture & CBT) group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_CEQ_C_Total, Post_CEQ_C_Total and Followup_CEQ_C_Total are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.197	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of credibility total score at pre-treatment (1.40), post-treatment (2.30) and 2-month follow-up (2.30) phases is shown in Figure 31. The median of credibility total score at pre-treatment (23.00), post-treatment (26.00) and 2-month follow-up (26.00) phases is shown in Table 31.



Total N	10
Test Statistic	3.250
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.197

1. Multiple comparisons are not performed because the overall test retained the null hypothesis of no differences.

Figure 31: Credibility total score: two-way ANOVA (Combined (Acupuncture & CBT) group).

Table 31: Credibility total score: median (Combined (Acupuncture & CBT) group).

	Pre_CEQ_C_Total	Post_CEQ_C_Total	Followup_CEQ_C_Total
Median	21.50	26.50	26.50

The Friedman test did not reject the null hypothesis that the distribution of the credibility total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant between the three time points for the credibility total score for the Acupuncture & CBT group.

The Credibility total score in the Combined (Acupuncture & CBT) group was higher at post-treatment (Mdn = 26.50) and 2-month follow-up (Mdn = 26.50) phases than at pre-treatment (Mdn = 21.50) phase, but the differences were not statistically significant, $\chi 2(2) = 3.25$, $p = 0.20$. Hence a post hoc analysis was not required.

4.4.1.2 Expectancy Total Score

4.4.1.2.1 Acupuncture Group

A Friedman test was performed on the Acupuncture group for the expectancy total score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 32)
- the two-way ANOVA (Figure 32)
- the median score (Table 33)

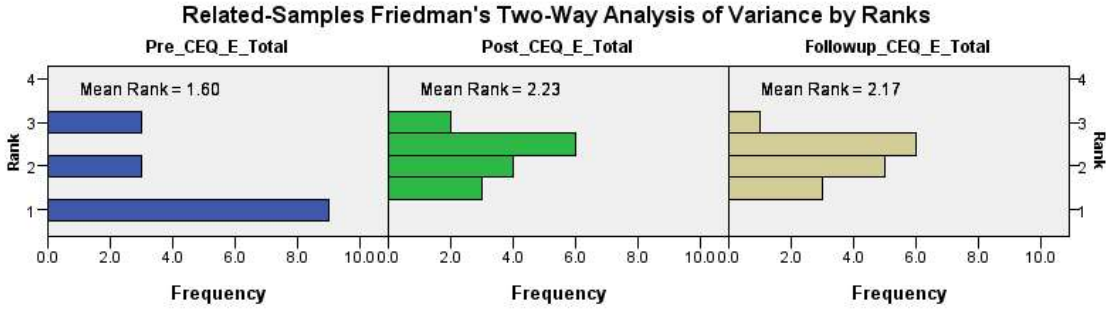
Table 32: Expectancy total score: Friedman Hypothesis test summary (Acupuncture group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_CEQ_E_Total, Post_CEQ_E_Total and Followup_CEQ_E_Total are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.061	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of expectancy total score at pre-treatment (1.60), post-treatment (2.23) and 2-month follow-up (2.17) phases is shown in Figure 32. The median of expectancy total score at pre-treatment (22.00), post-treatment (24.00) and 2-month follow-up (24.00) phases is shown in Table 33.



Total N	15
Test Statistic	5.590
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.061

1. Multiple comparisons are not performed because the overall test retained the null hypothesis of no differences.

Figure 32: Expectancy total score: two-way ANOVA (Acupuncture group).

Table 33: Expectancy total score: median (Acupuncture group).

	Pre_CEQ_E_Total	Post_CEQ_E_Total	Followup_CEQ_E_Total
Median	22.00	24.00	24.00

The Friedman test did not reject the null hypothesis that the distribution of the Expectancy total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the Expectancy total score for the Acupuncture group.

The Expectancy total score in the Acupuncture group was higher at post-treatment (Mdn = 24.00) and 2-month follow-up (Mdn = 24.00) phases than at pre-treatment (Mdn = 22.00) phase, but the differences were not statistically significant, $\chi 2(2) = 5.59$, $p = 0.06$. Hence, a post hoc analysis was not required.

4.4.1.2.2 CBT Group

A Friedman test was performed on the CBT group for the expectancy total score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 34)
- the two-way ANOVA (Figure 33)
- the median score (Table 35)

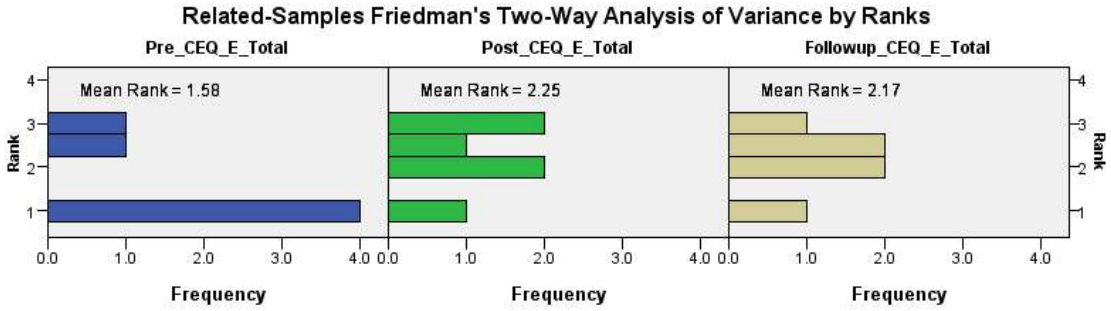
Table 34: Expectancy total score: Friedman Hypothesis test summary (CBT group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_CEQ_E_Total, Post_CEQ_E_Total and Followup_CEQ_E_Total are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.422	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of expectancy total score at pre-treatment (1.58), post-treatment (2.25) and 2-month follow-up (2.17) phases is shown in Figure 33. The median of expectancy total score at pre-treatment (16.00), post-treatment (18.00) and 2-month follow-up (17.50) phases is shown in Table 35.



Total N	6
Test Statistic	1.727
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.422

1. Multiple comparisons are not performed because the overall test retained the null hypothesis of no differences.

Figure 33: Expectancy total score: two-way ANOVA (CBT group).

Table 35: Expectancy total score: median (CBT group).

	Pre_CEQ_E_Total	Post_CEQ_E_Total	Followup_CEQ_E_Total
Median	16.00	18.00	17.50

The Friedman test did not reject the null hypothesis that the distribution of the Expectancy total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the Expectancy total score for the CBT group.

The Expectancy total score in the CBT group was higher at post-treatment (Mdn = 18.00) and 2-month follow-up (Mdn = 17.50) phases than at pre-treatment (Mdn = 16.00) phase, but the differences were not statistically significant, $\chi 2(2) = 1.73$, $p = 0.42$. Hence, a post hoc analysis was not required.

4.4.1.2.3 Combined (Acupuncture & CBT) Group

A Friedman test was performed on the Combined (Acupuncture & CBT) group for the expectancy total score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 36)
- the two-way ANOVA (Figure 34)
- the median score (Table 37)

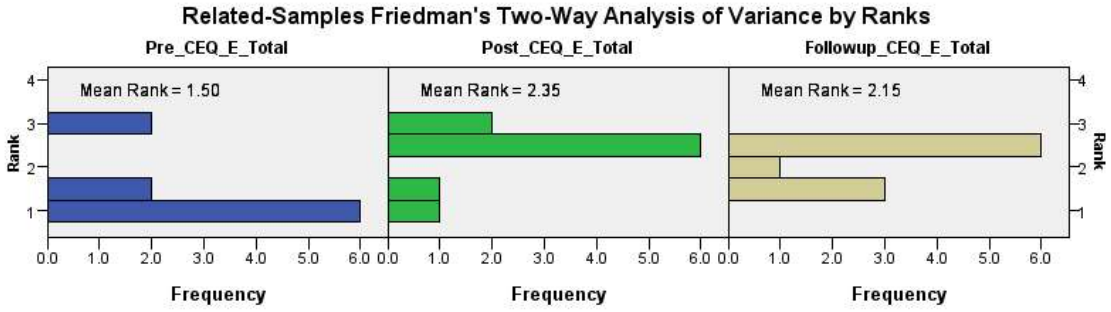
Table 36: Expectancy total score: Friedman Hypothesis test summary (Combined (Acupuncture & CBT) group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_CEQ_E_Total, Post_CEQ_E_Total and Followup_CEQ_E_Total are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.078	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of expectancy total score at pre-treatment (1.50), post-treatment (2.35) and 2-month follow-up (2.15) phases is shown in Figure 34. The median of expectancy total score at pre-treatment (17.50), post-treatment (25.00) and 2-month follow-up (25.00) phases is shown in Table 37.



Total N	10
Test Statistic	5.097
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.078

1. Multiple comparisons are not performed because the overall test retained the null hypothesis of no differences.

Figure 34: Expectancy total score: two-way ANOVA (Combined (Acupuncture & CBT) group).

Table 37: Expectancy total score: median (Combined (Acupuncture & CBT) group).

	Pre_CEQ_E_Total	Post_CEQ_E_Total	Followup_CEQ_E_Total
Median	17.50	25.00	25.00

The Friedman test did not reject the null hypothesis that the distribution of the Expectancy total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the Expectancy total score for the Combined (Acupuncture & CBT) group.

The Expectancy total score was not statistically significantly different at the different time points for Acupuncture & CBT group. Expectancy total score in the Acupuncture & CBT group was higher at post-treatment (Mdn = 25.00) and 2-month follow-up (Mdn = 25.00) phases than at pre-treatment (Mdn = 17.50) phase, but the differences were not statistically significant, $\chi 2(2) = 5.10$, $p = 0.08$. Hence, a post hoc analysis was not required.

4.4.2 Hopkins Symptoms Check List 25 (HSCL-25)

4.4.2.1 Hopkins Anxiety Score

4.4.2.1.1 Acupuncture Group

A Friedman test was performed on the Acupuncture group for the Hopkins Anxiety score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 38)
- Two-way ANOVA (Figure 35)
- The median score (Table 39) and
- Post Hoc pairwise comparison (Figure 36)

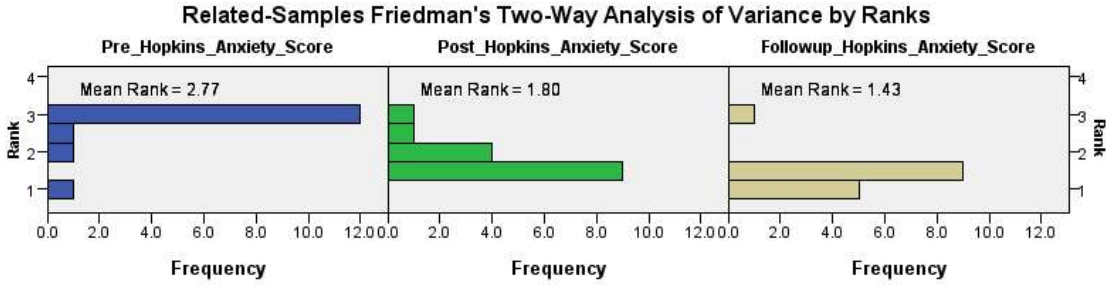
Table 38: Hopkins Anxiety score: Friedman hypothesis test summary (Acupuncture group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Anxiety_Score, Post_Hopkins_Anxiety_Score and Followup_Hopkins_Anxiety_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins anxiety score at pre-treatment (2.77), post-treatment (1.80) and 2-month follow-up (1.43) phases is shown in Figure 35. The median of Hopkins anxiety score at pre-treatment (23.00), post-treatment (26.00) and 2-month follow-up (26.00) phases is shown in Table 39.



Total N	15
Test Statistic	17.080
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.000

Figure 35: Hopkins Anxiety score: two-way ANOVA (Acupuncture group).

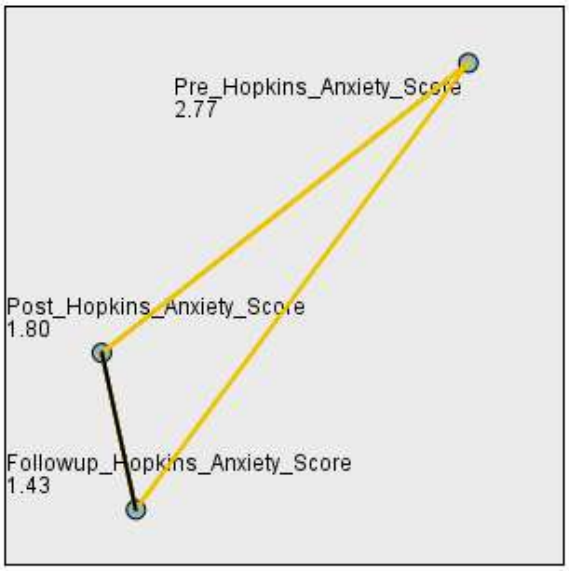
Table 39: Hopkins Anxiety score: median (Acupuncture group).

	Pre_Hopkins_Anxiety_Score	Post_Hopkins_Anxiety_Score	Followup_Hopkins_Anxiety_Score
Median	2.00	1.30	1.20

The Friedman test rejected the null hypothesis that the distribution of the Hopkins Anxiety score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Hopkins Anxiety score for the Acupuncture group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Hopkins Anxiety score between three time points for the Acupuncture group is shown Figure 36.

The Friedman test showed the Hopkins anxiety score was statistically significantly different at the different time points for Acupuncture group, $\chi 2(2) = 17.08$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in Hopkins anxiety score from pre-treatment (Mdn = 2.00) to post-treatment (Mdn =1.30) ($p = 0.02$) and pre-treatment to 2-month follow-up (Mdn = 1.20) ($p < 0.01$), but not post-treatment and 2-month follow-up.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Hopkins_Anxiety_Score-Post_Hopkins_Anxiety_Score	.367	.365	1.004	.315	.946
Followup_Hopkins_Anxiety_Score-Pre_Hopkins_Anxiety_Score	1.333	.365	3.651	.000	.001
Post_Hopkins_Anxiety_Score-Pre_Hopkins_Anxiety_Score	.967	.365	2.647	.008	.024

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 36: Hopkins Anxiety score: Post Hoc pairwise comparison (Acupuncture group).

4.4.2.1.2 CBT Group

A Friedman test was performed on the CBT group for the Hopkins Anxiety score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 40)
- the two-way ANOVA (Figure 37)
- the median score (Table 41)

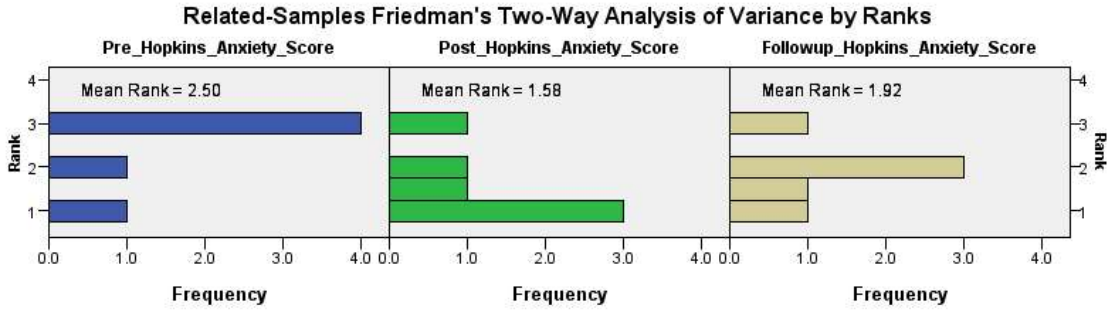
Table 40: Hopkins Anxiety score: Friedman Hypothesis test summary (CBT group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Anxiety_Score, Post_Hopkins_Anxiety_Score and Followup_Hopkins_Anxiety_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.260	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins anxiety score at pre-treatment (2.50), post-treatment (1.58) and 2-month follow-up (1.92) phases is shown in Figure 37. The median of Hopkins anxiety score at pre-treatment (2.10), post-treatment (1.65) and 2-month follow-up (1.90) phases is shown in Table 41.



Total N	6
Test Statistic	2.696
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.260

1. Multiple comparisons are not performed because the overall test retained the null hypothesis of no differences.

Figure 37: Hopkins Anxiety score: two-way ANOVA (CBT group).

Table 41: Hopkins Anxiety score: median (CBT group).

	Pre_Hopkins_Anxiety_Score	Post_Hopkins_Anxiety_Score	Followup_Hopkins_Anxiety_Score
Median	2.10	1.65	1.90

The Friedman test did not reject the null hypothesis that the distribution of the Hopkins Anxiety score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the Hopkins Anxiety score for the CBT group.

The Hopkins anxiety score in the CBT group was lower at post-treatment (Mdn = 2.10) and 2-month follow-up (Mdn = 1.90) phases than at pre-treatment (Mdn = 2.10) phase, but the differences were not statistically significant, $\chi 2(2) = 2.70$, $p = 0.26$. Hence, a post hoc analysis was not required.

4.4.2.1.3 Combined (Acupuncture & CBT) Group

A Friedman test was performed on the Combined (Acupuncture & CBT) group for the Hopkins Anxiety score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 42)
- Two-way ANOVA (Figure 38)
- The median score (Table 43) and
- Post Hoc pairwise comparison (Figure 39)

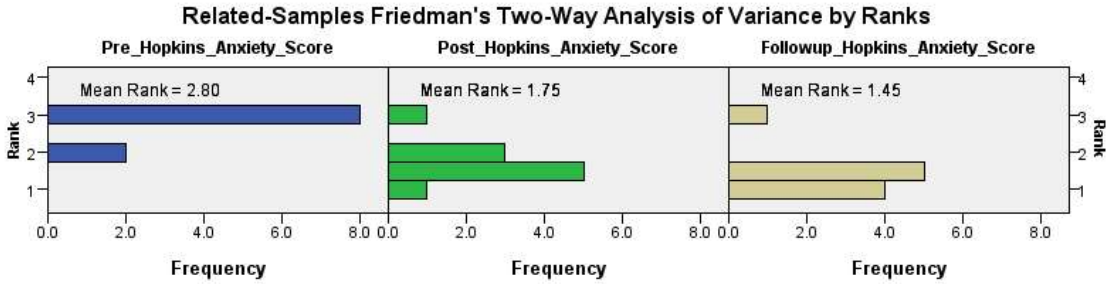
Table 42: Hopkins Anxiety score: Friedman hypothesis test summary (Combined (Acupuncture & CBT) group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Anxiety_Score, Post_Hopkins_Anxiety_Score and Followup_Hopkins_Anxiety_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.003	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins anxiety score at pre-treatment (2.80), post-treatment (1.75) and 2-month follow-up (1.45) phases is shown in Figure 38. The median of Hopkins anxiety score at pre-treatment (2.50), post-treatment (1.75) and 2-month follow-up (1.50) phases is shown in Table 43.



Total N	10
Test Statistic	11.486
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.003

Figure 38: Hopkins Anxiety score: two-way ANOVA (Combined (Acupuncture & CBT) group).

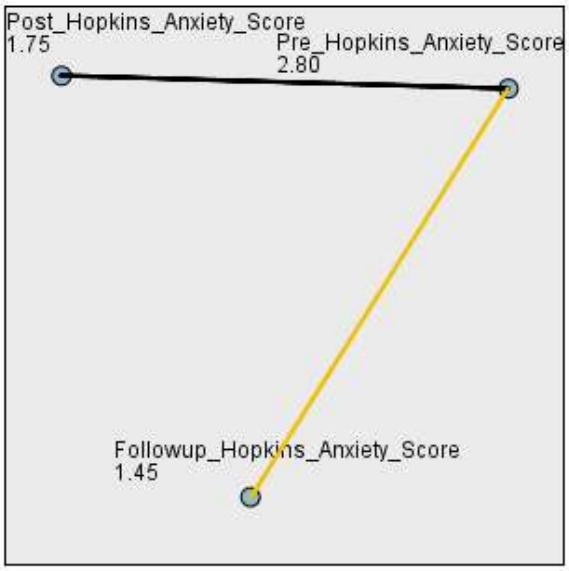
Table 43: Hopkins Anxiety score: median (Combined (Acupuncture & CBT) group).

	Pre_Hopkins_Anxiety_Score	Post_Hopkins_Anxiety_Score	Followup_Hopkins_Anxiety_Score
Median	2.50	1.75	1.50

The Friedman test rejected the null hypothesis that the distribution of the Hopkins Anxiety score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Hopkins Anxiety score for the Combined (Acupuncture & CBT) group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Hopkins Anxiety score between three time points for the Combined (Acupuncture & CBT) group is shown Figure 39.

The Friedman test showed the Hopkins anxiety score was statistically significantly different at the different time points for Acupuncture & CBT group, $\chi 2(2) = 11.49$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in Hopkins anxiety score from pre-treatment (Mdn = 2.50) to 2-month follow-up (Mdn = 1.50) ($p = 0.01$), but not between pre-treatment and post-treatment (Mdn = 1.75), and not between post-treatment and 2-month follow-up

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Hopkins_Anxiety_Score-Post_Hopkins_Anxiety_Score	.300	.447	.671	.502	1.000
Followup_Hopkins_Anxiety_Score-Pre_Hopkins_Anxiety_Score	1.350	.447	3.019	.003	.008
Post_Hopkins_Anxiety_Score-Pre_Hopkins_Anxiety_Score	1.050	.447	2.348	.019	.057

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 39: Hopkins Anxiety score: Post Hoc pairwise comparison (Combined (Acupuncture & CBT) group).

4.4.2.2 Hopkins Depression Score

4.4.2.2.1 Acupuncture Group

A Friedman test was performed on the Acupuncture group for the Hopkins Depression score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 44)
- Two-way ANOVA (Figure 40)
- The median score (Table 45) and
- Post Hoc pairwise comparison (Figure 41)

Table 44: Hopkins Depression score: Friedman hypothesis test summary (Acupuncture group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Depression_Score, Post_Hopkins_Depression_Score and Followup_Hopkins_Depression_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins depression score at pre-treatment (2.97), post-treatment (1.53) and 2-month follow-up (1.50) phases is shown in Figure 40. The median of Hopkins depression score at pre-treatment (2.13), post-treatment (1.47) and 2-month follow-up (1.40) phases is shown in Table 45.

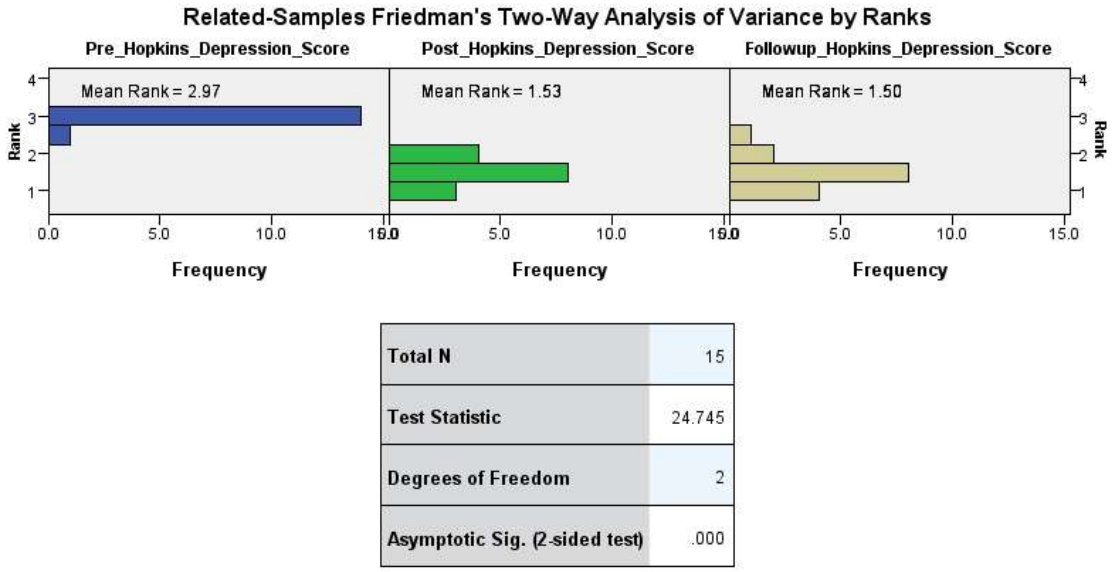
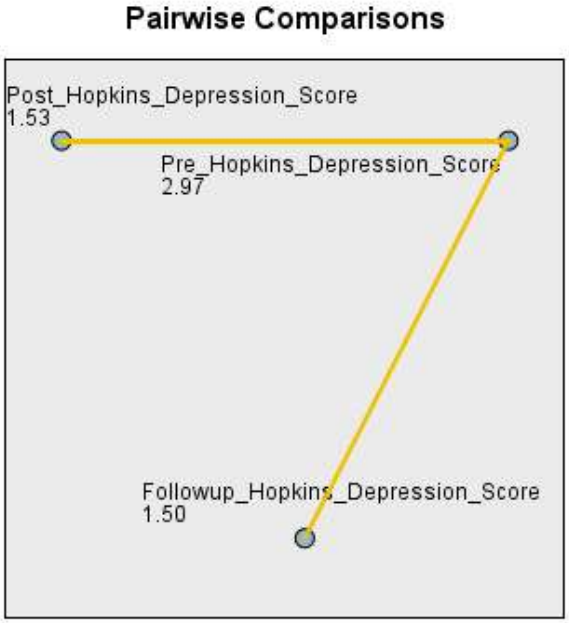


Figure 40: Hopkins Depression score: two-way ANOVA (Acupuncture group).

Table 45: Hopkins Depression score: median (Acupuncture group).

	Pre_Hopkins_Depression_Score	Post_Hopkins_Depression_Score	Followup_Hopkins_Depression_Score
Median	2.13	1.47	1.40

The Friedman test rejected the null hypothesis that the distribution of the Hopkins Depression score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Hopkins Depression score for the Acupuncture group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Hopkins Depression score between three time points for the Acupuncture group is shown Figure 41.



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Hopkins_Depression_Score-Post_Hopkins_Depression_Score	.033	.365	.091	.927	1.000
Followup_Hopkins_Depression_Score-Pre_Hopkins_Depression_Score	1.467	.365	4.017	.000	.000
Post_Hopkins_Depression_Score-Pre_Hopkins_Depression_Score	1.433	.365	3.925	.000	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 41: Hopkins Depression score: Post Hoc pairwise comparison (Acupuncture group).

The Friedman test showed the Hopkins depression score was statistically significantly different at the different time points for Acupuncture group, $\chi 2(2) = 24.75$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in Hopkins depression score from pre-treatment (Mdn = 2.13) to post-treatment (Mdn = 1.47) ($p < 0.01$) and pre-treatment to 2-month follow-up (Mdn = 1.40) ($p < 0.01$), but not post-treatment and 2-month follow-up.

4.4.2.2.2 CBT Group

A Friedman test was performed on the CBT group for the Hopkins Depression score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 46)
- the two-way ANOVA (Figure 42)
- the median score (Table 47)

Table 46: Hopkins Depression score: Friedman Hypothesis test summary (CBT group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Depression_Score, Post_Hopkins_Depression_Score and Followup_Hopkins_Depression_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.311	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins depression score at pre-treatment (2.33), post-treatment (2.17) and 2-month follow-up (1.50) phases is shown in Figure 42. The median of Hopkins depression score at pre-treatment (2.27), post-treatment (2.17) and 2-month follow-up (1.84) phases is shown in Table 47.

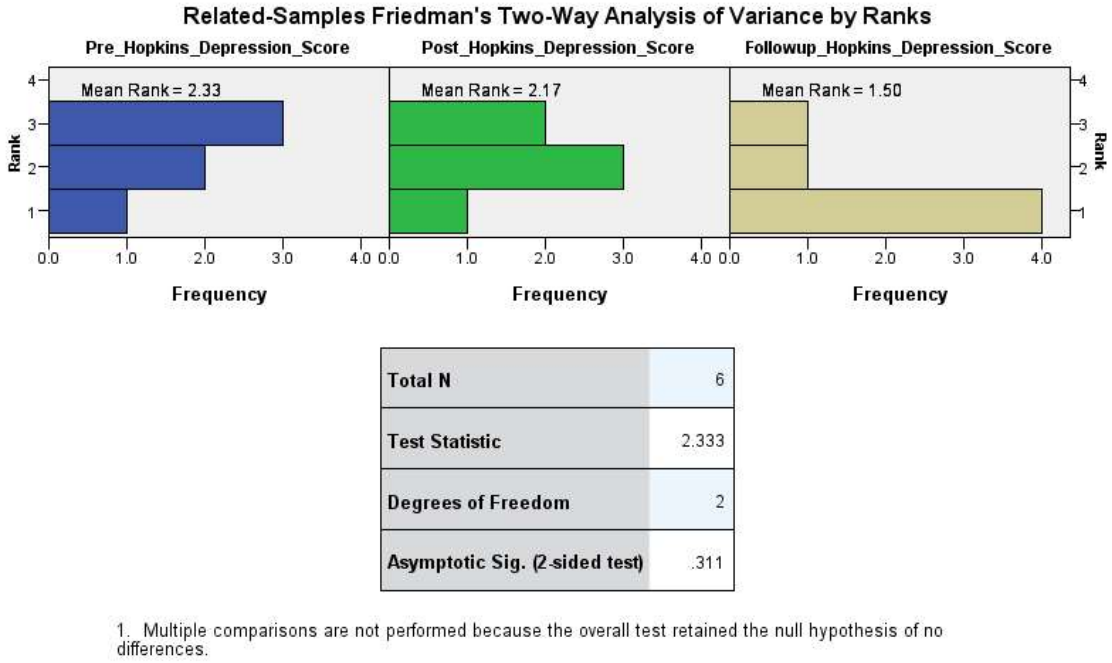


Figure 42: Hopkins Depression score: two-way ANOVA (CBT group).

Table 47: Hopkins Depression score: median (CBT group).

	Pre_Hopkins_Depression_Score	Post_Hopkins_Depression_Score	Followup_Hopkins_Depression_Score
Median	2.27	2.17	1.84

The Friedman test did not reject the null hypothesis that the distribution of the Hopkins Depression score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the Hopkins Depression score for the CBT group.

The Hopkins depression score was not statistically significantly different at the different time points for CBT group. Hopkins depression score in the CBT group is lower at post-treatment (Mdn = 2.17) and 2-month follow-up (Mdn = 1.50) phases than at pre-treatment (Mdn = 2.27) phase, but the differences were not statistically significant, $\chi 2(2) = 2.33$, $p = 0.31$. Hence, a post hoc analysis was not required.

4.4.2.2.3 Combined (Acupuncture & CBT) Group

A Friedman test was performed on the Combined (Acupuncture & CBT) group for the Hopkins Depression score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 48)
- Two-way ANOVA (Figure 43)
- The median score (Table 49) and
- Post Hoc pairwise comparison (Figure 44)

Table 48: Hopkins Depression score: Friedman hypothesis test summary (Combined (Acupuncture & CBT) group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Depression_Score, Post_Hopkins_Depression_Score and Followup_Hopkins_Depression_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.016	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins depression score at pre-treatment (2.70), post-treatment (1.80) and 2-month follow-up (1.50) phases is shown in Figure 43. The median of Hopkins depression score at pre-treatment (2.43), post-treatment (1.57) and 2-month follow-up (1.63) phases is shown in Table 49.

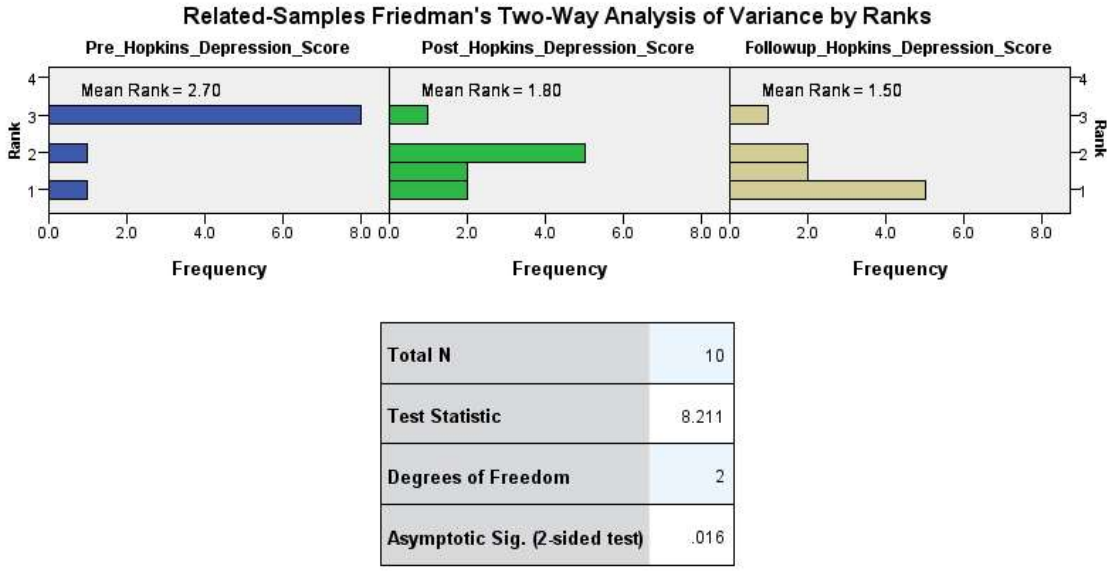
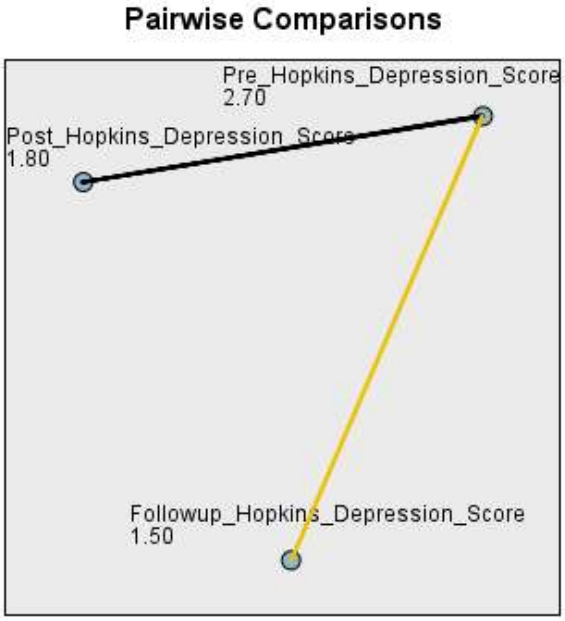


Figure 43: Hopkins Depression score: two-way ANOVA (Combined (Acupuncture & CBT) group).

Table 49: Hopkins Depression score: median (Combined (Acupuncture & CBT) group).

	Pre_Hopkins_Depression_Score	Post_Hopkins_Depression_Score	Followup_Hopkins_Depression_Score
Median	2.43	1.57	1.63

The Friedman test rejected the null hypothesis that the distribution of the Hopkins Depression score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Hopkins Depression score for the Combined (Acupuncture & CBT) group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Hopkins Depression score between three time points for the Combined (Acupuncture & CBT) group is shown Figure 44.



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Hopkins_Depression_Score-Post_Hopkins_Depression_Score	.300	.447	.671	.502	1.000
Followup_Hopkins_Depression_Score-Pre_Hopkins_Depression_Score	1.200	.447	2.683	.007	.022
Post_Hopkins_Depression_Score-Pre_Hopkins_Depression_Score	.900	.447	2.012	.044	.133

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 44: Hopkins Depression score: Post Hoc pairwise comparison (Combined (Acupuncture & CBT) group).

The Friedman test showed the Hopkins depression score was statistically significantly different at the different time points for Acupuncture & CBT group, $\chi 2(2) = 8.21$, $p = 0.02$. Post hoc analysis revealed statistically significant differences in Hopkins depression score from pre-treatment (Mdn = 2.43) to 2-month follow-up (Mdn = 1.63) ($p = 0.02$), but not between pre-treatment and post-treatment (Mdn = 1.57), and not between post-treatment and 2-month follow-up.

4.4.2.3 Hopkins Total Score

4.4.2.3.1 Acupuncture Group

A Friedman test was performed on the Acupuncture group for the Hopkins total score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 50)
- Two-way ANOVA (Figure 45)
- The median score (Table 51) and
- Post Hoc pairwise comparison (Figure 46)

Table 50: Hopkins total score: Friedman hypothesis test summary (Acupuncture group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Total_Score, Post_Hopkins_Total_Score and Followup_Hopkins_Total_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins total score at pre-treatment (2.93), post-treatment (1.67) and 2-month follow-up (1.40) phases is shown in Figure 45. The median of Hopkins total score at pre-treatment (2.08), post-treatment (1.44) and 2-month follow-up (1.32) phases is shown in Table 51.

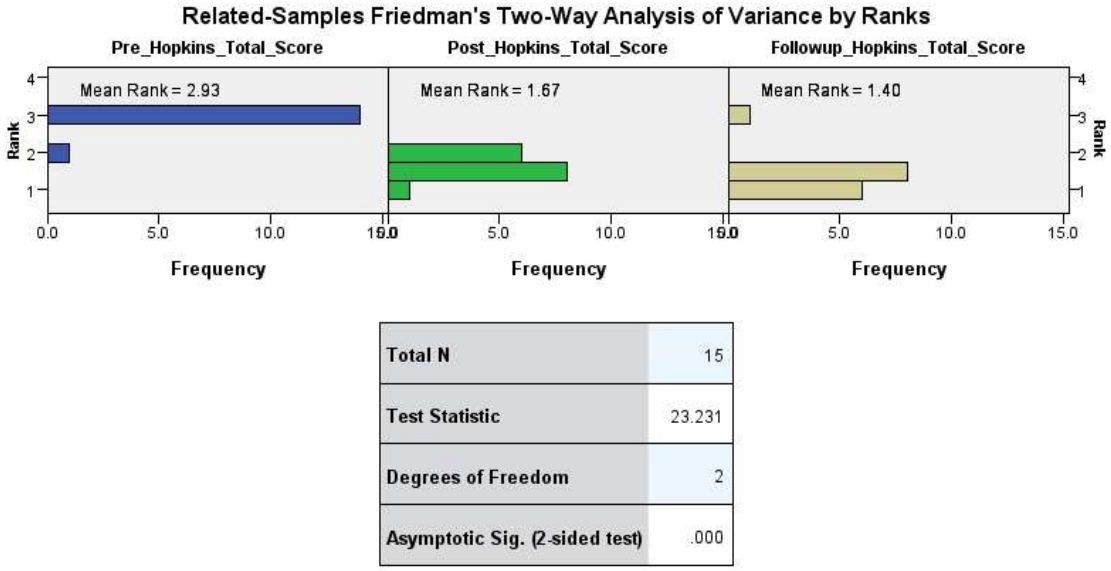


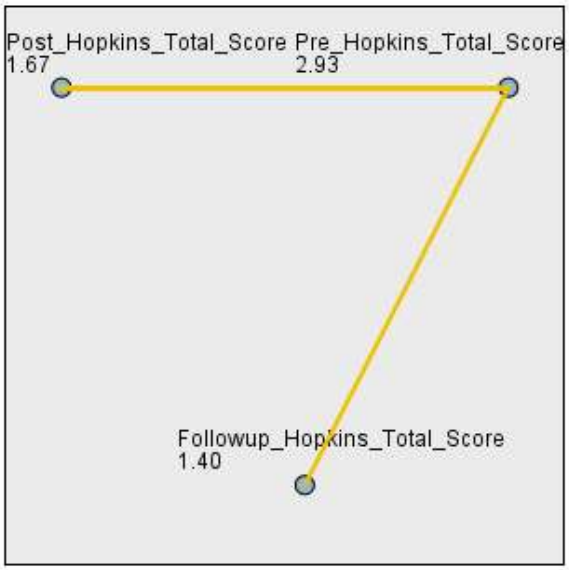
Figure 45: Hopkins total score: two-way ANOVA (Acupuncture group).

Table 51: Hopkins total score: median (Acupuncture group).

	Pre_Hopkins_Total_Score	Post_Hopkins_Total_Score	Followup_Hopkins_Total_Score
Median	2.08	1.44	1.32

The Friedman test rejected the null hypothesis that the distribution of the Hopkins total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Hopkins total score for the Acupuncture group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Hopkins total score between three time points for the Acupuncture group is shown Figure 46.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Hopkins_Total_Score-Post_Hopkins_Total_Score	.267	.365	.730	.465	1.000
Followup_Hopkins_Total_Score-Pre_Hopkins_Total_Score	1.533	.365	4.199	.000	.000
Post_Hopkins_Total_Score-Pre_Hopkins_Total_Score	1.267	.365	3.469	.001	.002

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 46: Hopkins total score: Post Hoc pairwise comparison (Acupuncture group).

The Friedman test showed the Post hoc analysis revealed statistically significant differences in Hopkins total score from pre-treatment (Mdn = 2.08) to post-treatment (Mdn = 1.44) ($p < 0.01$) and pre-treatment to 2-month follow-up (Mdn = 1.32) ($p < 0.01$), but not post-treatment and 2-month follow-up.

4.4.2.3.2 CBT Group

A Friedman test was performed on the CBT group for the Hopkins total score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 52)
- the two-way ANOVA (Figure 47)
- the median score (Table 53)

Table 52: Hopkins total score: Friedman Hypothesis test summary (CBT group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Total_Score, Post_Hopkins_Total_Score and Followup_Hopkins_Total_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.223	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins total score at pre-treatment (2.50), post-treatment (2.00) and 2-month follow-up (1.50) phases is shown in Figure 47. The median of Hopkins total score at pre-treatment (2.18), post-treatment (1.90) and 2-month follow-up (1.86) phases is shown in Table 53.

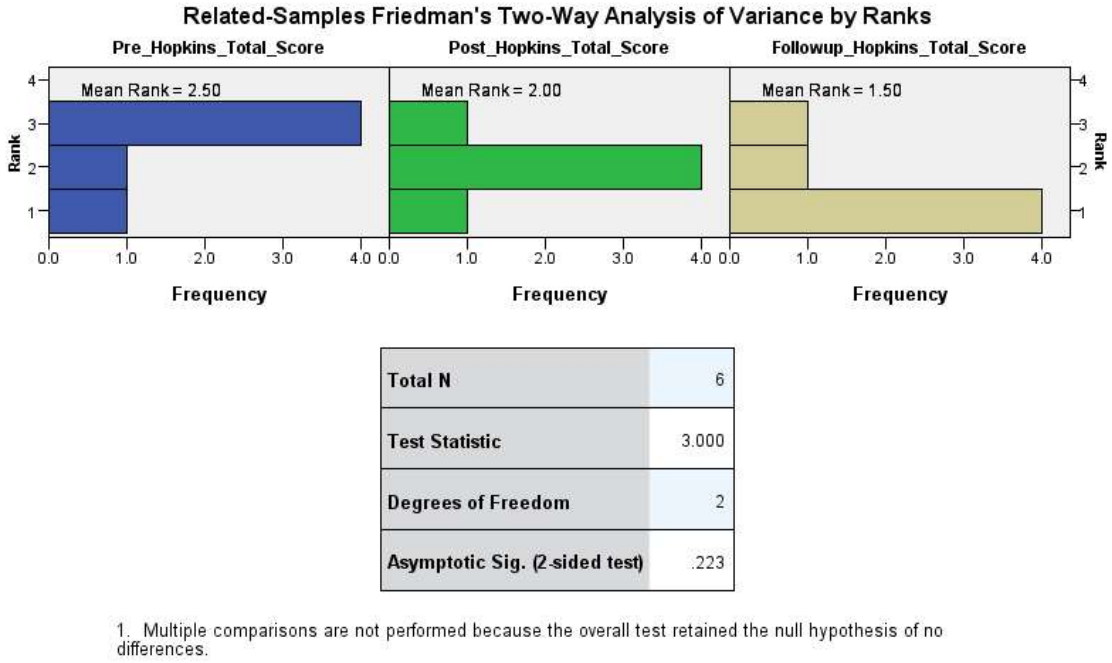


Figure 47: Hopkins total score: two-way ANOVA (CBT group).

Table 53: Hopkins total score: median (CBT group).

	Pre_Hopkins_Total_Score	Post_Hopkins_Total_Score	Followup_Hopkins_Total_Score
Median	2.18	1.90	1.86

The Friedman test did not reject the null hypothesis that the distribution of the Hopkins total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the Hopkins total score for the CBT group.

The Hopkins total score was not statistically significantly different at the different time points for CBT group. Hopkins total score in the CBT group is lower at post-treatment (Mdn = 1.90) and 2-month follow-up (Mdn = 1.86) phases than at pre-treatment (Mdn = 2.18) phase, but the differences were not statistically significant, $\chi 2(2) = 3.00$, $p = 0.22$. Hence, a post hoc analysis was not required.

4.4.2.3.3 Combined (Acupuncture & CBT) Group

A Friedman test was performed on the Combined (Acupuncture & CBT) group for the Hopkins total score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 54)
- Two-way ANOVA (Figure 48)
- The median score (Table 55) and
- Post Hoc pairwise comparison (Figure 49)

Table 54: Hopkins total score: Friedman hypothesis test summary (Combined (Acupuncture & CBT) group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Hopkins_Total_Score, Post_Hopkins_Total_Score and Followup_Hopkins_Total_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.009	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Hopkins total score at pre-treatment (2.75), post-treatment (1.80) and 2-month follow-up (1.45) phases is shown in Figure 48. The median of Hopkins total score at pre-treatment (2.50), post-treatment (1.60) and 2-month follow-up (1.56) phases is shown in Table 55.

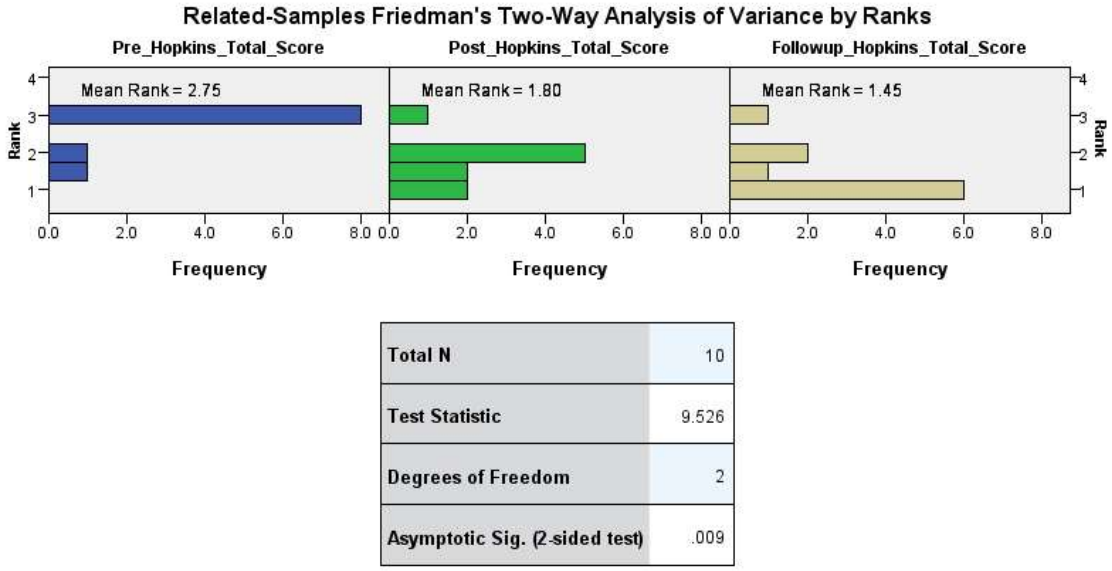


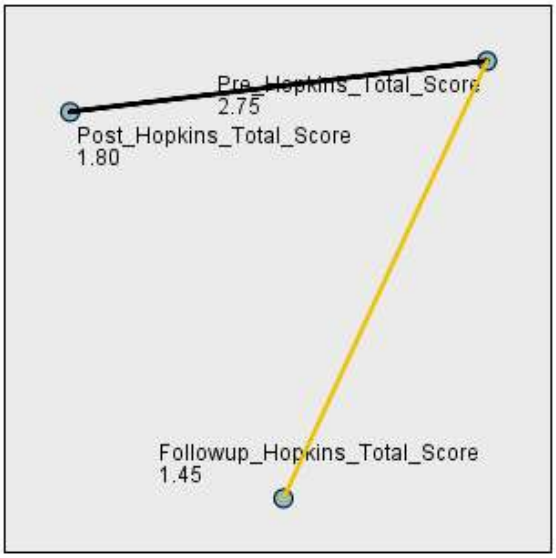
Figure 48: Hopkins total score: two-way ANOVA (Combined (Acupuncture & CBT) group).

Table 55: Hopkins total score: median (Combined (Acupuncture & CBT) group).

	Pre_Hopkins_Total_Score	Post_Hopkins_Total_Score	Followup_Hopkins_Total_Score
Median	2.50	1.60	1.56

The Friedman test rejected the null hypothesis that the distribution of the Hopkins total score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Hopkins total score for the Combined (Acupuncture & CBT) group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Hopkins total score between three time points for the Combined (Acupuncture & CBT) group is shown Figure 49.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Hopkins_Total_Score-Post_Hopkins_Total_Score	.350	.447	.783	.434	1.000
Followup_Hopkins_Total_Score-Pre_Hopkins_Total_Score	1.300	.447	2.907	.004	.011
Post_Hopkins_Total_Score-Pre_Hopkins_Total_Score	.950	.447	2.124	.034	.101

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 49: Hopkins total score: Post Hoc pairwise comparison (Combined (Acupuncture & CBT) group).

The Friedman test showed the Hopkins total score was statistically significantly different at the different time points for Acupuncture & CBT group, $\chi 2(2) = 9.53$, $p = 0.01$. Post hoc analysis revealed statistically significant differences in Hopkins total score from pre-treatment (Mdn = 2.50) to 2-month follow-up (Mdn = 1.56) ($p = 0.01$) but not between pre-treatment and post-treatment (Mdn = 1.60), and not between post-treatment and 2-month follow-up.

4.4.3 Harvard Trauma Questionnaire (HTQ)

4.4.3.1 Harvard Trauma DSM IV Score

4.4.3.1.1 Acupuncture Group

A Friedman test was performed on the Acupuncture group for the Harvard Trauma DSM IV score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 56)
- Two-way ANOVA (Figure 50)
- The median score (Table 57) and
- Post Hoc pairwise comparison (Figure 51)

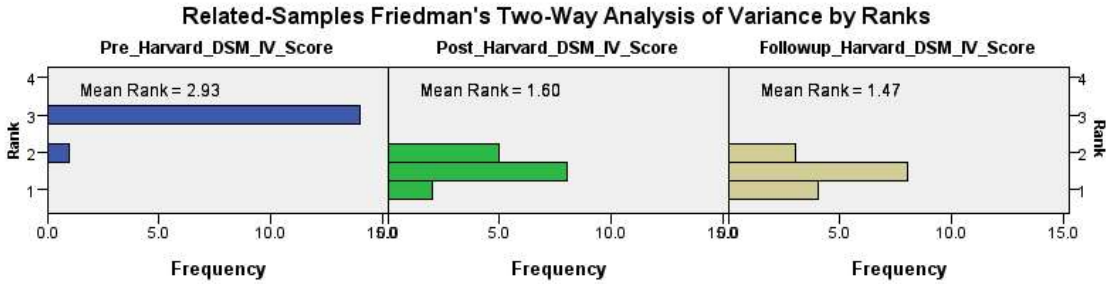
Table 56: Harvard Trauma DSM IV score: Friedman hypothesis test summary (Acupuncture group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Harvard_DSM_IV_Score, Post_Harvard_DSM_IV_Score and Followup_Harvard_DSM_IV_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Harvard trauma DSM IV score at pre-treatment (2.93), post-treatment (1.60) and 2-month follow-up (1.47) phases is shown in Figure 50. The median of Harvard trauma DSM IV score at pre-treatment (2.00), post-treatment (1.31) and 2-month follow-up (1.25) phases is shown in Table 57.



Total N	15
Test Statistic	24.667
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.000

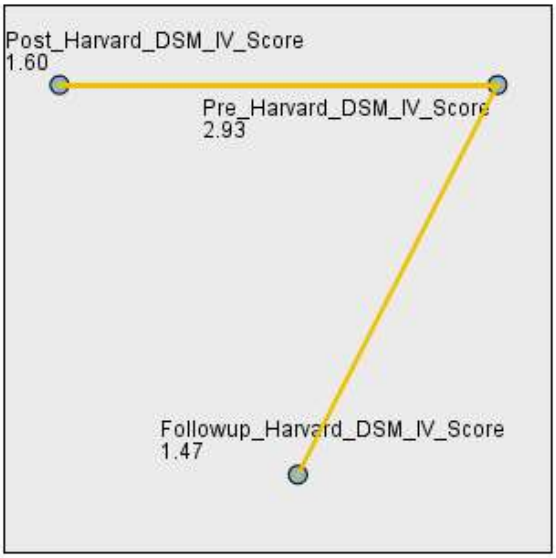
Figure 50: Harvard Trauma DSM IV score: two-way ANOVA (Acupuncture group).

Table 57: Harvard Trauma DSM IV score: median (Acupuncture group).

	Pre_Harvard_DSM_IV_Score	Post_Harvard_DSM_IV_Score	Followup_Harvard_DSM_IV_Score
Median	2.00	1.31	1.25

The Friedman test rejected the null hypothesis that the distribution of the Harvard Trauma DSM IV score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Harvard Trauma DSM IV score for the Acupuncture group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Harvard Trauma DSM IV score between three time points for the Acupuncture group is shown Figure 51.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Harvard_DSM_IV_Score-Post_Harvard_DSM_IV_Score	.133	.365	.365	.715	1.000
Followup_Harvard_DSM_IV_Score-Pre_Harvard_DSM_IV_Score	1.467	.365	4.017	.000	.000
Post_Harvard_DSM_IV_Score-Pre_Harvard_DSM_IV_Score	1.333	.365	3.651	.000	.001

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 51: Harvard Trauma DSM IV score: Post Hoc pairwise comparison (Acupuncture group).

The Friedman test showed the Harvard trauma DSM IV score was statistically significantly different at the different time points for Acupuncture group, $\chi2(2) = 24.67$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in Harvard trauma DSM IV score from pre-treatment (Mdn = 2.00) to post-treatment (Mdn = 1.31) ($p < 0.01$) and pre-treatment to 2-month follow-up (Mdn = 1.25) ($p < 0.01$), but not post-treatment and 2-month follow-up.

4.4.3.1.2 CBT Group

A Friedman test was performed on the CBT group for the Harvard Trauma DSM IV score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 58)
- Two-way ANOVA (Figure 52)
- The median score (Table 59) and
- Post Hoc pairwise comparison (Figure 53)

Table 58: Harvard Trauma DSM IV score: Friedman hypothesis test summary (CBT group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Harvard_DSM_IV_Score, Post_Harvard_DSM_IV_Score and Followup_Harvard_DSM_IV_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.006	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Harvard trauma DSM IV score at pre-treatment (2.83), post-treatment (2.17) and 2-month follow-up (1.00) phases is shown in Figure 52. The median of Harvard trauma DSM IV score at pre-treatment (2.51), post-treatment (2.56) and 2-month follow-up (1.78) phases is shown in Table 59.

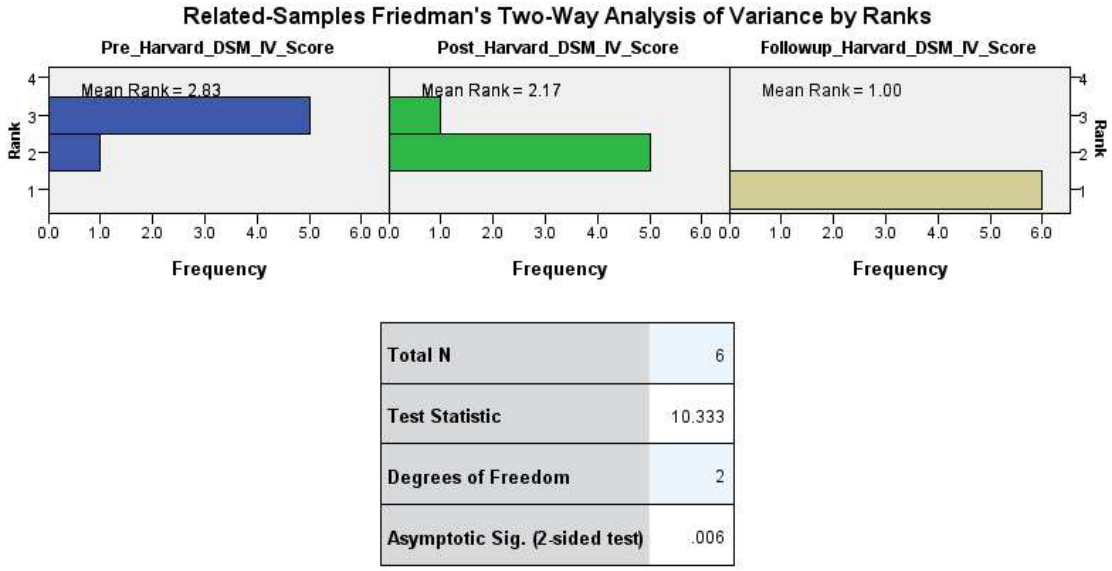


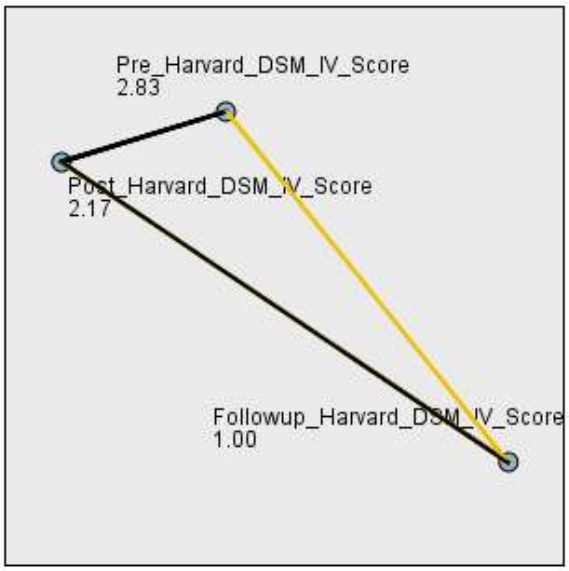
Figure 52: Harvard Trauma DSM IV score: two-way ANOVA (CBT group).

Table 59: Harvard Trauma DSM IV score: median (CBT group).

	Pre_Harvard_DSM_IV_ Score	Post_Harvard_DSM_IV_ Score	Followup_Harvard_DSM_IV_ Score
Median	2.51	2.26	1.78

The Friedman test rejected the null hypothesis that the distribution of the Harvard Trauma DSM IV score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Harvard Trauma DSM IV score for the CBT group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Harvard Trauma DSM IV score between three time points for the CBT group is shown Figure 53.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Harvard_DSM_IV_Score-Post_Harvard_DSM_IV_Score	1.167	.577	2.021	.043	.130
Followup_Harvard_DSM_IV_Score-Pre_Harvard_DSM_IV_Score	1.833	.577	3.175	.001	.004
Post_Harvard_DSM_IV_Score-Pre_Harvard_DSM_IV_Score	.667	.577	1.155	.248	.745

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 53: Harvard Trauma DSM IV score: Post Hoc pairwise comparison (CBT group).

The Friedman test showed the Harvard trauma DSM IV score was statistically significantly different at the different time points for CBT group, $\chi2(2) = 10.33$, $p = 0.01$. Post hoc analysis revealed statistically significant differences in Harvard trauma DSM IV score from pre-treatment (Mdn = 2.51) to 2-month follow-up (Mdn = 1.78) ($p < 0.01$) but not between pre-treatment and post-treatment (Mdn = 2.26), and not between post-treatment and 2-month follow-up.

4.4.3.1.3 Combined (Acupuncture & CBT) Group

A Friedman test was performed on the Combined (Acupuncture & CBT) group for the Harvard Trauma DSM IV score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 60)
- Two-way ANOVA (Figure 54)
- The median score (Table 61) and
- Post Hoc pairwise comparison (Figure 55)

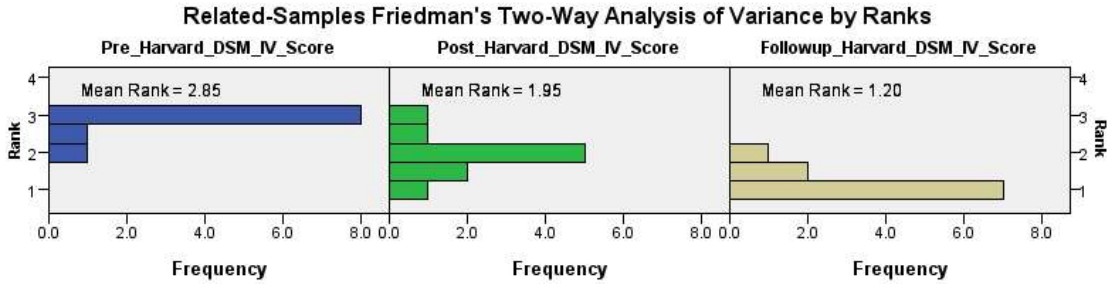
Table 60: Harvard Trauma DSM IV score: Friedman hypothesis test summary (Combined (Acupuncture & CBT) group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Harvard_DSM_IV_Score, Post_Harvard_DSM_IV_Score and Followup_Harvard_DSM_IV_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Harvard trauma DSM IV score at pre-treatment (2.85), post-treatment (1.95) and 2-month follow-up (1.20) phases is shown in Figure 54. The median of Harvard trauma DSM IV score at pre-treatment (2.54), post-treatment (1.63) and 2-month follow-up (1.60) phases is shown in Table 61.



Total N	10
Test Statistic	14.757
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.001

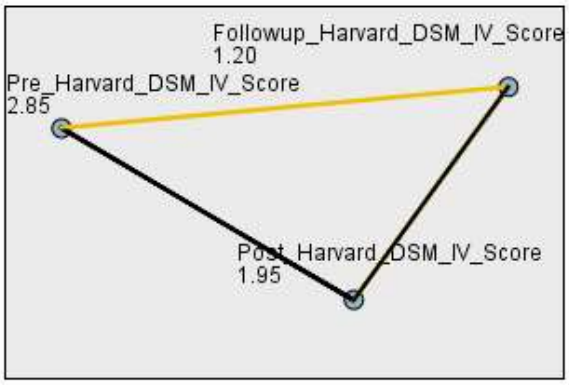
Figure 54: Harvard Trauma DSM IV score: two-way ANOVA (Combined (Acupuncture & CBT) group).

Table 61: Harvard Trauma DSM IV score: median (Combined (Acupuncture & CBT) group).

	Pre_Harvard_DSM_IV_ Score	Post_Harvard_DSM_IV_ Score	Followup_Harvard_DSM_IV_ Score
Median	2.54	1.63	1.60

The Friedman test rejected the null hypothesis that the distribution of the Harvard Trauma DSM IV score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Harvard Trauma DSM IV score for the Combined (Acupuncture & CBT) group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Harvard Trauma DSM IV score between three time points for the Combined (Acupuncture & CBT) group is shown Figure 55.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Harvard_DSM_IV_Score-Post_Harvard_DSM_IV_Score	.750	.447	1.677	.094	.281
Followup_Harvard_DSM_IV_Score-Pre_Harvard_DSM_IV_Score	1.650	.447	3.690	.000	.001
Post_Harvard_DSM_IV_Score-Pre_Harvard_DSM_IV_Score	.900	.447	2.012	.044	.133

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 55: Harvard Trauma DSM IV score: Post Hoc pairwise comparison (Combined (Acupuncture & CBT) group).

The Friedman test showed the Harvard trauma DSM IV score was statistically significantly different at the different time points for Acupuncture & CBT group, $\chi 2(2) = 14.76$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in Harvard trauma DSM IV score from pre-treatment (Mdn = 2.54) to 2-month follow-up (Mdn = 1.60) ($p < 0.01$), but not between pre-treatment and post-treatment (Mdn = 1.63), and not between post-treatment and 2-month follow-up.

4.4.4 Numeric Pain Scale

4.4.4.1 Pain Score

4.4.4.1.1 Acupuncture Group

A Friedman test was performed on the Acupuncture group for the Pain score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 62)
- Two-way ANOVA (Figure 56)
- The median score (Table 63) and
- Post Hoc pairwise comparison (Figure 57)

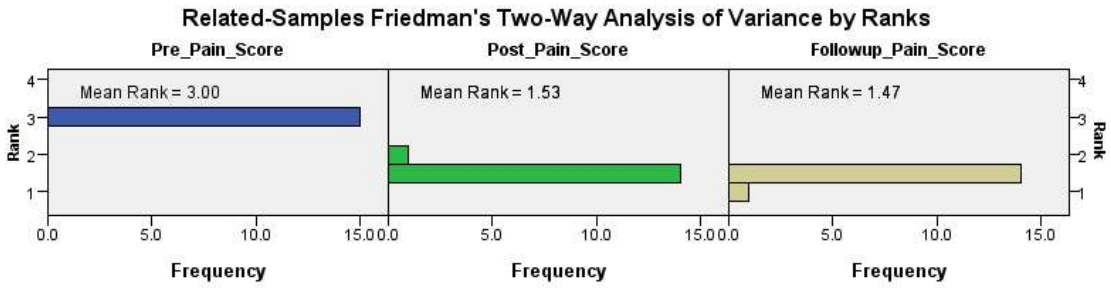
Table 62: Pain score: Friedman hypothesis test summary (Acupuncture group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Pain_Score, Post_Pain_Score and Followup_Pain_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Pain score at pre-treatment (3.00), post-treatment (1.53) and 2-month follow-up (1.47) phases is shown in Figure 56. The median of Pain score at pre-treatment (9.00), post-treatment (3.00) and 2-month follow-up (3.00) phases is shown in Table 63.



Total N	15
Test Statistic	29.391
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.000

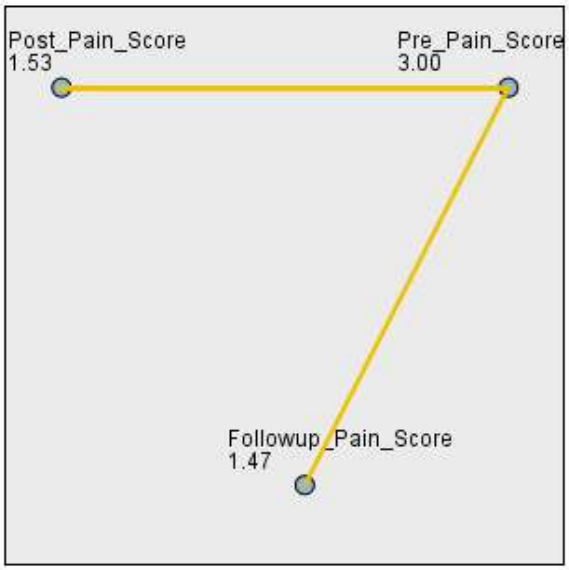
Figure 56: Pain score: two-way ANOVA (Acupuncture group).

Table 63: Pain score: median (Acupuncture group).

	Pre_Pain_Score	Post_Pain_Score	Followup_Pain_Score
Median	9.00	3.00	3.00

The Friedman test rejected the null hypothesis that the distribution of the Pain score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Pain score for the Acupuncture group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Pain score between three time points for the Acupuncture group is shown Figure 57.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Followup_Pain_Score-Post_Pain_Score	.067	.365	.183	.855	1.000
Followup_Pain_Score-Pre_Pain_Score	1.533	.365	4.199	.000	.000
Post_Pain_Score-Pre_Pain_Score	1.467	.365	4.017	.000	.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 57: Pain score: Post Hoc pairwise comparison (Acupuncture group).

The Friedman test showed the Pain score was statistically significantly different at the different time points for Acupuncture group, $\chi 2(2) = 29.39$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in Pain score from pre-treatment (Mdn = 9.00) to post-treatment (Mdn = 3.00) ($p < 0.01$) and pre-treatment to 2-month follow-up (Mdn = 3.00) ($p < 0.01$), but not post-treatment and 2-month follow-up.

4.4.4.1.2 CBT Group

A Friedman test was performed on the CBT group for the Pain score and compared the within the group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up phases. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 64)
- the two-way ANOVA (Figure 58)
- the median score (Table 65)

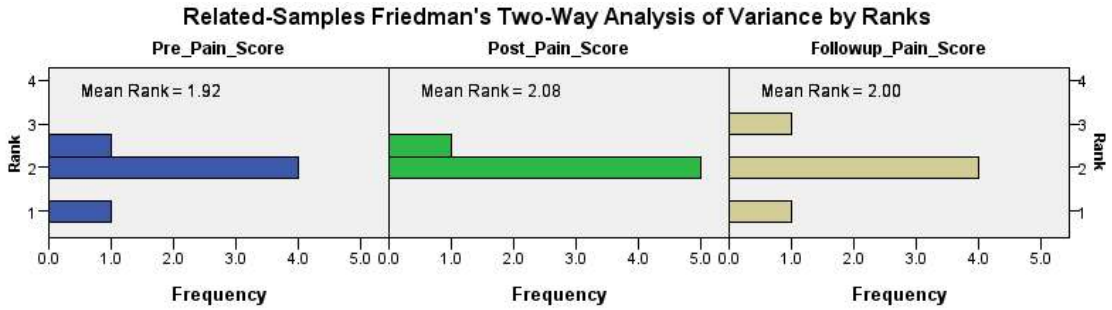
Table 64: Pain score: Friedman Hypothesis test summary (CBT group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Pain_Score, Post_Pain_Score and Followup_Pain_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.867	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Pain score at pre-treatment (1.92), post-treatment (2.08) and 2-month follow-up (2.00) phases is shown in Figure 58. The median of Pain score at pre-treatment (7.50), post-treatment (8.00) and 2-month follow-up (8.00) phases is shown in Table 65.



Total N	6
Test Statistic	.286
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.867

1. Multiple comparisons are not performed because the overall test retained the null hypothesis of no differences.

Figure 58: Pain score: two-way ANOVA (CBT group).

Table 65: Pain score: median (CBT group).

	Pre_Pain_Score	Post_Pain_Score	Followup_Pain_Score
Median	7.50	8.00	8.00

The Friedman test did not reject the null hypothesis that the distribution of the Pain score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was no statistically significant difference between the three time points for the Pain score for the CBT group.

The Pain score was not statistically significantly different at the different time points for CBT group. Pain score in the CBT group was slightly higher at post-treatment (Mdn = 8.00) and 2-month follow-up (Mdn = 8.00) phases than at pre-treatment (Mdn = 7.5) phase, but the differences were not statistically significant, $\chi 2(2) = 0.29$, $p = 0.87$. Hence, a post hoc analysis was not required.

4.4.4.1.3 Combined (Acupuncture & CBT) Group

A Friedman test was performed on the Combined (Acupuncture & CBT) group for the Pain score and compared the within group scores at three different points of time: pre-treatment, post-treatment and 2-month follow-up. The results are shown below:

- The hypothesis test summary of the Friedman test at three different time points (pre-treatment, post-treatment and 2-month follow-up) (Table 66)
- Two-way ANOVA (Figure 59)
- The median score (Table 67) and
- Post Hoc pairwise comparison (Figure 60)

Table 66: Pain score: Friedman hypothesis test summary (Combined (Acupuncture & CBT) group).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distributions of Pre_Pain_Score, Post_Pain_Score and Followup_Pain_Score are the same.	Related-Samples Friedman's Two-Way Analysis of Variance by Ranks	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The mean rank of Pain score at pre-treatment (2.90), post-treatment (1.50) and 2-month follow-up (1.60) phases is shown in Figure 59. The median of Pain score at pre-treatment (8.50), post-treatment (2.00) and 2-month follow-up (2.00) phases is shown in Table 67.

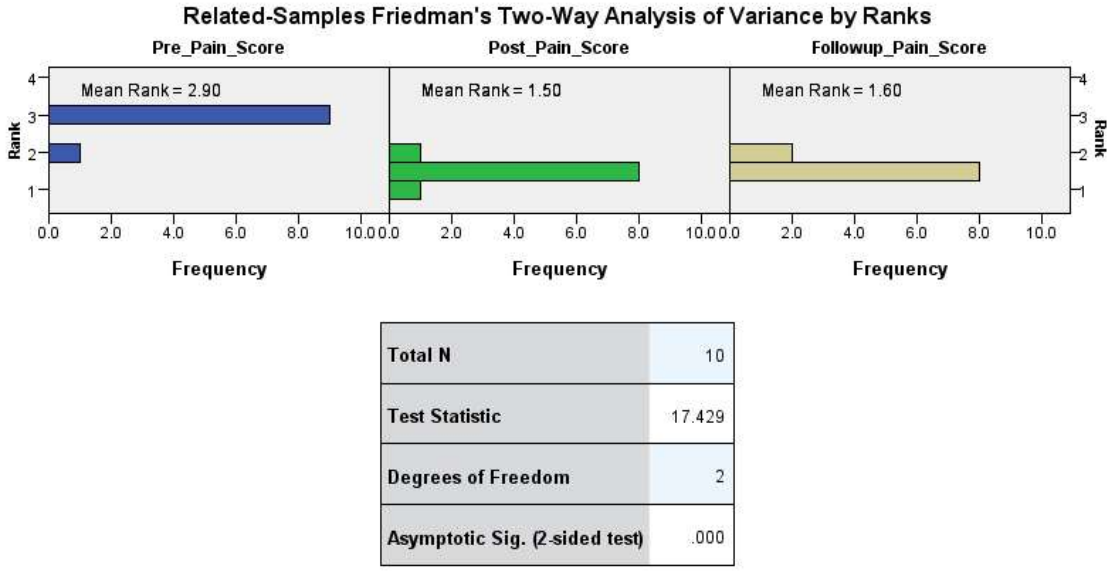


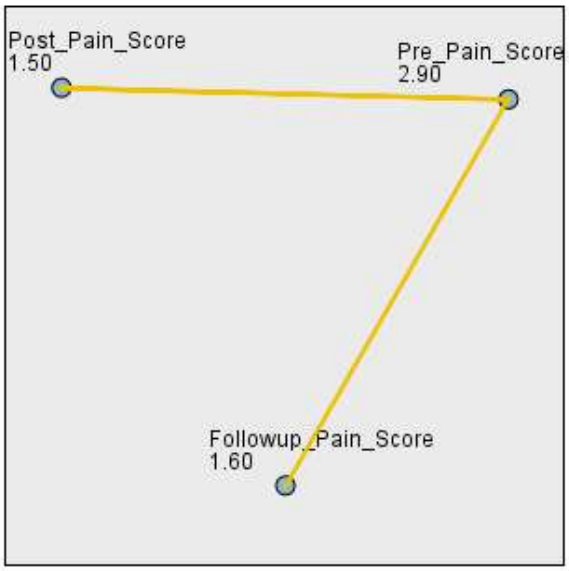
Figure 59: Pain score: two-way ANOVA (Combined (Acupuncture & CBT) group).

Table 67: Pain score: median (Combined (Acupuncture & CBT) group).

	Pre_Pain_Score	Post_Pain_Score	Followup_Pain_Score
Median	8.50	2.00	2.00

The Friedman test rejected the null hypothesis that the distribution of the Pain score at pre-treatment, post-treatment and 2-month follow-up are the same. The result indicated that there was statistically significant between the three time points for the Pain score for the Combined (Acupuncture & CBT) group. A post hoc analysis was required to determine where the differences occurred. The post hoc test pairwise comparisons of the mean rank of Pain score between three time points for the Combined (Acupuncture & CBT) group is shown Figure 60.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Post_Pain_Score-Followup_Pain_Score	-.100	.447	-.224	.823	1.000
Post_Pain_Score-Pre_Pain_Score	1.400	.447	3.130	.002	.005
Followup_Pain_Score-Pre_Pain_Score	1.300	.447	2.907	.004	.011

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 60: Pain score: Post Hoc pairwise comparison (Combined (Acupuncture & CBT) group).

The Friedman test showed the Pain score was statistically significantly different at the different time points for Acupuncture & CBT group, $\chi 2(2) = 17.43$, $p < 0.01$. Post hoc analysis revealed statistically significant differences in Pain score from pre-treatment (Mdn = 8.50) to post-treatment (Mdn = 2.00) ($p = 0.01$) and pre-treatment to 2-month follow-up (Mdn = 2.00) ($p = 0.01$), but not post-treatment and 2-month follow-up.

4.5 Between Groups Comparisons

A between groups comparison was undertaken using a Kruskal-Wallis H test or one-way ANOVA on ranks to determine if there were any statistically significant differences of an independent variable between the groups. The Kruskal-Wallis H test is an omnibus statistic and only determine if a difference exists between groups. Where the test rejected the null hypothesis, post hoc tests using a Bonferroni correction was used to determine which of the groups differed from the others. This test was deemed appropriate as these data met the four basic assumptions for using a Kruskal-Wallis H test, i.e.

- The dependant variable is measured at the ordinal or continuous level
- The independent variable consists of two or more categorical, independent groups
- There is independence of observations with no relationship between the observations in each group or between the groups
- Does not assume normality of data i.e. the distribution of scores for each group was variable, and thus only mean ranks could be compared (rather than the median scores)

The results for each of the outcomes measures is presented below.

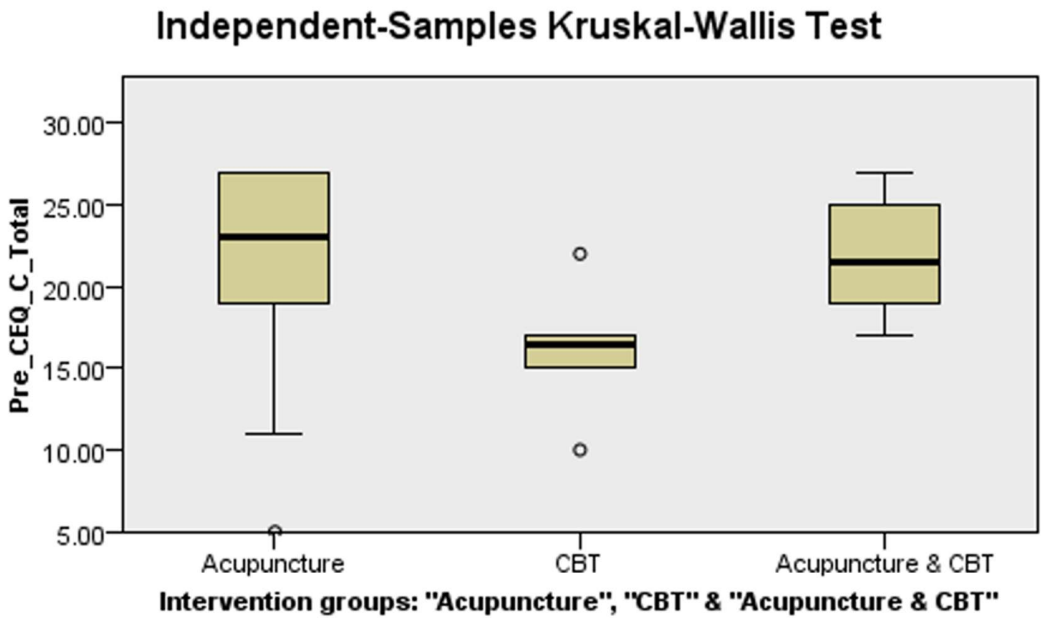
4.5.1 Credibility and Expectancy Questionnaire

4.5.1.1 Credibility Total Score: Pre-treatment

Distributions of the credibility total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 61. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the credibility total score in the pre-treatment phase in one group was higher or lower than the credibility total score in other groups. The results shown as shown below include the:

- Box plot of distribution of credibility total scores (Figure 61)
- median score (Table 68)

- mean rank (Table 69)
- hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment credibility total scores between the three groups (Table 70); and
- post hoc pairwise comparison (Figure 62)



Total N	31
Test Statistic	6.849
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.033

1. The test statistic is adjusted for ties.

Figure 61: Boxplot of pre-treatment Credibility total score distribution (all groups).

The median of the credibility total scores (Acupuncture: 23.00, CBT: 16.50, and Combined (Acupuncture & CBT): 21.50) in the pre-treatment phase is shown in Table 68. The mean ranks of credibility total scores (Acupuncture: 18.23, CBT: 7.33, and Combined (Acupuncture & CBT): 17.85) in the pre-treatment phase is shown in Table 69.

Table 68: Pre-treatment Credibility total scores - group median scores.

	Intervention groups:	Median	N
Pre_CEQ_C_Total	Acupuncture	23.00	15
	CBT	16.50	6
	Acupuncture & CBT	21.50	10
	Total	21.00	31

Table 69: Pre-treatment Credibility total scores - group mean rank.

	Intervention groups:	Mean Rank	N
Pre_CEQ_C_Total	Acupuncture	18.23	15
	CBT	7.33	6
	Acupuncture & CBT	17.85	10
	Total		31

The Kruskal-Wallis H test on the credibility total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase is shown in Table 70. The test rejected the null hypothesis that the distribution of the credibility total score is same across all three intervention groups.

Table 70: Pre-treatment Credibility total score Kruskal-Wallis H Hypothesis test summary (all groups).

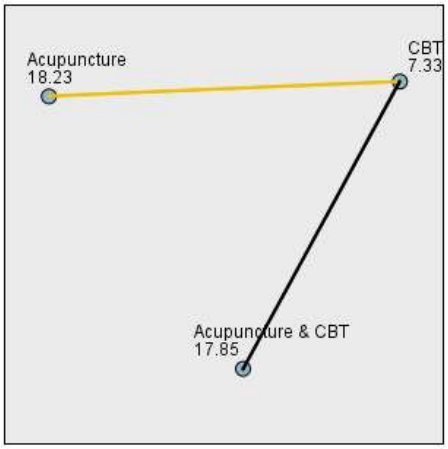
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre_CEQ_C_Total is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.033	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of credibility total score in the pre-treatment phase were statistically significantly different between groups, H(2) = 6.85, p = 0.03 or $\chi^2(2) = 6.85$, p = 0.03. Consequently, a post hoc analysis as seen in Figure 62 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
CBT-Acupuncture & CBT	-10.517	4.668	-2.253	.024	.073
CBT-Acupuncture	10.900	4.367	2.496	.013	.038
Acupuncture & CBT-Acupuncture	.383	3.690	.104	.917	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

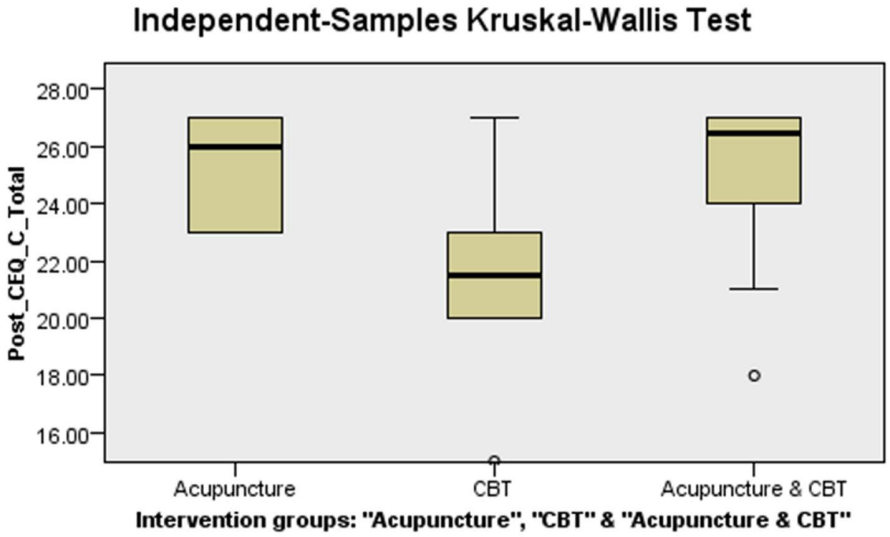
Figure 62: Pre-treatment Credibility total score Post hoc test (all groups).

The post hoc test analysis revealed the Acupuncture group (18.23) ($p = 0.04$) having higher credibility than the CBT group (7.33) was statistically significant in the pre-treatment phase. There was no statistically significant difference in credibility total scores in the pre-treatment phase between CBT and Combined (Acupuncture & CBT) groups, and between Acupuncture and Combined (Acupuncture & CBT) groups. The post hoc test pairwise comparisons of the mean rank of credibility total scores in the pre-treatment phase is shown in Figure 62.

4.5.1.2 Credibility Total Score: Post-treatment

Distributions of the credibility total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 63. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the credibility total score in the post-treatment phase in one group is higher or lower than credibility total score in other groups. The results as shown below include the:

- Box plot of distribution of credibility total scores (Figure 63)
- median score (Table 71)
- mean rank (Table 72) ; and hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment credibility total scores between the three groups (Table 73)



Total N	31
Test Statistic	5.546
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.062

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 63: Boxplot of post-treatment credibility total score distribution (all groups).

The median of the credibility total scores (Acupuncture: 26.00, CBT: 21.50, and Combined (Acupuncture & CBT): 26.50) in the post-treatment phase is shown in Table 71. The mean ranks of credibility total scores (Acupuncture: 17.77, CBT: 8.50, and Combined (Acupuncture & CBT): 17.85) in the post-treatment phase is shown in Table 72.

Table 71: Post-treatment credibility total scores – group median scores.

	Intervention groups:	Median	N
Post_CEQ_C_Total	Acupuncture	26.00	15
	CBT	21.50	6
	Acupuncture & CBT	26.50	10
	Total	24.00	31

Table 72: Post-treatment credibility total scores – group mean rank.

	Intervention groups:	Mean Rank	N
Post_CEQ_C_Total	Acupuncture	17.77	15
	CBT	8.50	6
	Acupuncture & CBT	17.85	10
	Total		31

The Kruskal-Wallis H test on the credibility total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 73. The test did not reject the null hypothesis that the distribution of the credibility total score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 73: Post-treatment credibility total score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Post_CEQ_C_Total is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.062	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

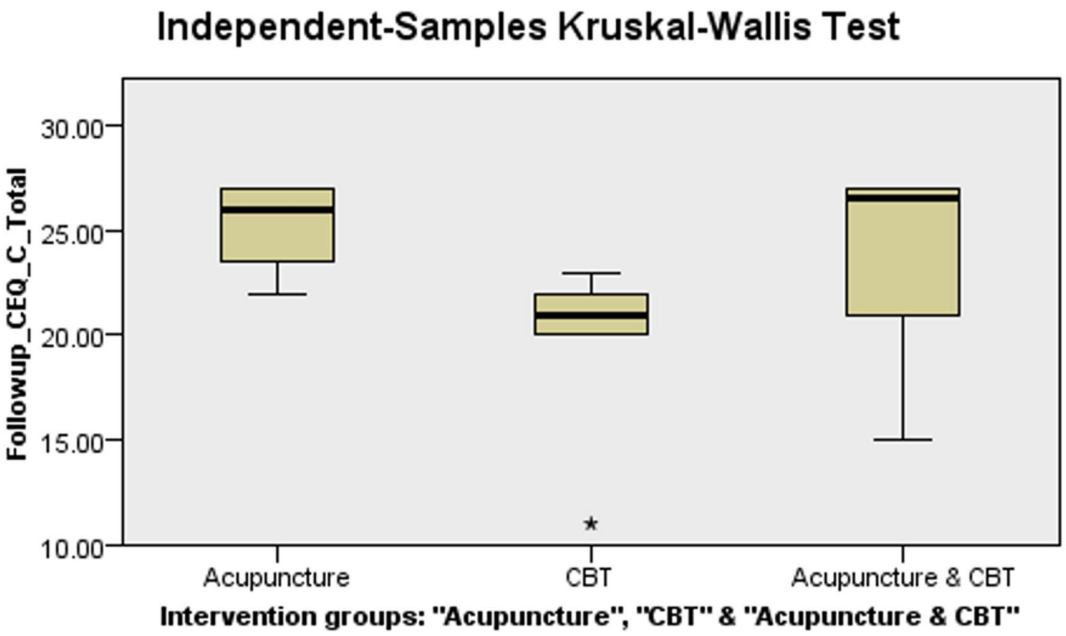
The distribution post-treatment credibility total scores showed the mean ranks were higher in both Acupuncture (17.77) and Combined (Acupuncture & CBT) (17.85) groups than in CBT (8.50) group in the post-treatment phase but the differences were not statistically significant, $H(2) = 5.55$, $p = 0.06$ or $\chi2(2) = 5.55$, $p = 0.06$.

4.5.1.3 Credibility Total Score: 2-month Follow-up

Distributions of the credibility total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase, as assessed by visual inspection of a boxplot shown in Figure 64. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the credibility total score in the 2-month follow-up phase in one group was higher or lower than the credibility total score in other groups. The results shown as shown below include the:

- Box plot of distribution of credibility total scores (Figure 64)

- median score (Table 74)
- mean rank (Table 75)
- hypothesis test summary for the Kruskal-Wallis H test on the 2-month follow-up credibility total scores between the three groups (Table 76); and
- post hoc pairwise comparison (Figure 65)



Total N	31
Test Statistic	9.969
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.007

1. The test statistic is adjusted for ties.

Figure 64: Boxplot of 2-month follow-up Credibility total score distribution (all groups).

The median of the credibility total scores (Acupuncture: 26.00, CBT: 21.00, and Combined (Acupuncture & CBT): 26.50) in the 2-month follow-up phase is shown in Table 74. The mean ranks of credibility total scores (Acupuncture: 19.07, CBT: 5.92, and Combined (Acupuncture & CBT): 17.45) in the 2-month follow-up phase is shown in Table 75.

Table 74: 2-month follow-up Credibility total scores - group median scores.

	Intervention groups	Median	N
Followup_CEQ_C_Total	Acupuncture	26.00	15
	CBT	21.00	6
	Acupuncture & CBT	26.50	10
	Total	24.00	31

Table 75: 2-month follow-up Credibility total scores - group mean rank.

	Intervention groups	Mean Rank	N
Followup_CEQ_C_Total	Acupuncture	19.07	15
	CBT	5.92	6
	Acupuncture & CBT	17.45	10
	Total		31

The Kruskal-Wallis H test on the credibility total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase is shown in Table 76. The test rejected the null hypothesis that the distribution of the credibility total score is same across all three intervention groups.

Hypothesis Test Summary

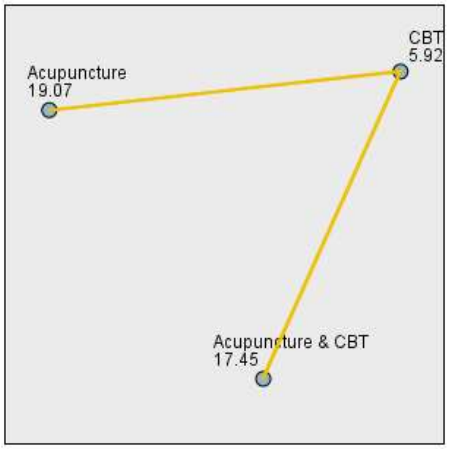
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Followup_CEQ_C_Total is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.007	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 76: 2-month follow-up Credibility total score Kruskal-Wallis H Hypothesis test summary (all groups).

The distributions of credibility total score in the 2-month follow-up phase were statistically significantly different between groups, H(2) = 9.97, p = 0.01 or $\chi^2(2) = 9.97$, p = 0.01. Consequently a post hoc analysis as seen in Figure 65 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
CBT-Acupuncture & CBT	-11.533	4.545	-2.538	.011	.033
CBT-Acupuncture	13.150	4.251	3.093	.002	.006
Acupuncture & CBT-Acupuncture	1.617	3.593	.450	.653	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

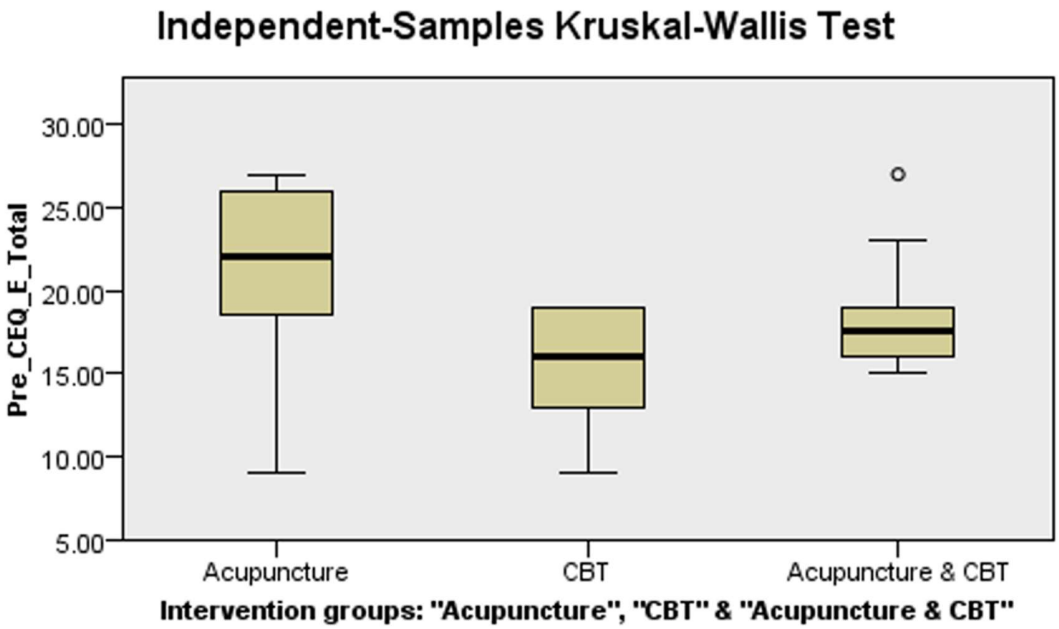
Figure 65: 2-month follow-up Credibility total score Post hoc test (all groups).

The post hoc test analysis revealed the Acupuncture group (19.07) ($p = 0.01$) had statistically significantly higher credibility total score than the CBT group (5.92) in the 2-month follow-up phase. It also revealed the Combined (Acupuncture & CBT) group (17.45) ($p = 0.03$) had statistically significantly higher credibility total score than the CBT group (5.92) in the 2-month follow-up phase. There was no statistically significant difference in credibility total scores in the 2-month follow-up phase between Acupuncture and Combined (Acupuncture & CBT) groups. The post hoc test pairwise comparisons of the mean rank of credibility total scores in the 2-month follow-up phase is shown in Figure 65.

4.5.1.4 Expectancy Total Score: Pre-treatment

Distributions of the expectancy total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 66. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the expectancy total score in the pre-treatment phase in one group was higher or lower than the expectancy total score in other groups. The results shown as shown below include the:

- Box plot of distribution of expectancy total scores (Figure 66)
- median score (Table 77)
- mean rank (Table 78)
- hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment expectancy total scores between the three groups (Table 79); and
- post hoc pairwise comparison (Figure 67)



Total N	31
Test Statistic	6.526
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.038

1. The test statistic is adjusted for ties.

Figure 66: Boxplot of pre-treatment Expectancy total score distribution (all groups).

The median of expectancy total scores (Acupuncture: 22.00, CBT: 16.00, and Combined (Acupuncture & CBT): 17.50) in the pre-treatment phase is shown in Table 77. The mean ranks of expectancy total scores (Acupuncture: 19.83, CBT: 9.08, and Combined (Acupuncture & CBT): 14.40) in the pre-treatment phase is shown in Table 78.

Table 77: Pre-treatment Expectancy total scores - group median scores.

	Intervention groups	Median	N
Pre_CEQ_E_Tota	Acupuncture	22.00	15
	CBT	16.00	6
	Acupuncture & CBT	17.50	10
	Total	19.00	31

Table 78: Pre-treatment Expectancy total scores - group mean rank.

	Intervention groups	Mean Rank	N
Pre_CEQ_E_Total	Acupuncture	19.83	15
	CBT	9.08	6
	Acupuncture & CBT	14.40	10
	Total		31

The Kruskal-Wallis H test on the expectancy total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase is shown in Table 79. The test rejected the null hypothesis that the distribution of the expectancy total score is same across all three intervention groups.

Hypothesis Test Summary

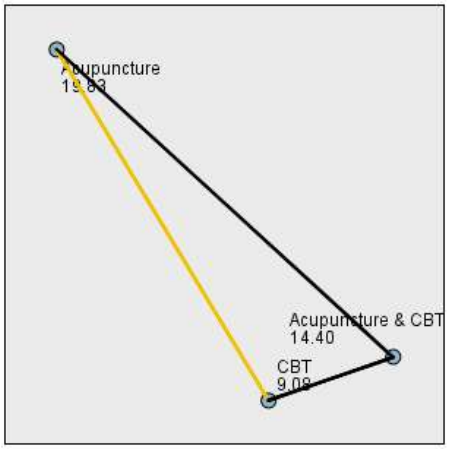
	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre_CEQ_E_Total is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.038	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Table 79: Pre-treatment Expectancy total score Kruskal-Wallis H Hypothesis test summary (all groups).

The distributions of expectancy total score in the pre-treatment phase were statistically significantly different between groups, H(2) = 6.53, p = 0.04 or $\chi^2(2) = 6.53$, p = 0.04. Consequently a post hoc analysis as seen in Figure 67 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
CBT-Acupuncture & CBT	-5.317	4.667	-1.139	.255	.764
CBT-Acupuncture	10.750	4.366	2.462	.014	.041
Acupuncture & CBT-Acupuncture	5.433	3.690	1.473	.141	.423

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

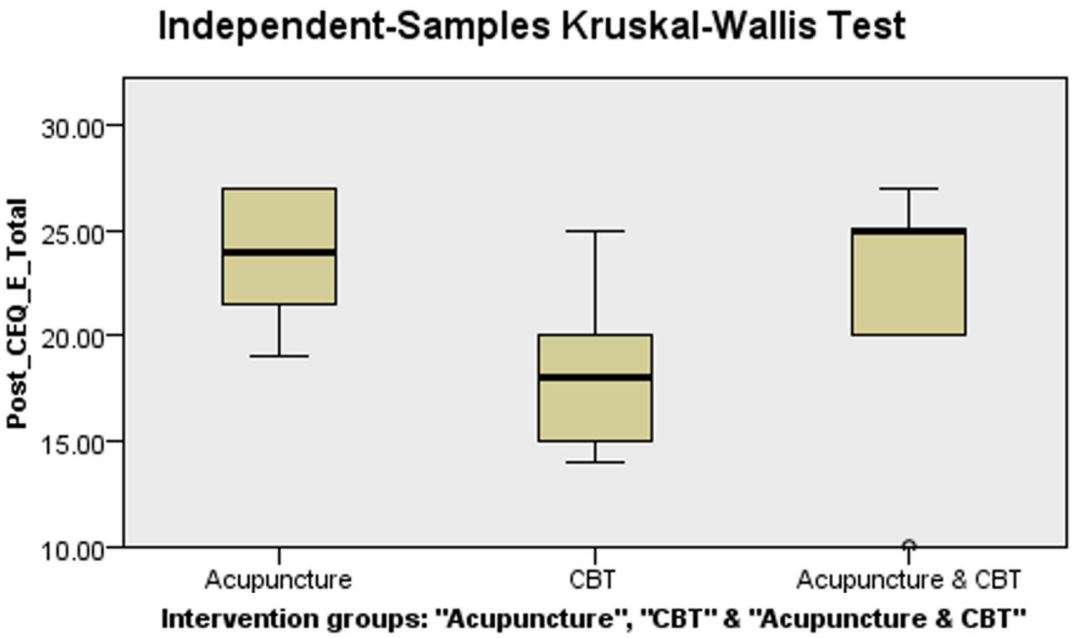
Figure 67: Pre-treatment Expectancy total score Post hoc test (all groups).

The post hoc test analysis revealed the Acupuncture group (19.83) ($p = 0.04$) had statistically significantly higher expectancy total score than the CBT group (9.08) in the pre-treatment phase. There was no statistically significant difference in expectancy total scores in the pre-treatment phase between CBT and Combined (Acupuncture & CBT) groups, and between Acupuncture and Combined (Acupuncture & CBT) groups. The post hoc test pairwise comparisons of the mean rank of expectancy total scores in the pre-treatment phase is shown in Figure 67.

4.5.1.5 Expectancy Total Score: Post-treatment

Distributions of the expectancy total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 68. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the expectancy total score in the post-treatment phase in one group was higher or lower than the expectancy total score in other groups. The results shown as shown below include the:

- Box plot of distribution of expectancy total scores (Figure 68)
- median score (Table 80)
- mean rank (Table 81)
- hypothesis test summary for the Kruskal-Wallis H test on the post-treatment expectancy total scores between the three groups (Table 82); and
- post hoc pairwise comparison (Figure 69)



Total N	31
Test Statistic	7.132
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.028

1. The test statistic is adjusted for ties.

Figure 68: Boxplot of post-treatment Expectancy total score distribution (all groups).

The median of expectancy total scores (Acupuncture: 24.00, CBT: 18.00, and Combined (Acupuncture & CBT): 25.00) in the post-treatment phase is shown in Table 80. The mean ranks of expectancy total scores (Acupuncture: 18.93, CBT: 7.42, and Combined (Acupuncture & CBT): 16.75) in the post-treatment phase is shown in Table 81.

Table 80: Post-treatment Expectancy total scores - group median scores.

	Intervention groups	Median	N
Post_CEQ_E_Total	Acupuncture	24.00	15
	CBT	18.00	6
	Acupuncture & CBT	25.00	10
	Total	24.00	31

Table 81: Post-treatment Expectancy total scores - group mean rank.

	Intervention groups	Mean Rank	N
Post_CEQ_E_Total	Acupuncture	18.93	15
	CBT	7.42	6
	Acupuncture & CBT	16.75	10
	Total		31

The Kruskal-Wallis H test on the expectancy total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 82. The test rejected the null hypothesis that the distribution of the expectancy total score is same across all three intervention groups.

Table 82: Post-treatment Expectancy total score Kruskal-Wallis H Hypothesis test summary (all groups).

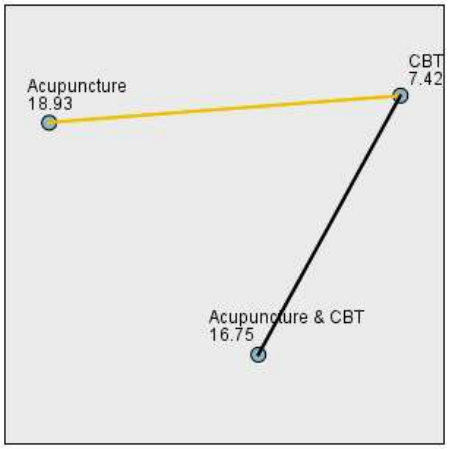
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Post_CEQ_E_Total is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.028	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of expectancy total score in the post-treatment phase were statistically significantly different between groups, $H(2) = 7.13$, $p = 0.03$ or $\chi^2(2) = 7.13$, $p = 0.03$. Consequently a post hoc analysis as seen in Figure 69 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
CBT-Acupuncture & CBT	-9.333	4.644	-2.010	.044	.133
CBT-Acupuncture	11.517	4.344	2.651	.008	.024
Acupuncture & CBT-Acupuncture	2.183	3.671	.595	.552	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

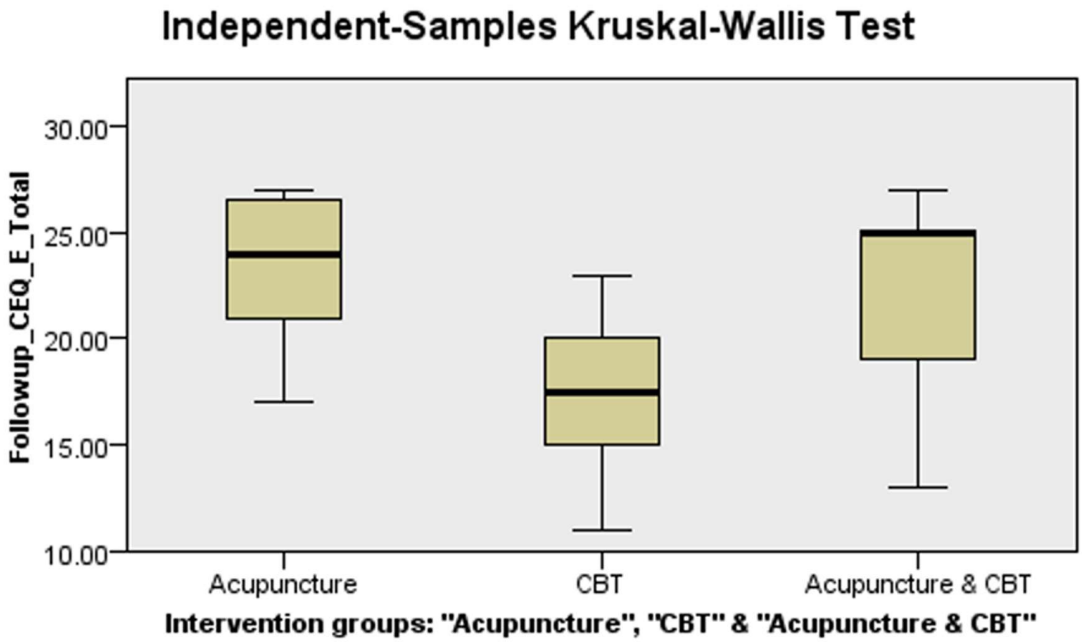
Figure 69: Post-treatment Expectancy total score Post hoc test (all groups).

The post hoc test analysis revealed the Acupuncture group (18.93) ($p = 0.02$) had statistically significantly higher expectancy total score than the CBT group (7.42) in the post-treatment. There was no statistically significant difference in expectancy total scores in the post-treatment phase between CBT and Combined (Acupuncture & CBT) treatment intervention groups, and between Acupuncture and Combined (Acupuncture & CBT) treatment intervention groups. The post hoc test pairwise comparisons of the mean rank of expectancy total scores in the post-treatment phase is shown in Figure 69.

4.5.1.6 Expectancy Total Score: 2-month Follow-up

Distributions of the expectancy total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase, as assessed by visual inspection of a boxplot shown in Figure 70. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the expectancy total score in the 2-month follow-up phase in one group was higher or lower than the expectancy total score in other groups. The results shown as shown below include the:

- Box plot of distribution of expectancy total scores (Figure 70)
- median score (Table 83)
- mean rank (Table 84)
- hypothesis test summary for the Kruskal-Wallis H test on the 2-month follow-up expectancy total scores between the three groups (Table 85); and
- post hoc pairwise comparison (Figure 71)



Total N	31
Test Statistic	7.128
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.028

1. The test statistic is adjusted for ties.

Figure 70: Boxplot of 2-month follow-up Expectancy total score distribution (all groups).

The median of expectancy total scores (Acupuncture: 24.00, CBT: 17.50, and Combined (Acupuncture & CBT): 25.00) in the 2-month follow-up phase is shown in Table 83. The mean ranks of expectancy total scores (Acupuncture: 18.87, CBT: 7.33, and Combined (Acupuncture & CBT): 16.90) in the 2-month follow-up phase is shown in Table 84.

Table 83: 2-month follow-up Expectancy total scores - group median scores.

	Intervention groups	Median	N
Followup_CEQ_E_Total	Acupuncture	24.00	15
	CBT	17.50	6
	Acupuncture & CBT	25.00	10
	Total	23.00	31

Table 84: 2-month follow-up Expectancy total scores - group mean rank.

	Intervention groups	Mean Rank	N
Followup_CEQ_E_Total	Acupuncture	18.87	15
	CBT	7.33	6
	Acupuncture & CBT	16.90	10
	Total		31

The Kruskal-Wallis H test on the expectancy total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase is shown in Table 85. The test rejected the null hypothesis that the distribution of the expectancy total score is same across all three intervention groups.

Table 85: 2-month follow-up Expectancy total score Kruskal-Wallis H Hypothesis test summary (all groups).

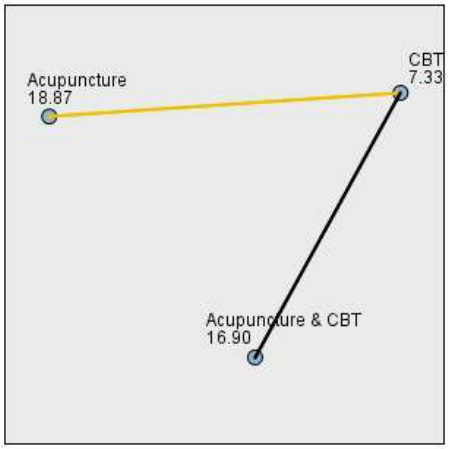
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Followup_CEQ_E_Total is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.028	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of expectancy total score in the 2-month follow-up phase were statistically significantly different between groups, $H(2) = 7.13$, $p = 0.03$ or $\chi^2(2) = 7.13$, $p = 0.03$. Consequently a post hoc analysis as seen in Figure 71 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
CBT-Acupuncture & CBT	-9.567	4.666	-2.050	.040	.121
CBT-Acupuncture	11.533	4.365	2.642	.008	.025
Acupuncture & CBT-Acupuncture	1.967	3.689	.533	.594	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 71: 2-month follow-up Expectancy total score Post hoc test (all groups).

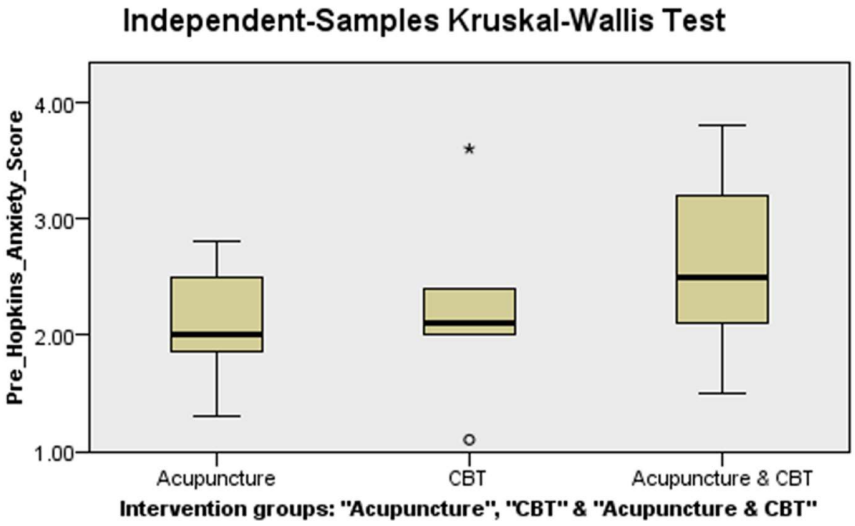
The post hoc test analysis revealed the Acupuncture group (18.87) ($p = 0.03$) had statistically significantly higher expectancy total score than the CBT group (7.33) in the 2-month follow-up phase. There was no statistically significant difference in expectancy total scores in the 2-month follow-up phase between CBT and Combined (Acupuncture & CBT) treatment intervention groups, and between Acupuncture and Combined (Acupuncture & CBT) treatment intervention groups. The post hoc test pairwise comparisons of the mean rank of expectancy total scores in the 2-month follow-up phase is shown in Figure 71.

4.5.2 Hopkins Symptoms Check List 25 (HSCL-25)

4.5.2.1 Hopkins Anxiety Score: Pre-treatment

Distributions of the Hopkins Anxiety score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 72. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Hopkins Anxiety score in the pre-treatment phase in one group is higher or lower than Hopkins Anxiety score in other groups. The results as shown below include the:

- Box plot of distribution of Hopkins Anxiety scores (Figure 72)
- median score (Table 86)
- mean rank (Table 87); and
- hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment Hopkins Anxiety scores between the three groups (Table 88)



Total N	31
Test Statistic	3.295
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.192

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 72: Boxplot of pre-treatment Hopkins Anxiety score distribution (all groups).

The median of Hopkins anxiety score (Acupuncture: 2.00, CBT: 2.10, and Combined (Acupuncture & CBT): 2.50) in the pre-treatment phase is shown in Table 86. The mean ranks of Hopkins anxiety score (Acupuncture: 13.40, CBT: 15.67, and Combined (Acupuncture & CBT): 20.10) in the pre-treatment phase is shown in Table 87.

Table 86: Pre-treatment Hopkins Anxiety scores - group median scores.

	Intervention groups	Median	N
Pre_Hopkins_Anxiety_Score	Acupuncture	2.00	15
	CBT	2.10	6
	Acupuncture & CBT	2.50	10
	Total	2.10	31

Table 87: Pre-treatment Hopkins Anxiety scores - group mean rank.

	Intervention groups	Mean Rank	N
Pre_Hopkins_Anxiety_Score	Acupuncture	13.40	15
	CBT	15.67	6
	Acupuncture & CBT	20.10	10
	Total		31

The Kruskal-Wallis H test on the Hopkins Anxiety score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 88. The test did not reject the null hypothesis that the distribution of the Hopkins Anxiety score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 88: Pre-treatment Hopkins Anxiety score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre_Hopkins_Anxiety_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.192	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

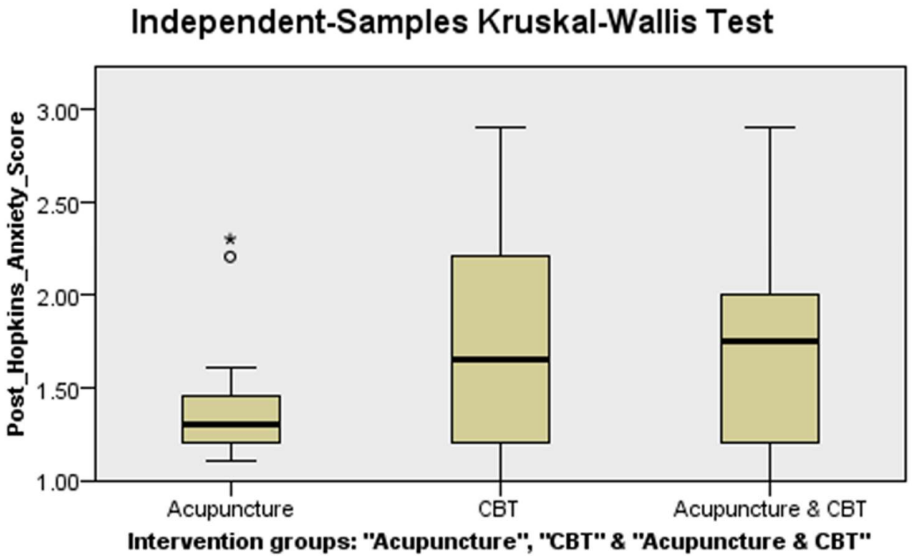
The distribution post-treatment Hopkins Anxiety scores showed the mean ranks were lower in both CBT (15.67) and Acupuncture (13.40) groups than in Combined (Acupuncture & CBT) (20.10) group in the pre-treatment phase but the differences were not statistically significant, H(2) = 3.30, p = 0.19 or $\chi^2(2) = 3.30$, p = 0.19.

4.5.2.2 Hopkins Anxiety Score: Post-treatment

Distributions of the Hopkins Anxiety score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 73. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Hopkins Anxiety score in the post-treatment phase in one group is higher or lower than Hopkins Anxiety score in other groups. The results as shown below include the:

- Box plot of distribution of Hopkins Anxiety scores (Figure 73)
- median score (Table 89)

- mean rank (Table 90); and
- hypothesis test summary for the Kruskal-Wallis H test on the post-treatment Hopkins Anxiety scores between the three groups (Table 91)



Total N	31
Test Statistic	1.255
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.534

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 73: Boxplot of post-treatment Hopkins Anxiety score distribution (all groups).

The median of Hopkins anxiety score (Acupuncture: 1.30, CBT: 1.65, and Combined (Acupuncture & CBT): 1.75) in the post-treatment phase is shown in Table 89. The mean ranks of Hopkins anxiety score (Acupuncture: 14.13, CBT: 17.67, and Combined (Acupuncture & CBT): 17.80) in the post-treatment phase is shown in Table 90.

Table 89: Post-treatment Hopkins Anxiety scores - group median scores.

	Intervention groups	Median	N
Post_Hopkins_Anxiety_Score	Acupuncture	1.30	15
	CBT	1.65	6
	Acupuncture & CBT	1.75	10
	Total	1.30	31

Table 90: Post-treatment Hopkins Anxiety scores - group mean rank.

	Intervention groups	Mean Rank	N
Post_Hopkins_Anxiety_Score	Acupuncture	14.13	15
	CBT	17.67	6
	Acupuncture & CBT	17.80	10
	Total		31

The Kruskal-Wallis H test on the Hopkins Anxiety score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 91. The test did not reject the null hypothesis that the distribution of the Hopkins Anxiety score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 91: Post-treatment Hopkins Anxiety score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Post_Hopkins_Anxiety_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.534	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

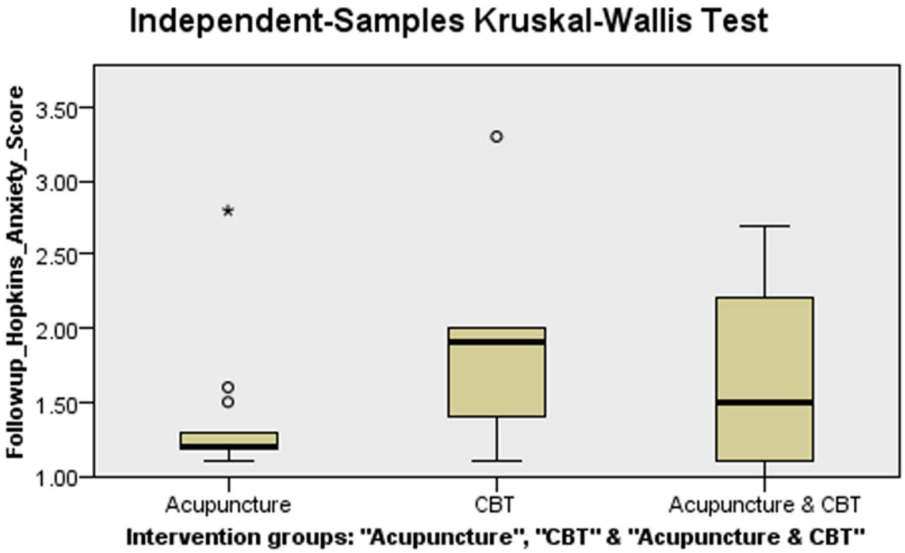
The distribution post-treatment Hopkins Anxiety scores showed the mean ranks were lower in Acupuncture (14.13) group than in both CBT (17.67) and Combined (Acupuncture & CBT) (17.80) groups in the post-treatment phase but the differences were not statistically significant, $H(2) = 1.26$, $p = 0.53$ or $\chi2(2) = 1.26$, $p = 0.53$.

4.5.2.3 Hopkins Anxiety Score: 2-month Follow-up

Distributions of the Hopkins Anxiety score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase, as assessed by visual inspection of a boxplot shown in Figure 74. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Hopkins Anxiety score in the 2-month follow-up phase in one group is higher or lower than Hopkins Anxiety score in other groups. The results as shown below include the:

- Box plot of distribution of Hopkins Anxiety scores (Figure 74)
- median score (Table 92)
- mean rank (Table 93); and

- hypothesis test summary for the Kruskal-Wallis H test on the 2-month follow-up Hopkins Anxiety scores between the three groups (Table 94)



Total N	31
Test Statistic	3.561
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.169

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 74: Boxplot of 2-month follow-up Hopkins Anxiety score distribution (all groups).

The median of Hopkins anxiety score (Acupuncture: 1.20, CBT: 1.90, and Combined (Acupuncture & CBT): 1.50) in the 2-month follow-up phase is shown in Table 92. The mean ranks of Hopkins anxiety score (Acupuncture: 13.33, CBT: 21.42, and Combined (Acupuncture & CBT): 16.75) in the 2-month follow-up phase is shown in Table 93.

Table 92: 2-month follow-up Hopkins Anxiety scores - group median scores.

	Intervention groups	Median	N
Followup_Hopkins_Anxiety_Score	Acupuncture	1.20	15
	CBT	1.90	6
	Acupuncture & CBT	1.50	10
	Total	1.30	31

The Kruskal-Wallis H test on the Hopkins Anxiety score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 94. The test did not reject the null hypothesis that the distribution of the Hopkins Anxiety score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 93: 2-month follow-up Hopkins Anxiety scores - group mean rank.

	Intervention groups	Mean Rank	N
Followup_Hopkins_Anxiety_Score	Acupuncture	13.33	15
	CBT	21.42	6
	Acupuncture & CBT	16.75	10
	Total		31

Table 94: 2-month follow-up Hopkins Anxiety score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Followup_Hopkins_Anxiety_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.169	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

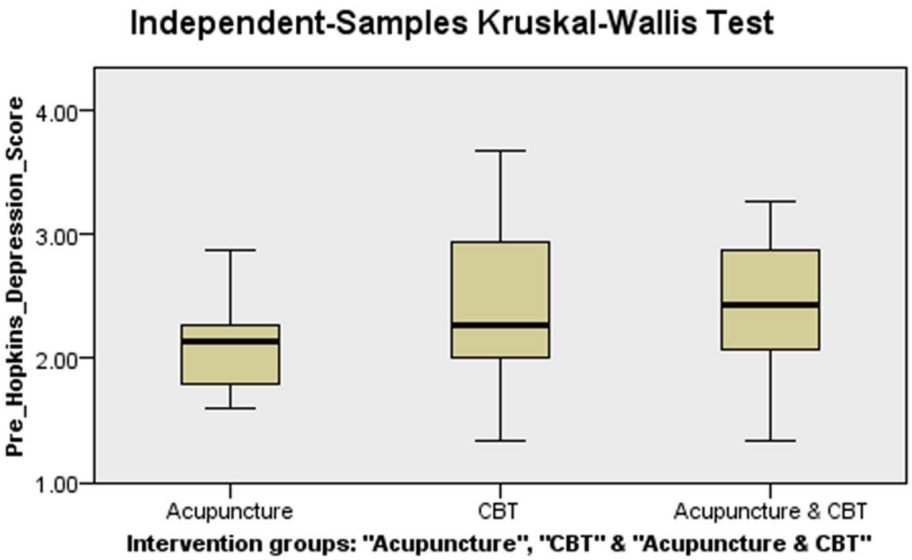
The distribution post-treatment Hopkins Anxiety scores showed the mean ranks were lower in Acupuncture group (13.33) than in both Combined (Acupuncture & CBT) (21.42) and CBT (17.67) groups in the 2-month follow-up phase but the differences were not statistically significant, $H(2) = 3.56$, $p = 0.17$ or $\chi2(2) = 3.56$, $p = 0.17$.

4.5.2.4 Hopkins Depression Score: Pre-treatment

Distributions of the Hopkins Depression score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 75. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Hopkins Depression score in the pre-treatment phase in one group is higher or lower than Hopkins Depression score in other groups. The results as shown below include the:

- Box plot of distribution of Hopkins Depression scores (Figure 75)
- median score (Table 95)
- mean rank (Table 96); and

- hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment Hopkins Depression scores between the three groups (Table 97)



Total N	31
Test Statistic	1.074
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.585

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 75: Boxplot of pre-treatment Hopkins Depression score distribution (all groups).

The median of Hopkins depression score (Acupuncture: 2.13, CBT: 2.27, and Combined (Acupuncture & CBT): 2.43) in the pre-treatment phase is shown in Table 95. The mean ranks of Hopkins depression score (Acupuncture: 14.30, CBT: 16.92, and Combined (Acupuncture & CBT): 18.00) in the pre-treatment phase is shown in Table 96.

Table 95: Pre-treatment Hopkins Depression scores - group median scores.

	Intervention groups	Median	N
Pre_Hopkins_Depression_Score	Acupuncture	2.13	15
	CBT	2.27	6
	Acupuncture & CBT	2.43	10
	Total	2.20	31

Table 96: Pre-treatment Hopkins Depression scores - group mean rank.

	Intervention groups	Mean Rank	N
Pre_Hopkins_Depression_Score	Acupuncture	14.30	15
	CBT	16.92	6
	Acupuncture & CBT	18.00	10
	Total		31

The Kruskal-Wallis H test on the Hopkins Depression score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 97. The test did not reject the null hypothesis that the distribution of the Hopkins Depression score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 97: Pre-treatment Hopkins Depression score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre_Hopkins_Depression_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.585	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

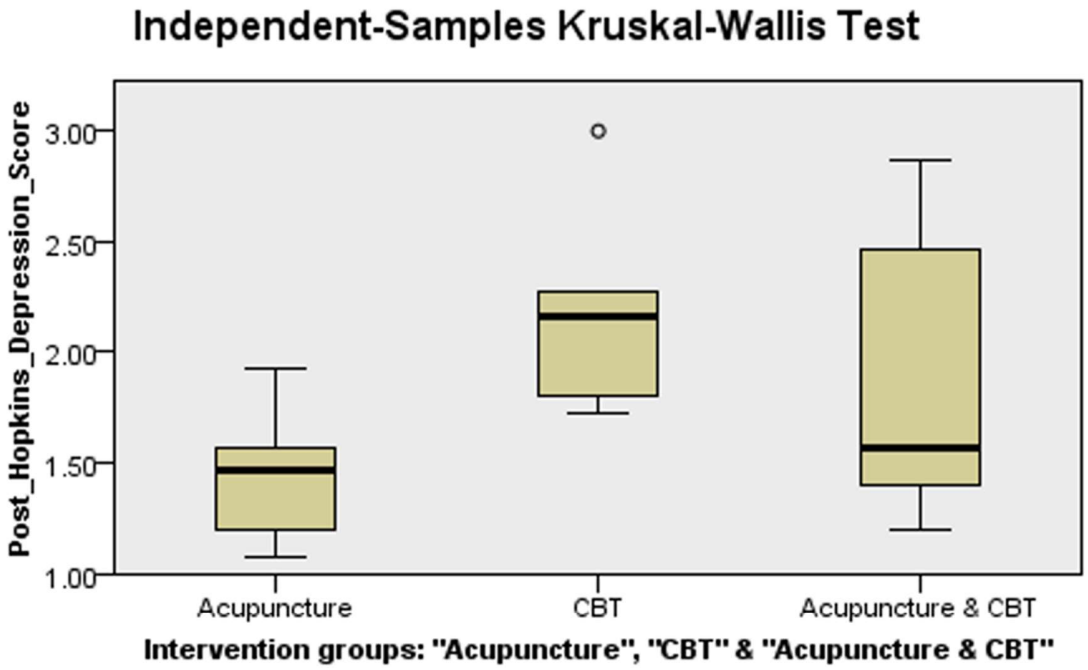
The Kruskal-Wallis H test on the Hopkins depression score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase is shown in Table 97. The Kruskal-Wallis H test did not reject the null hypothesis of that the distribution of the Hopkins depression score is same across all three intervention groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase are the same. Hence, the distribution of the Hopkins depression score is the same across all three intervention groups in the pre-treatment phase.

A Kruskal-Wallis H test was run to determine if there were differences in Hopkins depression score in the pre-treatment phase between three groups of participants with different treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. Distributions of Hopkins depression score were not similar for all groups in the pre-treatment phase, as assessed by visual inspection of a boxplot. The distribution post-treatment Hopkins Depression scores showed the mean rank was lower in Acupuncture (14.30) group than in both CBT (16.92) and Combined (Acupuncture & CBT) (18.00) groups in the pre-treatment phase but the differences were not statistically significant, $H(2) = 1.07$, $p = 0.59$ or $\chi2(2) = 1.07$, $p = 0.59$.

4.5.2.5 Hopkins Depression Score: Post-treatment

Distributions of the Hopkins Depression score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 76. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the Hopkins Depression score in the post-treatment phase in one group was higher or lower than the Hopkins Depression score in other groups. The results shown as shown below include the:

- Box plot of distribution of Hopkins Depression scores (Figure 76)
- median score (Table 98)
- mean rank (Table 99)
- hypothesis test summary for the Kruskal-Wallis H test on the post-treatment Hopkins Depression scores between the three groups (Table 100); and
- post hoc pairwise comparison (Figure 77)



Total N	31
Test Statistic	11.219
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.004

1. The test statistic is adjusted for ties.

Figure 76: Boxplot of post-treatment Hopkins Depression score distribution (all groups).

The median of Hopkins depression score (Acupuncture: 1.47, CBT: 2.165, and Combined (Acupuncture & CBT): 1.57) in the post-treatment phase is shown in Table 98. The mean ranks of Hopkins depression score (Acupuncture: 11.07, CBT: 25.33, and Combined (Acupuncture & CBT): 17.80) in the post-treatment phase is shown in Table 99.

Table 98: Post-treatment Hopkins Depression scores - group median scores.

	Intervention groups	Median	N
Post_Hopkins_Depression_Score	Acupuncture	1.47	15
	CBT	2.17	6
	Acupuncture & CBT	1.57	10
	Total	1.53	31

Table 99: Post-treatment Hopkins Depression scores - group mean rank.

	Intervention groups	Mean Rank	N
Post_Hopkins_Depression_Score	Acupuncture	11.07	15
	CBT	25.33	6
	Acupuncture & CBT	17.80	10
	Total		31

The Kruskal-Wallis H test on the Hopkins Depression score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 97. The test rejected the null hypothesis that the distribution of the Hopkins Depression score is same across all three intervention groups.

Table 100: Post-treatment Hopkins Depression score Kruskal-Wallis H Hypothesis test summary (all groups).

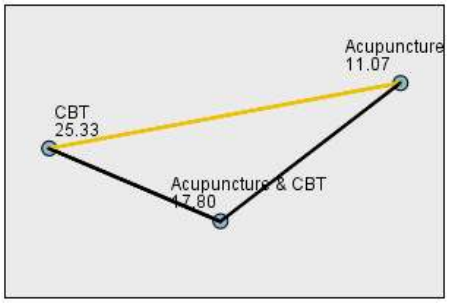
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Post_Hopkins_Depression_Score is the same across categories of Intervention groups: "Acupuncture" "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.004	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of Hopkins depression score in the post-treatment phase were statistically significantly different between groups, $H(2) = 11.22$, $p < 0.01$ or $\chi^2(2) = 11.22$, $p < 0.01$. Consequently a post hoc analysis as seen in Figure 77 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Acupuncture-Acupuncture & CBT	-6.733	3.697	-1.821	.069	.206
Acupuncture-CBT	-14.267	4.375	-3.261	.001	.003
Acupuncture & CBT-CBT	7.533	4.677	1.611	.107	.322

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 77: Post-treatment Hopkins Depression score Post hoc test (all groups).

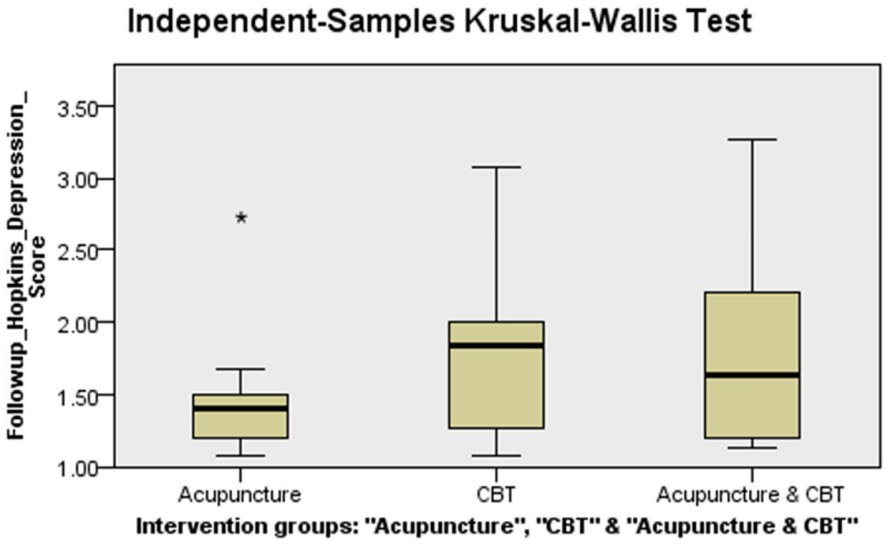
The post hoc test analysis revealed the Acupuncture group (11.07) ($p < 0.01$) had statistically significantly lower Hopkins depression score than the CBT (25.33) group in the post-treatment phase. There was no statistically significant difference in Hopkins depression score in the post-treatment phase between CBT and Combined (Acupuncture & CBT) groups, and between Acupuncture and Combined (Acupuncture & CBT) groups. The post hoc test pairwise comparisons of the mean rank of Hopkins depression score in the post-treatment phase is shown in Figure 77.

4.5.2.6 Hopkins Depression Score: 2-month Follow-up

Distributions of the Hopkins Depression score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase, as assessed by visual inspection of a boxplot shown in Figure 78. Since the distributions failed the

assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Hopkins Depression score in the 2-month follow-up phase in one group is higher or lower than Hopkins Depression score in other groups. The results as shown below include the:

- Box plot of distribution of Hopkins Depression scores (Figure 78)
- median score (Table 101)
- mean rank (Table 102); and
- hypothesis test summary for the Kruskal-Wallis H test on the 2-month follow-up Hopkins Depression scores between the three groups (Table 103)



Total N	31
Test Statistic	2.891
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.236

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 78: Boxplot of 2-month follow-up Hopkins Depression score distribution (all groups).

The median of Hopkins depression score (Acupuncture: 1.40, CBT: 1.84, and Combined (Acupuncture & CBT): 1.63) in the 2-month follow-up phase is shown in Table 101. The mean ranks of Hopkins depression score (Acupuncture: 13.20, CBT: 19.58, and Combined (Acupuncture & CBT): 18.05) in the 2-month follow-up phase is shown in Table 102.

Table 101: 2-month follow-up Hopkins Depression scores - group median scores.

	Intervention groups	Median	N
Followup_Hopkins_Depression_Score	Acupuncture	1.40	15
	CBT	1.84	6
	Acupuncture & CBT	1.63	10
	Total	1.47	31

Table 102: 2-month follow-up Hopkins Depression scores - group mean rank.

	Intervention groups	Mean Rank	N
Followup_Hopkins_Depression_Score	Acupuncture	13.20	15
	CBT	19.58	6
	Acupuncture & CBT	18.05	10
	Total		31

The Kruskal-Wallis H test on the Hopkins Depression score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 103. The test did not reject the null hypothesis that the distribution of the Hopkins Depression score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 103: 2-month follow-up Hopkins Depression score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Followup_Hopkins_Depression_Score is the same across categories of Intervention groups "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.236	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

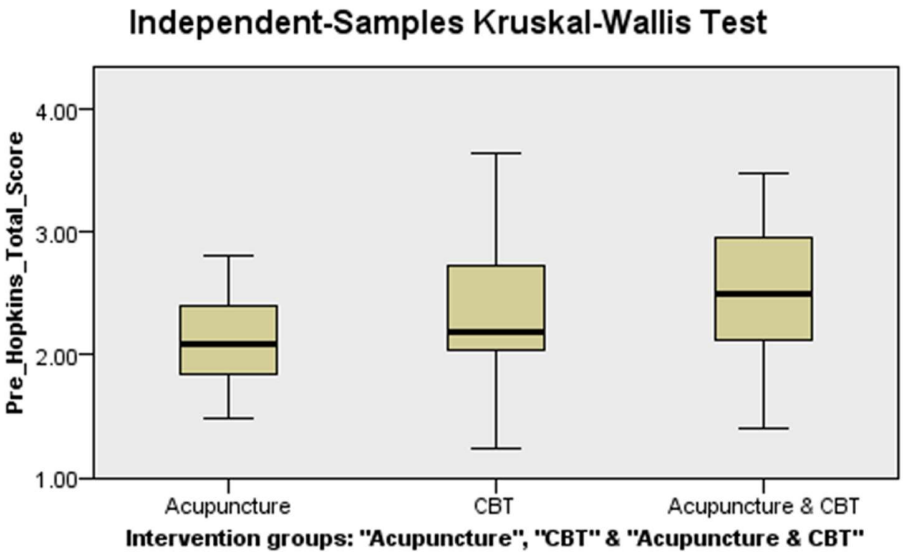
The distribution post-treatment Hopkins Depression scores showed the mean rank was lower in Acupuncture (13.20) group than both CBT (19.58) and Combined (Acupuncture & CBT) (18.05) groups in the 2-month follow-up phase but the differences were not statistically significant, $H(2) = 2.89$, $p = 0.24$ or $\chi 2(2) = 2.89$, $p = 0.24$.

4.5.2.7 Hopkins Total Score: Pre-treatment

Distributions of the Hopkins total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 79. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Hopkins total score in the pre-treatment phase in one group is higher or lower than Hopkins total score in other groups. The results as shown below include the:

- Box plot of distribution of Hopkins total scores (Figure 79)
- median score (Table 104)
- mean rank (Table 105); and

- hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment Hopkins total scores between the three groups (Table 106)



Total N	31
Test Statistic	2.535
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.282

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 79: Boxplot of pre-treatment Hopkins total score distribution (all groups).

The median of Hopkins total score (Acupuncture: 2.08, CBT: 2.18, and Combined (Acupuncture & CBT): 2.50) in the pre-treatment phase is shown in Table 104. The mean ranks of Hopkins total score (Acupuncture: 13.60, CBT: 16.17, and Combined (Acupuncture & CBT): 19.50) in the pre-treatment phase is shown in Table 105.

Table 104: Pre-treatment Hopkins total scores - group median scores.

	Intervention groups	Median	N
Pre_Hopkins_Total_Score	Acupuncture	2.08	15
	CBT	2.18	6
	Acupuncture & CBT	2.50	10
	Total	2.12	31

Table 105: Pre-treatment Hopkins total scores - group mean rank.

	Intervention groups	Mean Rank	N
Pre_Hopkins_Total_Score	Acupuncture	13.60	15
	CBT	16.17	6
	Acupuncture & CBT	19.50	10
	Total		31

The Kruskal-Wallis H test on the Hopkins total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 106. The test did not reject the null hypothesis that the distribution of the Hopkins total score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 106: Pre-treatment Hopkins total score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre_Hopkins_Total_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.282	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

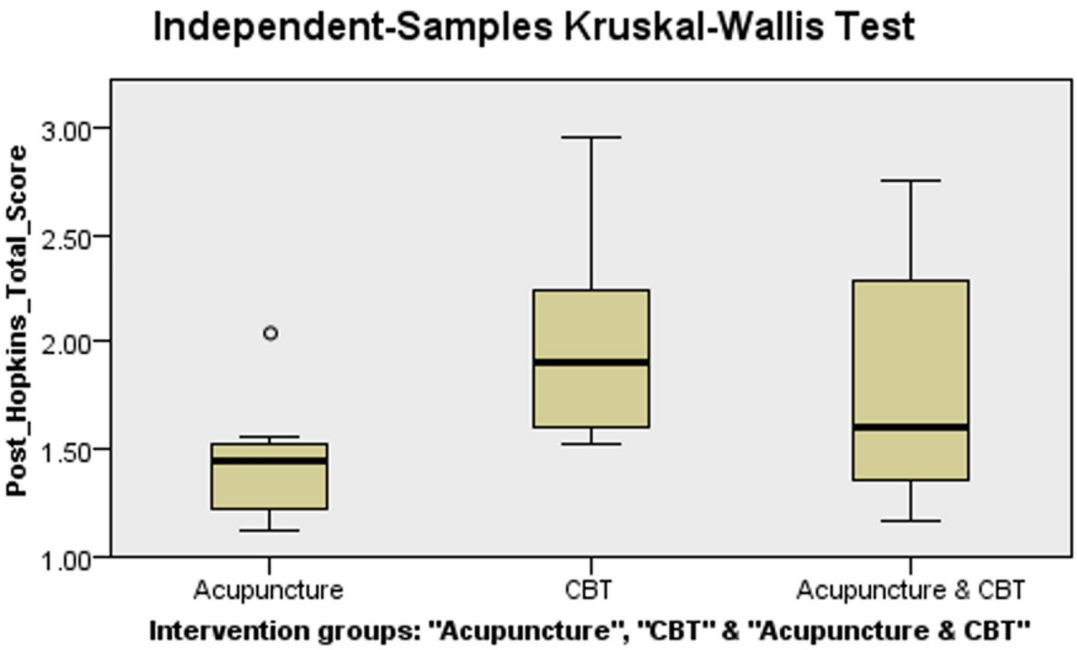
The distribution post-treatment Hopkins total scores showed the mean rank was lower in Acupuncture (13.60) group than in both CBT (16.17) and Combined (Acupuncture & CBT) (19.50) groups in the pre-treatment phase but the differences were not statistically significant, $H(2) = 2.54$, $p = 0.28$ or $\chi2(2) = 2.54$, $p = 0.28$.

4.5.2.8 Hopkins Total Score: Post-treatment

Distributions of the Hopkins total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 80. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the Hopkins total score in the post-treatment phase in one group was higher or lower than the Hopkins total score in other groups. The results shown as shown below include the:

- Box plot of distribution of Hopkins total scores (Figure 80)
- median score (Table 107)
- mean rank (Table 108)

- hypothesis test summary for the Kruskal-Wallis H test on the post-treatment Hopkins total scores between the three groups (Table 109); and
- post hoc pairwise comparison (Figure 81)



Total N	31
Test Statistic	8.513
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.014

1. The test statistic is adjusted for ties.

Figure 80: Boxplot of post-treatment Hopkins total score distribution (all groups).

The median of Hopkins total score (Acupuncture: 1.44, CBT: 1.90, and Combined (Acupuncture & CBT): 1.60) in the post-treatment phase is shown in Table 107. The mean ranks of Hopkins total score (Acupuncture: 11.63, CBT: 24.00, and Combined (Acupuncture & CBT): 17.75) in the post-treatment phase is shown in Table 108.

Table 107: Post-treatment Hopkins total scores - group median scores.

	Intervention groups	Median	N
Post_Hopkins_Total_Score	Acupuncture	1.44	15
	CBT	1.90	6
	Acupuncture & CBT	1.60	10
	Total	1.52	31

Table 108: Post-treatment Hopkins total scores - group mean rank.

	Intervention groups	Mean Rank	N
Post_Hopkins_Total_Score	Acupuncture	11.63	15
	CBT	24.00	6
	Acupuncture & CBT	17.75	10
	Total		31

The Kruskal-Wallis H test on the Hopkins total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 109. The test rejected the null hypothesis that the distribution of the Hopkins total score is same across all three intervention groups.

Table 109: Post-treatment Hopkins total score Kruskal-Wallis H Hypothesis test summary (all groups).

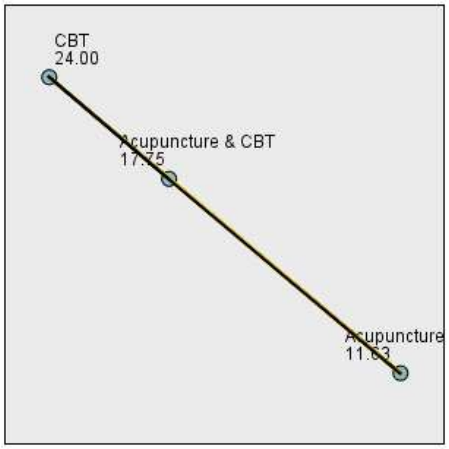
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Post_Hopkins_Total_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.014	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of Hopkins total score in the post-treatment phase were statistically significantly different between groups, H(2) = 8.51, p = 0.01 or $\chi^2(2) = 8.51$, p = 0.01. Consequently a post hoc analysis as seen in Figure 81 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Acupuncture-Acupuncture & CBT	-6.117	3.704	-1.652	.099	.296
Acupuncture-CBT	-12.367	4.382	-2.822	.005	.014
Acupuncture & CBT-CBT	6.250	4.685	1.334	.182	.546

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

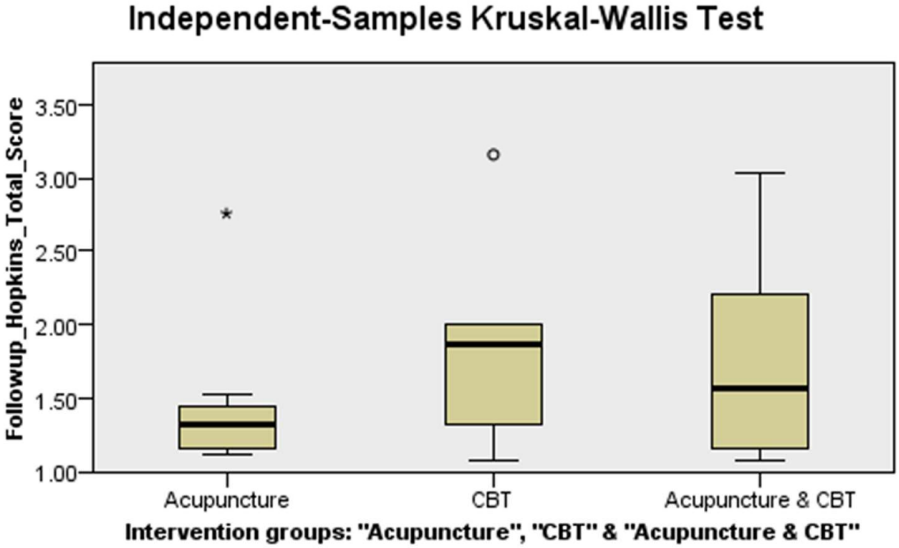
Figure 81: Post-treatment Hopkins total score Post hoc test (all groups).

The post hoc test analysis revealed the Acupuncture group (11.63) ($p = 0.01$) had statistically significantly lower Hopkins total score than the CBT group (24.00) in the post-treatment phase. There was no statistically significant difference in Hopkins total score in the post-treatment phase between CBT and Combined (Acupuncture & CBT) groups, and between Acupuncture and Combined (Acupuncture & CBT) groups. The post hoc test pairwise comparisons of the mean rank of Hopkins total score in the post-treatment phase is shown in Figure 81.

4.5.2.9 Hopkins Total Score: 2-month Follow-up

Distributions of the Hopkins total score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase, as assessed by visual inspection of a boxplot shown in Figure 82. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Hopkins total score in the 2-month follow-up phase in one group is higher or lower than Hopkins total score in other groups. The results as shown below include the:

- Box plot of distribution of Hopkins total scores (Figure 82)
- median score (Table 110)
- mean rank (Table 111); and
- hypothesis test summary for the Kruskal-Wallis H test on the 2-month follow-up Hopkins total scores between the three groups (Table 112)



Total N	31
Test Statistic	2.568
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.277

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 82: Boxplot of 2-month follow-up Hopkins total score distribution (all groups).

The median of Hopkins total score (Acupuncture: 1.32, CBT: 1.86, and Combined (Acupuncture & CBT): 1.56) in the 2-month follow-up phase is shown in Table 110. The mean ranks of Hopkins total score (Acupuncture: 13.40, CBT: 19.67, and Combined (Acupuncture & CBT): 17.70) in the 2-month follow-up phase is shown in Table 111.

Table 110: 2-month follow-up Hopkins total scores - group median scores.

	Intervention groups	Median	N
Followup_Hopkins_Total_Score	Acupuncture	1.32	15
	CBT	1.86	6
	Acupuncture & CBT	1.56	10
	Total	1.36	31

Table 111: 2-month follow-up Hopkins total scores - group mean rank.

	Intervention groups	Mean Rank	N
Followup_Hopkins_Total_Score	Acupuncture	13.40	15
	CBT	19.67	6
	Acupuncture & CBT	17.70	10
	Total		31

The Kruskal-Wallis H test on the Hopkins total score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 112. The test did not reject the null hypothesis that the distribution of the Hopkins total score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 112: 2-month follow-up Hopkins total score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Followup_Hopkins_Total_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.277	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

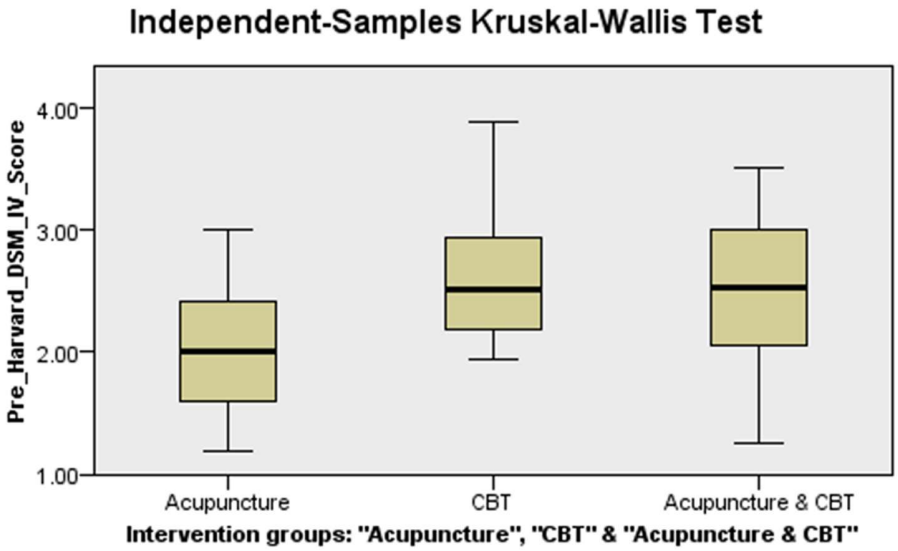
The distribution post-treatment Hopkins total scores showed the mean rank was lower in Acupuncture (13.40) group than both CBT (19.67) and Combined (Acupuncture & CBT) (17.70) groups in the 2-month follow-up phase but the differences were not statistically significant, $H(2) = 2.57$, $p = 0.28$ or $\chi 2(2) = 2.57$, $p = 0.28$.

4.5.3 Harvard Trauma Questionnaire (HTQ)

4.5.3.1 Harvard Trauma DSM IV Score: Pre-treatment

Distributions of the Harvard Trauma DSM IV score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 83. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Harvard Trauma DSM IV score in the pre-treatment phase in one group is higher or lower than Harvard Trauma DSM IV score in other groups. The results as shown below include the:

- Box plot of distribution of Harvard Trauma DSM IV scores (Figure 83)
- median score (Table 113)
- mean rank (Table 114); and
- hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment Harvard Trauma DSM IV scores between the three groups (Table 115)



Total N	31
Test Statistic	4.469
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.107

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 83: Boxplot of pre-treatment Harvard Trauma DSM IV score distribution (all groups).

The median of Harvard trauma DSM IV score (Acupuncture: 2.00, CBT: 2.51, and Combined (Acupuncture & CBT): 2.54) in the pre-treatment phase is shown in Table 113. The mean ranks of Harvard trauma DSM IV score (Acupuncture: 12.47, CBT: 20.08, and Combined (Acupuncture & CBT): 18.85) in the pre-treatment phase is shown in Table 114.

Table 113: Pre-treatment Harvard Trauma DSM IV scores - group median scores.

	Intervention groups	Median	N
Pre_Harvard_DSM_IV_Score	Acupuncture	2.00	15
	CBT	2.51	6
	Acupuncture & CBT	2.54	10
	Total	2.31	31

Table 114: Pre-treatment Harvard Trauma DSM IV scores - group mean rank.

	Intervention groups	Mean Rank	N
Pre_Harvard_DSM_IV_Score	Acupuncture	12.47	15
	CBT	20.08	6
	Acupuncture & CBT	18.85	10
	Total		31

The Kruskal-Wallis H test on the Harvard Trauma DSM IV score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase is shown in Table 115Table 115: Pre-treatment Harvard Trauma DSM IV score Kruskal-Wallis H Hypothesis test summary (all groups).. The test did not reject the null hypothesis that the distribution of the Harvard Trauma DSM IV score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 115: Pre-treatment Harvard Trauma DSM IV score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre_Harvard_DSM_IV_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.107	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

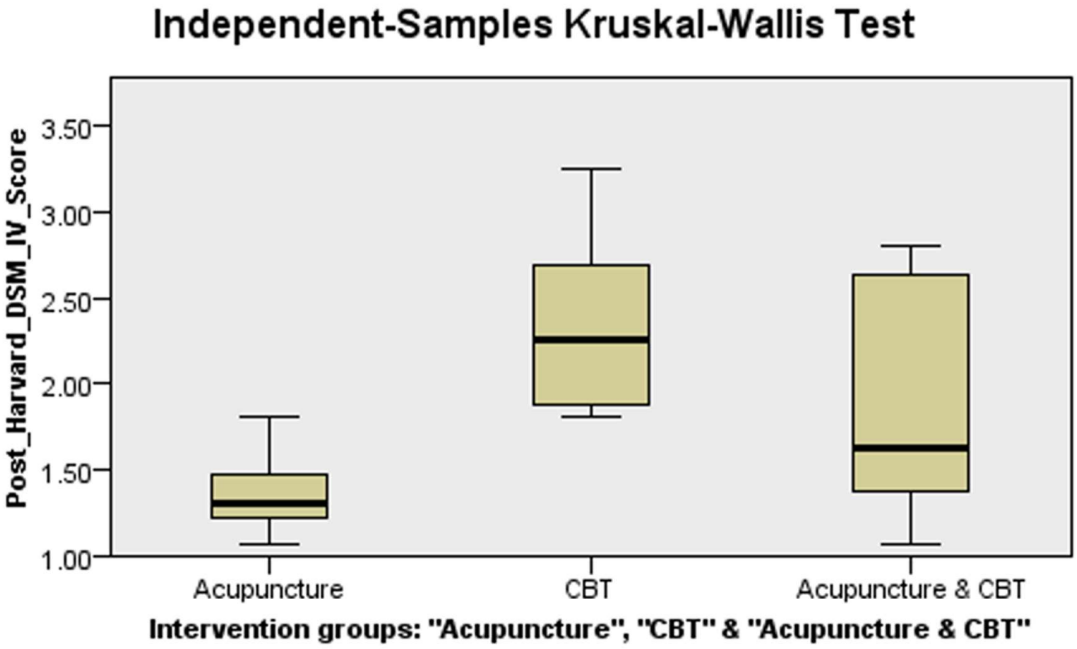
The distribution post-treatment Harvard Trauma DSM IV scores showed the mean rank was lower in Acupuncture (12.47) group than both CBT (20.08) and Combined (Acupuncture & CBT) (18.85) groups in the pre-treatment phase but the differences were not statistically significant, $H(2) = 4.47$, $p = 0.11$ or $\chi2(2) = 4.47$, $p = 0.11$.

4.5.3.2 Harvard Trauma DSM IV Score: Post-treatment

Distributions of the Harvard Trauma DSM IV score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 84. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the Harvard Trauma DSM IV score in the post-treatment phase in one group was higher or lower than the Harvard Trauma DSM IV score in other groups. The results shown as shown below include the:

- Box plot of distribution of Harvard Trauma DSM IV scores (Figure 84)
- median score (Table 116)

- mean rank (Table 117)
- hypothesis test summary for the Kruskal-Wallis H test on the post-treatment Harvard Trauma DSM IV scores between the three groups (Table 118); and
- post hoc pairwise comparison (Figure 85)



Total N	31
Test Statistic	12.975
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.002

1. The test statistic is adjusted for ties.

Figure 84: Boxplot of post-treatment Harvard Trauma DSM IV score distribution (all groups).

The median of Harvard trauma DSM IV score (Acupuncture: 1.31, CBT: 2.56, and Combined (Acupuncture & CBT): 1.63) in the post-treatment phase is shown in Table 116. The mean ranks of Harvard trauma DSM IV score (Acupuncture: 10.57, CBT: 25.75, and Combined (Acupuncture & CBT): 18.30) in the post-treatment phase is shown in Table 117.

Table 116: Post-treatment Harvard Trauma DSM IV scores - group median scores.

	Intervention groups	Median	N
Post_Harvard_DSM_IV_Score	Acupuncture	1.31	15
	CBT	2.26	6
	Acupuncture & CBT	1.63	10
	Total	1.56	31

Table 117: Post-treatment Harvard Trauma DSM IV scores - group mean rank.

	Intervention groups	Mean Rank	N
Post_Harvard_DSM_IV_Score	Acupuncture	10.57	15
	CBT	25.75	6
	Acupuncture & CBT	18.30	10
	Total		31

The Kruskal-Wallis H test on the Harvard Trauma DSM IV score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 118. The test rejected the null hypothesis that the distribution of the Harvard Trauma DSM IV score is same across all three intervention groups.

Table 118: Post-treatment Harvard Trauma DSM IV score Kruskal-Wallis H Hypothesis test summary (all groups).

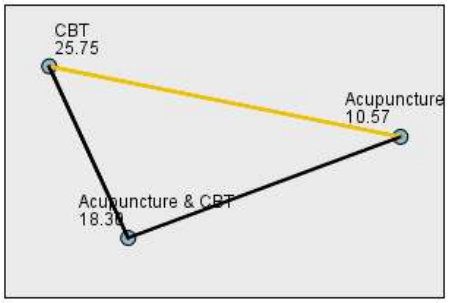
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Post_Harvard_DSM_IV_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of Harvard trauma DSM IV score in the post-treatment phase were statistically significantly different between groups, $H(2) = 12.98$, $p < 0.01$ or $\chi^2(2) = 12.98$, $p < 0.01$. Consequently a post hoc analysis as seen in Figure 85 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Acupuncture-Acupuncture & CBT	-7.733	3.701	-2.090	.037	.110
Acupuncture-CBT	-15.183	4.379	-3.468	.001	.002
Acupuncture & CBT-CBT	7.450	4.681	1.592	.111	.334

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 85: Post-treatment Harvard Trauma DSM IV score Post hoc test (all groups).

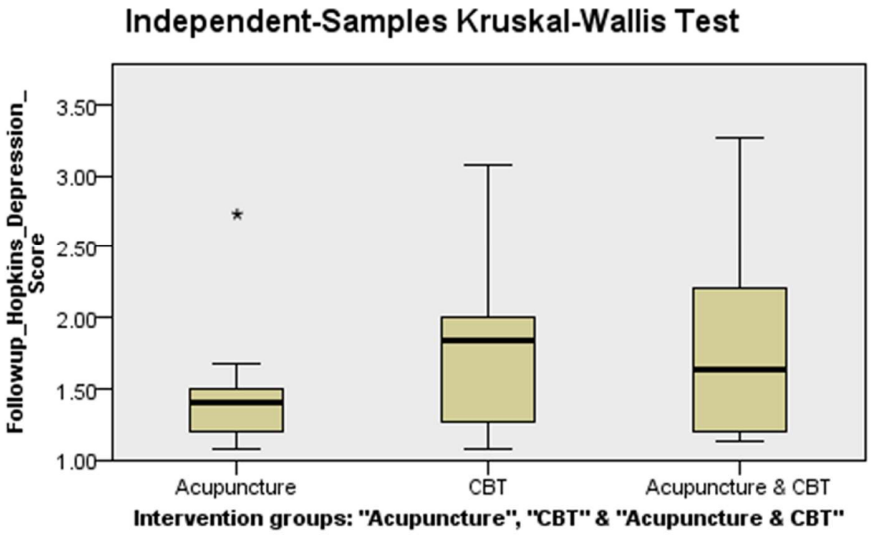
The post hoc test analysis revealed the Acupuncture group (10.57) ($p < 0.01$) had statistically significantly lower Harvard trauma DSM IV score than the CBT group (25.75) in the post-treatment. There was no statistically significant difference in Harvard trauma DSM IV score in the post-treatment phase between CBT and Combined (Acupuncture & CBT) treatment intervention groups, and between Acupuncture and Combined (Acupuncture & CBT) treatment intervention groups. The post hoc test pairwise comparisons of the mean rank of Harvard trauma DSM IV score in the post-treatment phase is shown in Figure 85.

4.5.3.3 Harvard Trauma DSM IV Score: 2-month Follow-up

Distributions of the Harvard Trauma DSM IV score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase, as assessed by visual inspection of a boxplot shown in Figure 86. Since the distributions failed

the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Harvard Trauma DSM IV score in the 2-month follow-up phase in one group is higher or lower than Harvard Trauma DSM IV score in other groups. The results as shown below include the:

- Box plot of distribution of Harvard Trauma DSM IV scores (Figure 86)
- median score (Table 119)
- mean rank (Table 120); and
- hypothesis test summary for the Kruskal-Wallis H test on the 2-month follow-up Harvard Trauma DSM IV scores between the three groups (Table 121)



Total N	31
Test Statistic	2.891
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.236

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 86: Boxplot of 2-month follow-up Harvard Trauma DSM IV score distribution (all groups).

The median of Harvard trauma DSM IV score (Acupuncture: 1.40, CBT: 1.84, and Combined (Acupuncture & CBT): 1.63) in the 2-month follow-up phase is shown in Table 119. The mean ranks of Harvard trauma DSM IV score (Acupuncture: 13.20, CBT: 19.58, and Combined (Acupuncture & CBT): 18.05) in the 2-month follow-up phase is shown in Table 120.

Table 119: 2-month follow-up Harvard Trauma DSM IV scores - group median scores.

	Intervention groups	Median	N
Followup_Hopkins_Depression_Score	Acupuncture	1.40	15
	CBT	1.84	6
	Acupuncture & CBT	1.63	10
	Total	1.47	31

Table 120: 2-month follow-up Harvard Trauma DSM IV scores - group mean rank.

	Intervention groups	Mean Rank	N
Followup_Hopkins_Depression_Score	Acupuncture	13.20	15
	CBT	19.58	6
	Acupuncture & CBT	18.05	10
	Total		31

The Kruskal-Wallis H test on the Harvard Trauma DSM IV score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 121. The test did not reject the null hypothesis that the distribution of the Harvard Trauma DSM IV score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 121: 2-month follow-up Harvard Trauma DSM IV score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Followup_Hopkins_Depression_ Score is the same across categories of Intervention groups "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.236	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distribution post-treatment Harvard Trauma DSM IV scores showed the mean rank was lower in Acupuncture (13.20) group than both CBT (19.58) and Combined (Acupuncture & CBT) (18.05) groups in the 2-month follow-up phase but the differences were not statistically significant, $H(2) = 2.89$, $p = 0.24$ or $\chi2(2) = 2.89$, $p = 0.24$.

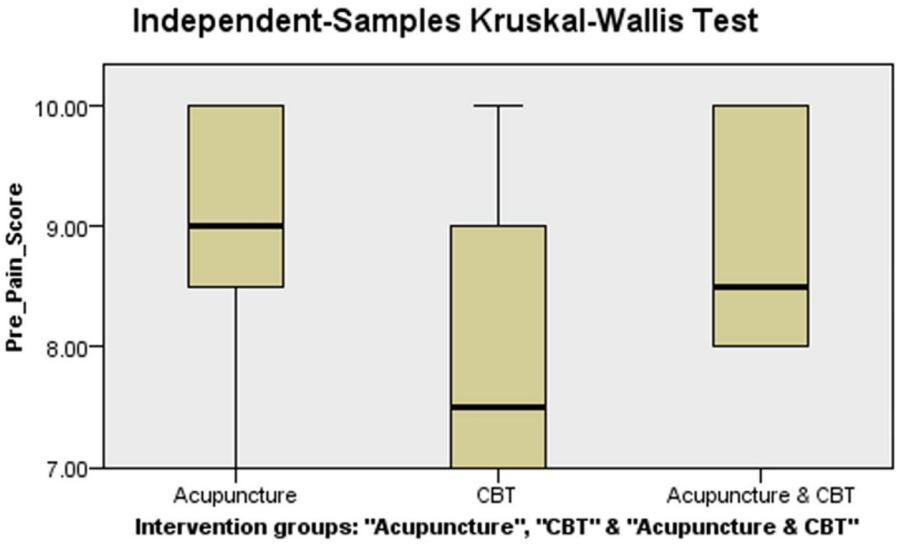
4.5.4 Numeric Pain Scale

4.5.4.1 Pain Score: Pre-treatment

Distributions of the Pain score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the pre-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 87. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, cannot be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score can be used to determine whether the Pain score in the pre-treatment phase in one group is higher or lower than Pain score in other groups. The results as shown below include the:

- Box plot of distribution of Pain scores (Figure 87)

- median score (Table 122)
- mean rank (Table 123); and
- hypothesis test summary for the Kruskal-Wallis H test on the pre-treatment Pain scores between the three groups (Table 124)



Total N	31
Test Statistic	4.161
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.125

1. The test statistic is adjusted for ties.
2. Multiple comparisons are not performed because the overall test does not show significant differences across samples.

Figure 87: Boxplot of pre-treatment Pain score distribution (all groups).

The median of pain score (Acupuncture: 9.00, CBT: 7.50, and Combined (Acupuncture & CBT): 8.50) in the pre-treatment phase is shown in Table 122. The mean ranks of pain score (Acupuncture: 18.27, CBT: 9.75, and Combined (Acupuncture & CBT): 16.35) in the pre-treatment phase is shown in Table 123.

Table 122: Pre-treatment Pain scores - group median scores.

	Intervention groups	Median	N
Pre_Pain_Score	Acupuncture	9.00	15
	CBT	7.50	6
	Acupuncture & CBT	8.50	10
	Total	9.00	31

Table 123: Pre-treatment Pain scores - group mean rank.

	Intervention groups	Mean Rank	N
Pre_Pain_Score	Acupuncture	18.27	15
	CBT	9.75	6
	Acupuncture & CBT	16.35	10
	Total		31

The Kruskal-Wallis H test on the Pain score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 124. The test did not reject the null hypothesis that the distribution of the Pain score is same across all three intervention groups. Hence a post hoc analysis is unnecessary.

Table 124: Pre-treatment Pain score Kruskal-Wallis H Hypothesis test summary (all groups).

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Pre_Pain_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.125	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

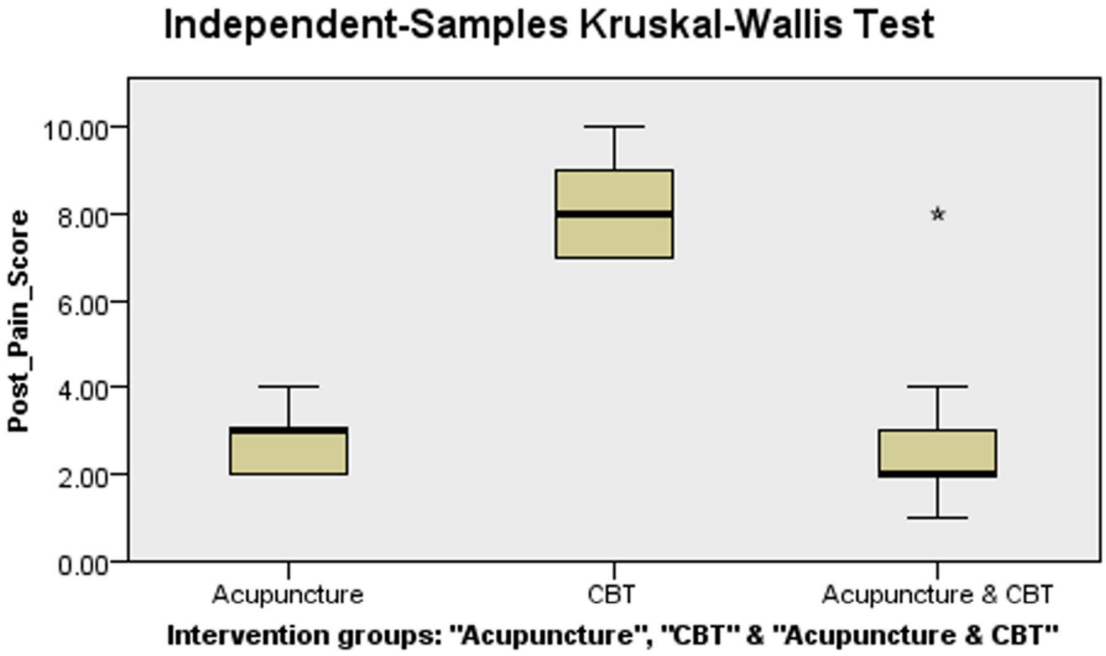
The distribution post-treatment Pain scores showed the mean rank was lower in CBT (9.75) group than both Acupuncture (18.27) and Combined (Acupuncture & CBT) (16.35) groups in the pre-treatment phase but the differences were not statistically significant, $H(2) = 4.16$, $p = 0.13$ or $\chi2(2) = 4.16$, $p = 0.13$.

4.5.4.2 Pain Score: Post-treatment

Distributions of the Pain score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase, as assessed by visual inspection of a boxplot shown in Figure 88. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the Pain score in the post-treatment phase in one group was higher or lower than the Pain score in other groups. The results shown as shown below include the:

- Box plot of distribution of Pain scores (Figure 88)
- median score (Table 125)
- mean rank (Table 126)

- hypothesis test summary for the Kruskal-Wallis H test on the post-treatment Pain scores between the three groups (Table 127); and
- post hoc pairwise comparison (Figure 89)



Total N	31
Test Statistic	14.646
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.001

1. The test statistic is adjusted for ties.

Figure 88: Boxplot of post-treatment Pain score distribution (all groups).

The median of pain score (Acupuncture: 3.00, CBT: 8.00, and Combined (Acupuncture & CBT): 2.00) in the post-treatment phase is shown in Table 125. The mean ranks of pain score (Acupuncture: 14.30, CBT: 28.00, and Combined (Acupuncture & CBT): 11.35) in the post-treatment phase is shown in Table 126.

Table 125: Post-treatment Pain scores - group median scores.

	Intervention groups	Median	N
Post_Pain_Score	Acupuncture	3.00	15
	CBT	8.00	6
	Acupuncture & CBT	2.00	10
	Total	3.00	31

Table 126: Post-treatment Pain scores - group mean rank.

	Intervention groups	Mean Rank	N
Post_Pain_Score	Acupuncture	14.30	15
	CBT	28.00	6
	Acupuncture & CBT	11.35	10
	Total		31

The Kruskal-Wallis H test on the Pain score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the post-treatment phase is shown in Table 127. The test rejected the null hypothesis that the distribution of the Pain score is same across all three intervention groups.

Table 127: Post-treatment Pain score Kruskal-Wallis H Hypothesis test summary (all groups).

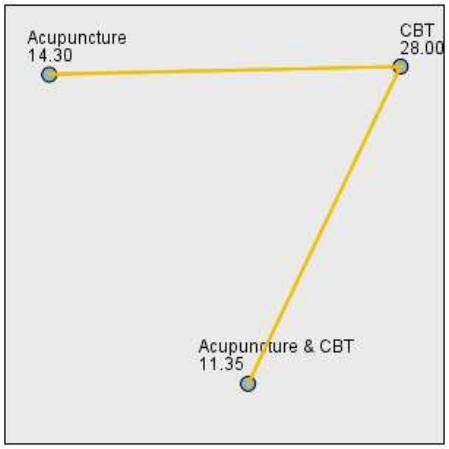
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Post_Pain_Score is the same across categories of Intervention groups: "Acupuncture" "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of pain scores in the post-treatment phase were statistically significantly different between groups, $H(2) = 14.65$, $p < 0.01$ or $\chi^2(2) = 14.65$, $p < 0.01$. Consequently a post hoc analysis as seen in Figure 89 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Acupuncture & CBT-Acupuncture	2.950	3.576	.825	.409	1.000
Acupuncture & CBT-CBT	16.650	4.523	3.681	.000	.001
Acupuncture-CBT	-13.700	4.231	-3.238	.001	.004

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

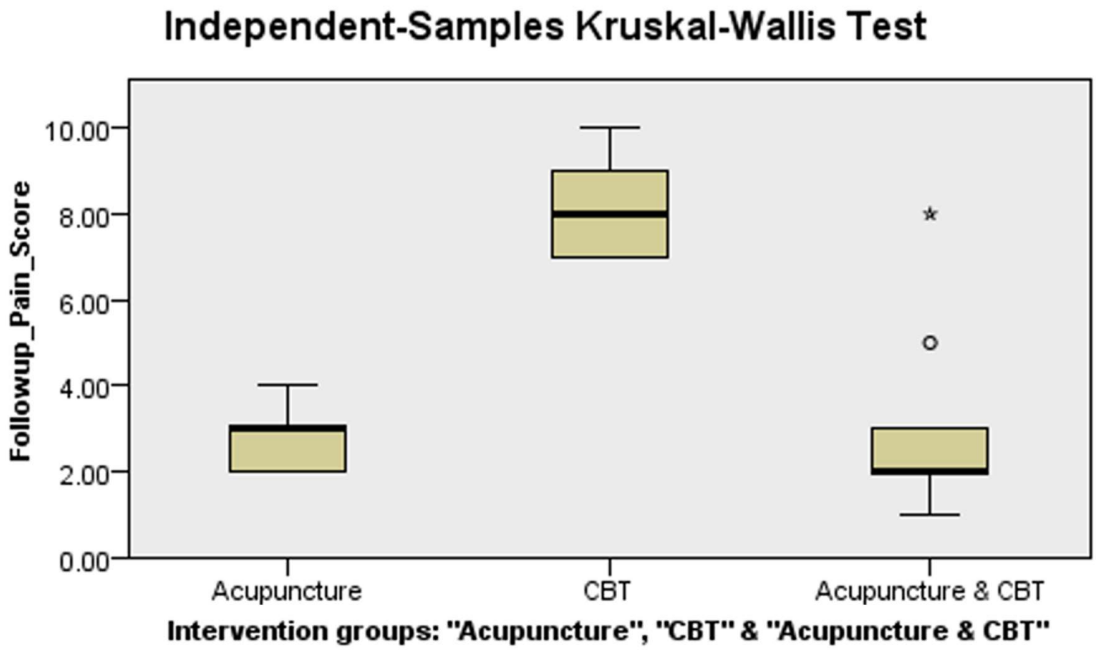
Figure 89: Post-treatment Pain score Post hoc test (all groups).

The post hoc test analysis revealed the Acupuncture group (14.30) ($p < 0.01$) and the Combined (Acupuncture & CBT) group (11.35) ($p < 0.01$) had statistically significantly lower Pain score than the CBT group (28.00) in the post-treatment phase. There was no statistically significant difference in pain score in the post-treatment phase between Acupuncture and Combined (Acupuncture & CBT) treatment intervention groups. The post hoc test pairwise comparisons of the mean rank of pain score in the post-treatment phase is shown in Figure 89.

4.5.4.3 Pain Score: 2-month Follow-up

Distributions of the Pain score were not similar for all groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase, as assessed by visual inspection of a boxplot shown in Figure 90. Since the distributions failed the assumption of similarly shaped distributions, the median, which is a well-known measure, could not be used to understand the differences between the groups. However, a comparison of the mean ranks of each distribution score was used to determine whether the Pain score in the 2-month follow-up phase in one group was higher or lower than the Pain score in other groups. The results shown as shown below include the:

- Box plot of distribution of Pain scores (Figure 90)
- median score (Table 128)
- mean rank (Table 129)
- hypothesis test summary for the Kruskal-Wallis H test on the 2-month follow-up Pain scores between the three groups (Table 130); and
- post hoc pairwise comparison (Figure 91)



Total N	31
Test Statistic	14.476
Degrees of Freedom	2
Asymptotic Sig. (2-sided test)	.001

1. The test statistic is adjusted for ties.

Figure 90: Boxplot of 2-month follow-up Pain score distribution (all groups).

The median of pain score (Acupuncture: 3.00, CBT: 8.00, and Combined (Acupuncture & CBT): 2.00) in the 2-month follow-up phase is shown in Table 128. The mean ranks of pain score (Acupuncture: 13.97, CBT: 28.00, and Combined (Acupuncture & CBT): 11.85) in the 2-month follow-up phase is shown in Table 129.

Table 128: 2-month follow-up Pain scores - group median scores.

	Intervention groups	Median	N
Followup_Pain_Score	Acupuncture	3.00	15
	CBT	8.00	6
	Acupuncture & CBT	2.00	10
	Total	3.00	31

Table 129: 2-month follow-up Pain scores - group mean rank.

	Intervention groups	Mean Rank	N
Followup_Pain_Score	Acupuncture	13.97	15
	CBT	28.00	6
	Acupuncture & CBT	11.85	10
	Total		31

The Kruskal-Wallis H test on the Pain score between the groups (Acupuncture, CBT, Combined (Acupuncture & CBT)) in the 2-month follow-up phase is shown in Table 130. The test rejected the null hypothesis that the distribution of the Pain score is same across all three intervention groups.

Table 130: 2-month follow-up Pain score Kruskal-Wallis H Hypothesis test summary (all groups).

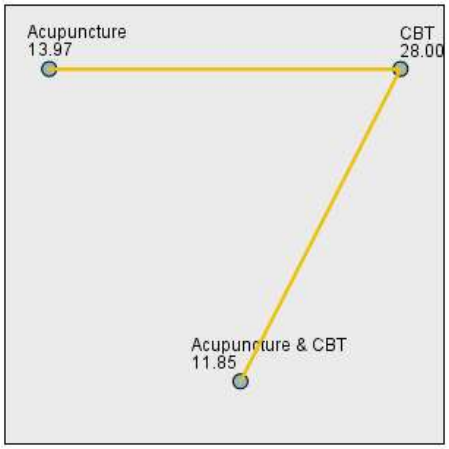
Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Followup_Pain_Score is the same across categories of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

The distributions of pain score in the 2-month follow-up phase were statistically significantly different between groups, $H(2) = 14.48$, $p < 0.01$ or $\chi^2(2) = 14.48$, $p < 0.01$. Consequently a post hoc analysis as seen in Figure 91 below, was required to determine which groups were different.

Pairwise Comparisons of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT"



Each node shows the sample average rank of Intervention groups: "Acupuncture", "CBT" & "Acupuncture & CBT".

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Acupuncture & CBT-Acupuncture	2.117	3.556	.595	.552	1.000
Acupuncture & CBT-CBT	16.150	4.498	3.591	.000	.001
Acupuncture-CBT	-14.033	4.207	-3.335	.001	.003

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same.
Asymptotic significances (2-sided tests) are displayed. The significance level is .05.
Significance values have been adjusted by the Bonferroni correction for multiple tests.

Figure 91: 2-month follow-up Pain score Post hoc test (all groups).

The post hoc test analysis revealed both Acupuncture group (13.97) ($p < 0.01$) and Combined (Acupuncture & CBT) group (11.85) ($p < 0.01$) had statistically significantly lower Pain score than the CBT group (28.00) in the 2-month follow-up phase. There was no statistically significant difference in pain score in the 2-month follow-up phase between Acupuncture and Combined (Acupuncture & CBT) groups. The post hoc test pairwise comparisons of the mean rank of pain score in the 2-month follow-up phase is shown in Figure 91.

5.0 Chapter 5: Discussion

This chapter discusses the results of the study presented in the previous chapter. A summary and examination of the results from each outcome measure (credibility and expectancy, Hopkins Symptoms Check List 25, Harvard Trauma Questionnaire and Numeric Pain Score) is undertaken in order, with appropriate extrapolations for each data set. The descriptive statistics are initially discussed, followed by an examination of within group and between group analysis at each time point or repeated outcome measurement.

5.1 Descriptive Statistics

5.1.1 Credibility and Expectancy Questionnaire

The mean credibility total score in the Acupuncture group was higher at post-treatment phase (σ = 25.20; SD = 1.90) and follow-up phase (σ = 25.20; SD = 1.94) than at pre-treatment phase (σ = 21.20; SD = 6.44). This could indicate that whilst participants considered acupuncture less credible prior to treatment, during and after treatment their belief in the therapy altered to a more positive disposition.

The mean credibility total score in the CBT group was higher at post-treatment (σ = 21.33; SD = 4.03) than at pre-treatment phase (σ = 16.17; SD = 3.87), and lower at follow-up (σ = 19.67; SD = 4.41) than at post-treatment phase but still higher than at pre-treatment phase. These results suggest that participants in the CBT group had a relatively positive perception of therapy prior to treatment, but this declined over time during the post and follow-up periods.

The mean credibility total score in the Combined (Acupuncture & CBT) group was higher at post-treatment phase (σ = 24.80; SD = 3.12) and follow-up phase (σ = 24.20; SD = 4.05) than at pre-treatment phase (σ = 21.90; SD = 3.25). For the combined therapy group, participants had low levels of belief in the credibility of their interventions, but this improved and maintained a more positive belief as treatment proceeded.

The mean expectancy total score in the Acupuncture group was higher at post-treatment phase (σ = 23.80; SD = 3.08) and follow-up phase (σ = 23.40; SD = 3.40) than at pre-treatment phase (σ = 21.33; SD = 5.23). This suggests that participants expectations of treatment outcomes improved and maintained as intervention progressed.

The mean expectancy total score in the CBT group was higher at post-treatment (σ = 18.33; SD = 3.93) than at pre-treatment phase (σ = 15.33; SD = 3.88), and lower at follow-up (σ = 17.33; SD = 4.23) than at post-treatment phase but still higher than at pre-treatment phase. CBT participants appeared to initially have higher expectations around treatment outcomes once treatment started, but as it progressed, expectations dropped at the follow-up stage. This suggests that unlike the other interventions, CBT was unable to maintain longer term effects, at least in respect of participant expectations of treatment outcomes.

The mean expectancy total score in the Combined (Acupuncture & CBT) group was higher at post-treatment phase (σ = 22.40; SD = 4.95) and follow-up phase (σ = 22.30; SD = 4.52) than at pre-treatment phase (σ = 18.70; SD = 3.68). For the combined group, expectations of treatment outcomes improved over time and were maintained. This may suggest that the combination of acupuncture as an adjunct treatment will modify the overall expectations of therapy. This could be an important outcome in terms of trying to support ongoing CBT which, whilst considered as a gold standard treatment, has suffered with poor retention rates during therapy with the refugee population in this study.

The mean credibility and expectancy total scores for all groups were higher in both post-treatment and 2-month follow-up phases than in the pre-treatment phase. This indicated that particpants were more favourably disposed to the treatment they were receiving in their treatment groups. Moreover, the mean credibility total scores and mean expectancy total scores in both the Acupuncture group and Combined (Acupuncture & CBT) group were higher as compared to the CBT group at pre-treatment, post-treatment and 2-month follow-up phases. This suggests that the participants were more favourably disposed towards the Acupuncture intervention, even in combination with CBT than when receiving CBT alone.

5.1.2 Hopkins Symptoms Check List 25 (HSCL-25)

5.1.2.1 Hopkins Anxiety Score

The mean Hopkins anxiety score in the Acupuncture group was lower at post-treatment phase (σ = 1.41; SD = 0.36) than at pre-treatment phase (σ = 2.07; SD = 0.47) but was lower at 2-month follow-up phase (σ = 1.35; SD = 0.42) than at post-treatment phase. This suggests that anxiety levels were successfully reduced and then maintained at a reduced level post-treatment.

The mean Hopkins anxiety score in the CBT group was lower at post-treatment phase (σ = 1.77; SD = 0.73) than at pre-treatment phase (σ = 2.22; SD = 0.81) but was higher at 2-month follow-up phase (σ = 1.93; SD = 0.76) than at post-treatment phase. These results would indicate that CBT was unsuccessful in maintaining lowered levels of anxiety after initially dropping anxiety to non-symptomatic levels.

The mean Hopkins anxiety score in the Combined (Acupuncture & CBT) group was lower at post-treatment phase (σ = 1.73; SD = 0.60) than at pre-treatment phase (σ = 2.58; SD = 0.76) and was even lower at 2-month follow-up phase (σ = 1.65; SD = 0.60) than at post-treatment phase. In light of the CBT results above, these results for the combined group suggest that acupuncture may continually moderate lower levels of anxiety into the follow-up phase.

The Hopkins Symptoms Check List 25 stipulates that if the mean of the Hopkins anxiety score is above the threshold of 1.75, then anxiety is symptomatic. The results indicated that anxiety was symptomatic across each treatment group at pre-treatment phase (Acupuncture: σ = 2.07; CBT: σ = 2.22; Combined: σ = 2.58). These results are comparable to the Hollifield et al. (2007) study which showed baselines greater than 2.0 (Acupuncture: σ = 2.45; CBT: σ = 2.40; Waitlist Control: σ = 2.24), which were above the threshold. The results from this study indicated that anxiety had improved across each treatment group at post-treatment phase as compared to at pre-treatment phase. The results also indicated that anxiety was no

longer symptomatic in the Acupuncture group at post-treatment phase (σ = 1.41) and at 2-month follow-up (σ = 1.35). The results also indicated that anxiety was no longer symptomatic in the Combined (Acupuncture & CBT) group at post-treatment phase (σ = 1.73) and at 2-month follow-up phase (σ = 1.65). However, the CBT group was unable to maintain the treatment benefits during the follow-up phase and their anxiety returned to symptomatic levels. These results may suggest that the acupuncture may have had a continuing moderating effect on anxiety during and post-treatment. Higher mean credibility and expectancy total scores in both Acupuncture and Combined (Acupuncture & CBT) groups than the CBT group may have also contributed to these results. A similar outcome was observed by the Hollifield et al. (2007) study where both the Acupuncture group (post-treatment: σ = 1.67; follow-up: σ = 1.66) and CBT group (post-treatment: σ = 1.78; follow-up: σ = 1.81) showed improvements in anxiety scores, but the CBT group was also unable to maintain anxiety scores below the threshold during the follow-up period.

5.1.2.2 Hopkins Depression Score

The mean Hopkins depression score in the Acupuncture group was lower at post-treatment phase (σ = 1.41; SD = 0.25) than at pre-treatment phase (σ = 2.15; SD = 0.41) and remained similar at 2-month follow-up phase (σ = 1.43; SD = 0.40). This suggests that depression levels were successfully reduced and then maintained at a reduced level post-treatment.

The mean Hopkins depression score in the CBT group was lower at post-treatment phase (σ = 2.19; SD = 0.45) than at pre-treatment phase (σ = 2.41; SD = 0.81) and was even lower at 2-month follow-up phase (σ = 1.85; SD = 0.70) than at post-treatment phase. These results would indicate that CBT was successful in lowering levels of depression, which continued to improve during the follow-up period.

The mean Hopkins depression score in the Combined (Acupuncture & CBT) group was lower at post-treatment phase (σ = 1.83; SD = 0.61) than at pre-treatment phase (σ = 2.39; SD = 0.63) and was even lower at 2-month follow-up phase (σ = 1.77; SD = 0.69) than at post-

treatment phase. Similar to the CBT group, the combined intervention was able to lower participant depression levels that continued to show improvement into the follow-up phases of the study.

The Hopkins Symptoms Check List 25 stipulates that if the mean of the Hopkins depression score is above the threshold of 1.75, then depression is symptomatic. The results indicated that depression was symptomatic across each treatment group at pre-treatment phase (Acupuncture: $\sigma = 2.15$; CBT: $\sigma = 2.41$; Combined: $\sigma = 1.83$). These results are comparable to the Hollifield et al. (2007) study with baseline scores greater than 2.0 (Aucupunture: $\sigma = 2.50$; CBT: $\sigma = 2.63$; Waitlist Control: $\sigma = 2.61$), above the threshold. The results from this study indicated that depression had improved across each treatment group at post-treatment phase and at 2-month follow-up phase as compared to the pre-treatment phase. They also indicated that depression was no longer symptomatic in the Acupuncture group ($\sigma = 1.41$) at post-treatment phase and at 2-month follow-up ($\sigma = 1.43$). However, whilst the CBT and Combined group depression scores continued to drop after the post-treatment measurement suggesting a marginal improvement in depression symptoms, both of these groups still maintained Hopkins depression scores above the threshold value of 1.75 (CBT $\sigma = 1.85$, Combined $\sigma = 1.77$).

When compared to the Hollifield et al. (2007) study both the Acupuncture and CBT group failed to achieve outcome below the threshold of 1.75 (Acupuncture: $\sigma = 1.89$ (post) & 1.88 (follow-up); CBT: $\sigma = 2.00$ (post) & 1.91 (follow-up)). On the other hand, the two other comparable studies, Engel et al. (2014) and Feng et al. (2019) showed improvements in their depression scores for their studies. Engel et al. (2014) showed improvement in Beck Depression Inventory-II (BDI-II) scores < 15 (mild or no depression symptoms) in the Acupuncture plus Usual PTSD Care group. Similarly, Feng et al. (2019) showed acupuncture as adjunct to another therapy improved depression from very severe (HAMD-17: $26.2 \geq 23$) to mild (HAMD-17: 10.1 which is between 8 and 13) symptoms while acupuncture adjunct to 2 other therapies (ie. TEAS combined with CBT plus sertraline) showed depression was no longer symptomatic (HAMD-17: $6.4 \leq 7$) at follow-up. There may be several reasons for

the different outcomes. For example, the different measures (Hopkins vs Beck vs HAMD) may show different sensitivities in refugee populations. There may also be a difference in the actual study populations as well as differences in the acupuncture intervention which is not standardised in the way drug therapy may be standardised. Nonetheless, there is a trend in these data which suggest that acupuncture may have a positive effect and further investigation is warranted.

The mixed results in this study suggest that participants who received acupuncture may be able to attain and maintain an asymptomatic score quicker than other participants exposed to CBT. Interestingly, acupuncture when combined with CBT was not able to achieve similar results to acupuncture alone. It is possible that the nature of CBT where participants are required to revisit their trauma may actually contribute to a slower recovery, even though potentially positive results could be achieved in the longer term, through what may be an unexplained self-regulatory mechanism given the continued gradual improvement over time during the follow-up period. This is in contrast to the acupuncture experience which seems to drop depression scores to asymptomatic level which are then simply maintained for the follow-up period. As with the anxiety scores, the higher mean credibility and expectancy total scores in both Acupuncture and Combined (Acupuncture & CBT) groups than the CBT group may have also contributed to these results.

5.1.2.3 Hopkins Total Score

The Hopkins Total score is an aggregate of the separate anxiety and depression scores. It is commonly reported as a total score, though the sub-scales provided greater differentiation that allow practitioners to determine whether some is suffering with a predisposition to either anxiety or depression, to allow for the adaptation of therapy. The total scores are reported below for completeness in relation to the protocol, though they offer no additional insight beyond the analysis of the sub-scales already presented.

The mean Hopkins total score in the Acupuncture group was lower at post-treatment phase ($\sigma = 1.41$; SD = 0.23) than at pre-treatment phase ($\sigma = 2.11$; SD = 0.40) and remained similar at 2-month follow-up phase ($\sigma = 1.40$; SD = 0.40).

The mean Hopkins total score in the CBT group was lower at post-treatment phase ($\sigma = 2.02$; SD = 0.54) than at pre-treatment phase ($\sigma = 2.33$; SD = 0.80) and was even lower at 2-month follow-up phase ($\sigma = 1.88$; SD = 0.72) than at post-treatment phase.

The mean Hopkins total score in the Combined (Acupuncture & CBT) group was lower at post-treatment phase ($\sigma = 1.79$; SD = 0.57) than at pre-treatment phase ($\sigma = 2.47$; SD = 0.67) and was even lower at 2-month follow-up phase ($\sigma = 1.72$; SD = 0.64) than at post-treatment phase.

The Hopkins Symptoms Check List 25 stipulates that if the mean of the Hopkins total score is above the threshold of 1.75, then anxiety and/or depression total is symptomatic. The results indicated that anxiety and/or depression symptoms were present across each treatment group at pre-treatment phase (Acupuncture: $\sigma = 2.11$; CBT: $\sigma = 2.33$; Combined: $\sigma = 2.47$). The results indicated that anxiety and/or depression symptoms had improved across each treatment group at post-treatment phase and at 2-month follow-up phase as compared to at pre-treatment phase. The results also indicated that anxiety and/or depression was no longer symptomatic in the Acupuncture group ($\sigma = 1.41$) at post-treatment phase and at 2-month follow-up ($\sigma = 1.40$). Anxiety and/or depression symptoms were also indicated to be marginally improved in CBT group and Combined (Acupuncture & CBT) group but not sufficiently for the total score to be non-symptomatic as their Hopkins total scores were still above the threshold value. Higher mean credibility and expectancy total scores in both Acupuncture and Combined (Acupuncture & CBT) groups than the CBT group may have also contributed to these results.

5.1.3 Harvard Trauma Questionnaire

The Harvard Trauma Questionnaire is a measure of severity of PTSD.

The mean DSM-IV score in the Acupuncture group was lower at post-treatment phase (σ = 1.35; SD = 0.24) than at pre-treatment phase (σ = 2.00; SD = 0.59) and remained similar at 2-month follow-up phase (σ = 1.42; SD = 0.48). These results suggest that acupuncture successfully reduced and maintained PTSD symptoms.

The mean DSM-IV score in the CBT group was lower at post-treatment phase (σ = 2.36; SD = 0.59) than at pre-treatment phase (σ = 2.66; SD = 0.69) and was even lower at 2-month follow-up phase (σ = 1.89; SD = 0.69) than at post-treatment phase. These outcomes suggest the CBT was able to reduce the symptoms of PTSD during treatment, which then continued to improve during the follow-up period.

The mean DSM-IV score in the Combined (Acupuncture & CBT) group was lower at post-treatment phase (σ = 1.86; SD = 0.63) than at pre-treatment phase (σ = 2.49; SD = 0.72) and was even lower at 2-month follow-up phase (σ = 1.73; SD = 0.67) than at post-treatment phase. Similar to the CBT, the combined treatment was able to reduce the symptoms of PTSD during treatment, which then continued to improve during the follow-up period.

The Harvard Trauma Questionnaire stipulates that if the mean DSM-IV score is above the threshold of 2.5, then PTSD is symptomatic. The results indicated that PTSD was symptomatic in CBT group (σ = 2.66) and borderline in the Combined (Acupuncture & CBT: σ = 2.49) but not symptomatic in Acupuncture group (σ = 2.00) at pre-treatment phase. Regardless of the starting score, the results indicated that PTSD had improved across each treatment group at post-treatment phase and at 2-month follow-up phase as compared to at pre-treatment phase. The results also indicated that PTSD was no longer symptomatic in both the Acupuncture group (σ = 1.41) and Combined (Acupuncture & CBT: σ = 1.86) group at post-treatment phase and at 2-month follow-up (σ = 1.89 and σ = 1.86 respectively). Although PSTD was not symptomatic in Acupuncture group at pre-treatment phase, the

DSM-IV score further improved at post-treatment phase (σ = 1.35) and at 2-month follow-up phase (σ = 1.42). These results were affected by the uneven distribution of the sample as was discussed earlier in chapter 4. Whilst it could be claimed that acupuncture improved PTSD symptoms and the percentage drop in symptom scores between groups may be comparable, it is not possible to determine if those symptoms would have improved if they were classified at a symptomatic level at the pre-treatment point. It may be that acupuncture is effective for mild cases of PTSD, but less so for sever cases. Without a data set of participants with severe presentation of PTSD, it is impossible for this study to determine this question.

The Harvard Trauma Questionnaire was also used in the Hollifield et al. (2007) and Engel et al. (2014) studies for similar intervention of acupuncture alone or acupuncture as an adjunct therapy to CBT. In the Hollifield et al. (2007) study, the Acupuncture group did improve in PTSD at post-treatment and at follow-up at follow-up (Acupuncture: σ = 15.42 > 13 [PSS-SR]). The CBT in the present study did improve in PTSD at post-treatment and at follow-up but was still symptomatic at follow-up. These results are comparable with the improvements in the CBT group in Hollifield et al. (2007) (CBT: σ = 16.68 > 13 [PSS-SR]) at follow-up as compared to baseline (CBT: σ = 32.52 > 13 [PSS-SR]) but still symptomatic at follow-up.

The PTSD in the Combined (Acupuncture & CBT) group of this present study improved at post-treatment (σ = 1.86 < 2.5) and follow-up (σ = 1.73 < 2.5) even though it was asymptomatic at pre-treatment (σ = 2.49 < 2.5). These improvements are comparable to the results of Engel et al. (2014) and Feng et al. (2019). The PTSD improvement in the Acupuncture plus Usual PTSD Care group (PCL: 38.7 > 35; CAPS: 41.2 > 19) and Usual PTSD Care group (PCL: 45.8 > 35; CAPS: 59.2 > 19) in Engel et al. (2014) study were still symptomatic at follow-up. Similar results were presented by Feng et al. (2019) where acupuncture was an adjunct therapy where PTSD symptoms improved from baseline (PCL-C=63.9 > 35; CAPS=71.3 > 19) to follow-up (PCL-C=30.1 < 35; CAPS=34.3 > 19) for TEAS (transcutaneous electrical acupoint stimulation) plus CBT group. Further improvements were

reported by Feng et al. (2019) from baseline (PCL-C=62.4 > 35; CAPS=73.9 > 19) to follow-up (PCL-C=23.9 < 35; CAPS=29.0 > 19) for TEAS plus CBT plus sertraline group. Although there were improvements PTSD were still symptomatic (CAPS > 19).

5.1.4 Numeric Pain Score

The mean Pain score in the Acupuncture group was lower at post-treatment phase (σ = 2.80; SD = 0.78) than at pre-treatment phase (σ = 9.13; SD = 0.99) and remained similar at 2-month follow-up phase (σ = 2.73; SD = 0.80). This suggest that acupuncture was able to moderate participant pain level and maintain higher pain thresholds (lower levels of pain) over time.

The mean Pain score in the CBT group was lower at pre-treatment phase (σ = 8.00; SD = 1.27) and remained similar at post-treatment phase (σ = 8.17; SD = 1.17) and at 2-month follow-up phase (σ = 8.17; SD = 1.17). These results indicate that CBT has no effect on pain in this study's sub-population.

The mean Pain score in the Combined (Acupuncture & CBT) group was lower at post-treatment phase (σ = 2.80; SD = 1.99) than at pre-treatment phase (σ = 8.90; SD = 0.99) and remained similar at 2-month follow-up phase (σ = 2.90; SD = 2.08). Participants in this group were able at achieve a similar level of pain threshold and lower level of pain as the acupuncture group and maintain that over time.

These results indicated that mean pain scores were similar across each treatment group at the pre-treatment phase (Acupuncture: σ = 9.13; CBT: σ = 8.00; Combined: σ = 8.90). The pain had improved (lower scores) in both the Acupuncture group (σ = 2.80) and Combined (Acupuncture & CBT: σ = 2.80) at post-treatment phase and remained stable at 2-month follow-up phase (Acupuncture: σ = 2.73; Combined: σ = 2.90) as compared to the pre-treatment phase. This suggest that acupuncture was the moderating intervention that affected this outcome. This is consistent with the literature (Engel et al. 2014; Feng et al. 2019) which

suggest that acupuncture is an effective pain control. Higher mean credibility and expectancy total scores in both Acupuncture and Combined (Acupuncture & CBT) groups than the CBT group may have also contributed to these results. In particular, it may be that participants were familiar with acupuncture as a treatment for pain and so considered this an appropriate treatment, whereas CBT would not be considered as appropriate or associated with treatment of pain.

5.2 Within Group Comparison

5.2.1 Credibility and Expectancy Questionnaire

A Friedman test was performed to determine if there were differences in the participants' credibility and expectancy scores within groups between three time points - the pre-treatment phase, post-treatment phase and 2-month follow-up phase - in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 131.

Table 131: Friedman test statistics on credibility and expectancy comparing Pre vs Post, Post vs Follow-up and Pre vs Follow-up for each of the groups.

	Test Statistic	**Pre Vs Post (p value)**	**Post Vs Follow-up (p value)**	**Pre Vs Follow-up (p value)**
Credibility/Expectancy (Within Group)				
Credibility				
AC	$\chi2(2) = 13.89$, **p < 0.01***	**0.04***	1.00	**0.04***
CBT	$\chi2(2) = 5.82$, p = 0.06	N/A	N/A	N/A
AC + CBT	$\chi2(2) = 3.25$, p = 0.20	N/A	N/A	N/A
Expectancy				
AC	$\chi2(2) = 5.59$, p = 0.06	N/A	N/A	N/A
CBT	$\chi2(2) = 1.73$, p = 0.42	N/A	N/A	N/A
AC + CBT	$\chi2(2) = 5.10$, p = 0.08	N/A	N/A	N/A

For the Acupuncture group, there were statistically significant differences in credibility scores between the time points, $\chi2(2) = 13.89$, $p < 0.01$. Credibility was statistically significantly higher at post-treatment phase (Mdn = 26.00) compared to at pre-treatment phase (Mdn = 23.00) ($p = 0.04$) and at 2-month follow-up phase (Mdn = 26.00) compared to

pre-treatment phase (p = 0.04), but not statistically significant between post-treatment phase and 2-month follow-up phase. This would suggest that participants started with relatively high level of credibility, which may have waned during the treatment phase, but was restored to pre-treatment levels by the time of follow-up. The Acupuncture group expectancy scores were higher at post-treatment (Mdn = 24.00) and 2-month follow-up (Mdn = 24.00) phases than at pre-treatment (Mdn = 22.00) phase, but the differences were not statistically significant, $\chi 2(2) = 5.59$, p = 0.06. The outcomes have been graphed in Figure 92.

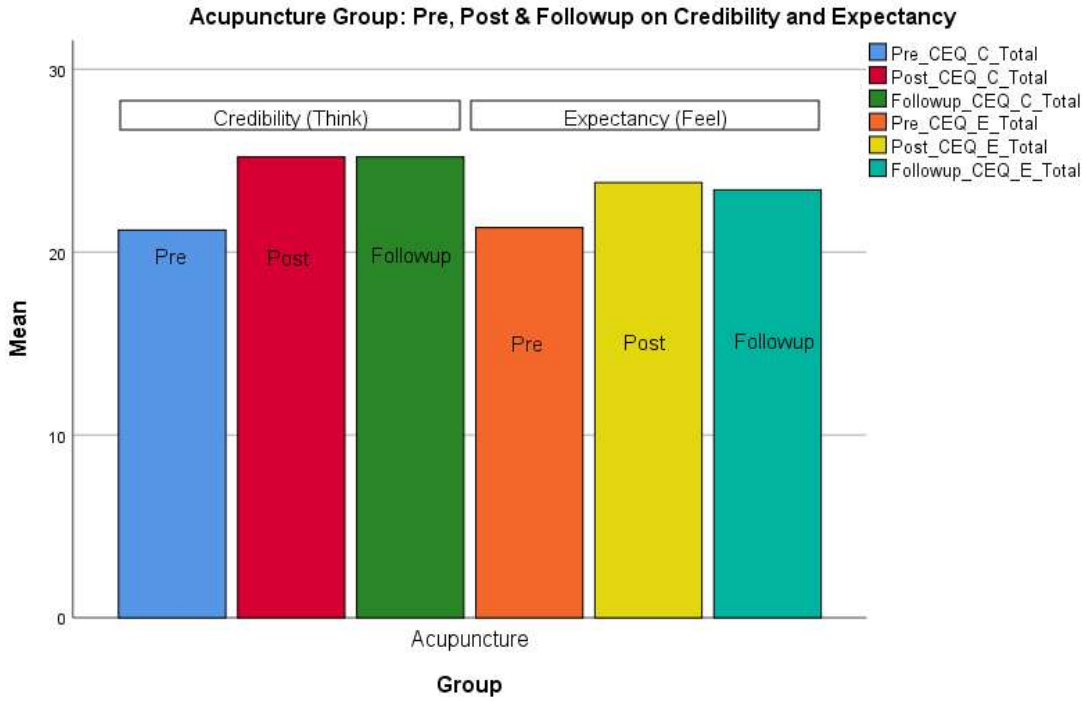


Figure 92: Graph of mean values of credibility and expectancy on Acupuncture group at pre, post and 2-month follow-up.

For the CBT group, credibility was higher at post-treatment (Mdn = 21.50) and 2-month follow-up (Mdn = 21.00) phases than at pre-treatment (Mdn = 16.50) phase, but the differences were not statistically significant, $\chi 2(2) = 5.82$, $p = 0.06$. Whilst these results were not statistically significant, they suggest that CBT had a lower credibility to start with which improved over time. However, this was also the group with the largest drop-out rate suggesting that there may be wider credibility issues in regards to this intervention. The CBT group expectancy scores were higher at post-treatment (Mdn = 18.00) and 2-month follow-up (Mdn = 17.50) phases than at pre-treatment (Mdn = 16.00) phase, but the differences were not statistically significant, $\chi 2(2) = 1.73$, $p = 0.42$. The outcomes have been graphed in Figure 93.

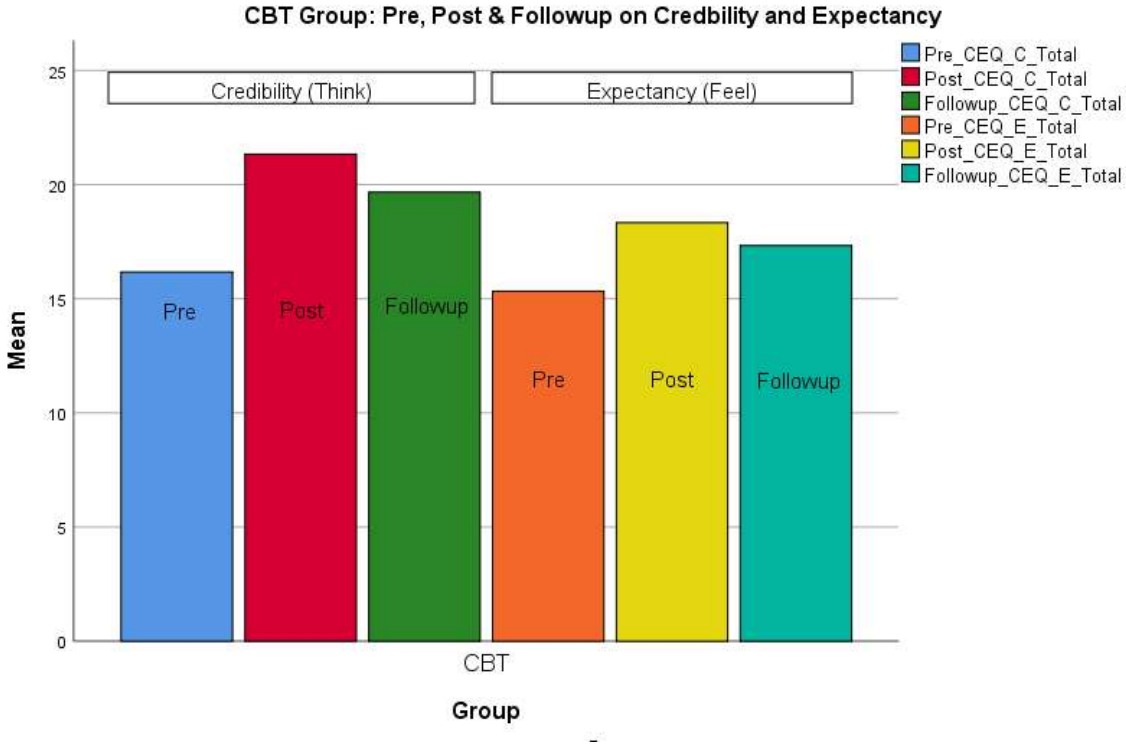


Figure 93: Graph of mean values of credibility and expectancy on CBT group at pre, post and 2-month follow-up.

For the Combined (Acupuncture & CBT) group, credibility was higher at post-treatment (Mdn = 26.50) and 2-month follow-up (Mdn = 26.50) phases than at pre-treatment (Mdn = 21.50) phase, but the differences were not statistically significant, $\chi 2(2) = 3.25$, $p = 0.20$. The expectancy scores were higher at post-treatment (Mdn = 25.00) and 2-month follow-up (Mdn = 25.00) phases than at pre-treatment (Mdn = 17.50) phase, but the differences were not statistically significant, $\chi 2(2) = 5.10$, $p = 0.08$.

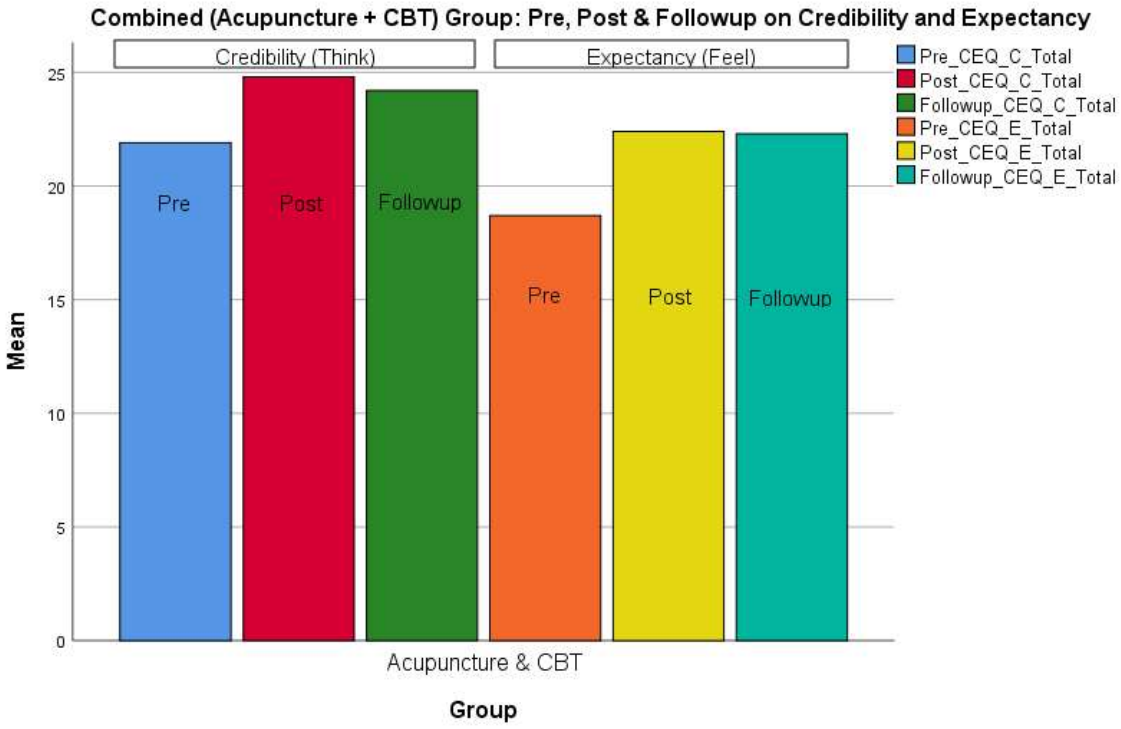


Figure 94: Graph of mean values of credibility and expectancy on Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up.

For the Credibility and Expectancy data, the major findings were

- The acupuncture group had a significant difference in credibility scores ($\chi 2(2) = 13.89$, $p < 0.01$) at the time points of pre vs post intervention ($p = 0.04$) and pre vs follow-up ($p = 0.04$)
- No significant scores for credibility or expectancy were recorded for the other groups at any time point.

This suggests that participants in the acupuncture group had the same level of belief and credibility of their intervention when they entered and exited the protocol. It also suggests that those participants in the acupuncture group may have had a higher belief in the credibility of their treatment compared to those groups that underwent CBT. No group had significant expectancy scores, suggesting there were no differences in expectation of outcomes from any of the interventions.

5.2.2 Hopkins Symptoms Check List 25

A Friedman test was performed to determine if there were differences in the participants' anxiety, depression and total scores within groups between three time points - pre-treatment phase, post-treatment phase and 2-month follow-up phase - in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 132.

Table 132: Friedman test statistics on Hopkins Anxiety, Depression and Total scores comparing Pre vs Post, Post vs Follow-up and Pre vs Follow-up for each of the groups.

	Test Statistic	**Pre Vs Post (p value)**	**Post Vs Follow-up (p value)**	**Pre Vs Follow-up (p value)**
Hopkins (Within Group)				
Hopkins Anxiety				
AC	$\chi2(2) = 17.08$, **p < 0.01***	**0.02***	0.95	**< 0.01***
CBT	$\chi2(2) = 2.70$, p = 0.26	N/A	N/A	N/A
AC + CBT	$\chi2(2) = 11.49$, **p < 0.01***	0.06	1.00	**0.01***
Hopkins Depression				
AC	$\chi2(2) = 24.75$, **p < 0.01***	**< 0.01***	1.00	**< 0.01***
CBT	$\chi2(2) = 2.33$, p = 0.31	N/A	N/A	N/A
AC + CBT	$\chi2(2) = 8.21$, **p = 0.02***	0.13	1.00	**0.02***
Hopkins Total				
AC	$\chi2(2) = 23.23$, **p < 0.01***	**< 0.01***	1.00	**< 0.01***
CBT	$\chi2(2) = 3.00$, p = 0.22	N/A	N/A	N/A
AC + CBT	$\chi2(2) = 9.53$, **p = 0.01***	0.10	1.00	**0.01***

The Acupuncture group demonstrated statistically significant differences in the anxiety scores between the time points, $\chi2(2) = 17.08$, $p < 0.01$. Anxiety scores were statistically significantly lower at post-treatment phase (Mdn = 1.30) compared to at pre-treatment phase (Mdn = 2.00) ($p = 0.02$) and at 2-month follow-up phase (Mdn = 1.20) compared to pre-treatment phase ($p < 0.01$), but not statistically significant between post-treatment phase and 2-month follow-up phase.

The Acupuncture group, also showed statistically significant differences in the depression scores between the time points, $\chi2(2) = 24.75$, $p < 0.01$. Depression were statistically significantly lower at post-treatment phase (Mdn = 1.47) compared to at pre-treatment phase (Mdn = 2.13) ($p < 0.01$) and at 2-month follow-up phase (Mdn = 1.40) compared to pre-treatment phase ($p < 0.01$), but not statistically significant between post-treatment phase and 2-month follow-up phase.

The total scores for Acupuncture group, showed statistically significant differences in the depression and/or anxiety (based on Hopkins total score) between the time points, $\chi2(2) = 23.23$, $p < 0.01$. Depression and/or anxiety (based on Hopkins total score) were statistically significantly lower at post-treatment phase (Mdn =1.44) compared to at pre-treatment phase (Mdn = 2.08) ($p < 0.01$) and at 2-month follow-up phase (Mdn = 1.32) compared to pre-treatment phase ($p < 0.01$), but not statistically significant between post-treatment phase and 2-month follow-up phase. These results have been graphed in Figure 95.

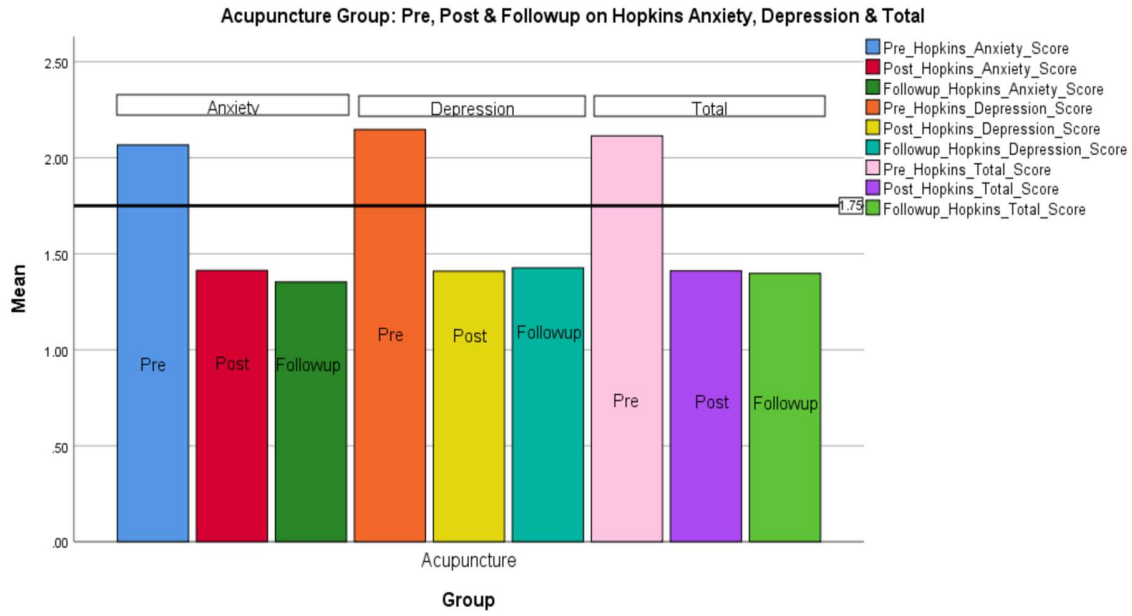


Figure 95: Graph of mean values of Hopkins Anxiety, Depression and Total scores on Acupuncture group at pre, post and 2-month follow-up.

The CBT group, demonstrated anxiety scores lower at post-treatment (Mdn = 2.10) and 2-month follow-up (Mdn = 1.90) phases than at pre-treatment (Mdn = 2.10) phase, but the differences were not statistically significant, $\chi 2(2) = 2.70$, $p = 0.26$.

The depression scores were lower at post-treatment (Mdn = 2.17) and 2-month follow-up (Mdn = 1.50) phases than at pre-treatment (Mdn = 2.27) phase, but the differences were not statistically significant, $\chi 2(2) = 2.33$, $p = 0.31$.

The Hopkins total score depression and/or anxiety for the CBT group was lower at post-treatment (Mdn = 1.90) and 2-month follow-up (Mdn = 1.86) phases than at pre-treatment (Mdn = 2.18) phase, but the differences were not statistically significant, $\chi 2(2) = 3.00$, $p = 0.22$. These results have been graphed in Figure 96.

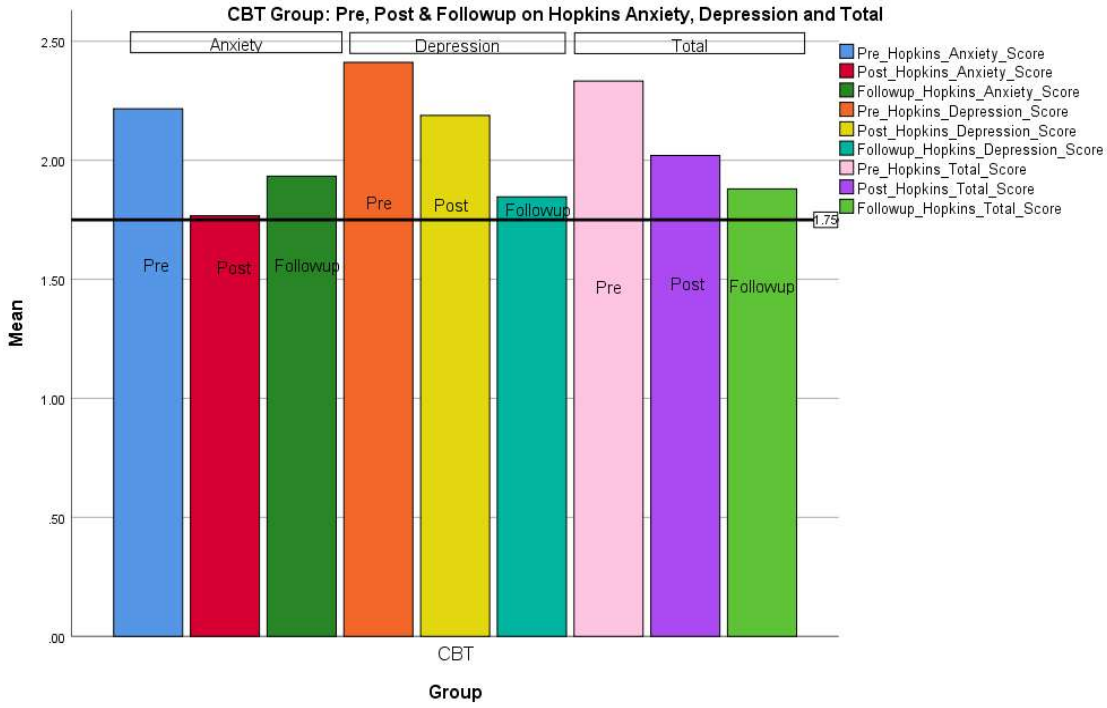


Figure 96: Graph of mean values of Hopkins Anxiety, Depression and Total scores on CBT group at pre, post and 2-month follow-up.

Finally, for Combined (Acupuncture & CBT) group, there were statistically significant differences in the anxiety between the time points, $\chi 2(2) = 11.49$, $p < 0.01$. Anxiety were statistically significantly lower at 2-month follow-up phase (Mdn =1.50) compared to at pre-treatment phase (Mdn = 2.50) ($p = 0.01$), but not statistically significant between pre-treatment phase and post-treatment phase or between post-treatment phase and 2-month follow-up phase. This suggests that this change may be anomalous rather than due to an acupuncture effect as it would be expected that changes would have occurred at the post-treatment point. The extent to which there is an interaction effect between acupuncture and CBT is unknown and it is possible that any beneficial effects of acupuncture may have been countered by ongoing CBT which has a trauma focus. The sample size in this study is simply too small to postulate.

Depression scores for the Combined (Acupuncture & CBT) group, showed statistically significant differences between the time points, $\chi 2(2) = 11.49$, $p < 0.01$. Depression scores were statistically significantly lower at 2-month follow-up phase (Mdn =1.63) compared to at pre-treatment phase (Mdn = 2.43) ($p = 0.02$), but not statistically significant between pre-treatment phase and post-treatment phase or between post-treatment phase and 2-month follow-up phase.

The Hopkins total score depression and/or anxiety for the Combined (Acupuncture & CBT) group, demonstrated statistically significant differences in the depression and/or anxiety (based on Hopkins total score) between the time points, $\chi 2(2) = 9.53$, $p = 0.01$. Depression and/or anxiety (based on Hopkins total score) were statistically significantly lower at 2-month follow-up phase (Mdn =1.56) compared to at pre-treatment phase (Mdn = 2.50) ($p = 0.01$), but not statistically significant between pre-treatment phase and post-treatment phase or between post-treatment phase and 2-month follow-up phase. These outcomes have been graphed in Figure 97.

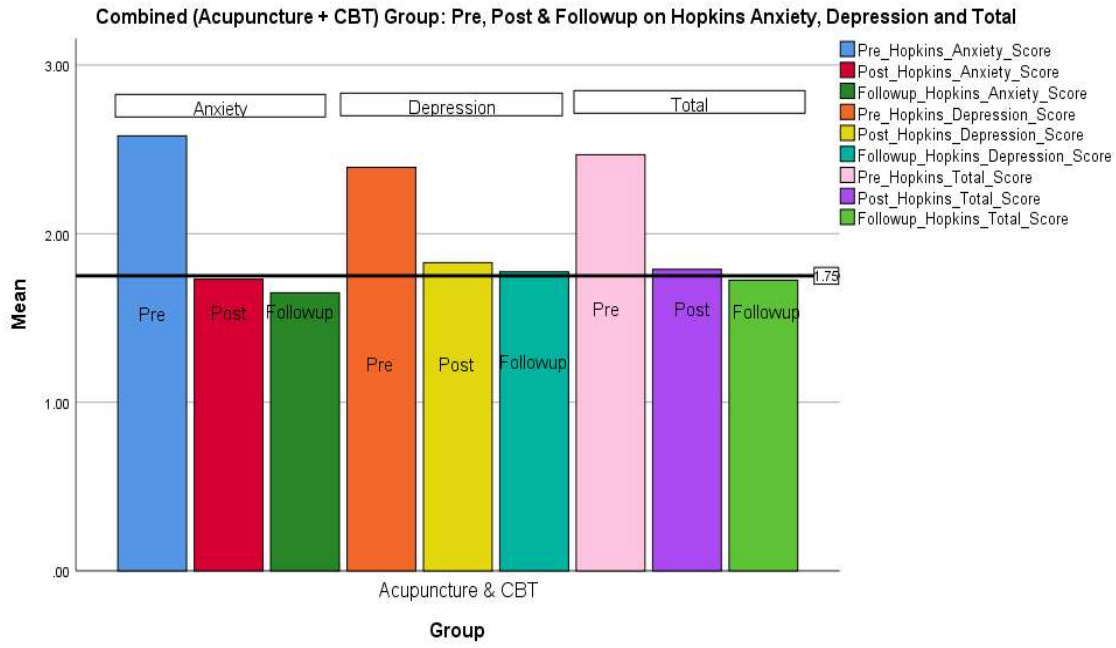


Figure 97: Graph of mean values of Hopkins Anxiety, Depression and Total scores on Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up.

For the Hopkins 25 the major findings were:

- The acupuncture group had a significant difference ($\chi 2(2) = 17.08$, $p < 0.01$) in anxiety scores pre and post intervention ($p=0.02$) and pre and follow-up interventions ($p < 0.01$)
- Similarly, for depression scores there were significant differences ($\chi 2(2) = 24.75$, $p < 0.01$) between pre and post intervention ($p < 0.01$) and pre and follow-up interventions ($p < 0.01$)
- There was no significant difference between post and follow-up for any of the groups.
- This suggests that acupuncture has an effect during the treatment phase, which was then maintained from the post-treatment point to the follow-up point two months later

In terms of treating anxiety, there were significant improvements in anxiety for the Acupuncture group, similar to Hollifield et al (2007), and combined groups with scores stabilising at 2-month follow-up. This was in contrast to the CBT group which showed no

significant improvements in anxiety, contrasting to the significant improvement for the CBT group in Hollifield et al. (2007) study This difference may be due to the different type of population in the studies. Statistically significant improvements in anxiety scores for the acupuncture group could be associated with statistically significant high credibility scores in the Acupuncture group at post and 2-month follow-up as compared to pre-treatment phase. This may account for some of the effect in treating anxiety. However, there was no statistically significant credibility scores for the Combined (Acupuncture & CBT) group across all 3 time points, though there was a statistically significant improvements in anxiety scores at the 2-month follow-up as compared to the pre-treatment phase. This suggests that acupuncture may not have a mediating effect on anxiety or that in combination with CBT, the effects of acupuncture on anxiety are reduced. Although the results show a potential promising acupuncture effect in treating anxiety similar to Hollifield et al. (2007), the results are inconclusive due to the small sample size in the study.

A similar pattern of presentation for the depression scores was observed. There were significant improvements in depression scores for the Acupuncture group that stabilised at 2-month follow-up, similar to Hollifield et al (2007). There were also significant improvements in depression scores for the Combined (Acupuncture & CBT) group at 2-month follow-up as compared to baseline, similar to the Acupuncture plus Usual PTSD Care group in Engel et al. (2014) study. Similar results were also reported by Feng et al. (2019) on depression improvement for acupuncture as an adjunct therapy. These could be aligned with significantly high credibility scores in Acupuncture group at post and 2-month follow-up as compared to pre-treatment phase, but again there was no statistically significant credibility scores for the Combined (Acupuncture & CBT) group across all 3 time points, though there was statistically significant improvements in depression scores at the 2-month follow-up as compared to the pre-treatment phase. Again such correlations are speculative. There was however no significant improvements in depression scores for the CBT group in contrast to Hollifield et al.(2007). This difference may be due to the different type of population in the studies.

The Total Hopkins 25 scores, being an amalgam of the anxiety and depression subscales, showed no remarkable differences from the subscale scores already discussed. There were significant improvements in anxiety and/or depression for the Acupuncture group that stabilised at 2-month follow-up. There were significant improvements in anxiety and/or depression for the Combined (Acupuncture & CBT) group at 2-month follow-up as compared to baseline. There were no significant improvements in anxiety and/or depression for the CBT group. The results remain inconclusive due to small sample sizes.

5.2.3 Harvard Trauma Questionnaire

A Friedman test was performed to determine if there were differences in the participants' PTSD symptoms within groups between three time points - pre-treatment phase, post-treatment phase and 2-month follow-up phase - in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 133.

Table 133: Friedman test statistics on Harvard DSM IV comparing Pre vs Post, Post vs Follow-up and Pre vs Follow-up for each of the groups.

	Test Statistic	**Pre Vs Post (p value)**	**Post Vs Follow-up (p value)**	**Pre Vs Follow-up (p value)**
Harvard (Within Group)				
Harvard Symptoms				
AC	$\chi2(2) = 24.67$, **p < 0.01***	**< 0.01***	1.00	**< 0.01***
CBT	$\chi2(2) = 10.33$, **p = 0.01***	0.75	0.13	**< 0.01***
AC + CBT	$\chi2(2) = 14.76$, **p < 0.01***	0.13	0.09	**< 0.01***

The Acupuncture group demonstrated statistically significant differences in the PTSD between the time points, $\chi2(2) = 24.67$, $p < 0.01$. PTSD were statistically significantly lower

at post-treatment phase (Mdn = 1.31) compared to at pre-treatment phase (Mdn = 2.00) ($p < 0.01$) and at 2-month follow-up phase (Mdn = 1.25) compared to pre-treatment phase ($p < 0.01$), but not statistically significant between post-treatment phase and 2-month follow-up phase. These results have been graphed in Figure 98.

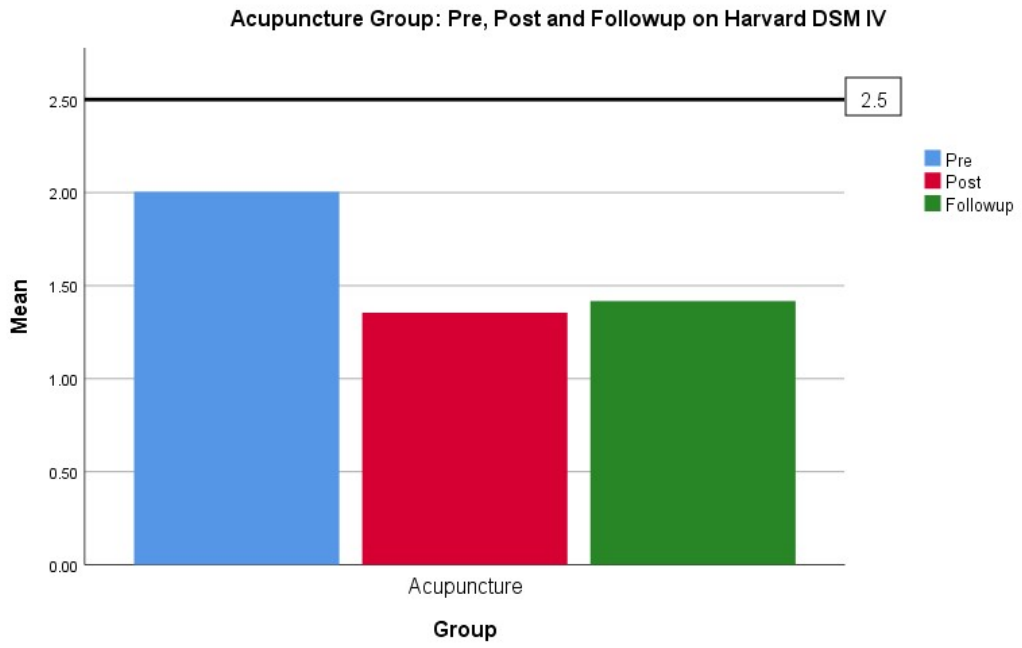


Figure 98: Graph of mean values of Harvard DSM IV on Acupuncture group at pre, post and 2-month follow-up.

The CBT group demonstrated statistically significant differences in the PTSD between the time points, $\chi2(2) = 13.89$, $p < 0.01$. PTSD were statistically significantly lower at 2-month follow-up treatment phase (Mdn = 1.78) compared to at pre-treatment phase (Mdn = 2.51) ($p < 0.01$), but not statistically significant between pre-treatment phase and post-treatment phase or between post-treatment and 2-month follow-up phase. These results have been graphed in Figure 99.

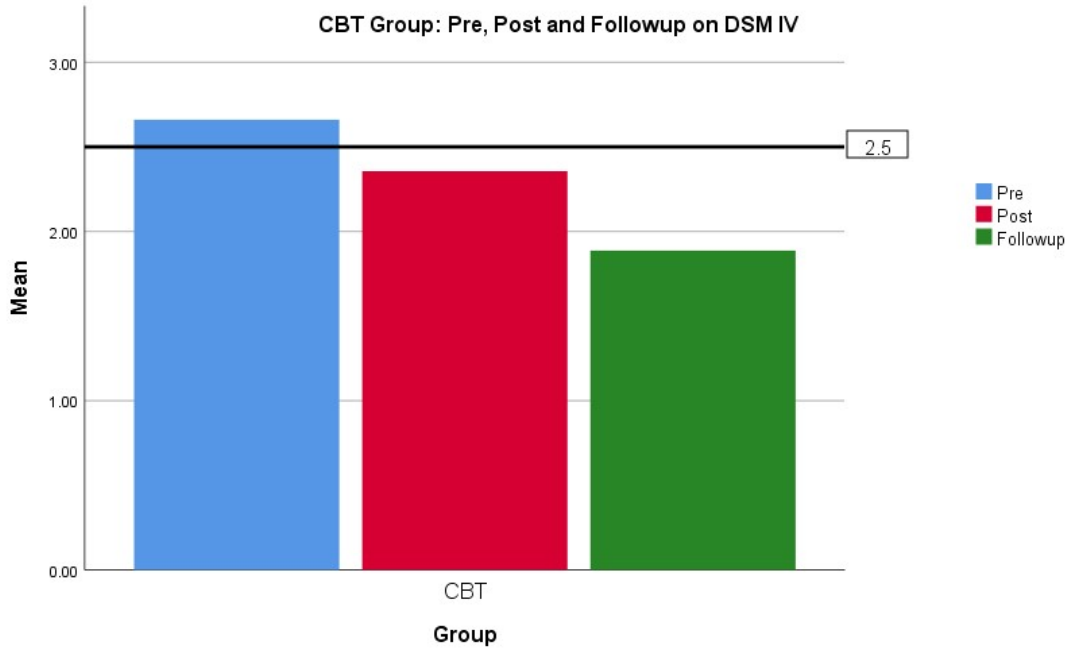


Figure 99: Graph of mean values of Harvard DSM IV on CBT group at pre, post and 2-month follow-up.

The Combined (Acupuncture & CBT) group demonstrated statistically significant differences in the PTSD between the time points, $\chi 2(2) = 14.76$, $p < 0.01$. PTSD were statistically significantly lower at 2-month follow-up phase (Mdn =1.60) compared to at pre-treatment phase (Mdn = 2.54) ($p < 0.01$), but not statistically significant between pre-treatment phase and post-treatment phase or between post-treatment phase and 2-month follow-up phase. These results have been graphed in Figure 100.

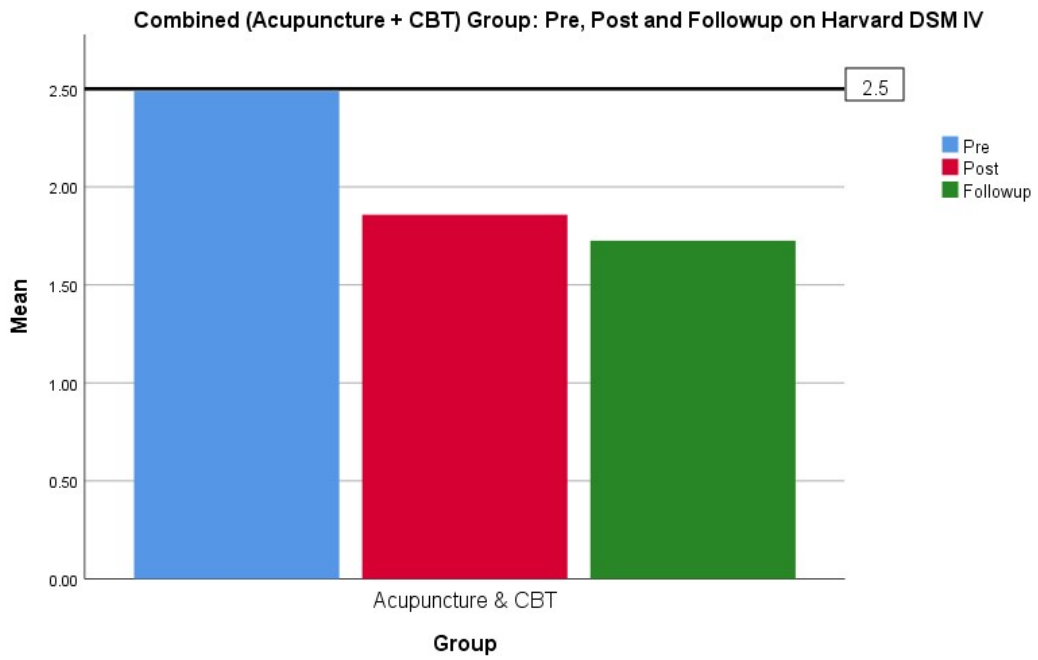


Figure 100: Graph of mean values of Harvard DSM IV on Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up.

For the Harvard Trauma Questionnaire, the major findings were

- The Acupuncture group had a significant difference $\chi 2(2) = 24.67$, $p < 0.01$) in trauma scores pre and post intervention ($p < 0.01$)
- While the Acupuncture & CBT and CBT alone groups showed no difference in pre vs post scores or post vs follow-up
- All groups showed significant differences in pre vs follow-up scores

These data suggest there were statistically significant improvements in PTSD for the Acupuncture group that stabilised at 2-month follow-up. This result is similar to Hollifield et al. (2007) study. Statistically significant high credibility scores in the Acupuncture group at post and 2-month follow-up as compared to pre-treatment phase may have contributed to the PTSD improvements in the participants.

There were also statistically significant improvements in PTSD for both the CBT and Combined (Acupuncture & CBT) groups at 2-month follow-up as compared to baseline, again comparable to Hollifield et al. (2007) and Feng et al. (2019) . These results however, do not correlate with credibility scores in these two groups which were not statistically significant at any time point.

Whilst it may be possible to speculate that acupuncture might have an effect during the treatment phase, the results are inconclusive due to the small sample size in the study. Furhter, none of the interventions would appear to have any lasting effect between post-treatment and follow-up phases. Since all groups report a significant difference in their trauma symptoms at the follow-up point compared to pre intervention, it suggests that time is a factor in affecting conceptions of trauma regardless of intervention.

5.2.4 Numeric Pain Scale

A Friedman test was performed to determine if there were differences in the participants' pain within groups between three time points - pre-treatment phase, post-treatment phase and 2-month follow-up phase - in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 134.

Table 134: Friedman test statistics on pain comparing Pre vs Post, Post vs Follow-up and Pre vs Follow-up for each of the groups.

	Test Statistic	**Pre Vs Post (p value)**	**Post Vs Follow-up (p value)**	**Pre Vs Follow-up (p value)**
Pain (Within Group)				
Pain				
AC	$\chi2(2) = 29.39$, **p < 0.01***	**< 0.01***	1.00	**< 0.01***
CBT	$\chi2(2) = 0.29$, p = 0.87	N/A	N/A	N/A
AC + CBT	$\chi2(2) = 17.43$, **p < 0.01***	**0.01***	1.00	**0.01***

The Acupuncture group demonstrated statistically significant differences in the pain between the time points, $\chi2(2) = 29.39$, $p < 0.01$. Pain were statistically significantly lower at post-treatment phase (Mdn = 3.00) compared to at pre-treatment phase (Mdn = 9.00) ($p < 0.01$) and at 2-month follow-up phase (Mdn = 3.00) compared to pre-treatment phase ($p < 0.01$), but not statistically significant between post-treatment phase and 2-month follow-up phase. These results have been graphed in Figure 101.

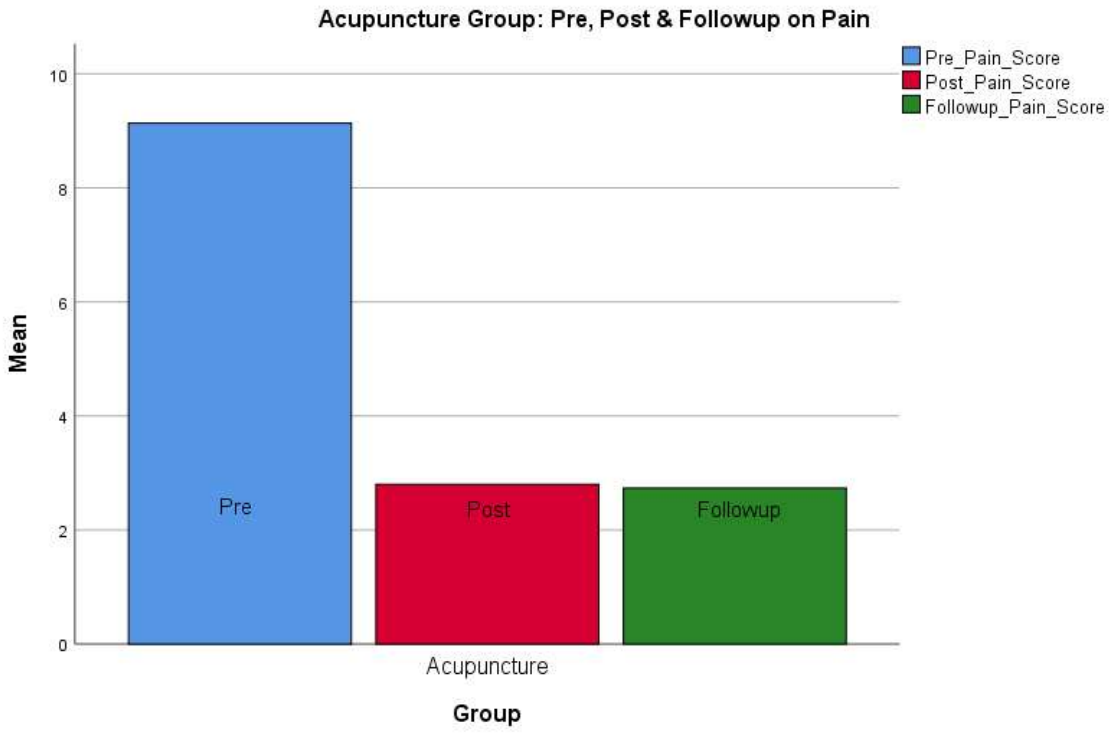


Figure 101: Graph of mean values of pain on Acupuncture group at pre, post and 2-month follow-up.

The CBT group demonstrated pain was slightly higher at post-treatment (Mdn = 8.00) and 2-month follow-up (Mdn = 8.00) phases than at pre-treatment (Mdn = 7.5) phase, but the differences were not statistically significant, $\chi 2(2) = 0.29$, $p = 0.87$. These results have been graphed in Figure 102.

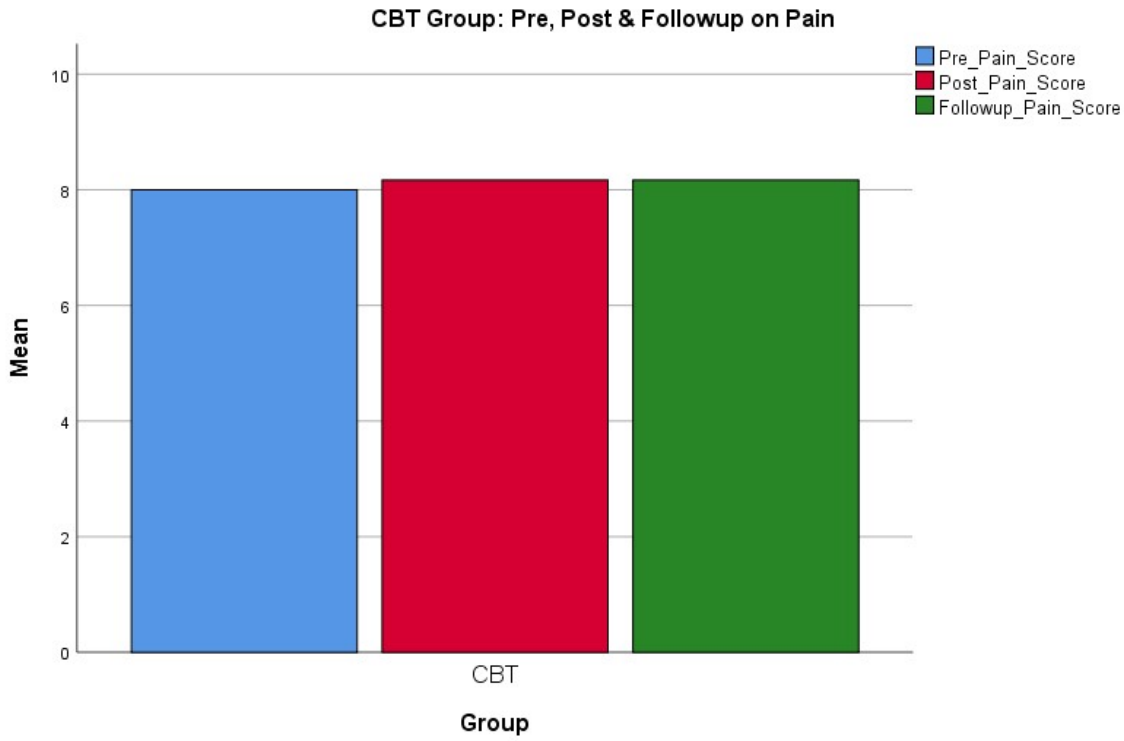


Figure 102: Graph of mean values of pain on CBT group at pre, post and 2-month follow-up.

The Combined (Acupuncture & CBT) group demonstrated statistically significant differences in the pain between the time points, $\chi 2(2) = 17.43$, $p < 0.01$. Pain were statistically significantly lower at 2-month follow-up phase (Mdn = 2.00) compared to at pre-treatment phase (Mdn = 8.50) ($p = 0.01$) and at 2-month follow-up phase (Mdn = 2.00) compared to pre-treatment phase ($p = 0.01$), but not statistically significant between post-treatment phase and 2-month follow-up phase. These results have been graphed in Figure 103.

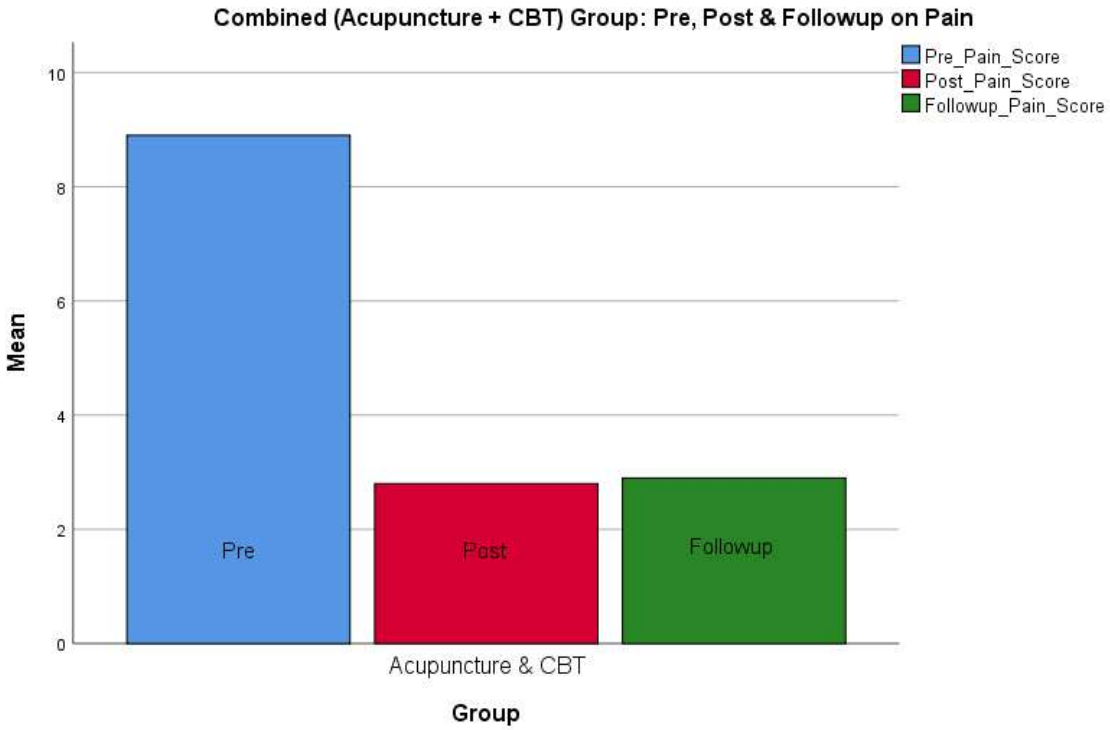


Figure 103: Graph of mean values of pain on Combined (Acupuncture & CBT) group at pre, post and 2-month follow-up.

For the Pain score, the major findings were

- The acupuncture group had a significant difference in pain scores ($\chi 2(2) = 29.39$, $p < 0.01$) both at pre vs post-treatment ($p < 0.01$) and pre vs follow-up points ($p < 0.01$)
- The AC + CBT group had also had significant difference in pain scores ($\chi 2(2) = 17.43$, $p < 0.01$) at pre vs post-treatment ($p = 0.01$) and at pre and follow-up ($p = 0.01$)
- CBT had no significant difference in pain scores ($\chi 2\ (2) = 0.29$, $p = 0.87$)

This suggests that acupuncture has an effect on pain either alone or when combined with CBT, but CBT alone does not affect pain. These results are reflected in the Engel et al. (2014) study where for the Usual PTSD care alone (CBT) had no effect on pain.

Statistically significant high credibility in Acupuncture group at post and 2-month follow-up as compared to pre-treatment phase may have contributed to the pain improvements in the participants. Although these results showed a promising effect for acupuncture in treating pain, the results are inconclusive due to the small sample size in the study.

5.3 Between Groups Comparison

5.3.1 Credibility and Expectancy Questionnaire

A Kruskal-Wallis H test was performed to determine if there were differences in the participants' credibility and expectancy scores between groups at the pre-treatment phase, post-treatment phase and 2-month follow-up phase in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 131.

Table 135: Kruskal-Wallis H test statistics on credibility and expectancy comparing between groups for Pre, Post and Follow-up.

	Test Statistic	**AC Vs AC + CBT (p value)**	**AC Vs CBT (p value)**	**CBT Vs AC + CBT (p value)**
Credibility/Expectancy (Between Groups)				
Credibility				
Pre	$\chi2(2) = 6.85$, **p = 0.03***	1.00	**0.04***	**0.01***
Post	$\chi2(2) = 5.55$, p = 0.06	N/A	N/A	N/A
Follow-up	$\chi2(2) = 9.97$, **p = 0.01***	1.00	**0.01***	**0.03***
Expectancy				
Pre	$\chi2(2) = 6.53$, **p = 0.04***	0.42	**0.04***	0.76
Post	$\chi2(2) = 7.13$, **p = 0.03***	1.00	**0.02***	0.13
Follow-up	$\chi2(2) = 7.13$, **p = 0.03***	1.00	**0.03***	0.12

At pre-treatment phase, there were statistically significant differences in the credibility between the groups, H(2) = 6.85, p = 0.03 or $\chi^2(2) = 6.85$, p = 0.03. Credibility was statistically significantly higher in Acupuncture group (mean rank = 18.23) as compared to those in CBT group (mean rank = 7.33) (p = 0.04). There were no statistically significant differences in credibility between Acupuncture group and Combined (Acupuncture & CBT)

group or between CBT group and Combined (Acupuncture & CBT) group. There were statistically significant differences in the expectancy between the groups, H(2) = 6.53, p = 0.04 or $\chi^2(2) = 6.53$, p = 0.04. Expectancy was statistically significantly higher in Acupuncture group (mean rank = 19.83) as compared to those in CBT group (mean rank = 9.08) (p = 0.04). There were no statistically significant differences in expectancy between Acupuncture group and Combined (Acupuncture & CBT) group or between CBT group and Combined (Acupuncture & CBT) group.

At post-treatment phase, credibility were higher in both Acupuncture (mean rank = 17.77) and Combined (Acupuncture & CBT) (mean rank = 17.85) groups than in CBT (mean rank = 8.50) group but the differences were not statistically significant, H(2) = 5.55, p = 0.06 or $\chi2(2) = 5.55$, p = 0.06. There were statistically significant differences in expectancy between the groups, H(2) = 7.13, p = 0.03 or $\chi^2(2) = 7.13$, p = 0.03. Expectancy was statistically significantly higher in Acupuncture group (mean rank = 18.93) as compared to those in CBT group (mean rank = 7.42) (p = 0.02). There were no statistically significant differences in expectancy between Acupuncture group and Combined (Acupuncture & CBT) group or between CBT group and Combined (Acupuncture & CBT) group.

At the 2-month follow-up phase, there were statistically significant differences in the credibility between the groups, H(2) = 9.97, p = 0.01 or $\chi^2(2) = 9.97$, p = 0.01. Credibility was statistically significantly higher in the Acupuncture group (mean rank = 19.07) as compared to the CBT group (mean rank = 5.92) (p = 0.01). Credibility was also statistically significantly higher in the Combined (Acupuncture & CBT) group (mean rank = 17.45) as compared to the CBT group (mean rank = 5.92) (p = 0.03). There were no statistically significant differences in credibility between Acupuncture group and Combined (Acupuncture & CBT) group. There were statistically significant differences in the expectancy between the groups, H(2) = 7.13, p = 0.03 or $\chi2(2) = 7.13$, p = 0.03. Expectancy was statistically significantly higher Acupuncture group (mean rank = 18.87) as compared to the CBT group (mean rank = 7.33) (p = 0.03). There were no statistically significant differences in expectancy between Acupuncture group and Combined (Acupuncture & CBT)

group or between CBT group and Combined (Acupuncture & CBT) group. The outcomes have been graphed in Figure 104.

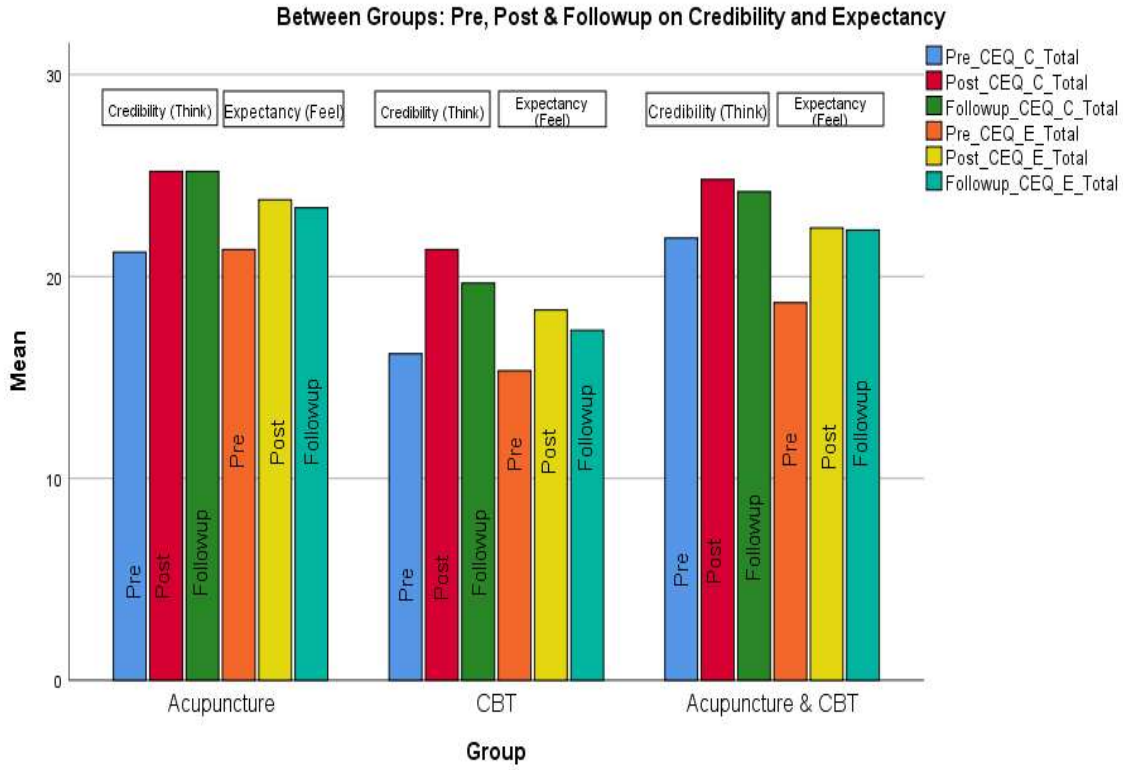


Figure 104: Graph of mean values of credibility and expectancy on comparing between groups at pre, post and 2-month follow-up.

The participants' credibility towards the treatment was statistically significant in the Acupuncture group and Combined (Acupuncture & CBT) group as compared to the CBT group before they received the treatment and at 2-month follow-up. The participants' expectancy towards the treatment therapy was significant in both the Acupuncture group and Combined (Acupuncture & CBT) group as compared to the CBT group before they received the treatment, after the treatment completion and at 2-month follow-up.

For Credibility, when the intervention groups were compared, the only groups with a significant differences were:

- ACU vs CBT ($\chi 2(2) = 6.85$, p = 0.03) pre-treatment (p = 0.04)
- ACU vs CBT ($\chi 2(2) = 6.85$, p = 0.01) follow-up (p = 0.01)
- AC + CBT Vs CBT ($\chi 2(2) = 9.97$, p = 0.03) pre-treatment (p = 0.01)
- AC + CBT Vs CBT ($\chi 2(2) = 9.97$, p = 0.01) follow-up (p = 0.03)

For Expectancy, when the intervention groups were compared, the only group with a significant difference was ACU vs CBT at all intervention points ($\chi 2(2) = 6.53$, p = 0.04 pre) ($\chi 2(2) = 7.13$, p = 0.03 post) ($\chi 2(2) = 7.13$, p = 0.03 follow-up).

This reinforces the within group data that suggests that participants who received acupuncture had a higher belief in the effectiveness and credibility of the intervention.

5.3.2 Hopkins Symptoms Check List 25

A Kruskal-Wallis H test was performed to determine if there were differences in the participants' anxiety symptoms between groups at the pre-treatment phase, post-treatment phase and 2-month follow-up phase in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 136.

Table 136: Kruskal-Wallis H test statistics on Hopkins Anxiety, Depression and Total scores comparing between groups for Pre, Post and Follow-up.

	Test Statistic	**AC Vs AC + CBT (p value)**	**AC Vs CBT (p value)**	**CBT Vs AC + CBT (p value)**
Hopkins (Between Groups)				
Hopkins Anxiety				
Pre	$\chi2(2) = 3.30$, $p = 0.19$	N/A	N/A	N/A
Post	$\chi2(2) = 1.26$, $p = 0.53$	N/A	N/A	N/A
Follow-up	$\chi2(2) = 3.56$, $p = 0.17$	N/A	N/A	N/A
Hopkins Depression				
Pre	$\chi2(2) = 1.07$, $p = 0.59$	N/A	N/A	N/A
Post	$\chi2(2) = 11.22$, **$p < 0.01$***	0.21	**< 0.01***	0.32
Follow-up	$\chi2(2) = 2.89$, $p = 0.24$	N/A	N/A	N/A
Hopkins Total				
Pre	$\chi2(2) = 2.54$, $p = 0.28$	N/A	N/A	N/A
Post	$\chi2(2) = 8.51$, **$p = 0.01$***	0.30	**0.01***	0.55
Follow-up	$\chi2(2)= 2.57$, $p = 0.28$	N/A	N/A	N/A

At pre-treatment phase, anxiety scores were higher in the Combined (Acupuncture & CBT) (mean rank = 20.10) group than in CBT (mean rank = 15.67) and Acupuncture (mean rank = 13.40) groups but the differences were not statistically significant, $H(2) = 3.30$, $p = 0.19$ or $\chi^2(2) = 3.30$, $p = 0.19$. Depression was lower in Acupuncture (mean rank = 14.30) group than both CBT (mean rank = 16.92) and Combined (Acupuncture & CBT) (mean rank = 18.00) groups but the differences were not statistically significant, $H(2) = 1.07$, $p = 0.59$ or $\chi2(2) = 1.07$, $p = 0.59$. Hopkins total score was lower in Acupuncture (13.60) group than both CBT (16.17) and Combined (Acupuncture & CBT) (19.50) groups than in in the pre-treatment phase but the differences were not statistically significant, $H(2) = 2.54$, $p = 0.28$ or $\chi2(2) = 2.54$, $p = 0.28$.

At post-treatment phase, anxiety was lower in Acupuncture (mean rank = 14.13) group than both CBT (mean rank = 17.67) and Combined (Acupuncture & CBT) (mean rank = 17.80) but the differences were not statistically significant, $H(2) = 1.26$, $p = 0.53$ or $\chi2(2) = 1.26$, $p = 0.53$. There were statistically significant differences in the depression scores between the groups, $H(2) = 11.22$, $p < 0.01$ or $\chi^2(2) = 11.22$, $p < 0.01$. Depression scores were statistically significantly lower in the Acupuncture group (mean rank = 11.07) as compared to those in CBT group (mean rank = 25.33) ($p < 0.01$). There were no statistically significant differences in depression scores between the Acupuncture group and Combined (Acupuncture & CBT) group or between the CBT group and Combined (Acupuncture & CBT) group. There were statistically significant differences in the Hopkins total score (anxiety and/or depression symptoms) between the groups, $H(2) = 8.51$, $p = 0.01$ or $\chi^2(2) = 8.51$, $p = 0.01$. Hopkins total score was statistically significantly lower in Acupuncture group (mean rank = 11.63) as compared to those in CBT group (mean rank = 24.00) ($p = 0.01$). There were no statistically significant differences in Hopkins total score between Acupuncture group and Combined (Acupuncture & CBT) group or between CBT group and Combined (Acupuncture & CBT) group.

At 2-month follow-up phase, anxiety scores were lower in both the Acupuncture (mean rank = 13.33) and Combined (Acupuncture & CBT) (mean rank = 16.75) groups than the CBT (mean rank = 21.42) group but the differences were not statistically significant, H(2) = 3.56, p = 0.17 or $\chi 2(2) = 3.56$, p = 0.17. Depression scores were lower in the Acupuncture (mean rank = 13.20) group than both the CBT (mean rank = 19.58) and Combined (Acupuncture & CBT) (mean rank = 18.05) groups but the differences were not statistically significant, H(2) = 2.89, p = 0.24 or $\chi 2(2)$ = H(2) = 2.89, p = 0.24. Hopkins total score was lower in the Acupuncture (13.40) group than both CBT (19.67) and Combined (Acupuncture & CBT) (17.70) groups than in in the 2-month follow-up phase but the differences were not statistically significant, H(2) = 2.57, p = 0.28 or $\chi 2(2) = 2.57$, p = 0.28. The outcomes have been graphed in Figure 105.

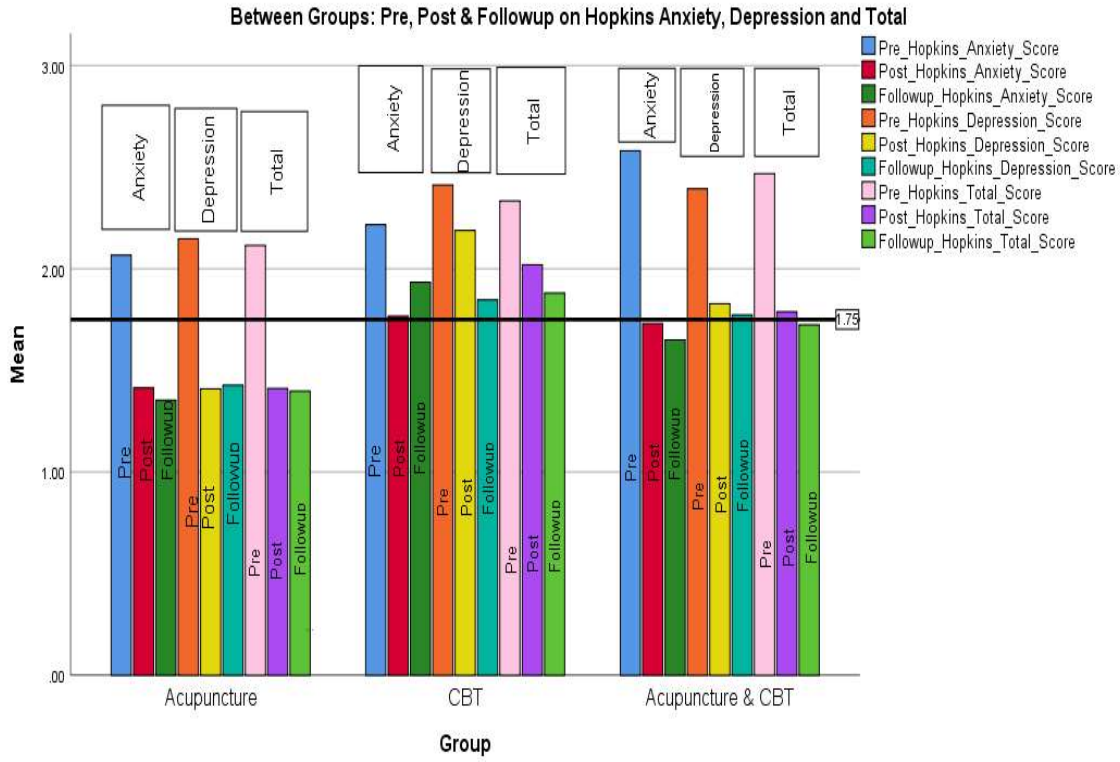


Figure 105: Graph of mean values of Hopkins Anxiety, Depression and Total scores on comparing between groups at pre, post and 2-month follow-up.

For the Hopkins 25 the major findings were:

- When the intervention groups were compared with each other, the Acupuncture Vs CBT, post depression score ($\chi 2(2) = 11.22$, $p < 0.01$) was significant.
- Also the total score for this group was significant ($\chi 2(2) = 8.51$, $p = 0.01$).
- However, the difference in mean ranks (ACU = 13.40, CBT = 15.67, ACU + CBT = 20.10) suggests that this statistical significance may not be clinically relevant. A larger study would be required to determine clinical significance.

Although high credibility and expectancy scores were statistically significant in the Acupuncture group and high expectancy scores were statistically significant in the Combined (Acupuncture & CBT) group as compared to the CBT group, there was no difference in anxiety in the participants between the three treatment groups - Acupuncture, CBT and Combined (Acupuncture & CBT) – across the three time points – pre-treatment, post-treatment and 2-month follow-up. Similar results in anxiety were reported by Hollifield et al. (2007) for Acupuncture group vs CBT group at post-treatment.

There was no significant differences in the participants' depression at baseline at pre-treatment between the three groups. Participants' depression scores improved significantly with Acupuncture as compared to CBT after treatment completion but the improvement did not remain significant at 2-month follow-up. However, Hollifield et al. (2007) study reported that there was no difference in depression improvement between the Acupuncture group and CBT group at post-treatment. This difference may be due to the different type of population in the studies.

There were no significant differences in the participants' Hopkins total score at baseline and at pre-treatment between the three groups. Participants' Hopkins total score improved significantly in the Acupuncture group as compared to CBT after treatment completion, but the improvement did not remain significant at 2-month follow-up.

Statistically significant high credibility and expectancy scores in the Acupuncture group as compared to the CBT group may have contributed to the improvements in the depression and total scores of participants. Although high expectancy was statistically significant in the Combined (Acupuncture & CBT) group as compared to the CBT group, there was no difference in depression scores for these participants. Hence whilst the results show promise of an acupuncture effect in treating depression, the results are inconclusive due to the small sample size in the study.

5.3.3 Harvard Trauma Questionnaire

A Kruskal-Wallis H test was performed to determine if there were differences in the participants' PTSD symptoms at the pre-treatment phase, post-treatment phase and 2-month follow-up phase in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 137.

Table 137: Kruskal-Wallis H test statistics on Harvard DSM IV comparing between groups for Pre, Post and Follow-up.

	Test Statistic	**AC Vs AC + CBT (p value)**	**AC Vs CBT (p value)**	**CBT Vs AC + CBT (p value)**
Harvard (Between Groups)				
Harvard Symptoms				
Pre	$\chi2(2) = 4.47$, $p = 0.11$	N/A	N/A	N/A
Post	$\chi2(2) = 12.98$, **$p < 0.01$***	0.11	**< 0.01***	0.33
Follow-up	$\chi2(2) = 2.89$, $p = 0.24$	N/A	N/A	N/A

At pre-treatment phase, PTSD was lower in Acupuncture (mean rank = 12.47) group than both CBT (mean rank = 20.08) and Combined (Acupuncture & CBT) (mean rank = 18.85) groups but the differences were not statistically significant, $H(2) = 4.47$, $p = 0.11$ or $\chi2(2) = 4.47$, $p = 0.11$.

At the post-treatment phase, there were statistically significant differences in the PTSD between the groups, $H(2) = 12.98$, $p < 0.01$ or $\chi^2(2) = 12.98$, $p < 0.01$. PTSD scores were statistically significantly lower in Acupuncture group (mean rank = 10.57) as compared to those in CBT group (mean rank = 25.75) ($p < 0.01$). There were no statistically significant differences in PTSD between the Acupuncture group and Combined (Acupuncture & CBT) group or between CBT group and Combined (Acupuncture & CBT) group.

At the 2-month follow-up phase, PTSD was lower in Acupuncture (mean rank = 13.20) group than both CBT (mean rank = 19.58) and Combined (Acupuncture & CBT) (mean rank = 18.05) groups than in in the 2-month follow-up phase but the differences were not statistically significant, H(2) = 2.89, p = 0.24 or χ2(2) = 2.89, p = 0.24. These results have been graphed in Figure 106.

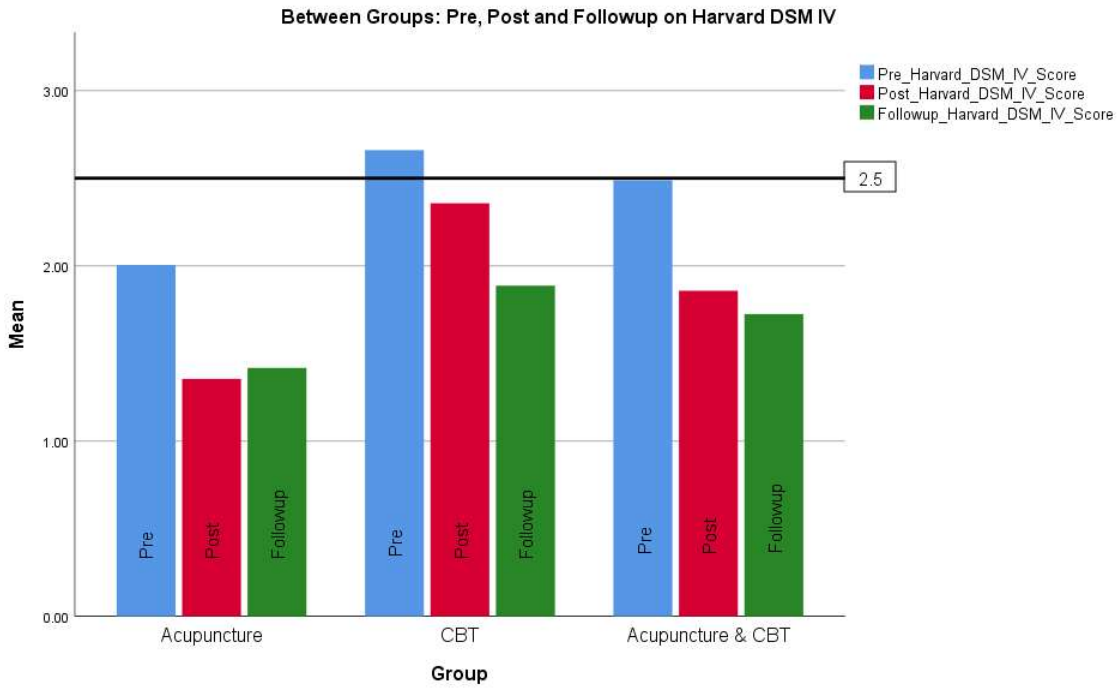


Figure 106: Graph of mean values of Harvard DSM IV on comparing between groups at pre, post and 2-month follow-up.

For the Harvard Trauma Questionnaire, the major findings were

- When each of the intervention groups were compared with each other, the only group with a significant difference (χ2(2) = 12.98, p < 0.01) was the Acupuncture Vs CBT, Harvard trauma score (p < 0.01)

- This suggests that there was no significant differences in intervention effects for any of the groups. There was a slight difference in mean ranks with the acupuncture only group scoring lower (ACU = 12.47) than the other two interventions (CBT = 20.08, ACU + CBT = 18.85), however a larger study would be required to determine if these differences were clinically significant.

There were no significant differences in the participants' PTSD scores at baseline and at pre-treatment between the three groups. Participants' PTSD scores improved significantly in the Acupuncture group as compared to the CBT group after treatment completion but the improvement did not remain significant at 2-month follow-up. However, Hollifield et al. (2007) reported that there were no differences in PTSD improvement between the Acupuncture group and CBT group at post-treatment in his study. This difference may be due to the different type of population in the studies.

Statistically significant high credibility and expectancy in the Acupuncture group as compared to the CBT group may have contributed to the improvements in PTSD scores of participants. Although high expectancy was statistically significant in the Combined (Acupuncture & CBT) group as compared to the CBT group, there was no difference in PTSD scores for these participants. Hence whilst the results show promise of an acupuncture effect in treating PTSD, the results are inconclusive due to the small sample size in the study.

5.3.4 Numeric Pain Scale

A Kruskal-Wallis H test was performed to determine if there were differences in the participants' pain between groups at the pre-treatment phase, post-treatment phase and 2-month follow-up phase in their allocated treatment interventions: Acupuncture (n=15), CBT (n=6), and Combined (Acupuncture & CBT) (n=10) groups. The outcomes are shown in Table 138.

Table 138: Kruskal-Wallis H test statistics on pain comparing between groups for Pre, Post and Follow-up.

	Test Statistic	**AC Vs AC + CBT (p value)**	**AC Vs CBT (p value)**	**CBT Vs AC + CBT (p value)**
Pain (Between Groups)				
Pain				
Pre	$\chi2(2) = 4.16$, $p = 0.13$	N/A	N/A	N/A
Post	$\chi2(2) = 14.65$, **$p < 0.01$***	1.00	**< 0.01***	**< 0.01***
Follow-up	$\chi2(2) = 14.48$, **$p < 0.01$***	1.00	**< 0.01***	**< 0.01***

At pre-treatment phase, pain scores were lower in the CBT group (mean rank = 9.75) than both the Acupuncture (mean rank = 18.27) and Combined (Acupuncture & CBT) (mean rank = 16.35) groups but the differences were not statistically significant, $H(2) = 4.16$, $p = 0.13$ or $\chi2(2) = 4.16$, $p = 0.13$.

At post-treatment phase, there were statistically significant differences in the pain scores between the groups, $H(2) = 14.65$, $p < 0.01$ or $\chi^2(2) = 14.65$, $p < 0.01$. Pain scores were statistically significantly lower in Acupuncture group (mean rank = 14.30) as compared to those in CBT group (mean rank = 28.00) ($p < 0.01$). Pain scores were statistically significantly lower in Combined (Acupuncture & CBT) group (mean rank = 11.35) as compared to those in CBT group (mean rank = 28.00) ($p < 0.01$). There were no statistically

significant differences in pain scores between Acupuncture group and Combined (Acupuncture & CBT) group.

At 2-month follow-up phase, there were statistically significant differences in the pain scores between the groups, $H(2) = 14.48$, $p < 0.01$ or $\chi^2(2) = 14.48$, $p < 0.01$. Pain scores were statistically significantly lower in Acupuncture group (mean rank = 13.97) as compared to those in the CBT group (mean rank = 28.00) ($p < 0.01$). Pain scores were statistically significantly lower in the Combined (Acupuncture & CBT) group (mean rank = 11.35) as compared to those in the CBT group (mean rank = 28.00) ($p < 0.01$). There were no statistically significant differences in pain scores between the Acupuncture group and Combined (Acupuncture & CBT) group. These results have been graphed in Figure 107.

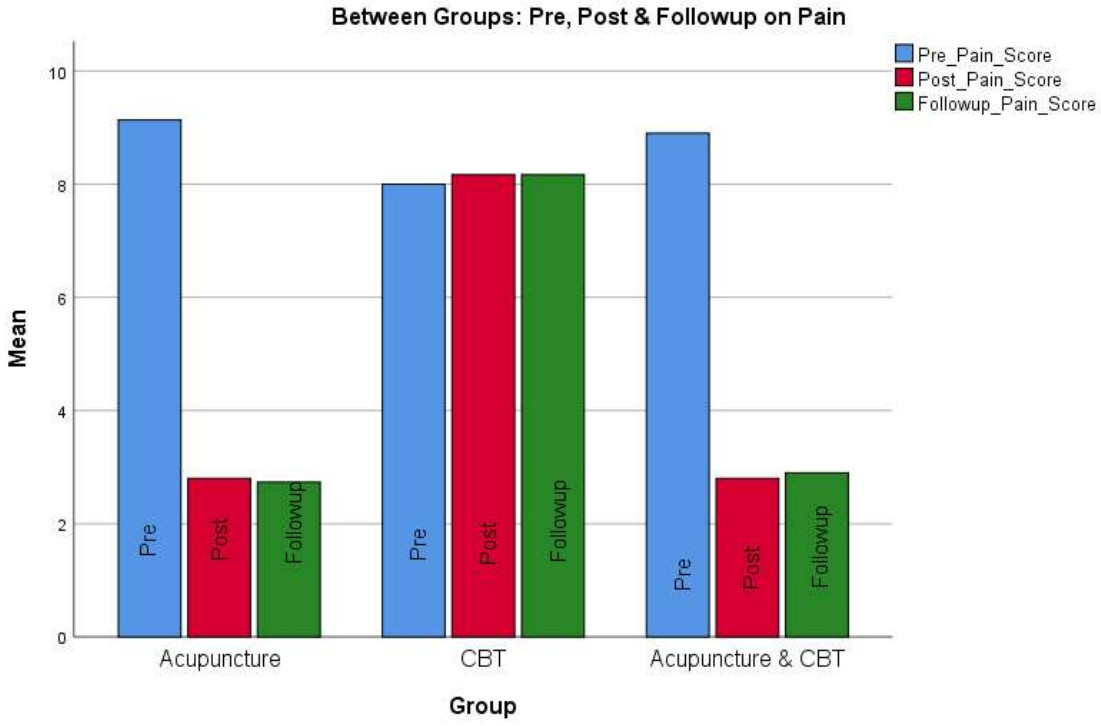


Figure 107: Graph of mean values of pain on comparing between groups at pre, post and 2-month follow-up.

When the intervention groups were compared, the only groups with significant differences were:

- the ACU vs CBT ($\chi 2(2) = 14.65$, $p < 0.01$) post-treatment ($p < 0.01$)
- the ACU vs CBT ($\chi 2(2) = 14.48$, $p < 0.01$) follow-up ($p < 0.01$)

and

- ACU + CBT vs CBT ($\chi 2(2) = 14.65$, $p < 0.01$) post-treatment ($p < 0.01$)
- ACU + CBT vs CBT ($\chi 2(2) = 14.48$, $p < 0.01$) follow-up ($p < 0.01$)

This reinforces the findings of the within group data that suggest acupuncture is the mediating intervention that affects pain either alone or coupled with CBT, whilst CBT alone has no effect on pain.

There were no significant differences in the participants' pain scores at baseline and at pre-treatment between the three groups. Participants' pain scores improved significantly in both the Acupuncture and Combined (Acupuncture & CBT) groups as compared to the CBT group after treatment completion and the improvement remained significant at 2-month follow-up. Similar results were reported by Engel et al. (2014), with acupuncture significantly lowering pain scores in that study.

5.4 Summary

This chapter presented a detailed discussion on the results of the study. Conclusions shall be drawn in the next chapter. The descriptive statistics presented here were used to understand the clinical effectiveness of the outcomes. Whilst the within group and between group results may have been statistically significant, this does not necessarily translate as being clinically significant. For example, the study found statistically significant improvements in PTSD symptoms across all study groups. However when the descriptive statics were examined, the differences in measurement scores where minimal and consequently any clinical effectiveness would also be minimal. Whilst this provides an opportunity to claim these data show trends that may prove the effectiveness of one modality over another, there are insufficient differences in these data to claim clinical effectiveness.

- In broadest sense for within group analysis, this study found:that PTSD, anxiety and depression improved across all three study groups.
- Improvements in the Acupuncture group resulted in an asymptomatic PSTD, anxiety and depression presentation.
- the Combined (Acupuncture & CBT) group showed asymptomatic PTSD, anxiety and depression, noting that PTSD was just below borderline symptomatic at pre-treatment.
- In contrast, although there were improvements in PTSD, anxiety and depression in CBT group, they were still symptomatic at follow-up.
- For pain, both Acupuncture and Combined (Acupuncture & CBT) groups showed statistically and clinically significant improvements in pain, whereas there was no pain improvement in the CBT group.

Consequently, it could be claimed that each treatment modality was effective in its own right, though acupuncture was clearly beneficial for pain whereas CBT was not.

The between groups analysis however, which determines the effectiveness of one modality in comparison to another, and arguably the only legitimate comparison for clinical trials indicated:

- only the Acupuncture group had a statistically significant improvement in PTSD (HTQ) and depression as compared to the CBT group at post-treatment.
- There were no significant differences for all other group comparisons in PTSD (HTQ), anxiety and depression at the different time points.
- There were statistically significant differences for pain outcomes in the Acupuncture group and Combined (Acupuncture & CBT) group as compared to the CBT group.

When these results are correlated with the within group comparisons and descriptive data, it is evident that each treatment modality was capable of treating PTSD (HTQ), anxiety and depression for the refugee clients of STARTTS, but the acupuncture group was the only one that suggested a data trend for effectiveness, though not necessarily clinically significant effectiveness. For the treatment of pain however, Acupuncture was clearly effective for this subpopulation of refugee clients of STARTTS.

It was interesting to note that all groups improved in credibility and expectancy mean scores over time, but only credibility scores for the acupuncture group showed statistical significance at post-treatment and follow-up as compared to pre-treatment. These significant differences in positive beliefs in regards to treatment may have contributed to improvements in pain scores, which in turn, according to Liedl & Knaevelsrud's (2008) "Perpetual Avoidance Model" (PAM), may have contributed to PTSD, anxiety and depression improvements. This potentially reinforces the importance of acupuncture as an adjunct therapy to CBT as well as a potential stand-alone therapy.

6.0 Chapter 6: Conclusion

This study employed an experimental, randomised, pragmatic design to explore the clinical effectiveness of acupuncture treatment for refugee clients of STARTTS suffering from PTSD, anxiety, depression and pain. The outcome measurement tools used in the study were the Harvard Trauma Questionnaire for PTSD, Hopkins Symptoms Check List 25 for anxiety and depression, Numeric Rating Scale for pain, and the Credibility/Expectancy Questionnaire for beliefs and therapeutic alliance. Interpreters and other clinical staff were trained as required to ensure a standardised approach to the application of the assessment measures and the CBT treatment. Subjects were randomised into three arms: an acupuncture only arm, a CBT only arm and an acupuncture and CBT arm. A control or waitlist group could not be used in this trial due to the nature and severity of the participants presenting symptoms and the type of population under study. A repeated measure design was employed with assessments occurring pre and post intervention and at follow-up. As the data is this study was not normally distributed, a FRIEDMAN TEST was applied to test within group results and a KRUSKAL-WALLIS H TEST used to test between group comparisons,

6.1 Limitations

There were a number of limitations to this study, some of which were accounted for by the design and others that arose during the study.

Given the vulnerability of the population, great care was taken to ensure the safety of the participants whilst attempting to maintain integrity of the study. For example, control group or waitlist control could not be used as this might deny critical care to a vulnerable population. At the same time, it was impossible to standardise the acupuncture care as the type of trauma experienced by each participant could vary considerably and a standardised treatment may not be applicable. For these reasons, a pragmatic design was adopted. Whilst this meant that the treatment variable could not be standardised, the approach did closely mimic what would be a lived clinical experience and approach.

During the study, issues arose with the randomisation. A permuted block randomisation method was chosen as it is a commonly applied technique in clinical trial design to reduce bias and achieve balance in the allocation of participants to each treatment arm, especially when the sample size is small. The probability that each arm will contain an equal number of individuals by sequencing participant assignments by block is increased, but the allocation process may be predictable when the block size is fixed. To counter this, randomisation was undertaken by an individual who was blinded to all other researchers. It should also be noted that the original trial had planned for 20 in each group and hence randomised on block permutation totalling sixty participants. However, the trail was cut short due to an number reasons resulting in three groups of 15. This will have affected the randomisation, through the groups did more or less achieve equal numbers.

However, the study suffered from differential drop-out i.e. one group had a substantially larger dropout rate than the two other groups. According to Bell et al. (2013), differential drop out does not necessarily bias results. These authors claim that the presence if bias will be determined by the type of "missingness" and the statistical analysis. An analysis of "missingness" is beyond the scope of this study and may not yield additional valuable information as 1) the statistical analysis did correct for bias to the extent possible based on the data set and 2) the sample size is too small to warrant this additional work.

It was not possible to predict the high levels of drop out in the CBT group and consequently it was not possible to adjust for this variation when calculating the sample size for purposes of randomisation. Consequently, this limitation can only be acknowledged with due care given to any implications drawn from these data.

Another limitation that arose during the study was in relation to the order of treatment given in the combined acupuncture and CBT group. The preferred model would have been to administer one therapy consistently across the group before the other. However, the clinical environment did not allow for this and some participants had acupuncture before CBT whereas other had acupuncture after CBT. A separate study would need to be undertaken to

determine the interaction effects of these two therapies to determine if the order of treatment bore any consequence on overall intervention outcome.

Upon completion of the treatment phase of the study, it was noted that the population was not normally distributed. A standard 2-way mixed ANOVA statistical test would have been the appropriate for this type of research study had the population been normally distributed. A this was not the case, alternative non-parametric statistical tests, KRUSKAL-WALLIS H TEST for comparison between groups data and FRIEDMAN TEST for comparison within the group data were used.

The within group analysis found that, on average there were signs of improvements in PTSD, anxiety and depression within each treatment groups. The acupuncture group however, managed to reach a lower threshold score for PTSD and maintain that through to the follow-up period compared to the other two groups. The combined acupuncture and CBT and CBT alone group were able to achieve lower PTSD threshold scores, but this mean scores indicated that this was a gradual onset over the treatment and follow-up period. It is speculated, that this may relate to the nature of CBT as well as the complexity and nature of the refugee clients of STARTTS. This may indicate that eight sessions of therapy for refugee clients may not be sufficient as compared to the number of years imprisonment, torture, trauma, rape, and living in refugee camps they had experienced and endured. Further study into determining an appropriate number of treatment sessions for refugee clients undertaking CBT or CBT combined with other therapies is required.

6.2 Cultural Diversity and Perception of Interventions

In planning for this study, cultural diversity was taken into account. The Outcome measures used were available in a number of minority languages and had external face validity. Protocols and training were put in place for the use of translators. However, the effect of cultural perception on the interventions was perhaps underestimated and could form a new area of further study.

The nature of the sub-population of clients was such that certain ethnic groups were over represented. More importantly, some groups showed particular bias towards certain therapies. For example, Bhutanese participants preferred acupuncture over CBT.

The Nepali Ethnopsychological model as described by Kohrt et al. (2012) may explain why Bhutanese participants preferred acupuncture over CBT. The model conceptualises how members of this community group may see pain or sickness in the physical body as leading to worries in the heart-mind, where the memory (traumatic or intrusive) and emotions (worries and anxiety) reside. Feedback from independent STARTTS counsellors, working closely with the Bhutanese community, noted that these participants preferred not to be associated with the stigma of mental health (as associated with the treatment of CBT) in their community as they 'believed that when it comes to challenges in life, the "discussion" must be done within the Bhutanese community first', believing that "once life's challenges change, then their mental health will improve as well'. Similar feedback was received from the Karen community and Middle East community. For these sub-populations of participants, group therapy may be of greater value and relevance. On the one hand, these sorts of attitudes can reflect participant bias which may affect treatment outcomes. This re-enforces the need to measure credibility and expectancy within these types of studies. Alternately, the combination of a physical therapy such as acupuncture with a more stigmatised therapy such as CBT may help improve retention rates and this was evidenced in the combined group within this study with only one drop out compared to the seven drop outs in the CBT group.

6.3 Conclusions

The aim if this study was to determine if a statistically significant improvement in presenting symptoms of PTSD could be achieved through:

- acupuncture alone?
- counselling alone? or
- acupuncture and counselling combined?

The null hypothesis stated that there is no statistically significant difference in treatment outcomes when using the modalities above as an intervention for PTSD in a sub population of STARTTS refugee clients. Four primary outcome measures noted below were used to measure level of depression and anxiety, PTSD trauma, pain and the credibility of the therapeutic alliance:

- Hopkins Symptoms Check List 25
- Harvard Trauma Questionnaire
- Credibility and Expectancy Questionnaire
- Numeric Rating Scale (for pain)

A summary of the outcomes in relation to the null hypothesis for each treatment group against each outcome measure is noted in Table 139 and Table 140. A rejected null hypothesis indicates that there was a statistically significant difference in outcome measures at the various time points (pre, post or follow-up treatment) due possibly to the intervention.

Within group measures tests all conditions for the same participant against a corresponding variable. In this instance, the variable is the intervention. No interactions between participants is considered. Where the null hypothesis is rejected, it indicates there is a statistically significant difference in outcomes measures at a particular time point, which may indicate that the intervention is having an effect. Statistical significance however does not indicate clinical impact. The effect size of the intervention can be determined by looking at the difference in means as noted in the descriptive statistics. Table 139 below summaries the study outcomes in relation to the null hypothesis for within- group measures. The clinical significance of these outcomes will be discussed

Table 139: Study outcomes in relation to the null hypothesis for within- group measures.

Within Group measures		Null Hypothesis		
		Acupuncture	CBT	Acupuncture & CBT
	credibility	rejected	accepted	accepted
	expectancy	accepted	accepted	accepted
Hopkins-25	anxiety	rejected	accepted	rejected
	depression	rejected	accepted	rejected
	total	rejected	accepted	rejected
Harvard trauma	PTSD	rejected	rejected	rejected
Numeric scale	pain	rejected	accepted	rejected

For the acupuncture group, the null hypothesis was rejected for all measures except expectancy.

For the credibility, HSCL-25 anxiety, HSCL-25 depression, HSCL-25 total, HTQ-PTSD and NRS outcomes the null hypothesis was rejected for the pre vs post and pre vs follow-up comparisons. For all measures in the post vs follow-up timepoint, the null hypothesis was accepted. This basically suggests that participants improved during the treatment intervention i.e. pre – post comparison, and then essentially maintained or slightly improved those clinical states during the post to follow-up period (2 months with no treatment), resulting in a statistically significant difference in the pre to follow-up comparison, suggesting that at the end of the follow-up, their condition had improved compared to when then started.

An examination of the differences in mean scores for each measure however, suggests that with the exception of pain, differences would not suggest a huge clinical significance. For example the pre-treatment scores for HSCL-25 total (depression and anxiety) was (σ = 2.11; SD = 0.40) (above clinical thresholds of 1.75), compared to a follow-up score of (σ = 1.40; SD = 0.40) (below clinical threshold), but that small difference in scores does not necessarily translate to significant changes in clinical symptomatology. By comparison, a reduction in pain scores with a range of scores being 0 = no pain, 10 = maximum pain, from (σ = 9.13;

SD = 0.99) at the pre-treatment point compared to (σ = 2.73; SD = 0.80) at follow-up suggests there is potentially significant clinical effect of acupuncture on pain management for this subpopulation.

For the CBT group, the null hypothesis was accepted for all measures except the HTQ, which is a measure of PTSD symptomatology. This suggests that CBT is not effective for the treatment of depression, anxiety or pain. This may be related to the nature of this therapy where patients are guided through a process of essentially re-living and desensitising to their trauma. At the same time, the scores at pre-treatment (σ = 2.66; SD = 0.69) were statistically significantly lower at post-treatment (σ = 2.36; SD = 0.59) and follow-up (σ = 1.89; SD = 0.69) suggest an effect on PTSD. Again however, the threshold measure for PTSD for the HTQ is 2.5 and these data suggest that the participants were only slightly above this threshold entering the study and whilst exiting with a lower score, this does not necessarily translate to a clinically significant outcome. Given CBT is considered the gold standard treatment, this outcome is of concern.

The Combined Acupuncture & CBT group showed significant differences in scores at the pre-treatment vs follow -up point for the HSCL-25 and HTQ measures. There were no differences noted at other time points. This is an interesting outcome as on one hand it reinforces the outcomes of the Acupuncture group suggesting that in the long run, the acupuncture may be having an effect. The fact that there is no significant difference in scores when comparing the other two time points suggests that the combination of CBT may be having an effect on the treatment overall, with CBT potentially negatively impacting on treatment outcomes. Unfortunately, it was not possible to determine the exact nature of the interaction effects. However, it was interesting to note that the drop-out rates for the CBT group was very high when compared to the other two groups (9 drop-outs in total: 1 acupuncture, 1 combined, 7 CBT). It is possible that the adjunct of acupuncture to the combined group had a positive effect on participant retention. A larger study with a qualitative analysis component would have to be designed to further test this hypothesis.

Between group measures test different participants against each intervention. Whilst within group assessment may indicate whether an intervention is effective on its own, only a between group measure can determine if one type of intervention is more effective than another. Where the null hypothesis is rejected, it indicates there is a statistically significant difference in outcome measures for one intervention over another at a particular time point. Statistical significance however does not indicate clinical impact. Clinical impact is determined by looking at within group and descriptive statistics. Table 140 below summaries the study outcomes in relation to the null hypothesis for between group measures. The clinical significance of these outcomes will be discussed.

Table 140: Study outcomes in relation to the null hypothesis for between group measures.

Between Group measures		Null Hypothesis		
		Acu vs Acu & CBT	Acu vs CBT	CBT vs Acu & CBT
credibility	pre	accepted	rejected	rejected
	Follow-up	accepted	rejected	rejected
expectancy	pre	accepted	rejected	accepted
	post	accepted	rejected	accepted
	follow-up	accepted	rejected	accepted
Hopkins-25 anxiety	all points	accepted	accepted	accepted
Hopkins-25 depression	post	accepted	rejected	accepted
Hopkins 25 Total	post	accepted	rejected	accepted
Harvard trauma PTSD	post	accepted	rejected	accepted
Numeric Pain Scale	post	accepted	rejected	rejected
	follow-up	accepted	rejected	rejected

As a general observation, there was no difference in treatment outcomes between acupuncture and the combined acupuncture and CBT group. Alternately, the acupuncture vs CBT group showed the rejection of the null hypothesis for all but one measure suggesting

there was as difference between these groups. Examination of the detailed data (within group means and descriptive statistics means) suggested that acupuncture was the more effective intervention compared to CBT. When CBT was compared to the combined Acupuncture & CBT group, the null hypothesis was rejected only for the credibility and pain scores. A more consistent result would have been for the other measures to also be rejected in which case, it might be possible to conclude a more significant difference in effect between the two interventions. Analysis of the detailed data suggest that for those measures where the null hypothesis was rejected, the combined treatment group showed improved outcome scores compared to CBT. Without a more defined outcome in regards to the other between group outcome measures, it is not possible to determine the overall effects of acupuncture when combined with CBT. The acceptance of the null hypothesis for the expectancy, HSCL-25 and HTQ suggest that there was no real difference in the treatment outcomes between these groups. A more detailed analysis follows to help interpret these mixed results.

The credibility and expectancy scores for the acupuncture group showed statistically significant differences at all time points except at post-treatment. For the combined group, credibility scores were statistically significant pre-treatment and follow-up time points. These data are generally consistent with the within group analysis and together suggest that participants in these groups had a stronger positive belief in acupuncture when compared to CBT. Whilst it was not possible to determine the exact interaction effects for the combined group and hence it is not possible to attribute those beliefs to acupuncture directly, it was interesting to note that both of these groups only had 1 participant each out of 15 in each group, drop out.

All groups improved their HSCL-25 anxiety scores, with no statistically different outcomes between the groups. This suggests that each treatment modality has a capacity to treat anxiety as mean anxiety scores for each group dropped (refer to tables 17,18 and 19). However the differences in pre and post-treatment scores is minimal and consequently would not likely represent a significant clinical effect. For the HSCL-25 depression scores, the null hypothesis was only rejected for the acupuncture vs CBT group in the post-treatment period. The within

group measures correlate with this outcome and suggest that acupuncture might be effective for depression. The descriptive statistics show that pre-treatment scores (σ = 2.15; SD = 0.41) were above the HSCL-25 threshold of 1.75 and substantially reduced and maintained a reduced level at follow-up (σ = 1.43; SD = 0.40). Nonetheless these results are inconclusive due to the small sample sizes, though they are comparable to other studies which suggest that acupuncture may have a positive effect on depression. Interestingly, The Hopkins depression scores suggest that all three intervention groups were able to reduce depression scores to non-symptomatic levels, but only the acupuncture group was able to maintain those scores through the follow-up period. The CBT and combined groups, whilst able to achieve non-symptomatic scores at the post-treatment measurement point, were unable to maintain those during the follow-up period where the depression score again returned to above symptomatic levels, though below their original pre-treatment scores. It is possible that CBT and the associated therapy processes was a contributing factor to this phenomenon.

For the HTQ, only the acupuncture vs CBT group showed a statistically significant difference between the treatment groups at post-treatment. In all other time points for all other groups, the null hypothesis was accepted. The within group analysis was rejected for all groups which indicated that all group were effective in lowering PTSD symptoms. The descriptive data in tables 20, 21 and 22 indicate the changes in scores were minimal. Hence, whilst PTSD symptoms were reduced, the clinical significance would have been minimal. It is also worthy to note that both the Acupuncture and Combined groups started with scores that were borderline non-symptomatic according to the DSM-IV. Thus, it is not clear as to whether acupuncture is only useful in mild cases of PTSD as opposed to more severely presenting cases, in which case CBT may be the preferred option, though the rate of drop-out with this therapy is of concern in clinical applications.

A clinically significant outcome from this study came in relation to the treatment of pain. Improvements in the pain scores were statistically significant in both the Acupuncture and Combined (Acupuncture & CBT) group at both post-treatment and follow-up. This was consistent with within group analyses. Results from the Numeric Rating Scale pain score

(refer to tables 23, 24 and 25) indicated that both groups receiving acupuncture showed significant improvement in pain thresholds with a drop in mean values of scores for pain from around 9 to around 3 (range is 0-10 with lower scores indicating less pain) from the pre-treatment to the post-treatment points, and were able to maintain those scores during the follow-up period. The CBT group maintained a pain score of approximately 8 throughout all treatment phases. This is consistent with many studies that have indicated acupuncture as an effective intervention for pain control.

Consequently, in relation of the specific research questions and objectives of this study:

To determine the effectiveness of acupuncture for specific PTSD symptoms including, chronic pain, depression and anxiety within the specified subpopulation

Study data suggest:

- That acupuncture may be useful for the treatment of depression and anxiety, but further study is required with a larger sample size.
- That acupuncture is clinically useful for the treatment of pain associated with PTSD in this subpopulation.

To determine if there is a significant difference in the presentation of PTSD symptoms after intervention between (1) acupuncture and counselling compared to (2) acupuncture alone or (3) counselling alone.

Study data suggest:

- All modalities tested show potential for positive treatment of PTSD. Acupuncture may be more effective in milder cases, whilst CBT may be relevant for more severe cases.
- Poor treatment compliance rates with CBT may be improved when acupuncture is combined with CBT.

- The between group analysis, indicates statistically significant differences between acupuncture alone and acupuncture combined with CBT versus CBT alone. However, further study with a larger sample size is required to determine if there are significant clinical differences in the effectiveness of each modality. These data trends suggest acupuncture may be effective.

To determine any relationships that may exist due to therapeutic alliance as measured by the Credibility/expectancy questionnaire.

These data suggest:

- The credibility and expectancy data for the acupuncture group and the credibility data for the combined acupuncture and CBT group indicated that participants receiving acupuncture had a greater positive belief in their therapy. This may have accounted for both the positive therapeutic effects of acupuncture and the improve retention rate in the combined group vs CBT group.
- The significant differences in positive beliefs and its potential effects on the treatment of pain may also result in important secondary treatment benefits. Specifically, according to Liedl & Knaevelsrud's (2008) "Perpetual Avoidance Model" (PAM), the successful treatment of pain may contributed to ongoing successful treatment of PTSD, anxiety and depression improvements. This potentially reinforces the befefits of acupuncture as an adjunct therapy to CBT as well as a potential stand-alone therapy.
- Further larger scale studies would be able to confirm these initial results.

To test the applicability of the Harvard Trauma Questionnaire and Hopkins Symptoms Check List as measurement tools for PTSD in acupuncture studies.

- These two outcome measures were able to successfully detect changes in symptomatology for their respective conditions within this sub-population. There were no issues with compliance of administration, which involved the use of

interpreters where necessary. A significantly larger study would be required to undertake an appropriate factor analysis to be able to statistically show the specific relevance of these measures to a population receiving acupuncture. However there is no evidence to challenge their face validity and given they have been tested in other populations and with other modalities, their use would seem appropriate for studies involving acupuncture.

To develop an experimental design to test acupuncture as a treatment method for refugee clients of STARTTS suffering from PTSD.

- Despite the limitations of this study, the basic design of a randomised, pragmatic trial is appropriate. The ethical issues surrounding treatment for this subpopulation of refugees meant that wait-list controls or placebo treatments could not be applied. The process for participant identification, assessment and allocation were appropriate given the vulnerability of the subpopulation.
- The impact of cultural perceptions was tangible in this subpopulation. Any future studies dealing with refugees will need to consider cultural competencies carefully in terms of a range of impacts including recruitment, appropriate translation services and the impact of cultural perception of treatment modalities.
- The achievement of a standardised CBT manual for application in clinical situation has been a major achievement of this study.

The data from this study show initial trends that indicate acupuncture may be an effective standalone therapy or adjunct therapy to CBT, particularly in respect of the treatment of pain, retention of participants in CBT when combined with acupuncture and may be a more culturally acceptable practice for segments of the sub-population of refugee clients at STARTTS.

6.4 Recommendations for Further Studies

To confirm the finding and data trends in this study, further larger scale studies are recommended. Whilst the initial study design is considered robust, the following recommendations are made:

- When determining sample size, a larger estimation should be used for the calculations. For this study, approximately 50% of participants in the CBT group dropped out.
- Sample population could be considered for stratification based on ethnicity, which could also help account for the effects of credibility bias due to cultural perceptions of therapy.
- For any combined therapy groups, monitoring and analysis the order of treatment will be important to better understand interaction effects.
- A larger sample size should be used.

Whilst the outcomes of this study were not completely conclusive, the results did show a promising trend that acupuncture may be a useful adjunct to CBT for the treatment of PTSD in the STARTTS refugee sub-population. It may particularly improve therapy retention for CBT and, as a stand alone therapy, would have definite benefits for the treatment of pain. Effective treatment of pain, may in turn support successful resolution of PTSD. Further studies would be required along the lines suggested in this thesis.

Appendices

Appendix 1: Needles and Sharp Procedure

All the procedures have been approved and must work under strictly guidance of NSW Health service when dealing with needles and sharp as follows:

Sharps

Staff at STARTTS have the right to work without concern of experiencing a sharps injury. For this right to be realised, the mutual obligation of employers and staff to ensuring a culture of safety must be acknowledged, enhanced and promoted.

A **sharp** is an object or device capable of inflicting a penetrating injury, which may or may not be contaminated with blood and/or body substances. This includes needles and any other sharp objects or instruments designed to perform penetrating procedures.

A **sharps injury** is any injury that results in piercing of the skin by a needle or other sharp object or device. For the purpose of this policy a sharps injury (either clean or contaminated) is one that occurs as a result of a work related activity.

Responsibility for sharps: Only those staff authorised by the Clinical Services Co-ordinator to use sharps for acupuncture may use sharps and handle sharps at STARTTS. Each healthcare worker is responsible for the management and safe disposal of any sharp they use. STARTTS is responsible for training new staff who will be using sharps in STARTTS policies and procedures for the safe use and disposal of sharps.

The procedures for use and disposal of sharps should be evaluated annually by Management and those staff using sharps.

Standard Precautions

All techniques which breech the skin barrier carry a potential risk of exposure to blood and cross-contamination with micro-organisms. Standard Precautions should always be adopted.

To protect the staff member and the client from micro-organisms, **hands must be washed**:

- before and after contact with each client
- after contact with any blood, body substance or tissue
- immediately prior to putting on a new pair of gloves and attending a client
- immediately after removing gloves
- after carrying out a skin penetration procedure on a client
- after touching the nose or mouth
- before and after smoking, eating and drinking
- after going to the toilet
- before and after treating wounds and handling soiled wound dressings

Liquid soap and warm water or anti-microbial solution must be used, and hands dried with a single use towel.

Cuts and abrasions on exposed skin must be covered by a water-resistant occlusive dressing which should be changed as necessary or when the dressing becomes soiled.

Gloves must be worn when skin contact with bodily fluids is anticipated or when touching items or surfaces which may be contaminated with such fluids.

After contact with each patient gloves must be removed and hands must be washed and then re-gloved before treating another patient.

After donning gloves, examine them for physical defects. Fit gloves so they cover the cuff of your clothing if possible to reduce the area of skin exposure.

Staff should also wear a clean gown or apron during the skin penetration procedure.
All equipment must be **cleaned,** before disinfection or sterilisation, to remove all organic matter and other residue that may prevent disinfection or sterilisation. Equipment that comes into contact with intact skin must be cleaned before re-use whether it looks soiled or not. This includes chairs and workbenches.

All surfaces must be cleaned regularly. Surfaces must be cleaned immediately soiling or spills occur, or when visibly soiled. Effective cleaning ensures that equipment is clean to the naked eye and free from any residues. Soiled equipment must never be stored or processed in clean areas.

Non-reusable sharps must:

- be safely managed
- not be re-sheathed
- be disposed of in a puncture resistant container immediately or as soon as practical following use

STARTTS does not use or process **reusable sharps.**

Sharps containers

All sharps containers must:

- comply with AS/NZS 4261 and AS 4031
- be puncture-resistant, waterproof and leak-proof
- have an opening that is wide enough to allow sharps to be dropped into the container by a single hand operation or from a puncture resistant container used for transporting sharps for disposal
- be clearly labelled with black lettering on yellow background with the "biohazard" symbol printed on the container
- remain upright at all times
- never be overfilled (change container when three quarters full, or contents to fill line)
- be securely sealed with a lid before disposal.

In addition, re-usable sharps containers must be:

- cleaned and disinfected before reuse
- inspected before reuse to ascertain that they are clean, intact and without leaks
- repaired before use or taken out of service, if found to be defective
- resistant to leakage, impact rupture and corrosion

Sharps containers must be placed as close as practical to the immediate area where sharps are used ('point of use') to limit the distance between the area of use and disposal. If it is determined that point of use sharps containers are unable to be made available for specific procedures or settings, rigid containers (eg injection trays) that are puncture resistant and comply with Australian Standards (AS)

are to be used. Sharps containers should be mounted at an ergonomic and occupationally safe position and height to suit the staff required to utilise them. Sharps containers must also be placed so visitors, particularly children, cannot easily access them, eg containers should not be placed on floors, or on the lower shelves of trolleys or cupboards in areas where children might gain access. Containers must be of a large enough size to accommodate the type of devices commonly used in the clinical area where they are situated. Sharps must never be forced into a sharps container

Procedures for needlestick injuries and/or exposure to body substances

These procedures must be followed in the correct order:

1. Remove needle if necessary.
2. Encourage bleeding of the punctured area and wash with liquid soap and water, or if exposure does not involve puncture, wash with liquid soap and water.
3. If splashed with bodily fluids to the eye or mucosal area, irrigate the area with copious water or normal saline – injured/affected eye down.
4. Remove contaminated clothing.
5. Report the incident immediately to your supervisor.
6. Fill in an incident/accident report form (see Appendix F) and report to Administrative Services Co-ordinator within 24 hours.
7. Seek medical care and assessment immediately from medical staff with current experience in treating needle stick injuries (eg Fairfield or Auburn Hospital).

Post-exposure prophylaxis – PEP

If there has been a risk of exposure to HIV the most appropriate course of action is PEP (Post-exposure prophylaxis). There is only a 72-hour window of opportunity for PEP to be beneficial. Anti-viral medication needs to reach a particular concentration within 72 hours for prophylaxis to have a chance of occurring.

Disposal of sharps

Sharps waste is classified as a "Hazardous Waste" under the Protection of the Environment Operations Amendment Regulation 1999 and must be disposed of through a licensed waste transporter and treatment facility. At the Carramar office sharps are disposed of at the FLYHT facility

on the Carramar campus. At the Auburn office they are disposed of through the practitioner's arrangement with a licensed operator.

When the sharps containers are being transported the lids should always be firmly in place.

Disposal of sharps into the general waste streams is illegal. Records of sharps waste removal must be kept on-site for 5 years.

Used swabs and other items which come in contact with bodily substances should be disposed of in contaminated waste bags and disposed of in the same manner as the sharps.

Flooring: must be plastic vinyl in case needles searching and contamination fluids.

Appendix 2: Referral Procedure by Telephone Screening

Acupuncture as an adjunct therapy to Counselling for Refugee Survivors at STARTTS-

REFERRAL PROCEDURE

SCREENING: ***(To be completed by Telephone Screening)***

EXCLUSION CRITERIA – SCREENING PHASE

Please indicate if any of the following apply/are present	**YES**	**NO**	**NOT KNOWN**
Currently in community detention			
Brain injury not associated with Torture & Trauma experiences			
Epilepsy			

- If the answer to **ANY** of the above questions is ***YES***, the client **does not** meet the research criteria & cannot be accepted for the project. ***They are to remain on the waiting list***.

- If the answer to **ALL** the above questions is **either *NO* or *NOT KNOWN***, please complete the Research Inclusion Criteria table.

INCLUSION CRITERIA – SCREENING PHASE

	YES	**NO**	**NOT KNOWN**
Aged 18 years or above			
Has lived through refugee trauma/torture experiences (Assessment)Assessment) (Mena)			
symptoms of PTSD (nightmares, flashbacks, sleep/concentration difficulty, memory problems, avoid talking about trauma)			

- If the answer to **ANY** of the above questions is ***NO***, the client **does not** meet the research criteria & cannot be accepted for the project. ***They are to remain on the waiting list***.

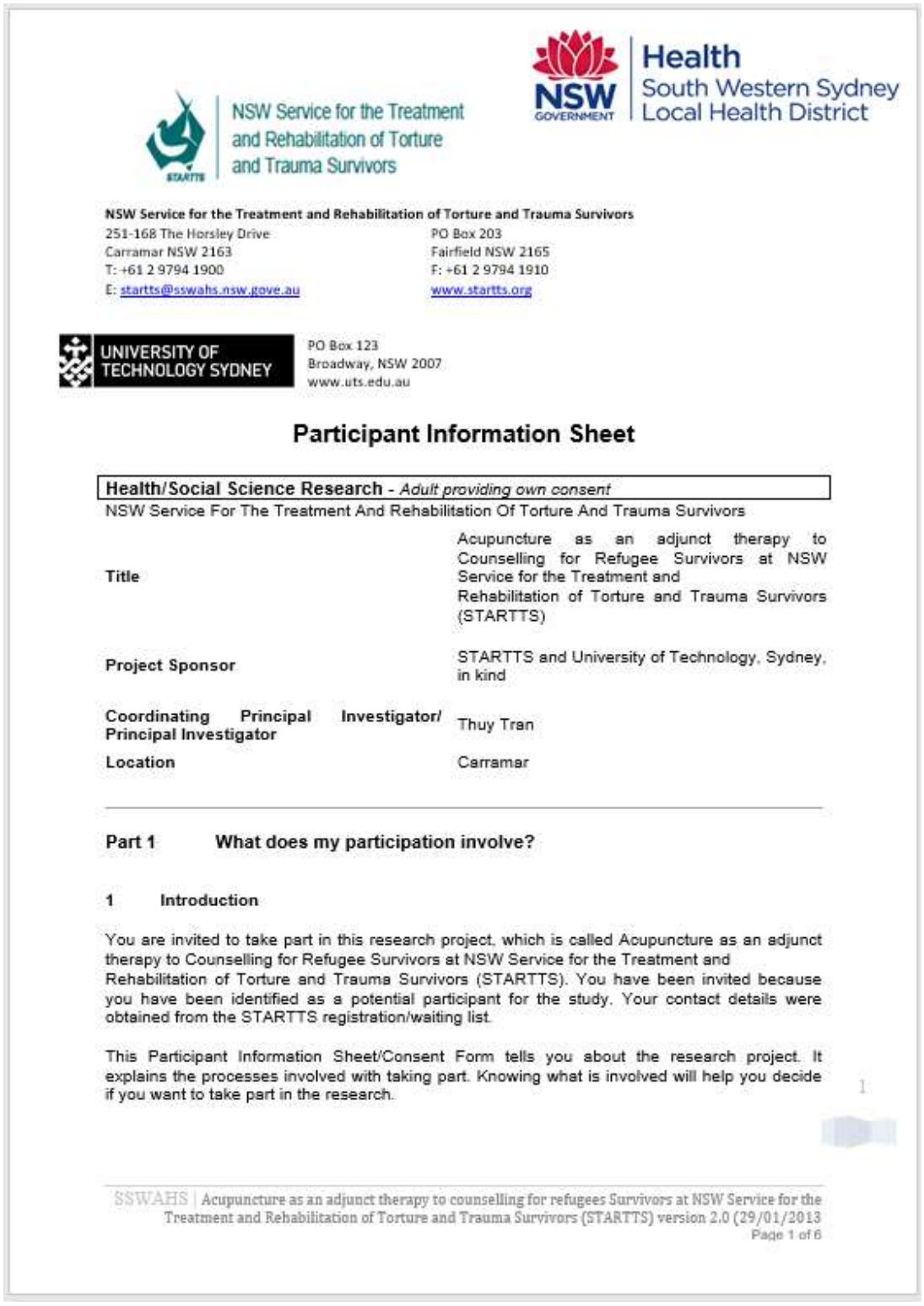
- If the answer to **ALL** the above questions is **either *YES* or *NOT KNOWN***, the client progresses to the next stage of screening and is allocated for a face-face assessment.

CHECKLIST OF PHYSICAL SYMPTOMS

		Severity		
Indicate the presence of the following symptoms and their severity:	**YES**	**Mild**	**Moderate**	**Severe**
Physical injury during war or escape journey				
Chronic lower back pain as a major symptom				
Headaches				
Neck pain				
Shoulder pain				
Generalised body pain and aches				
Other pain *(please specify)*				

Does the client receive any treatment for their pain symptoms?	**NO**	**YES**	**if YES please, explain briefly:**

Appendix 3: Participation Information Sheet



NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors

Health
South Western Sydney Local Health District

NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors
251-168 The Horsley Drive
Carramar NSW 2163
T: +61 2 9794 1900
E: startts@sswahs.nsw.gove.au

PO Box 203
Fairfield NSW 2165
F: +61 2 9794 1910
www.startts.org

UNIVERSITY OF TECHNOLOGY SYDNEY
PO Box 123
Broadway, NSW 2007
www.uts.edu.au

Participant Information Sheet

Health/Social Science Research - *Adult providing own consent*

NSW Service For The Treatment And Rehabilitation Of Torture And Trauma Survivors

Title	Acupuncture as an adjunct therapy to Counselling for Refugee Survivors at NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS)
Project Sponsor	STARTTS and University of Technology, Sydney, in kind
Coordinating Principal Investigator/ Principal Investigator	Thuy Tran
Location	Carramar

Part 1 What does my participation involve?

1 Introduction

You are invited to take part in this research project, which is called Acupuncture as an adjunct therapy to Counselling for Refugee Survivors at NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS). You have been invited because you have been identified as a potential participant for the study. Your contact details were obtained from the STARTTS registration/waiting list.

This Participant Information Sheet/Consent Form tells you about the research project. It explains the processes involved with taking part. Knowing what is involved will help you decide if you want to take part in the research.

1

Please read this information carefully. Ask questions about anything that you don't understand or want to know more about. Before deciding whether or not to take part, you might want to talk about it with a relative, friend or local health worker.

Participation in this research is voluntary. If you don't wish to take part, you don't have to.

If you decide you want to take part in the research project, you will be asked to sign the consent section. By signing it you are telling us that you:
- Understand what you have read
- Consent to take part in the research project
- Consent to be involved in the research described
- Consent to the use of your personal and health information as described.

You will be given a copy of this Participant Information and Consent Form to keep.

2 What is the purpose of this research?

The aim of this study is to clinically evaluate the effectiveness of acupuncture treatment for chronic pain, depression and anxiety in a group of survivors of torture and refugee trauma from various cultural backgrounds, who suffer from PTSD due to exposure to imprisonment, torture, war, and other human rights violations in the context of organised violence.

The study will aim to answer the following questions:

Is there a statistically significant improvement in presenting symptoms of PTSD when using
- Acupuncture alone?
- Counselling alone?
- Acupuncture and counselling combined?

The study may provide direct benefits to participants including:
- Possible relief from a major PTSD symptom, i.e. chronic pain which may further assist with the management of related depression and anxiety.
- Possible increase in quality of life.

The study may provide new information on the effectiveness (or ineffectiveness) of acupuncture as an adjunct to counselling for PTSD for patients, practitioners and the wider academic community. This may change clinical practices (assuming a positive outcome).

This research has been funded by STARTTS and the University of Technology, Sydney.

This research is being conducted by STARTTS in collaboration with the University of Technology, Sydney and is part of a PhD candidacy for the Thi Thuy Tran.

3 What does participation in this research involve?

If you decide to take part in the research project, you will first be interviewed by STARTTS Clinical Psychology Intern where you will be screened for serious mental illness using the DSMIV and other study related inclusion/exclusion criteria. This will determine if you are eligible to take part in the research. The screening will take approximately one hour.

If the screening shows that you meet the requirements, then you will be able to start the research project. If the screening shows that you cannot be in the research project, the research coordinator will discuss other options with you.

If you are eligible to take part in the research, you will be randomly be allocated to one of the 3 study groups:

Group 1
Group name: Acupuncture
Expected number of participants in this group: 20
Age range: 18 years old and above

These participants will be receive eight acupuncture treatments. Participants will be seen individually for approximately one hour per week.

Group 2
Group name: Counselling & Acupuncture
Expected number of participants in this group: 20
Age range: 18 years old and above

These participants will be receiving eight counselling and acupuncture treatments. Participants will be seen individually for approximately one hour per week for acupuncture and one hour per week for counselling.

Group 3
Group name: Counselling
Expected number of participants in this group: 20
Age range: 18 years old and above

These participants will receive eight counselling sessions. Participant will be seen individually for approximately one hour per week.

The individual time commitments of the participants in each group are noted above. In addition to the one hour treatment sessions, participants will need to undertake a screening interview of approximately one hour and complete the questionnaires on three occasions. Completion of the questionnaire may take between 20 and 40 minutes depending on whether the questionnaires are available in the participant's native language or if an interpreter is required, or the level of literacy (which is also mitigated by the use of official interpreters).

At the start and end of the intervention periods, the STARTTS Clinical Psychology Intern will administer the study questionnaires. There will be a two-month follow up period where participants will need to return to STARTTS and complete a final set of questionnaires with the clinical intern. During the follow up period, participants in all groups will be contacted at least once to mitigate risk of psychological trauma that may arise out of the interventions or from simply being on a waiting list.

Participants in the acupuncture group will have access to on-hand counselling services should they be required or if a crisis situation arises during the intervention. The acupuncturist is a qualified counsellor with 10 year of STARTTS experience.

The "managed waitlist" will not disadvantage any STARTTS participants who may wish to withdraw from the study at any time as they will simply be returned to the general waitlist without bias. That is they will return to their nominal "spot in the queue", not be added to the end of the list. If necessary, crisis counselling will be provided as with any STARTTS client.

As per standard STARTTS protocols, Clinical Interns are also primary contacts in case of emergency. If participants find themselves in crisis during the follow up period or while on the wait list, they will be referred to appropriate services under the supervision of STARTTS.

There are no costs associated with participating in this research project, nor will you be paid.

4 Other relevant information about the research project

The research project is conducted by STARTTS in collaboration with the University of Technology, Sydney.

5 Do I have to take part in this research project?

Participation in any research project is voluntary. If you do not wish to take part, you do not have to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage.

If you do decide to take part, you will be given this Participant Information and Consent Form to sign and you will be given a copy to keep.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your routine care, your relationship with professional staff or your relationship with NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors.

6 What are the possible benefits of taking part?

We cannot guarantee or promise that you will receive any benefits from this research; however, possible benefits may include relief from a major PTSD symptom and increase in quality of life.

7 What are the possible risks and disadvantages of taking part?

There is a risk that acupuncture may trigger a flashback. Experience from the trial work done to date has not indicated that acupuncture will trigger flashbacks. Should this occur during the proposed study, STARTTS counsellors and/or the Mental Health Crisis Team will be on hand to deal with any issues.

There may be minor risks associated with acupuncture including bruising, bleeding and mild pain. These will be mitigated by ensuring that gentle techniques and minimum needle depths are used as opposed to the normally vigorous stimulation associated with Chinese acupuncture.

If you become upset or distressed as a result of your participation in the research project, the research team will be able to arrange for counselling or other appropriate support.

8 Could this research project be stopped unexpectedly?

This research project may be stopped unexpectedly for a variety of reasons. These may include reasons such as natural disaster, other unforeseeable circumstances that are beyond control of the research team or if conditions of the stopping rules are met e.g. a particular intervention is deemed as having no viable benefit after an interim data analysis.

9 What happens when the research project ends?

The Intern will provide feedback to participants on the research outcomes.

There will be a two-month follow up period where participants will need to return to STARTTS and complete a final set of questionnaires with the Clinical Intern. During the follow up period, participants in all groups will be contacted at least once to mitigate risk of psychological trauma that may arise out of the interventions or from simply being on a waiting list.

Part 2 How is the research project being conducted?

11 What will happen to information about me?

By signing the consent form you consent to the research team collecting and using personal information about you for the research project. Any information obtained in connection with this research project that can identify you will remain confidential. A medical record file will be created for each participant and information collected will be associated to the participant's medical file number, not the participant's name. Participant's medical record will need to be kept for future on going counselling support, physiotherapy, group therapy and other services once participants have completed the research. The medical record file will remain open until client no longer requires a STARTTS where upon the file will be closed and client discharged.

Medical records of each participant will be stored permanently in the medical record room, which is securely locked. The data will be kept for at least 7 years according legal requirements. Only authorised STARTTS personnel can access the medical file.

Your information will only be used for the purpose of this research project and it will only be disclosed with your permission, except as required by law.

Information about you may be obtained from your health records held at this and other health organisations for the purpose of this research. By signing the consent form you agree to the research team accessing health records if they are relevant to your participation in this research project.

Your health records and any information obtained during the research project are subject to inspection (for the purpose of verifying the procedures and the data) by the relevant authorities and authorised representatives, the University of Technology Sydney Human Research Ethics Committee (EC00146) and South Western Sydney Local Health District HREC (EC00136), the institution relevant to this Participant Information Sheet, STARTTS, or as required by law. By signing the Consent Form, you authorise release of, or access to, this confidential information to the relevant research personnel and regulatory authorities as noted above.

It is anticipated that the results of this research project will be published and/or presented in a variety of forums. In any publication and/or presentation, information will be provided in such a way that you cannot be identified, except with your express permission. Statistical analysis will be performed on de-identified and aggregated data.

In accordance with relevant Australian and/or New South Wales privacy and other relevant laws, you have the right to request access to the information about you that is collected and stored by the research team. You also have the right to request that any information with which you disagree be corrected. Please inform the research team member named at the end of this document if you would like to access your information.

Any information obtained for the purpose of this research project that can identify you will be treated as confidential and securely stored. It will be disclosed only with your permission, or as required by law.

12 Complaints

If you suffer any distress or psychological injury as a result of this research project, you should contact the research team as soon as possible. You will be assisted with arranging appropriate treatment and support.

NSW South Western Sydney Local Health District HREC
Local Project Number 12/263

UTS HUMAN RESEARCH ETHICS COMMITTEE (University of Technology, Sydney)

13 Who is organising and funding the research?

This research project is being conducted by Thuy Tran at STARTTS in collaboration with the University of Technology, Sydney. STARTTS and the University of Technology, Sydney, have sponsored the research.

STARTTS and the University of Technology, Sydney, do not have a financial interest in the outcome of the research.

You will not benefit financially from your involvement in this research project even if, for example, knowledge acquired from the project outcomes leads to discoveries that are of commercial value to STARTTS and the University of Technology, Sydney.

No member of the research team will receive a personal financial benefit from your involvement in this research project (other than their ordinary wages).

14 Who has reviewed the research project?

All research in Australia involving humans is reviewed by an independent group of people called a Human Research Ethics Committee (HREC).

The ethical aspects of this research project have been approved by the University of Technology Sydney Human Research Ethics Committee (EC00146) and South Western Sydney Local Health District HREC (EC00136).

This project will be carried out according to the *National Statement on Ethical Conduct in Human Research (2007)*. This statement has been developed to protect the interests of people who agree to participate in human research studies.

15 Further information and who to contact

The person you may need to contact will depend on the nature of your query. If you want any further information concerning this project or if you have any problems which may be related to your involvement in the project, you can contact the researcher, Thuy Tran, on 9794 1920. You may also contact Ms Tran's supervisor(s) Mariano Coello (STARTTS -02 9794 1900) and Peter Meier (UTS-02 9514 7858) if you have any concerns about the research.

16. Complaints contact person

This study has been approved by the South Western Sydney Local Health District Human Research Ethics Committee. Any person with concerns or complaints about the conduct of this study should contact the Ethics and Research Governance Office, Locked Bag 7279, LIVERPOOL BC, NSW, 1871 on 02 8738 8304, fax 02 8738 8310, email research.support@sswahs.nsw.gov.au, website: http://www.sswahs.nsw.gov.au/swslhd/ethics/default.html and quote [*HREC/12/LPOOL/443*].

6

Thank you for taking the time to consider this study.
If you wish to take part in it, please sign the attached consent form.
This information sheet is for you to keep.

Appendix 4: Referral Procedure by Clinical Physiologist Intern

Acupuncture as an adjunct therapy to Counselling for Refugee Survivors at STARTTS-

REFERRAL PROCEDURE

SCREENING: (To be completed by Clinical Physiologist Intern based on information from the client Intake Form)

EXCLUSION CRITERIA – SCREENING PHASE

Please indicate if any of the following apply/are present	**YES**	**NO**	**NOT KNOWN**
Currently in community detention			
Moderate to high suicide risk (ie. has a plan & accessibility to means)			
Brain injury not associated with Torture & Trauma experiences			
Epilepsy			
Psychotic disorder			
Current Drug/Alcohol abuse			
Current domestic violence			
Current child protection issues			

Criminal Law issues (charges pending or currently on probation/parole)			
Acute/recent injury causing pain			
Past experience includes torture using needles			

- If the answer to **ANY** of the above questions is ***YES***, the client **does not** meet the research criteria & cannot be accepted for the project. ***They are to remain on the waiting list***.

- If the answer to **ALL** the above questions is **either *NO* or *NOT KNOWN***, please complete the Research Inclusion Criteria table.

INCLUSION CRITERIA – SCREENING PHASE

	YES	NO	NOT KNOWN
Aged 18 years or above			
Has lived through refugee trauma/torture experiences			
Experiences symptoms of PTSD			

- If the answer to **ANY** of the above questions is ***NO***, the client **does not** meet the research criteria & cannot be accepted for the project. ***They are to remain on the waiting list***.

- If the answer to **ALL** the above questions is **either *YES* or *NOT KNOWN***, the client progresses to the next stage of screening and is allocated for a face-face assessment.

CHECKLIST OF PHYSICAL SYMPTOMS – (To be completed by Intern at Screening Phase)

	Severity

Indicate the presence of the following symptoms and their severity:	**YES**	**Mild**	**Moderate**	**Severe**
Physical injury during war or escape journey				
Chronic lower back pain as a major symptom				
Headaches				
Neck pain				
Shoulder pain				
Generalised body pain and aches				
Musculoskeletal pain				
Psychosomatic pain (no medical cause)				
Other pain *(please specify)*				

Does the client receive any treatment for their pain symptoms?	**NO**	**YES**	**if YES please, explain briefly:**

ASSESSMENT: (To be completed by Clinical Psychologist Intern conducting face-face assessment)

A face-face assessment will be conducted by a provisionally or fully registered Psychology Intern. The number of sessions in which to complete the assessment is from 1 – 2.

The following must be completed during the assessment phase.

- Inclusion & Exclusion form.
- Client Consent Form to participate in the Clinical Research Project
- Acupuncture referral form.
- Open Medical Record folders through Medical Record Officer
- Harvard trauma Questionnaire including 2 parts: Trauma Events 17Q & Trauma
  - Symptoms 16Q
- Credibility/ Expectancy questionnaire
- Summary Of Symptoms (AT ASSESSMENT) National Minimum Set (NMDS)
- Case Management: Refugee Comprehensive Assessment Tool (RCAT)

If at any stage of the assessment process, the Counsellor becomes aware of the presence of any issues which would exclude the client from the research project, the assessment should still be completed and any required actions/follow-up should also be completed. The client must also be informed that they cannot take part in the research project beyond the assessment phase.

Supervision of Interns

Suitably experienced and qualified clinical supervisors from STARTTS will be allocated to interns to provide clinical supervision throughout the client assessment phase and to support them in the development of a self-care program.

Thuy Tran- Principal Researcher of the Project/ Counsellor/ Acupuncturist- CM

Carmela Morano- Student Clinic - Clinical Project Officer

Mariano Coello- Clinical Services & Research Coordinator

Shakeh Momartin _ Research Officer

INCLUSION & EXCLUSION CRITERIA FORM – ASSESSMENT PHASE

CLIENT NAME	RN	MRN

RESEARCH INCLUSION CRITERIA

	YES	NO
1. Aged 18 years or above		
2. Has lived through refugee trauma/torture experiences		
3. Experiences symptoms of PTSD		

RESEARCH EXCLUSION CRITERIA

Please indicate if any of the following apply/are present	YES	NO
1. Currently in community detention		
2. Moderate to high suicide risk (ie. has a plan & accessibility to means)		
3. Brain injury not associated with Torture & Trauma experiences		
4. Epilepsy		
5. Psychotic disorder		

6. Current Drug/Alcohol abuse		
7. Current domestic violence		
8. Current child protection issues		
9. Criminal Law issues (charges pending or currently on probation/parole)		
10. Acute/recent injury causing pain		
11. Past experience includes torture using needles		

NAME OF ASSESSING CLINICIAN	**NO. OF SESSIONS**	**DATE OF LAST SESSION**
Clinician Signature:		

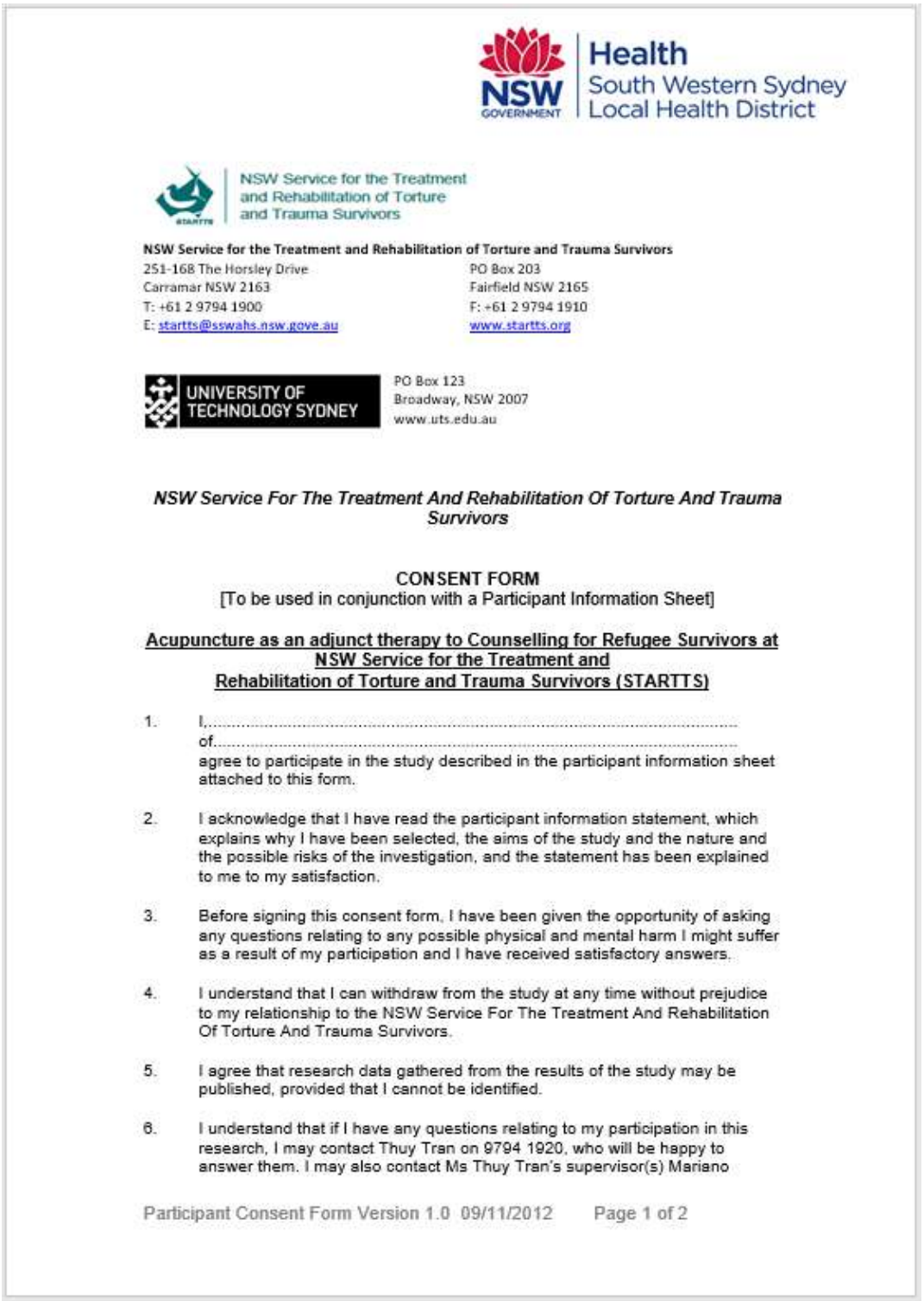
Appendix 5: Acupuncture Stopping Rule

Acupuncture Stopping Interview Guideline

	Response	Action	Outcome
Have you suffered a severe worsening of pain due to the acupuncture?	Yes	Refer to Direct Services Coordinator	Withdrawn from study
	No	N/A	Remain in study
Have you experienced any serious side effects from treatment? (includes serious medical complications)	Yes	Refer to Direct Services Coordinator	Withdrawn from study
	No	N/A	Remain in study
Have you experienced any psychological effects from treatment? (includes suicidal ideation, psychosis, drug/alcohol/substance abuse)	Yes	Refer to Direct Services Coordinator	Withdrawn from study
	No	N/A	Remain in study
Do you have any concerns about the study or the practitioners?	Yes	Refer to Principle Investigators	Concerns addressed or Withdrawn from study
	No	N/A	Remain in study

Do you wish to withdraw from the study?	Yes	Refer to Principle Investigators	Withdrawn from study
	No	N/A	Remain in study

Appendix 6: Consent Form



Health
South Western Sydney
Local Health District

NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors

NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors
251-168 The Horsley Drive
Carramar NSW 2163
T: +61 2 9794 1900
E: startts@sswahs.nsw.gove.au

PO Box 203
Fairfield NSW 2165
F: +61 2 9794 1910
www.startts.org

UNIVERSITY OF TECHNOLOGY SYDNEY
PO Box 123
Broadway, NSW 2007
www.uts.edu.au

NSW Service For The Treatment And Rehabilitation Of Torture And Trauma Survivors

CONSENT FORM
[To be used in conjunction with a Participant Information Sheet]

Acupuncture as an adjunct therapy to Counselling for Refugee Survivors at NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS)

1. I,.....
of.....
agree to participate in the study described in the participant information sheet attached to this form.

2. I acknowledge that I have read the participant information statement, which explains why I have been selected, the aims of the study and the nature and the possible risks of the investigation, and the statement has been explained to me to my satisfaction.

3. Before signing this consent form, I have been given the opportunity of asking any questions relating to any possible physical and mental harm I might suffer as a result of my participation and I have received satisfactory answers.

4. I understand that I can withdraw from the study at any time without prejudice to my relationship to the NSW Service For The Treatment And Rehabilitation Of Torture And Trauma Survivors.

5. I agree that research data gathered from the results of the study may be published, provided that I cannot be identified.

6. I understand that if I have any questions relating to my participation in this research, I may contact Thuy Tran on 9794 1920, who will be happy to answer them. I may also contact Ms Thuy Tran's supervisor(s) Mariano

Health
South Western Sydney
Local Health District

Coello (STARTTS -02 9794 1900)
and Peter Meier (UTS-02 9514 7858) if you have any concerns about the research.

7. I acknowledge receipt of a copy of this Consent Form and the Participant Information Statement.

Signature of participant Please PRINT name Date

_____ _____ _____

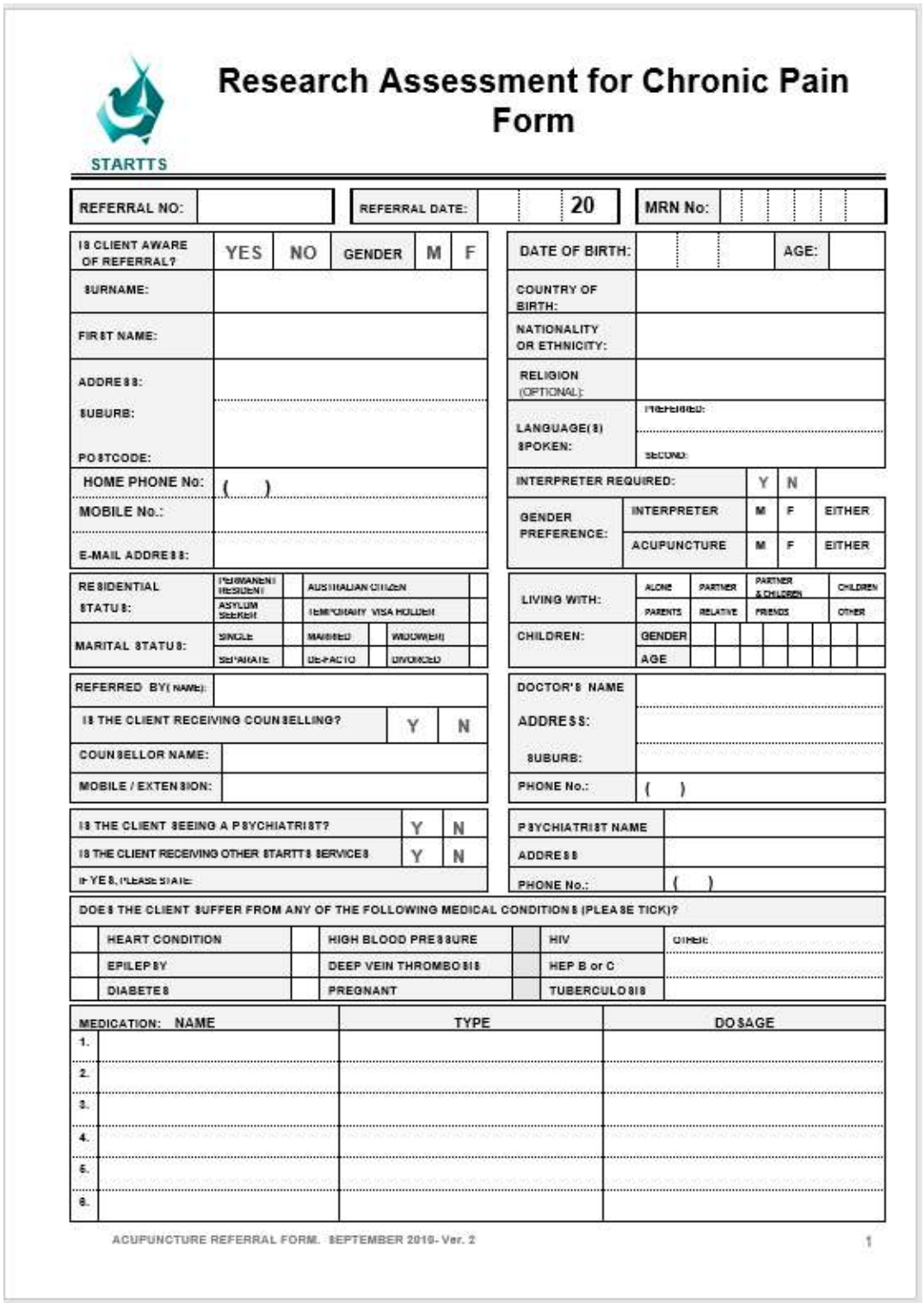
Signature of witness Please PRINT name Date

_____ _____ _____

Signature of investigator Please PRINT name Date

_____ _____ _____

Appendix 7: Research Assessment for Chronic Pain Form



STARTTS

Research Assessment for Chronic Pain Form

REFERRAL NO:		REFERRAL DATE:	20	MRN No:	

IS CLIENT AWARE OF REFERRAL?	YES	NO	GENDER	M	F	DATE OF BIRTH:	AGE:
SURNAME:						COUNTRY OF BIRTH:	
FIRST NAME:						NATIONALITY OR ETHNICITY:	
ADDRESS:						RELIGION (OPTIONAL):	
SUBURB:						LANGUAGE(S) SPOKEN: PREFERRED:	
POSTCODE:						SECOND:	
HOME PHONE No:	( )					INTERPRETER REQUIRED:	Y N
MOBILE No.:						GENDER PREFERENCE: INTERPRETER	M F EITHER
E-MAIL ADDRESS:						ACUPUNCTURE	M F EITHER

RESIDENTIAL STATUS:	PERMANENT RESIDENT	AUSTRALIAN CITIZEN		LIVING WITH:	ALONE	PARTNER	PARTNER & CHILDREN	CHILDREN
	ASYLUM SEEKER	TEMPORARY VISA HOLDER			PARENTS	RELATIVE	FRIENDS	OTHER
MARITAL STATUS:	SINGLE	MARRIED	WIDOW(ER)	CHILDREN:	GENDER			
	SEPARATE	DE-FACTO	DIVORCED		AGE			

REFERRED BY(NAME):		DOCTOR'S NAME	
IS THE CLIENT RECEIVING COUNSELLING?	Y N	ADDRESS:	
COUNSELLOR NAME:		SUBURB:	
MOBILE / EXTENSION:		PHONE No.:	( )

IS THE CLIENT SEEING A PSYCHIATRIST?	Y	N	PSYCHIATRIST NAME	
IS THE CLIENT RECEIVING OTHER STARTTS SERVICES	Y	N	ADDRESS	
IF YES, PLEASE STATE:			PHONE No.:	( )

DOES THE CLIENT SUFFER FROM ANY OF THE FOLLOWING MEDICAL CONDITIONS (PLEASE TICK)?

	HEART CONDITION		HIGH BLOOD PRESSURE		HIV	OTHER:	
	EPILEPSY		DEEP VEIN THROMBOSIS		HEP B or C		
	DIABETES		PREGNANT		TUBERCULOSIS		

MEDICATION:	NAME	TYPE	DOSAGE
1.			
2.			
3.			
4.			
5.			
6.			

ACUPUNCTURE REFERRAL FORM. SEPTEMBER 2010- Ver. 2 1

SUICIDE RISK:	YES	NO

IF YES, PLEASE SUMMARIZE	
MAIN RISK FACTORS:	**PROTECTIVE FACTORS**
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.

ALCOHOL ABUSE	YES	NO	IN DOA TREATMENT?	YES	NO

OTHER DRUGS	YES	NO	IF YES, STATE:		IN TREATMENT?	YES	NO

PSYCHOTIC ILLNESS:	YES	NO	IF YES, STATE:		IN TREATMENT?	YES	NO

REQUEST AN ESTIMATE OF THE SEVERITY OF DISTRESS CAUSED BY THE RELEVANT SYMPTOMS (PLEASE TICK and RATE):
None- 0 MILD - 1 MODERATE - 2 SEVERE - 3

SYMPTOMS

DOES THE CLIENT REPORT ANY OF THE FOLLOWING? :	*COMMENTS*	SEVERITY 0-3 Assess	SEVERITY 0-3 Review
(a) DEPRESSED MOOD / SADNESS / CRYING OFTEN			
(b) LACK OF MOTIVATION			
(c) LOSS OF ENERGY / OFTEN TIRED			
(d) LOSS OF APPETITE / WEIGHT LOSS			
(e) LOSS OF SEXUAL INTEREST / OTHER SEXUAL DIFFICULTIES			
(f) FEELINGS OF GUILT			
(g) GRIEF / BEREAVEMENT / LOSS			
(h) DISTURBED SLEEP/ INSOMNIA (OTHER, PLEASE SPECIFY)			
(i) CONCENTRATION OR MEMORY PROBLEMS			
(j) IRRITABILITY			
(k) HYPERVIGILANCE / STARTLE RESPONSE			
(l) FLASHBACKS / FEELING AS IF YOU ARE RELIVING PAST EVENTS			
(m) NIGHTMARES			
(n) PHOBIC REACTIONS (PLEASE SPECIFY:)			
(o) PANIC / ANXIETY ATTACKS			
(p) INTRUSIVE MEMORIES			
(q) AVOIDING REMINDERS OF PAST EVENTS			
(r) SOCIAL WITHDRAWAL			
(s) ANGER/AGGRESSIVE OUTBURSTS			
(t) Other, please specify:			
(u) Other, please specify:			
(v) Other, please specify:			
	TOTAL:		

OVERALL EFFECTS OF PSYCHOLOGICAL SYMPTOMS ON FUNCTIONING LEVEL:				
(a) ACTIVITIES OF DAILY LIVING:	NONE(0)	MILD(1)	MODERATE (2)	SEVERE (3)
(b) STUDY/WORK (OR ABILITY TO LOOK FOR WORK):	NONE(0)	MILD (1)	MODERATE (2)	SEVERE (3)
(c) SOCIAL AREA	NONE (0)	MILD (1)	MODERATE (2)	SEVERE (3)
			TOTAL:	

GENOGRAM	PERSONAL/SOCIAL SUPPORT NETWORKS

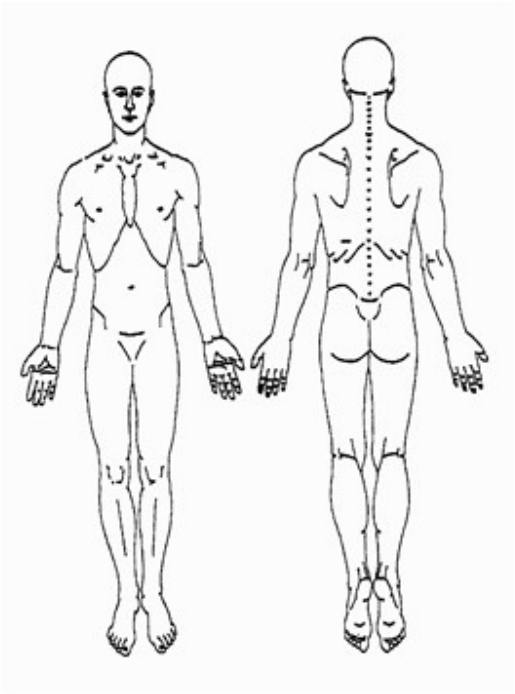
SUMMARY AND BACKGROUND OF CURRENT PROBLEM (s): (Please briefly describe torture/trauma and migration experiences)

PHYSICAL PROBLEMS DESCRIBE ANY INJURIES/WOUNDS (e.g.: gun, knife, stick or object(s) the client has bee tortured with)

OVERALL EFFECTS OF PHYSICAL SYMPTOMS ON FUNCTIONING LEVEL:				
(a) ACTIVITIES OF DAILY LIVING:	NONE(0)	MILD(1)	MODERATE (2)	SEVERE (3)
(b) STUDY/WORK (OR ABILITY TO LOOK FOR WORK):	NONE(0)	MILD (1)	MODERATE (2)	SEVERE (3)
(c) SOCIAL AREA	NONE (0)	MILD (1)	MODERATE (2)	SEVERE (3)
			TOTAL:	

HAS THE CLIENT RECEIVED ACUPUNCTURE TREATMENT BEFORE? (IF YES PLEASE EXPLAIN):

PLEASE INDICATE THE AREAS OF THE BODY WHERE THE CLIENT EXPERIENCES PAIN, DISCOMFORT OR OTHER PROBLEM(S)



ANALOGUE PAIN SCALES

PAIN IN:

0 1 2 3 4 5 6 7 8 9 10

PAIN IN:

0 1 2 3 4 5 6 7 8 9 10

PAIN IN:

0 1 2 3 4 5 6 7 8 9 10

Visual – Analogue Pain Scale

0 - No Pain

1-4 - Mild pain & movement is not a problem

5-8 - Moderate pain –more pain - & some problem(s) with movement

9-10 - Servere pain & higher degree of problems with movement.

COMMENTS:

GENERAL LEVEL OF PAIN

Musculoskeletal

0 1 2 3 4 5 6 7 8 9 10

Joint

0 1 2 3 4 5 6 7 8 9 10

Bone

0 1 2 3 4 5 6 7 8 9 10

Allocated to:			
Allocated by:			
Date:			20
First Session Date:			20

Appendix 8: Credibility and Expectancy Questionnaire

Credibility/expectancy questionnaire

1 session: before you receive therapy list as follows: (Counselling Only), (Acupuncture+ Counselling). (Acupuncture Only)

We would like you to indicate below how much you believe, *right now*, that the therapy you are receiving will help reduce your anxiety. Our beliefs usually have two aspects to it: (1) what one *thinks* will happen and (2) what one *feels* will happen. Sometimes these are similar; sometimes they are different. Please answer the questions below. In the first set, answer in terms of what you *think*. In the second answer in terms of what you really and truly *feel*. We do not want your therapist to ever see these ratings, so keep the sheet covered when you are done.

Set I

1. At this point, how logical does the therapy offered to you seem?

1	2	3	4	5	6	7	8	9
not at all logical			somewhat logical				very logical	

2. At this point, how successful do you think this treatment will be in reducing your trauma symptoms?

1	2	3	4	5	6	7	8	9
not at all useful			somewhat useful				very useful	

3. How confident would you be in recommending this treatment to a friend who experiences similar problems?

1	2	3	4	5	6	7	8	9
not at all confident			somewhat confident				very confident	

4. By the end of the therapy period, how much improvement do you think you will have in your trauma symptoms? ?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Set II

For this set, close your eyes for a few moments, and try to identify what you really *feel* about the therapy and its likely success. Then answer the following questions.

1. At this point, how much do you really *feel* that therapy will help reduce your trauma symptoms?

1	2	3	4	5	6	7	8	9
not at all				somewhat				very much

2. By the end of the therapy period, how much improvement in your trauma symptoms do you really *feel* will occur?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Credibility/expectancy questionnaire

Conducted at session 8: After you received therapy list as follows: (Counselling only), (Acupuncture+ Counselling). (Acupuncture Only)

We would like you to indicate below how much you believe, *right now*, that the therapy you are receiving will help to reduce your anxiety. Our beliefs usually have two aspects to it: (1) what one *thinks* will happen and (2) what one *feels* will happen. Sometimes these are similar; sometimes they are different. Please answer the questions below. In the first set, answer in terms of what you *think*. In the second answer in terms of what you really and truly *feel*. We do not want your therapist to ever see these ratings, so keep the sheet covered when you are done.

Set I

5. At this point, how logical does the therapy offered to you seem?

1	2	3	4	5	6	7	8	9
not at all logical				somewhat logical				very logical

6. At this point, how successful do you think this treatment will be in reducing your trauma symptoms?

1	2	3	4	5	6	7	8	9
not at all useful				somewhat useful				very useful

7. How confident would you be in recommending this treatment to a friend who experiences similar problems?

1	2	3	4	5	6	7	8	9
not at all confident				somewhat confident				very confident

8. By the end of the therapy period, how much improvement in your trauma symptoms do you think will occur?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Set II

For this set, close your eyes for a few moments, and try to identify what you really *feel* about the therapy and its likely success. Then answer the following questions.

3. At this point, how much do you really *feel* that therapy will help to reduce your trauma symptoms?

1	2	3	4	5	6	7	8	9
not at all				somewhat				very much

4. By the end of the therapy period, how much improvement in your trauma symptoms do you really *feel* will occur?

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Credibility/expectancy questionnaire

Conduct at 2 months: After you received therapy list as follows: (Counselling only), (Acupuncture+ Counselling). (Acupuncture Only)

We would like you to indicate below how much you believe, *right now*, that the therapy you are receiving will help to reduce your anxiety. Our beliefs usually have two aspects to it: (1) what one *thinks* will happen and (2) what one *feels* will happen. Sometimes these are similar; sometimes they are different. Please answer the questions below. In the first set, answer in terms of what you *think*. In the second answer in terms of what you really and truly *feel*. We do not want your therapist to ever see these ratings, so keep the sheet covered when you are done.

Set I

9. At this point, how logical does the therapy offered to you seem?

1	2	3	4	5	6	7	8	9
not at all logical				somewhat logical				very logical

10. At this point, how successful do you think this treatment will be in reducing your trauma symptoms?

1	2	3	4	5	6	7	8	9
not at all useful				somewhat useful				very useful

11. How confident would you be in recommending this treatment to a friend who experiences similar problems?

1	2	3	4	5	6	7	8	9
not at all confident				somewhat confident				very confident

12. By the end of the therapy period, how much improvement in your trauma symptoms do you think will occur?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Set II

For this set, close your eyes for a few moments, and try to identify what you really *feel* about the therapy and its likely success. Then answer the following questions.

5. At this point, how much do you really *feel* that therapy will help to reduce your trauma symptoms?

1 2 3 4 5 6 7 8 9

not at all somewhat very much

6. By the end of the therapy period, how much improvement in your trauma symptoms do you really *feel* will occur?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Appendix 9: **DSM-IV-TR criteria**

DSM-IV-TR criteria for post traumatic stress disorder:

A. The person has been exposed to a traumatic event in which both of the following were present:

1. the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.

2. the person's response involved intense fear, helplessness, or horror.

B. The traumatic event is persistently reexperienced in one (or more) of the following ways:

1. recurrent and intrusive distressing recollections of the event, including images, thoughts, or perceptions

2. recurrent distressing dreams of the event

3. acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and dissociative flashback episodes, including those that occur on awakening or when intoxicated)

4. intense psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

5. physiological reactivity on exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event

C. Persistent avoidance of stimuli associated with the trauma and numbing of general responsiveness (not present before the trauma), as indicated by three (or more) of the following:

1. efforts to avoid thoughts, feelings, or conversations associated with the trauma

2. efforts to avoid activities, places, or people that arouse recollections of the trauma

3. inability to recall an important aspect of the trauma

4. markedly diminished interest or participation in significant activities

5. feeling of detachment or estrangement from others

6. restricted range of affect (e.g., unable to have loving feelings)

7. sense of a foreshortened future (e.g., does not expect to have a career, marriage, children, or a normal life span)

D. Persistent symptoms of increased arousal (not present before the trauma), as indicated by two (or more) of the following:

1. difficulty falling or staying asleep

2. irritability or outbursts of anger

3. difficulty concentrating

4. hypervigilance

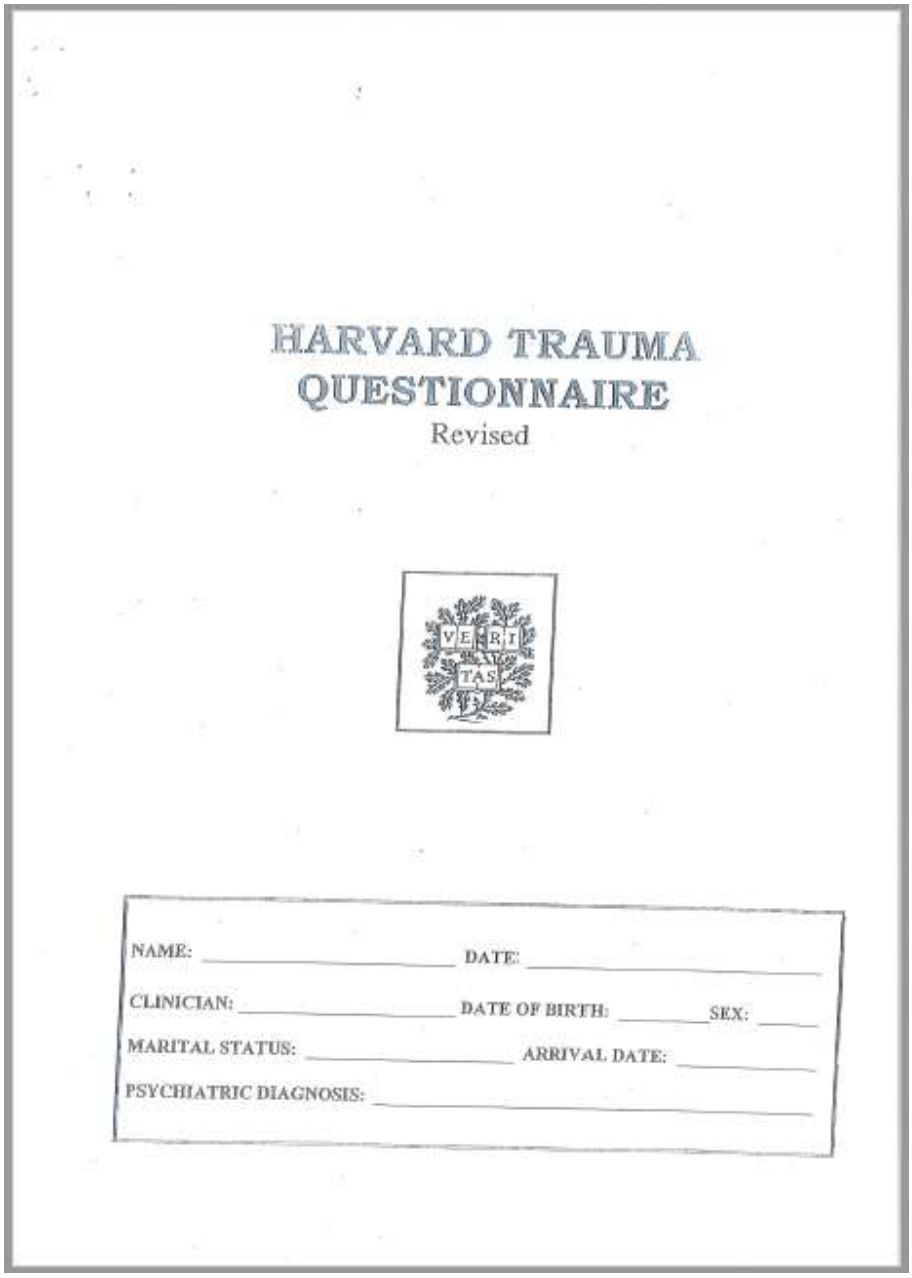
5. exaggerated startle response

E. Duration of the disturbance (symptoms in Criteria B, C, and D) is more than 1 month.

F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

(American Psychiatric Association 2002)

Appendix 10: Harvard Trauma Questionnaire



HARVARD TRAUMA
QUESTIONNAIRE
Revised

VE RI TAS

NAME: _____ DATE: _____

CLINICIAN: _____ DATE OF BIRTH: _____ SEX: _____

MARITAL STATUS: _____ ARRIVAL DATE: _____

PSYCHIATRIC DIAGNOSIS: _____

PART 4: TRAUMA SYMPTOMS

The following are symptoms that people sometimes have after experiencing hurtful or terrifying events in their lives. Please read each one carefully and decide how much the symptoms bothered you in the past week.

		(1) Not at all	(2) A little	(3) Quite a bit	(4) Extremely
1.	Recurrent thoughts or memories of the most hurtful or terrifying events				
2.	Feeling as though the event is happening again				
3.	Recurrent nightmares				
4.	Feeling detached or withdrawn from people				
5.	Unable to feel emotions				
6.	Feeling jumpy, easily startled				
7.	Difficulty concentrating				
8.	Trouble sleeping				
9.	Feeling on guard				
10.	Feeling irritable or having outbursts of anger				
11.	Avoiding activities that remind you of the traumatic or hurtful event				

		(1) Not at all	(2) A little	(3) Quite a bit	(4) Extremel
12.	Inability to remember parts of the most hurtful or traumatic events				
13.	Less interest in daily activities				
14.	Feeling as if you don't have a future				
15.	Avoiding thoughts or feelings associated with the traumatic or hurtful events				
16.	Sudden emotional or physical reaction when reminded of the most hurtful or traumatic events				

Part 5: Scoring Part 4 Trauma Symptoms.

1 – Assign the following numbers for each answered item:

1 = " Not at all"

2 = "A little"

3 = "Quite a bit"

4 = "Extremely".

2 – Add up item scores and divide by the total number of the answered items.

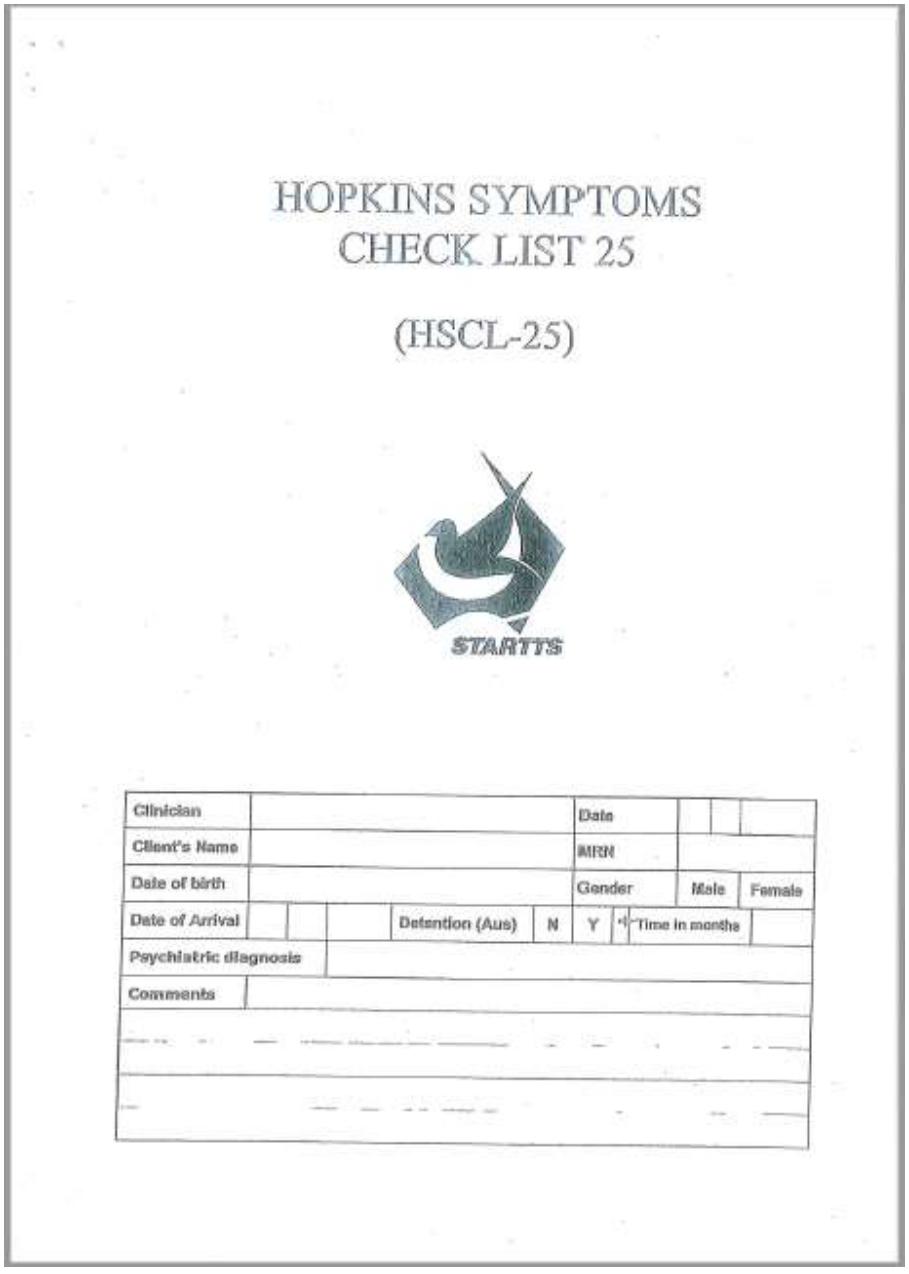
$$\text{DSM-IV Score} = \frac{\text{ITEMS 1 – 16}}{16}$$

$$\text{TOTAL Score} = \frac{\text{ITEMS 1 - 40}}{40}$$

Individuals with scores on DSM-IV and/or total > 2.5 are considered symptomatic for PTSD.
See manual for additional information.

Developed by:
The Harvard Program in Refugee Trauma
Department of Health Policy and Management
Harvard School of Public Health.

Appendix 11: Hopkins Symptoms Check List 25



HOPKINS SYMPTOMS
CHECK LIST 25

(HSCL-25)

STARTTS

Clinician			Date				
Client's Name			MRN				
Date of birth			Gender	Male	Female		
Date of Arrival			Detention (Aus)	N	Y	Time in months	
Psychiatric diagnosis							
Comments							

Listed below are some symptoms or problems that people sometimes have. Please read each one carefully and decide how much the symptoms bothered you or distressed you in the last week, including today. Please check in the appropriate column.

Part 1 Anxiety Symptoms	Not at all 1	A little 2	Quit a bit 3	Extremely 4
1. Suddenly scared for no reason				
2. Feeling unsafe				
3. Faintness, dizziness, or weakness				
4. Nervousness or shakiness inside				
5. Heart pounding or racing				
6. Trembling				
7. Feeling tense to keyed up				
8. Headaches				
9. Spells of terror or panic				
10. Felling restless, can't sit still				

Part II Depression Symptoms	Not at all 1	A little 2	Quit a bit 3	Extremely 4
11. Feeling low in energy, slowed down				
12. Blaming yourself for things				
13. Crying easily				
14. Loss of sexual interest or pleasure				
15. Loss of appetite				
16. Difficulty falling asleep, staying sleep				
17. Feeling hopeless about the future				
18. Feeling blue				
19. Feeling lonely				
20. Thoughts of ending your life				
21. Feeling of being trapped or caught				
22. Worrying too much about things				
23. Feeling no interest in things				
24. Feeling every thing is an effort				
25. Feeling of worthlessness				

3

SCORING

Responses are summed and divided by the number of answers items, to generate three scores

ANXIETY = $\frac{\text{ITEMS 1-10}}{10}$ = [ ]

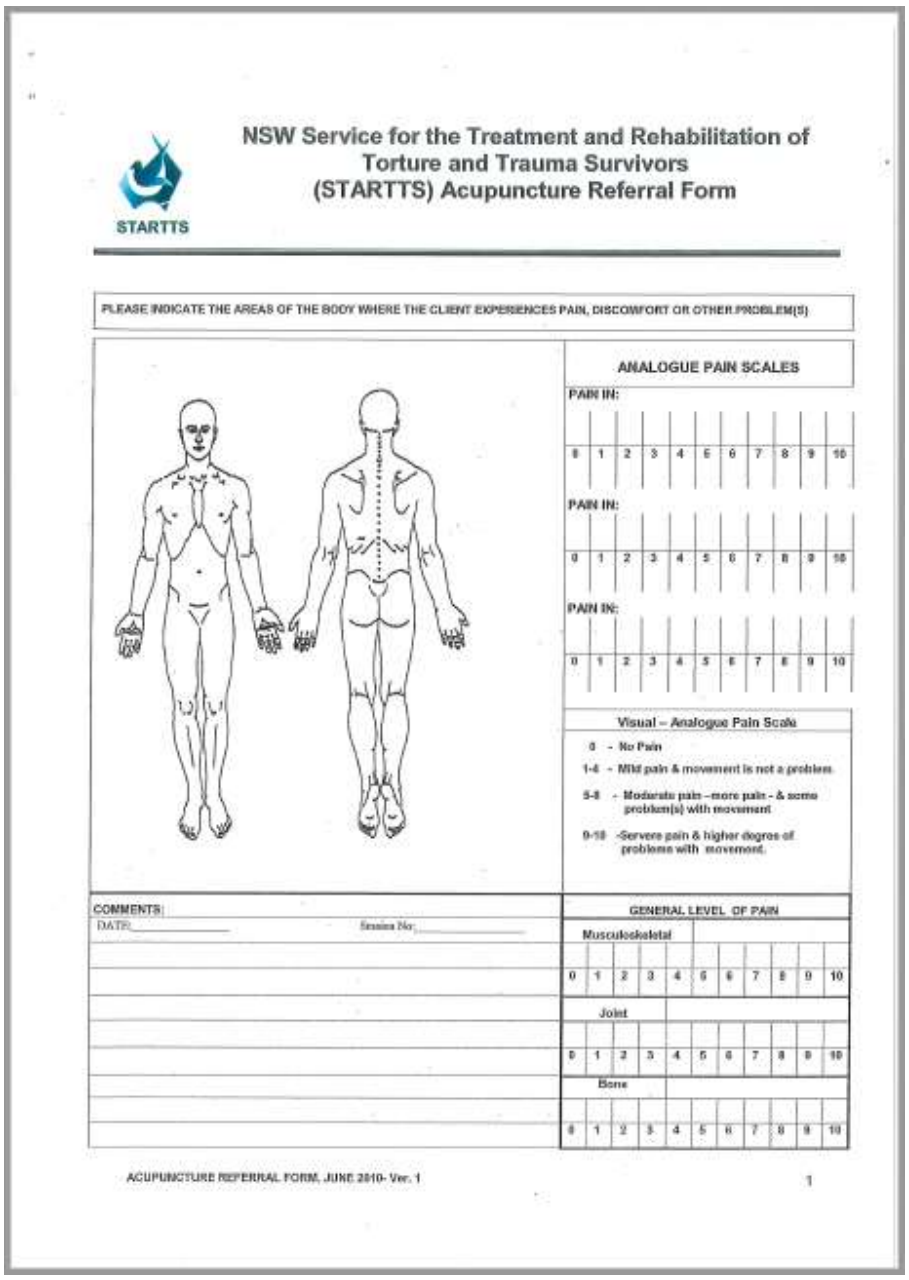
DEPRESSION = $\frac{\text{ITEMS 11-25}}{15}$ = [ ]

TOTAL = $\frac{\text{ITEMS 1-25}}{25}$ = [ ]

Individuals with scores on anxiety and/or depression and or total > 1.75 are considered symptoms.

(See Manual for additional information)

Appendix 12: Acupuncture Referral Form



STARTTS

NSW Service for the Treatment and Rehabilitation of Torture and Trauma Survivors (STARTTS) Acupuncture Referral Form

PLEASE INDICATE THE AREAS OF THE BODY WHERE THE CLIENT EXPERIENCES PAIN, DISCOMFORT OR OTHER PROBLEM(S)

ANALOGUE PAIN SCALES

PAIN IN:

0 1 2 3 4 5 6 7 8 9 10

PAIN IN:

0 1 2 3 4 5 6 7 8 9 10

PAIN IN:

0 1 2 3 4 5 6 7 8 9 10

Visual – Analogue Pain Scale

0 - No Pain

1-4 - Mild pain & movement is not a problem

5-8 - Moderate pain – more pain - & some problem(s) with movement

9-10 -Severe pain & higher degree of problems with movement.

COMMENTS:

DATE: Session No:

GENERAL LEVEL OF PAIN

Musculoskeletal

0 1 2 3 4 5 6 7 8 9 10

Joint

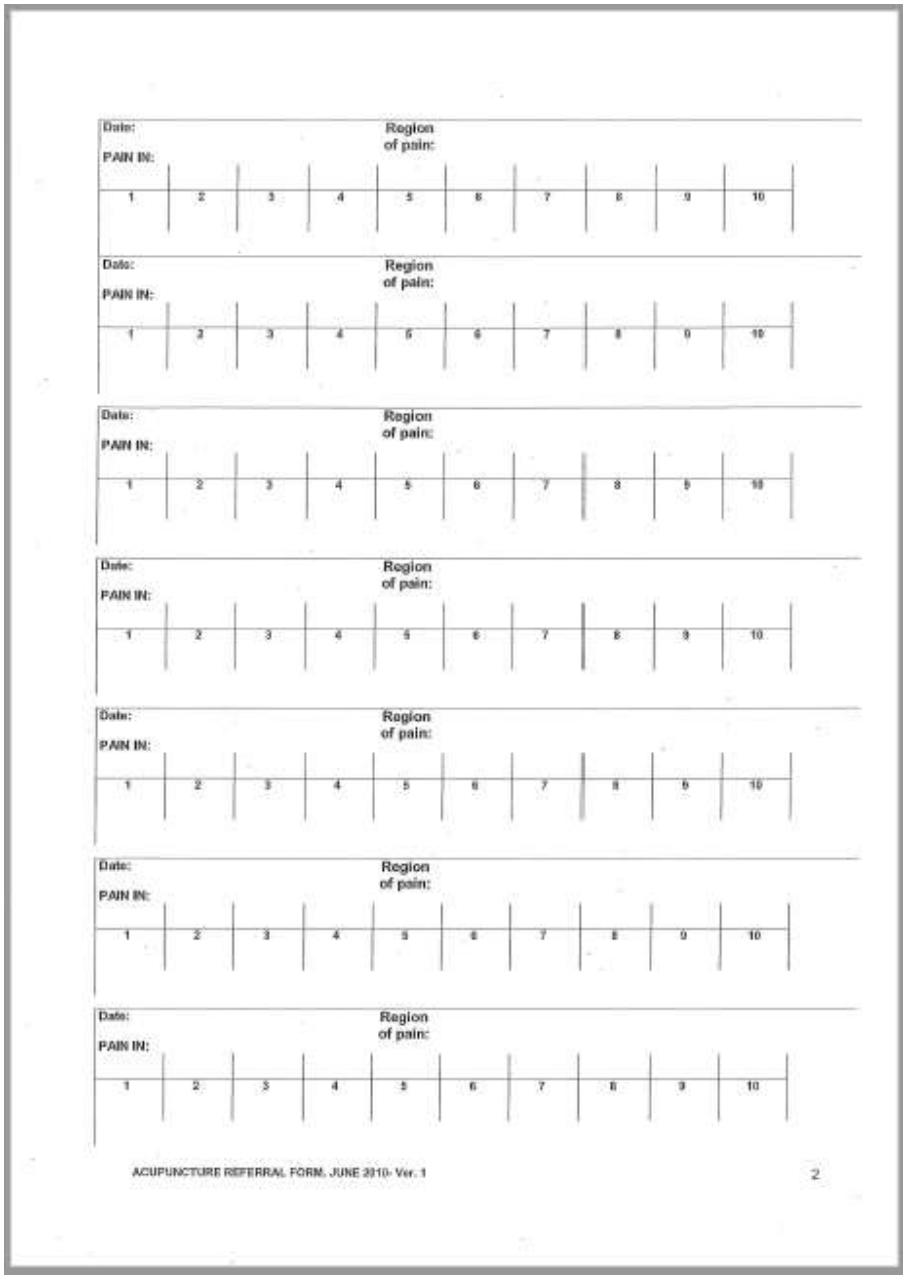
0 1 2 3 4 5 6 7 8 9 10

Bone

0 1 2 3 4 5 6 7 8 9 10

ACUPUNCTURE REFERRAL FORM, JUNE 2010- Ver. 1

1


Date:
Region of pain:
PAIN IN:
1 2 3 4 5 6 7 8 9 10
Date:
Region of pain:
PAIN IN:
1 2 3 4 5 6 7 8 9 10
Date:
Region of pain:
PAIN IN:
1 2 3 4 5 6 7 8 9 10
Date:
Region of pain:
PAIN IN:
1 2 3 4 5 6 7 8 9 10
Date:
Region of pain:
PAIN IN:
1 2 3 4 5 6 7 8 9 10
Date:
Region of pain:
PAIN IN:
1 2 3 4 5 6 7 8 9 10
Date:
Region of pain:
PAIN IN:
1 2 3 4 5 6 7 8 9 10
ACUPUNCTURE REFERRAL FORM. JUNE 2010- Ver. 1
2

Appendix 13: Discussion on the Cognitive Behavioural Therapy CBT manual

The editors of the CBT manual have used materials from treatment manuals and other resources by other authors. These are cited in the text and fully referenced in the References section. Particular mention should be made of the use of extensive excerpts from *The treatment of anxiety disorders: Clinician guides and patient manuals* by Andrews et al (2003).

STARTTS ethos for Cognitive Behavioural Therapy (CBT) manual:

CBT is an evidenced based approach for treating Post Traumatic Stress Disorder (PTSD). Over the vigorous meetings, active staff members have contributed their clinical experiences and bilingual skills on how to approach CBT techniques that is also culturally sound and the interpretation of different culture for example, explain differently their pain experience, grief and loss, dream and so on. The client's interpretation provides a deeper meaning and understanding on what they are expressing, conveying and experiencing that will provide valid information for the therapist to assist them in healing their deepest wound.

Initially, it was proposed to have variation from 10 sessions of CBT therapy. However, Health South Western Sydney Local Health District Ethic Committee has approved the research to have 8 sessions of CBT therapy.

STARTTS is an organisation that provides psychological treatment for refugees and those from a refugee-like background. Many refugees have experienced trauma and often these individuals suffer from symptoms of PTSD.

STARTTS has 30 years of experience working with refugees of various backgrounds and over this time, it has developed various treatment protocols to work with this diverse population. STARTTS employs staff from a range of professions including clinical psychology, social work and community development. Through training, regular clinical meetings and individual internal clinical consultations, STARTTS staff have developed a holistic approach to counselling that is culturally appropriate and sensitive to the needs of our client population.

The Cognitive Behavioural Therapy manual developed for the research study is a product of STARTTS experiences and combines evidence-based CBT approaches to culturally sensitive practice, providing best outcomes for our clients. Therefore, this manual contains significant CBT principles in combination with treatment strategies, psycho-education, spiritual imperatives, anthropological and historical background and understanding of settlement needs that are essential for the treatment and recovery of our clients.

The CBT manual is required to ensure that each CBT therapist is trained and provided consistent and streamlined approach when providing CBT treatment to refugee clients in the research study.

For acupuncture therapy, there is only one acupuncturist who provides acupuncture treatment to Acupuncture group as well as to the Combine group (Acupuncture and CBT). Therefore, no acupuncture manual is required for this research study.

The process involved in creating the CBT manual required many meetings after meetings, debates after debates, revisions after revisions before the CBT manual can be finalised and submitted to the Health South Western Sydney Local Health District for approval. The research study can only be allowed to commence after the CBT manual has been approved.

The CBT manual begins with an introduction in Chapter 1, providing background information to Counsellor on the treatment for PTSD in refugee and the rationale of CBT

treatment before going into detailing the structure of the treatment for CBT. The treatment consists of eight weekly sessions of counselling. The clients will need attend two sessions of assessment prior to the first CBT session. It is important to conduct an ongoing review and assessment of client concerns and symptoms throughout the eight sessions using tools such as discussion of findings at assessment, psycho education reflecting on typical symptoms of people surviving trauma, Subjective Units of Distress Scale (SUDS) for measuring the subjective intensity of disturbance or distress currently experienced by an individual, Socratic inquiry - using questions, rather than teaching, to stimulate learning through reflection on clients' assumptions, values, and preconceptions, and discussion of Posttraumatic Growth (Tedeshi & Calhoun, 2004) to open up conversational space to identify and thicken preferred stories (Freedman, 1996) of survival, resilience and resourcefulness. The treatment plan will reflect the client's priorities and the findings from the clinician's ongoing assessment. There may be distinct stages of treatment for PTSD, one stage may cover several sessions, some less than one, depending on the client. The stages of treatment for PTSD are crisis stabilization and engagement, education about PTSD and related conditions, strategies to manage the symptoms, trauma focused therapy (confronting the painful memories and feared situations), cognitive restructuring (learning to think more realistically about what happened) and relapse prevention and ongoing support. The final two sessions will aim to address issues of relapse.

Chapter 2 of the CBT manual discusses the techniques for the therapist to help the client to cope during treatment. The therapist has suggestions that are mostly common sense, although sometimes they can make a real difference for people. Everyone experiences anxiety in different ways. If your overall initial level of stress is high, an escalation in distress level will result in panic, whereas if your overall anxiety level is low, your anxiety will not reach the same heights, although you will still react to negative events. Exercise, rest, sensible diet, and relaxation may help to be part of everyday routine. It is beneficial to use language which is simple and easy and discuss how symptoms are keeping them safe. Hypervigilance is designed to keep you safe and prepared in case the trauma happens again, nightmares happen because they're telling you that you have not processed the traumatic memory yet and that

your brain is trying to consolidate the memory and find a place for it. Somatic complaints sometimes equate to physical pain as a result of the emotional pain we experience and this is easier to feel than emotional pain.

Chapter 3 of the CBT manual covers the psycho education – what is psycho education and why psycho is used. Most treatments for PTSD include educating clients about the disorder, in one or another way. Psycho education in this context is defined not as a separate or highly structured educational program, but rather as the use of usual therapeutic methods and techniques such as clarifications and reframing, in the course of counselling. These techniques provide a useful therapeutic message, helping the clients to understand and make sense of their symptoms. Traumatised people might misunderstand the nature of disorders or sensations they experience. The problem is that symptoms of intrusion – intrusive thoughts about painful experiences, images, traumatic nightmares and especially flashbacks, are usually accompanied by intense emotional and physiological arousal. However, the client might erroneously think that he/she is having a heart attack, or is experiencing difficulties breathing, and misinterprets it as a sign of serious illness, fearing fainting or death. Correcting such clients' misinterpretations about the nature of their symptoms and sensations, and helping them understand not only *what* they are going through, but also *why* they are experiencing what they are experiencing, is a crucial aspect of our work with traumatised clients. This chapter also covers trauma. as trauma can have different consequences on individuals as each individual has their own perception of the traumatic event, personality, beliefs and past experiences. A traumatic event can occur as a result of a threatening event which can cause intense fear, helplessness or horror in response to a threat or injury to oneself or to others close to them. PTSD can result in three main aspects of problems – intrusive (distressing memories or images of the traumatic event/s (including smell, pain, other body feelings); nightmares of the event or other frightening themes; flashbacks (reliving the event); becoming upset when reminded of the event; and physical symptoms, such as sweating, palpitations, or muscle tension when reminded of the event), avoidant (trying to avoid any reminders of the trauma, such as thoughts, feelings, conversations, activities, places and people; gaps in memory – forgetting parts of the experience; losing interest in normal

activities; feeling detached or cut off from loved ones; feeling flat or numb; and difficulty imagining a future) and arousal (sleep disturbance; anger and irritability; concentration problems; constantly on the lookout for signs of danger; and jumpy, easily startled) symptoms. People may also develop other psychological responses to trauma such as anxiety, depression, guilt, use of alcohol and drugs to cope with their symptoms, impact on relationships with the misinterpretation of the symptoms that lead to a focus on your own feelings as selfishness, and impact on work as it is often difficult to cope at work due to irritability, jumpiness, mood swings, poor concentration and memory problems. In the therapist training and induction program we have strongly emphasized the best work practice and create a safe environment where the client is comfortable to ask about words/terms/ideas that do not make sense to them and educating them.

Chapter 4 of the CBT manual covers cognitive restructuring. Cognitive restructuring is a procedure whereby people's thoughts, beliefs and interpretations about past experiences are identified and mistakes in thinking are highlighted. A person may be overgeneralising (e.g., "no-one can be trusted") by over focusing on the negatives and minimizing the positives about their situation. They may see one negative thing as confirmation that they are not coping, while ignoring evidence that they are, in fact, coping quite well. A common problem in PTSD is that people based their interpretations about what happened, themselves, or the world upon only a fragment of the memory (the part that repeatedly comes back) rather than on information that places that aspect in a broader context. Once these faulty thought patterns are discovered, it is the goal of cognitive therapy to replace them with more adaptive, realistic and flexible beliefs. This, of course, includes re-evaluating our experiences and, in particular, the traumatic event. It is a difficult process that can take a lot of hard work, but it can be very effective in minimizing and managing unpleasant emotions. There is homework and follow-up homework for the client to complete to gain a better understanding of the client's cognitive functioning. Automatic thoughts, intermediate beliefs ("if x, then y") and core beliefs play a crucial role in identifying negativities and correcting them. The counsellor is encouraged to establish an imaginal exposure with client through the selected event or experience in great detail, starting at the beginning and continuing through to the end to a point where the client

feels relatively safe in order to keep the distress manageable. For more information on this refer to Imaginal Exposure section of the CBT manual.

Chapter 5 of the CBT manual covers the exposure therapy. Exposure therapy is challenging for the client, but is considered the most effective treatment for PTSD, especially in conjunction with cognitive restructuring. Anxiety often makes people avoid frightening situations. It is better to confront the full anxiety and allow it to reduce of its own accord than to use other strategies to bring it down. Most people get an enormous sense of achievement when they have confronted the memory or other feared situation. The CBT therapist will guide the client on the treatment at a comfortable pace through a selected event or experience in great detail, starting at the beginning and continuing through to the end to a point where you feel relatively safe in order to keep the distress manageable. Exposure is done in a controlled and gradual fashion so that discomfort is kept manageable. The manual describes two types of exposure therapies: In vivo exposure and imaginal exposure. In vivo exposure, which means "in real life", confronts activities, places, people or objects that are often not appropriate for traumatised refugees. Imaginal exposure confronts memories by doing it with imagination can be used to treat distressing memories of the trauma. In PTSD the most feared situation may actually be painful memories of the trauma experience. These memories can be so frightening, and cause so much distress, that the person tries to avoid or escape from them by blocking them out. With Imaginal exposure, two options are presented. The first option is the Therapist-assisted Imaginal exposure and the second option is the self-directed imaginal exposure. The Self-directed Imaginal exposure follow the same 5 steps as for therapist-assisted imaginal exposure but substituting the writing exercise for listening to the recording of the session. Subjective units of distress (SUDs) is suggested to be used to measure anxiety and distress before and after the exposure therapy. Unpleasant physical symptoms associated with posttraumatic stress and PTSD can be managed with regular gentle exercise, eating properly, and cutting down on stimulants (such as coffee, tea, cola, chocolates, cigarettes and energy drinks). Two additional specific techniques for reducing arousal are simple breathing control strategy and progressive muscle relaxation. Refer to chapter 10 pain for more technique has been systematically put in place to assist client when

applying these techniques. In the manual the reason why progressive muscle relaxation is useful is when people are stressed out, anxious or have an anxiety disorder, they often have really tense or tight muscles. This means that you can actually reduce the stress and anxiety you feel, if you learn to relax your muscles properly. Progressive muscle relaxation can help you with this – it's the most common type of relaxation training, and it's used by a lot of people. It involves tensing and relaxing different groups of muscles through your body. In the pain chapter describes how the techniques can be applied and preparation for treatment for pain and commonly we encourage counsellor to finish the session in a safe environment as sometimes the client may be experiencing a quick drop of blood pressure, dizziness and falling down.

Chapter 6 of the CBT manual covers sleep problems. It is commonly known that majority of STARTTS clients from this study shown 29 out of 31 which is about 94% of clients have experienced chronic insomnia and having some difficult to staying at sleep and falling to sleep and vigorous nightmare. There are techniques available to overcome sleep difficulty for the horrific of torture and trauma the client experienced. Some of these techniques are Progressive Muscle Relaxation Training, keeping a sleep diary, sleep hygiene and stay in good sleep. The therapist conducts an assessment and recommends techniques for working with nightmares, Exposure, Relaxation and Rescripting Therapy, Self-exposure Therapy, The Testimony method. Treatment Trauma-focused CBT, particularly Image Rehearsal Therapy, has been shown to be effective treatment for nightmares in PTSD (Aurora et al 2010). It is helpful for client to understand their dreams and differentiate between ordinary nightmares and traumatic nightmares.

Chapter 7 of the CBT manual covers flashbacks and intrusive thoughts. Flashbacks are considered one of the re-experiencing symptoms of PTSD and many people with PTSD struggle to cope with flashbacks. Some kind of reminder of a traumatic event or some other stressful thoughts or experience are often triggering the flashbacks. Prevention is the key to coping with flashbacks by limiting exposure to those triggers and devising coping strategies. Re-enactment is another form of intrusions where the traumatised people relive the traumatic

events not only through their thoughts and dreams, but also in their actions. The chapter is also the mind-body connection in trauma where the body also reexperiences when a person experiences flashbacks of a traumatic event. Examples of these mind-body connection along with onset of symptoms of intrusions can be found in this chapter of the CBT manual. These examples are collections being collated by all Co investigators / STARTTS counsellors who have thoroughly explored the number of strategies when dealing with the client who have onset symptoms. These collections are to assist and guide the co investigators/ counsellors working within the CBT for this particular research with uniform examples of the client intrusions and worst experience. The chapter continues on with healing process by identifying the early warning signs, using grounding techniques of 5 senses (such as sound, touch, smell, taste, and sight), gardening, and praying. STARTTS counsellors are highly trained, respecting for client's religion and emphasising on the level of spiritual beliefs and respect for client. If a client in the period of fasting required to pray STARTTS provides a praying mat and a personal space for client during their 10 to 15 minutes of prayer. Problems with thoughts can be managed with mental distractions and self-statements. The chapter concludes with discussion on emotions. Indira Haracic-Novic STARTTS clinical psychologist and a team of counsellors/ Co investigators in CBT manualise Team have contributed and provided insight of the guideline to assist with the CBT manual that tailor to STARTTS clients when emotions arise to convey information. They are a response to changing states of external and internal environment, so they help us to understand our world and ourselves.

Chapter 8 of the CBT manual covers guilt. Working with survivor guilt is a complex matter in the CBT manualisation as there are crucial questions when working with survivor's guilt especially with STARTTS client who has an overwhelming experience when one witness of their family been executed, tortured and raped. Often through the counselling session clients talked about their wishes to die there with their family members. Clients talked about survival guilt. From this chapter the therapist needs to be insightful with survival guilt and fine line between suicidal thoughts. Intervention needs to be taken into account if client has an indication of suicidal thoughts. The therapist must action to inform clinical team leader,

coordinator and crisis mental unit Liverpool hospital. Often the miscommunication from client to interpreter service face to face and therapist need to clearly define if an indication has a suicidal plan in place date and time and method. Once the therapist has clear indication via assessment then the therapist will provide psycho education as a treatment for guilt. Guilt is a common response following loss and/or traumatic experiences with significant victimization (e.g., after war, personal victimization). When events result in severe traumatic reactions, multiple losses can occur. Guilt can occur not only in relationship to what we should have done, or shouldn't have done, but in relationship to our views about what we should be. A CBT therapist needs to understand and assess guilt as guilt can undermine well-being, trauma recovery and positive relationships. Guilt will affect the quality of life, goal-setting and productivity as it can keep the person fixated in suffering. On the other hand, guilt can also serve as a mobilizer. It can move us to re-examine ourselves and our actions, and to act in a carefully considered positive manner that benefits the survivor and others who are affected by the event and/or the survivor's actions. After a traumatic event or a loss, self-blame, guilt and shame may arise for surviving when others didn't survive. Cognitive Behavioural Therapy can treat trauma-related guilt by focusing on helping people become more aware of the thoughts or beliefs that underlie feelings of guilt, such as through self-monitoring, cognitive restructuring when PTSD is characterised by guilt or shame or when response to exposure alone is suboptimal and the formalised model of Antecedents, Behaviour, Consequences (ABC) Model for examining behaviour (symptoms) in a larger context. Consequently, Cognitive Behavioural Therapy may also help increase self-compassion and acceptance when guilt is reduced.

Chapter 9 of the CBT manual covers grief. In this particular chapter, grief and loss were most debateable on the discussion and formation of the 8 CBT treatment sessions provided by co-investigators/ counsellors as there was discussion on the limitation of time frame due to the extend of the loss a family in a very horrific and tragic as the client may witness to their family decapitation and execution. This chapter discusses a number intervention and guideline to assist co- investigator/ counsellors in the process of treatment. Grief normally arises when there is a loss and there is no right or wrong way to grief as a bereaved person may think they hear or see the deceased person in their daily lives and that can be part of the

grieving process. Statements of 'I can't believe it's true', 'I can't get it out of my head', 'I feel numb', 'I can't stop crying', 'I feel so angry', 'I blame myself, I feel so guilty', 'I feel so frightened' and 'life has lost its meaning' that the CBT therapist hear from clients are quite common and require the CBT therapist to psycho educated the clients and provide appropriate treatments. Further information for treatment strategies can be found in the CBT manual.

Chapter 10 of the CBT manual covers pain. In this chapter, Robert Holt, Gary Thornell and Thuy Tran STARTTS Counsellors have extensive meetings in looking at a suitable and easy tool of measuring pain for the STARTTS clients as some clients have very limited literacy skills even in their own dialect. Limited literacy skills are due to limited or no education as they have been living in the refugee camps for many years and some nearly 20 years. These counsellors explored what the client can understand about their understanding of pain and the client to provide feedback of their pain in order to have a uniformity in the pain measuring and feedback. As a result, a pain numeric rating has been chosen that can be applied to CBT group or acupuncture group. At the same time numerical rating scale was also adapted in the acupuncture assessment for chronic pain and the pain scale was applied at pre acupuncture treatment, post acupuncture treatment and 2 months follow-up. Client/participants will provide a verbal feedback of their pain number rating and that information will be collected in the data for pre, post and 2 months follow-up sessions.

There are many complexities as STARTTS client expressed pain in differently in different cultures. Some nationalities expressed pain as like beating their liver or spleen. Expressive nationalities like Iraqi, Kurdish, Syrian, Afghan, El Salvador, Chilean, Asyrian and Mandean have a high expressive of pain, rating their pain exceeding 10/10 while the Asia continent such as the Bhutanese, Vietnamese, Karen/ Burma and Cambodia they might describe their pain severity with a rating of 7 or 8/10 as their worst experience. Experiencing of pain consists of two components: the sensory component that provides information about the location and quality of the pain and the affective component that much the pain bothers us. Pain scale on a range of 0 to 10, with 0 being no pain and 10 being worst possible pain, is a

useful and valuable assessment tool for evaluating and recording the impact of treatment. This chapter provides guiding questions for the CBT therapist to guide the client in General Training exercise and dissolve any pain present in the body. More details on these can be found in the CBT manual.

Chapter 11 of the CBT manual covers anger topic. In CBT manualisation team discussion of anger is the most sensitive topic as anger is a common emotion and it surfaces to be a problem when it becoming too distressing or disabling for the person or those around them. Unhelpful behaviours such as irritability, interpersonal conflict and social withdrawal are examples of problems of regulating anger in PTSD. Anger can prevent the client from moving on to the next stage of treatment as it can act as a stumbling block to recovery. A number of Strategies for dealing with anxiety are also useful for dealing with anger. Arousal and anger coping during the treatment in chapter 11 anger has been explored. Co- investigators guide client to recognise the warning signs and intervene early. The first step in managing anger is being prepared for it. Delay, time out, and planning are three strategies to help client to manage their anger in PTSD before it escalates and gets out of control. The chapter concludes with how to deal with anger and unpleasant feelings. A person needs to recognise and accept their feelings but accepting their feelings is not a permission to do harmful things. There is a movement of anger within the physical body in the beginning stages of this process and the co- investigator/ Counsellor guides the client as to why do they get angry and prone to feel angry and behave aggressively when they are actually worried or anxious. In the environment where they grew up it wasn't always allowed to express fear or a lack of self-confidence, especially if they are males. Therefore, client is prone to "covering up" fears and anxiety by anger, and instead of experiencing fears they react with anger outbursts. The anger in context of cultural sensitivity versus in the new and unknown environment like Australian laws in child protection and verbal and physical abuse escalated from anger from client has become aggressive towards their children because client is afraid that without our strong control and restrictions something bad could happen to their children. The co-investigator/ counsellor explores how to deal with stress in family relationship and provide guidance to client in behavioural coping strategies and changing behaviours.

Appendix 14: Cognitive Behavioural Therapy Manual

The Cognitive Behavioural Therapy Manual was developed by STARTTS counsellors/co-investigators for the research study project to provide an consistent and streamlined approach for CBT therapy application into the CBT group. This Cognitive Behavioural Therapy Manual was approved by NSW Government Health South Western Sydney Local District. The manual is presented here in the Appendices for reference starting on the following page.

Provisional Treatment Manual Version 1

Cognitive behavioural treatment for PTSD in refugees and asylum seekers For The Project Titled:

Developed for use in research by Thuy Tran in partial fulfilment of the requirements of the degree of Doctor of Philosophy at the University of Technology, Sydney.

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Local Project Number 12/263

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The editors have used material from treatment manuals and other resources by other authors. These are cited in the text and fully referenced in the **References** section. Particular mention should be made of the use of extensive excerpts from:

Andrews, G., Creamer, M., Crino, R., Hunt, C., Lamp, L. and Page, A. (2003) *The treatment of anxiety disorders: Clinician guides and patient manuals.* 2nd Edition, UK: Cambridge University Press.

The editors of this manual have also written some original contributions:

Mariano Coello

John O'Connor

Robert Holt

Shakeh Momartin

Gary Thornell, Thuy Tran & Indira Haracic-Novic

(Senior Editors)

Contribution:

Gordana Hol Radicic, Susan Maddrell, Adana Zagic, Esber Melhem, Mirjana Askovic, Melanie Leemon, Nooria Mehraby, Shaheen Kohsar; Emma Boles; Meng Thai; Neeraja Sanmuhanathan; Heyam Haddad; Tajana Opacic; Deborah Gould; Carolyn Garabedian; Daniel Zu; Carmela Morano; Claudia Herrero; Tshimanga Beya; David Ajang,

CBT is an evidenced based approach for treating Post Traumatic Stress Disorder (PTSD).

STARTTS is an organisation that provides psychological treatment for refugees and those from a refugee-like background. Many refugees have experienced trauma and often these individuals suffer from symptoms of PTSD.

STARTTS has 25 years of experience working with refugees of various backgrounds and over this time, it has developed various treatment protocols to work with this diverse population. STARTTS employs staff from a range of professions including clinical psychology, social work and community development. Through training, regular clinical meetings and individual internal clinical consultations, STARTTS staff have developed a holistic approach to counselling that is culturally appropriate and sensitive to the needs of our client population.

The Cognitive Behavioural Therapy manual developed for the study 'Acupuncture vs. CBT' is a product of STARTTS experiences and combines evidence based CBT approaches to culturally sensitive practice, providing best outcomes for our clients. Therefore this manual contains significant CBT principles in combination with treatment strategies, psycho-education, spiritual imperatives, anthropological and historical background and understanding of settlement needs that are essential for the treatment and recovery of our clients.

John O'Connor

(Psychologist)

Contents

Chapter 1: Introduction

Counsellor information:

In their survey, Nickerson, et al (2011) found that while there was little research on effective treatment of PTSD in refugees, it is reasonable to expect that CBT would be potentially beneficial to refugees, because trauma-focused cognitive behavioural therapy such as exposure therapy is the treatment of choice for PTSD in non-refugee populations. ,

They cautioned that this assumption might be limited by the particular circumstances refugees can face – cultural and language issues, settlement stressors and challenges, and the complexity of their trauma history. (ibid, 401) Andrews, et al (2003) also caution that "Exposure-based treatments are not for everybody. In some cases, if the trauma occurred many years ago and the memories are not causing too much of a problem, it may be best not to drag everything up again" (540). They suggest the relative benefits and risks should be negotiated collaboratively between the client and the counsellor.

They point out that multimodal interventions have dominated the approaches of specialist refugee mental health services in recent decades. These interventions have encompassed a variety of components, including resettlement assistance, referral for medical care as well as psychological treatment. (ibid, 401)

Rationale

Cognitive behavioural therapy (CBT) is a psychotherapeutic approach that focuses on distorted/dysfunctional thoughts, emotions, and behaviour through a goal-oriented, structured and time limited procedure. (Aurora, et al, 2010, 395). CBT is often used as a broad term for a number of psychotherapeutic and behavioural techniques tailored to uncover, alter, and correct distortions of cognition and behaviour in an individual. Trauma-focused CBT for treatment of PTSD specifically uses the techniques of exposure therapy and cognitive restructuring (Nickerson, et al, 2011) which are described in separate sections in this manual.

There are also chapters on more specific techniques addressing problems related to pain, nightmares, guilt and flashbacks. As ongoing review and assessment will be a part of this treatment, clinicians may choose to interrupt the counselling treatment to allow referral for case management issues or for specialist assessment for concerns such as mental health, pain management or sleep disorders.

Structure of the treatment

Treatment consists of eight weekly sessions of counselling.

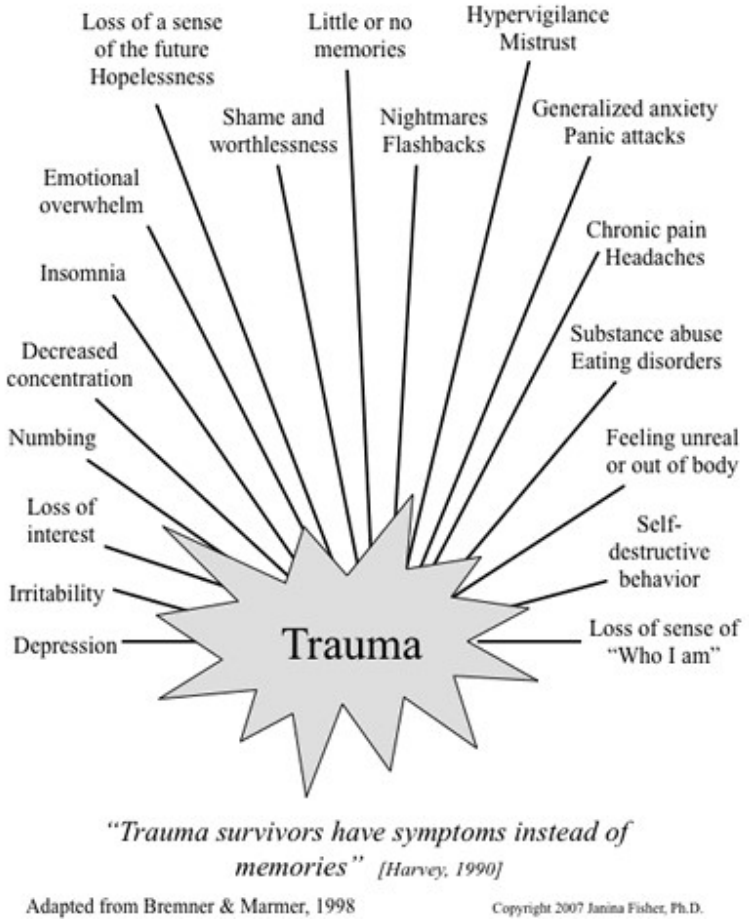
The following chapters can be considered modules, each a discrete entity that can be used independently of the other chapters for treatment.

The modules titled 'Cognitive re-structuring' and 'Exposure Therapy' can be considered over-arching techniques that inform the following modules that deal with specific symptoms.

Prior to the first session, clients will attend two sessions of assessment.

Ongoing review and assessment of client concerns and symptoms will be a feature of the treatment throughout the eight sessions. This may involve tools such as:

- Discussion of findings at assessment.
- **Psycho education (**see Chapter 3: Psycho education) – reflection on typical symptoms of people surviving trauma. This can be used to assess current impacts on function and distress and to trigger discussion of client's ranking of symptoms and to prioritise treatment goals. This could be done using a resource such as Janina Fisher's flip chart (Fisher and Ogden, 2009), below:



- **Subjective Units of Distress Scale** (SUDS**) -** a scale for measuring the subjective intensity of disturbance or distress currently experienced by an individual. The individual self assesses where they are on a scale of 0 to 100 (see Chapter 5: Exposure therapy).

- **Socratic inquiry** - using questions, rather than teaching, to stimulate learning through reflection on clients' assumptions, values, and preconceptions.

- Discussion of **Posttraumatic Growth** (Tedeshi & Calhoun, 2004) can open up conversational space to identify and thicken preferred stories (Freedman, 1996) of survival, resilience and resourcefulness. This may be therapeutic in itself and provide useful information about available resources and supports to guide treatment planning.

Discussion of client concerns and priorities should inform the negotiation of treatment goals. Interventions outlined in this manual will provide simple descriptions of the rationale for treatment, to assist the clinician in providing clear information and to ensure that informed consent is being given.

The treatment plan will reflect the client's priorities and the findings from the clinician's ongoing assessment. The treatment may be structured as eight consecutive sessions of a single treatment method with a single goal (such as exposure therapy for intrusive memories); or as simultaneous or consecutive treatments for a range of symptoms (such as cognitive restructuring for hyper-vigilance along with exposure therapy for nightmares).

The final two sessions will aim to address issues of relapse prevention (Chapter 12: Relapse prevention) and discharge planning. This will involve review of progress and discussion of coping strategies learned that can be implemented.

Within the 8 sessions there may be distinct stages of treatment for PTSD, one stage may cover several sessions, some less than one. It depends on the client.

The stages of treatment for PTSD

- Crisis stabilization and engagement
- Education about PTSD and related conditions
- Strategies to manage the symptoms
- Trauma focused therapy (confronting the painful memories and feared situations)
- Cognitive restructuring (learning to think more realistically about what happened)
- Relapse prevention and ongoing support

Chapter 2: Coping during treatment

adapted from Andrews, et al (2003, 524-525)

Points to discuss with the client:
(Explaining the advantages of anxiety to the client and why it is not "all bad").

The following suggestions are mostly common sense, although sometimes they can make a real difference for people. The more relaxed you are in general, the better you will cope when the memories return or you are confronted with other unexpected difficulties. Everyone experiences anxiety in different ways. If your overall initial level of stress is high, an escalation in distress level will result in panic, whereas if your overall anxiety level is low, your anxiety will not reach the same heights, although you will still react to negative events. We call these hints 'routine strategies', since we want them to become part of your everyday routine. Examples would be regular exercise, rest, sensible diet, and relaxation. The other strategies, such as breathing control and progressive muscle relaxation (outlined in the section on *Managing the physical symptoms* in Chapter 5: Exposure therapy), are designed to help you to deal more specifically with difficult situations when you can feel your anxiety escalating and you are beginning to feel overwhelmed. These require a lot of practice, but are very useful when the feelings of distress and anxiety are particularly strong.

Note to counsellor:

- It is beneficial to use language which is simple and easy. Example: have different cards with symptoms written on them and have the client pick out those that are relevant to them and pick a couple that are most prominent for them. Then discuss how these symptoms are helping to keep them safe
    - E.G. Hypervigilance = designed to keep you safe and prepared in case the trauma happens again.
    - E.G. Nightmares = they happen because they're telling you that you have not processed the traumatic memory yet and that your brain is trying to consolidate the memory and find a place for it.
    - E.G. Somatic complaints = Sometimes physical pain is a result of the emotional pain we experience and this is easier to feel than emotional pain.
- Use of examples relevant to the client (e.g. Mandaens/Iraqi's = fear of dogs)

The following is a list of tips that many people find useful. Do not try to do everything at once. When you have read the following section, you may wish to stop for a while and work out a 'plan of action'. Which strategies sound particularly useful for you? Which ones are you prepared to try? It is suggested that you select only one or two to begin with. Work out a plan to achieve them, one at a time, and set yourself some realistic goals for the next week. At the end of the week, review your progress; modify your goals if necessary and/or try some additional strategies for the following week. Over time, you will gradually develop a range

of coping strategies and changes to your lifestyle that will help you to feel more in control of your symptoms and get more out of life.

- Eat healthy meals. This sounds simple, but most people don't actually do it. A poor diet (especially junk food with lots of sugar) will increase your stress levels. If in doubt, this can be discussed with a GP or a dietician.

- Get regular aerobic exercise such as walking, jogging, swimming or cycling. Exercise is very effective in managing stress. If you have PTSD, your body is constantly geared up for 'fight or flight'. Exercise helps to burn up those chemicals (like adrenaline) that are hyping you up and it will help you to become more relaxed.

- Get enough rest, even if you can't sleep. Rest will help you to increase your reserves of strength and energy. (See also Chapter 6: Sleep problems).

- Establish, and try to stick to, daily routines (e.g., go to bed and get up at a set time, plan your activities for the day). Routine is very important in helping us to feel in control and to function effectively. Don't expect too much of yourself and don't use work as a way to avoid painful feelings.

- Ask for support and help from your family, friends, church, or other community resources when you need it. This is not a sign of weakness. In general, other people are often very keen to help as long as you let them know what you want. If they do not offer, it may simply be because they are unsure of what to do.

- Spend time with other people, but don't feel that you have to talk about the trauma. Talk about sport, books, or the weather; go to a movie or a concert; try to do some enjoyable things with others. This is part of resuming a normal life.

- Focus on your strengths and coping skills. It may not feel like it at times, but you have strengths and strategies to deal with difficult times. Remember that you are not alone. Many other survivors over the centuries have experienced these kinds of problems and the vast majority have recovered well.

*Note to the counsellor:
Another method could be to consider introducing a continuum approach to reflect the individual differences in coping and current capacities. For example, the client might be asked to rate their current coping for each bullet point on a scale of 1-10 (where 1 = I am not engaging in this strategy at all and 10 = I am doing this all of the time), and then using this as a point of reference for goal setting. For example if a client rates their current exercise level as 2/10, then they can set a goal for the week that would take them to a 3/10. This might involve walking 2 times per week. This would help each strategy seem achievable to the client.

Ways to invite help from family and friends (Hints)

The following are ways that you can invite your family and close friends to help you to deal with the effects of trauma. They may not know how to help. You could say something like:

- If possible, listen and empathize when I want to talk. Remember, it may be very hard for me to express what I am going through. A sympathetic listener can be important for people with PTSD to help minimize the tendency to withdraw and "shut down".

- It is best not to say "I understand what you're feeling" (they probably don't, unless they've been through the same experiences). Instead, show me your empathy by saying things like "it must be really difficult for you; I can see that it upsets you; is there anything I can do to help?"

- Spend time with me. There is no substitute for human presence. Just do the usual things that people do together with me. You don't have to talk about the trauma or be my counsellor. Just being with people who care about me is important. At the same time, please respect my need for privacy and private grief sometimes.

- Don't tell me I am "lucky it wasn't worse" or to "pull myself together and get over it". I don't find that helpful or consoling. You could tell me instead if you are sorry I was involved in such an event, and that you want to understand and to help.

You are welcome to remind me that I am now safe.

- If family are overseas, encourage regular contact by phone or skype.
- Prayer and other types of religious support can be used in the session and at other times as a coping method

Chapter 3: Psycho education

Counsellor Information:

What is psycho education?

Most treatments for PTSD include educating clients about the disorder, in one or another way. Psycho education in this context is defined not as a separate or highly structured educational program, but rather as the use of usual therapeutic methods and techniques such as **clarifications** and **reframing,** in the course of counselling. These techniques provide a useful therapeutic message, helping the clients to understand and make sense of their symptoms.

Usually there are a few basic topics that we want to address and information that we want to convey when we work with traumatised people:

First of all, to help them to understand that trauma symptoms are normal human responses to extreme circumstances; and that they are not doomed to suffer this condition indefinitely, that they can expect to recover as others have recovered.

But so called **"normalisation**" of trauma symptoms does not mean just to tell the client "It is normal what you are experiencing". Although it might be helpful to hear that your reactions are 'normal responses to abnormal life situation', it is also very important to help the client to understand ***why*** **they are reacting with such distressing symptoms** and ***correct*** **their misconceptions about PTSD symptoms**. For example, the clients, while experiencing flashbacks, may become unaware of their immediate surroundings; flashbacks could be perceived as a different "realm of experience", which can be very scary and that may lead them to believe and feel that they are losing their minds.

Such clients' misinterpretations add to their existing problems - they already experience painful, distressing symptoms of intrusions and hyperarousal, and on top of that they develop fear of some kind of mental illnesses and the stigma that may go with this in some cultures,, as they misdiagnose intrusions as a sign of madness.

Some of our clients can communicate such fears or apprehensions and talk openly about them, but many people are not completely aware of them or they may not be able to articulate it. In any case, if these fears or beliefs about intrusions remain unresolved or uncorrected, they become an obstacle to the recovery process.

Why psycho education?

Sometimes even basic information about trauma related symptoms and issues can help traumatised people to speed up their recovery process. If they understand their symptoms of PTSD, especially intrusions and hyper arousal, they are far less frightened when they experience them, and they are able not just to tolerate them, but to overcome them faster.

Traumatised people might misunderstandthe nature of disorders or sensations they experience. The problem is that symptoms of intrusion – intrusive thoughts about painful experiences, images, traumatic nightmares and especially flashbacks, are usually accompanied by intense emotional and physiological arousal. However, the client might erroneously think that he/she is having a heart attack, or is experiencing difficulties breathing, and misinterprets it as a sign of serious illness, fearing fainting or death. **Correcting such clients' misinterpretations** about the nature of their symptoms and sensations, and helping them understand not only ***what*** they are going through, but also ***why*** they are experiencing what they are experiencing, is a crucial aspect of our work with traumatised clients.

Adapted from Andrews, et al (2003, 514-521)

Points to discuss with the client - counsellor to decide which parts are relevant as part of their treatment:

The nature of traumatic stress and posttraumatic stress disorder

At some point in our lives, nearly all of us will experience a very frightening or distressing event that will challenge our view of the world or ourselves. Virtually everyone develops some kind of psychological reaction following such experiences – this is part of a normal human response to extreme stress. Most people will recover over the weeks and months following the incident, with the help of caring family members and friends. For some, however, recovery does not come so easily and more serious problems ensue.

Some go on to develop a chronic condition called posttraumatic stress disorder (PTSD). This may happen to 5% to 40% of trauma survivors.

What is a trauma?

Trauma can have different consequences on individuals depending on their perception of the traumatic event, personality, beliefs and past experiences. A traumatic event can occur as a result of a threatening event which can cause intense fear, helplessness or horror in response to a threat or injury to oneself or to others close to them.

Traumatic events can be the result of natural disasters (such as earthquakes) or of human origin (such as acts of violence); they may be a single event, or a complex set of events. The age and experience of the person experiencing the event will influence the effect it has on them.

PTSD can result in three main aspects of problems – intrusive, avoidant and arousal symptoms.

- Consider specific cultural beliefs when providing psycho education – including cultural implications for diagnosis. **After a brief explanation,** gauge the client's views on mental health difficulties. Generally 'posttraumatic stress disorder' is a Western term and mostly wouldn't translate or resonate well with different cultural groups. Instead, another way of introducing this would be discussing 'common reactions to uncommon events' as a way of normalising their symptoms and experiences.

Intrusive symptoms

- Distressing memories or images of the traumatic event/s (including smell, pain, other body feelings)
- Nightmares of the event or other frightening themes
- Flashbacks (reliving the event)
- Becoming upset when reminded of the event
- Physical symptoms, such as sweating, palpitations, or muscle tension when reminded of the event
- These symptoms can cause other emotions such as grief, guilt, fear or anger

Avoidance and numbing symptoms

- Trying to avoid any reminders of the trauma, such as thoughts, feelings, conversations, activities, places and people
- Gaps in memory – forgetting parts of the experience
- Losing interest in normal activities
- Feeling detached or cut off from loved ones
- Feeling flat or numb
- Difficulty imagining a future

Arousal symptoms

- Sleep disturbance
- Anger and irritability
- Concentration problems
- Constantly on the lookout for signs of danger
- Jumpy, easily startled

Associated problems

People may also develop other psychological responses to trauma which can affect the quality of their life, their ability to relate to other people and their capacity for work. These may include:

Anxiety

Feelings of fear and worry, often accompanied by physical symptoms (such as sweating, racing heart, breathing difficulties) which themselves can be frightening, leading to fears of going crazy or dying. These symptoms may be specific to certain situations, such as social events, public transport or crowded places.

Depression

Generalised low mood and loss of interest or pleasure in things that were previously enjoyed. Life becomes gray and flat. Intense depression can lead to withdrawal from others and a feeling of numbness. This may last for only a few hours or up to months or years. In severe cases it may feel like life isn't worth living.

Guilt

Feelings of guilt, shame and remorse may come up, sometimes over the fact that the person survived while others did not. Guilt may also be about the circumstances of what they survived – what they had to do to survive – or about how they acted after the trauma. This is often extremely hard to talk about.

Alcohol and drugs

Many people use alcohol or other drugs to cope with their symptoms. This may feel helpful in the short-term, but can cause longer-term problems and get in the way of recovery from the trauma. Drug and alcohol abuse can impair the ability to cope and to relate to others. This can cause problems in relationships, work, finances and lead to violent behaviour and other risk taking.

Impact on relationships and work

Others may misinterpret the symptoms that lead to a focus on your own feelings as selfishness. Emotions, including love and enthusiasm, can be difficult to feel and express; loss of interest in sex; reduced participation in activities and hobbies; are all common. Low energy and irritability can lead to saying hurtful things and not thinking about consequences. Partners may feel rejected and unloved.

It is often difficult to cope at work. Irritability, jumpiness, mood swings, poor concentration and memory problems can lead to poor performance, disputes and instability of employment record. Others may try to lose themselves in their work in order to avoid other symptoms such as memories.

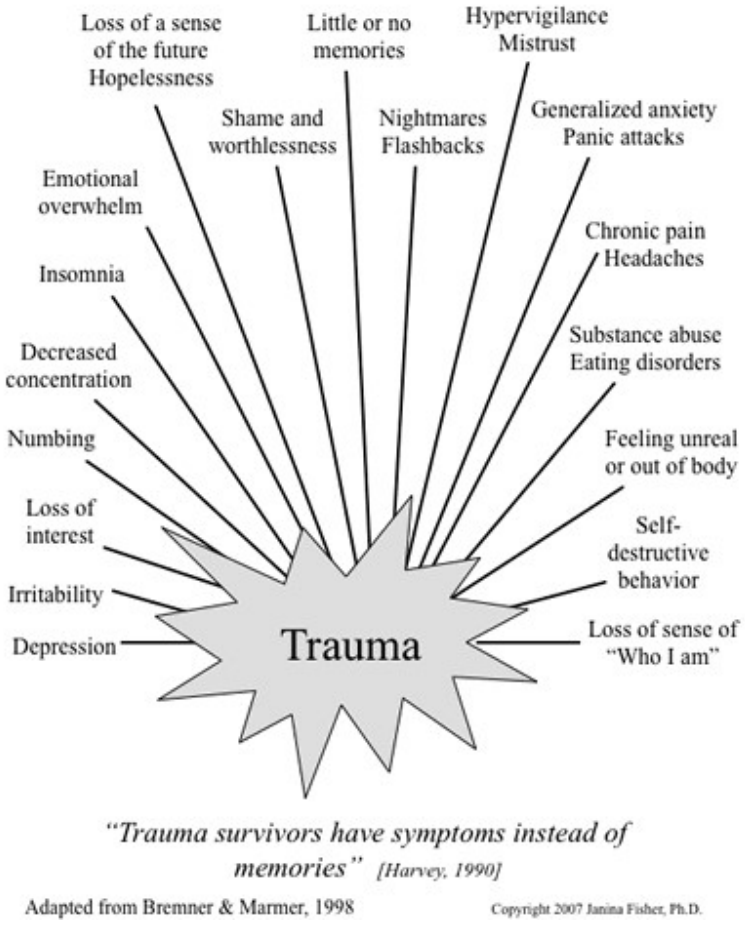
Why do traumatic stress reactions happen?

Traumatic events are overwhelming and confusing. They do not make sense according to our normal rules and expectations. We struggle to make sense. The event keeps coming back into our mind in an attempt to make sense of it. This is the body's natural way of trying to deal with what happened. But at the same time we try to push away the highly distressing thoughts and feelings connected to the event. As a result the memory keeps going away and then coming back. This can become a repeating cycle of backward and forward movements – intrusive thoughts and feelings about the trauma followed by avoidance and numbing.

The mind and body stay on alert to make sure that no future potential dangers are missed. The cost of this is the constant stimulation and sense of alarm and danger.

Educating the client:

- Create an environment where the client is comfortable to ask about words/terms/ideas that do not make sense to them. This can be clarified during first session.
- Can introduce a box of common terms or feelings (nervousness, fear, avoidance, depression) that each week can be focused on. Client can add to this box each week and choose a word/term to discuss. This will assist in reducing stigma.
- Introducing scenarios of others and their situations and exploring the nature of that person's feelings, situation and their coping or lack of coping mechanisms and why it is that way.
- Discussing stigma and taboo topics and normalising their feelings and normalising their need to discuss these feelings and the process of counselling.



Fisher, J. and Ogden, P. (2009) *Treating complex traumatic stress disorders: an evidence-based guide*, New York: Guilford Press.

Chapter 4: Cognitive restructuring

(See also Chapter 8: Guilt)

Adapted from Andrews, et al (2003, 543-546)

Information for counsellor: Rationale
Trauma (and its treatment, particularly with exposure therapy) can have the effect of bringing to the surface unhelpful thoughts and beliefs that have arisen because of trauma experiences. It may be helpful to challenge these thoughts and beliefs (referred to here as "cognitions") and replace them with something more realistic and rational. This is best carried out in conjunction with exposure therapy. This way, unhelpful cognitions can be modified as they arise.

After trauma, people can be left with negative thoughts about what happened - thoughts about themselves and about the world. For example, many people are left feeling vulnerable and insecure. They may think the world has become a dangerous place and other people are nasty, cruel and out to take advantage. Similarly, many people experience feelings of guilt and shame (see also Chapter 8: Guilt). They may think that they are bad or evil for acting in the way they did during or after the incident; they may think that what happened was their fault; they may see themselves as weak or inadequate for not coping better. Sometimes, there may even be elements of truth in these thoughts. Usually, however, they are completely untrue or, at least, grossly exaggerated. This kind of thinking leads to all sorts of unpleasant emotions such as depression and guilt, anxiety and fear, and anger. An important part of recovery involves identifying those maladaptive thoughts, challenging them, and replacing them with a more realistic view of yourself and the world.

Cognitive restructuring is a procedure whereby people's thoughts, beliefs and interpretations about past experiences are identified and mistakes in thinking are highlighted. For example, it may be that the person is thinking in "black and white terms" – seeing things (or other people) as all good or all bad – when in reality the world holds much that is "gray". It may not be perfect, but it's not all bad either. The person may be overgeneralising (e.g., "no-one can be trusted") by over focusing on the negatives and minimizing the positives about their situation. They may see one negative thing as confirmation that they are not coping, while ignoring evidence that they are, in fact, coping quite well. A common problem in PTSD is that people base their interpretations about what happened, themselves, or the world upon only a fragment of the memory (the part that repeatedly comes back) rather than on information that places that aspect in a broader context. Once these faulty thought patterns are discovered, it is the goal of cognitive therapy to replace them with more adaptive, realistic and flexible beliefs. This, of course, includes re-evaluating our experiences and, in particular, the traumatic event. It is a difficult process that can take a lot of hard work, but it can be very effective in minimizing and managing unpleasant emotions.

The process of cognitive restructuring: Instructions to client

As a starting assignment, write at least one page (or talk at length) about what your experience of the event *means* to you. In particular, how has it changed your beliefs, views and ideas about yourself, other people and the world? What views or beliefs have been strengthened? Which ones have changed? Try to write (or talk about) something under each of the following headings:

(You can try these with the client during session)

- My beliefs about myself have changed since the trauma in the following ways.
- My beliefs about other people have changed since the trauma in the following ways.
- My beliefs about the world have changed since the trauma in the following ways.

In answering those questions, you may want to think about issues such as how you feel about yourself (self-esteem), your personal safety, trusting others, thoughts about control and power, intimacy with others, what kind of society we live in, etc.

(Homework for client to complete)
The next stage is to pick one of the key themes that is leading you to feel an unpleasant emotion. Which one makes you feel angry? Or frightened? Or guilty? Or sad? Try to express it as a single statement of opinion, such as "all men are bad" or "it was all my fault". In particular, look for statements beginning with "I", such as "I'm weak and hopeless" or "I'm not safe anywhere". Write this thought or belief at the top of a clean sheet in your exercise book. Then go through and try to answer the following questions. Some of them may not apply to every thought, but most will. They will help you to re-evaluate whether your thoughts and beliefs are really true.

- What is the evidence? Here we want you to become a scientist and really think about the objective evidence for and against the thought. Is it really true? Are you 100% sure? Do the facts of the situation back up what you think or contradict it? Write out all the evidence you can think of for and against the thought. In most cases, you will find that it is not completely true. (Indeed, it may turn out to be completely false.)
- What alternative views are there? How do other people think about this? Would other people agree with you? Is there another way of looking at it? Are there other explanations? Try to generate as many alternative explanations as you can and review the evidence for and against them. When you look at it objectively, which explanation is most likely to be correct?

- Am I thinking in all-or-nothing, black-and-white terms? Am I using terms like all, always, never? Nothing is all bad or all good, no person is either perfect or worthless. Try to look for a more balanced view, with a more realistic assessment of the situation.

- Am I overestimating my responsibility? Things happen for all sorts of complex reasons, many of which we may never understand. Be very careful not to take too much responsibility for things over which you do not have control.

- Are my judgements based on how I feel, rather than what is actually happening? If you feel guilty, you are likely to assume things must have been your fault. If you feel frightened, you are likely to assume that you are not safe. If you feel depressed, you may assume that things will never get better. Feelings are not a good basis on which to make rational judgements. Put the feelings to one side for a moment and look for objective evidence.

- Am I over-focusing on one aspect and forgetting other aspects? Am I looking only at the negative side and ignoring the neutral or positive things? If we focus only on small parts of the whole picture, we will end up with a very distorted view of reality.

- How likely is it? Am I confusing a low probability with a high probability? How likely is it that what you fear will actually happen? Understandably, many trauma survivors fear a recurrence of the event, but realistically, how likely is it?

- Am I underestimating what I can do about it? Am I putting myself in the role of helpless victim? What can I do to make things better or safer for myself? Taking some control – doing something about it – is an important part of recovery.

- What will happen if I continue to think like this? Is this kind of thinking helping me to recover? Will it help me to live a happy and relaxed life? Are there any benefits to thinking this way? If not, it is worth working hard to try to let go of the irrational negative thoughts.

(Following up homework exercises)
When you have written an answer to all (or most) of the above questions, go back and reconsider the original thought. Do you still believe it? Is it still a rational statement of reality? If yes, try to go through the above process again. Talking to others who may be more objective can help. Do not expect all the negative thoughts to disappear at once. It is hard work and you will need to go through the process many times to shift those ideas. If the thought does not seem entirely rational now, can you come up with a more realistic version of the original thought? Remember that we are not talking here about positive thinking – that is just as unrealistic and very fragile. We do not want to pretend that everything is rosy when it is not. We do not want to minimize what you went through. Equally, we do not want to overemphasize the negatives. Recovery is difficult, but you can make progress; life will not always be safe, but do not exaggerate the dangers. For example, if the original thought was “all men are bad”, a more rational alternative may

be “some men are bad, but by no means all – most men are actually caring, safe, friendly people”. If the original thought was “I’m not safe anywhere” the rational alternative may be “I am safe in most places most of the time – I will be careful not to put myself in dangerous situations, but I do not need to worry constantly about getting hurt again”.

The following points can be discussed with clients:
Automatic thoughts
An *automatic thought* is a brief stream of thought about ourselves and others.

Automatic thoughts largely apply to specific situations and/or events and occur quickly throughout the day as we appraise ourselves, our environment, and our future.

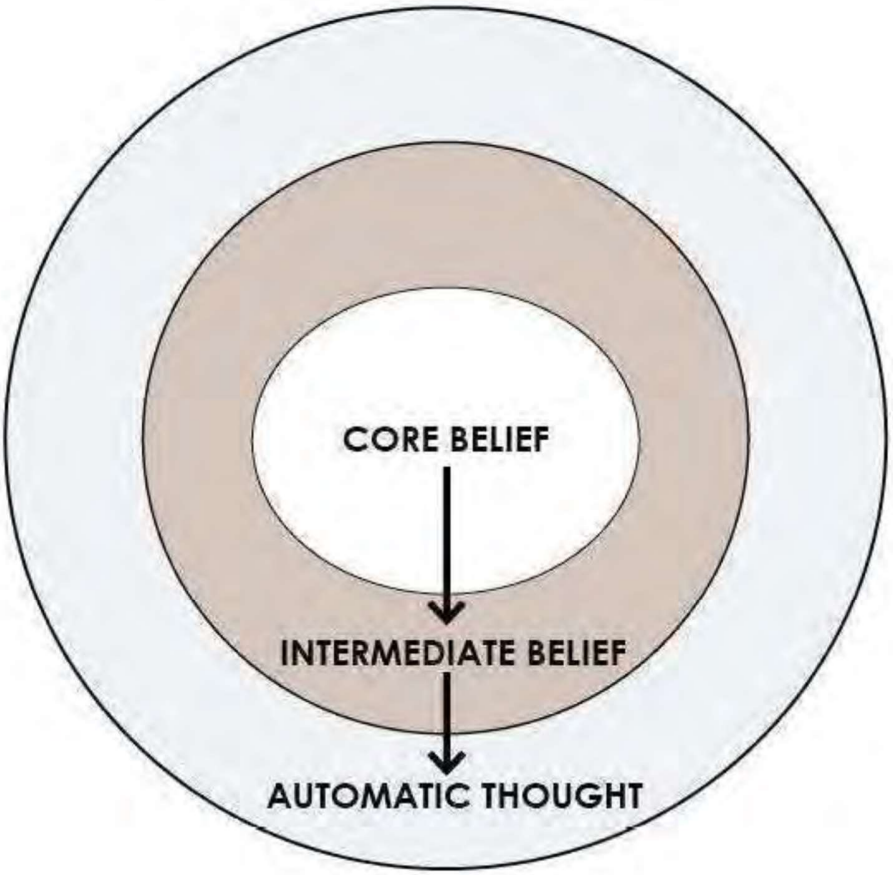
We are often unaware of these thoughts, but are very familiar with the emotions that they create within us.

Maladaptive automatic thoughts are distorted reflections of a situation, which are often accepted as true. Automatic thoughts are the real-time manifestations of dysfunctional beliefs about oneself, the world, and the future that are triggered by situations or exaggerated by psychiatric states, such as anxiety or depression.

Intermediate beliefs are attitudes or rules that a person follows in his/her life that typically apply across situations (not situation specific as with automatic thoughts). Intermediate beliefs can often be stated as conditional rules: “If x, then y.” For example, “If I am thin, then I will be loved by others.”

Individuals create these assumptions by categorizing the information they receive from the world around them. These rules guide thoughts and subsequently influence behaviours. Dysfunctional core beliefs drive dysfunctional rules and automatic thoughts. For example, the belief, I am unlovable, may be driving the conditional rule, If I am thin, then I will be loved by others, which may drive obsessive thinking about one’s appearance, excessive exercise, or disordered eating habits.

Core beliefs are often formed in childhood and solidified over time as a result of one’s perceptions of experiences. Because individuals with psychological disorders tend to store information consistent with negative beliefs but ignore evidence that contradicts them, core beliefs tend to be rigid and pervasive. Although automatic thoughts are often tied to a specific situational trigger, intermediate and core beliefs are more global and cut across domains. Beck suggests that individuals tend to have core beliefs that involve either interpersonal (“I’m unlovable”) or achievement issues (“I’m incompetent”).


CORE BELIEF
INTERMEDIATE BELIEF
AUTOMATIC THOUGHT

Chapter 5: Exposure therapy

Summary

Introduction

Discussion points to consider with client

Rationale for client

In vivo exposure: Confronting activities, places, people or objects

Instructions for client

Planning your program

Implementing your program

Practicing the steps

Imaginal exposure: confronting memories

Instructions for client

What is imaginal exposure?

Therapist-assisted imaginal exposure

Step 1: Preparation

Step 2: Confront the memory safely

Step 3: At the end of the recording, pause and open your eyes

Step 4: Process the memory by writing down some or all of the following

Step 5: Relax and do your planned activity

Self-directed imaginal exposure

Subjective units of distress (SUDs)

Managing physical symptoms

Breathing control.

Progressive muscle relaxation (PMR).

Why progressive muscle relaxation is useful

How to do it
Preparation
The relaxation
Recommended order of muscle tensing
Finishing a session
If you're having trouble

Introduction

Note: Exposure therapy is not always appropriate for traumatized refugees)

Exposure therapy is challenging for the client, but is considered the most effective treatment for PTSD, especially in conjunction with cognitive restructuring (Chapter 4: Cognitive restructuring). However the research evidence is largely based on non-refugee populations who are therefore less likely to have complex trauma histories or a refugee history of loss and dislocation; who may have fewer co-morbid conditions and less current social challenges (Nickerson, et al, 2011). For this reason, care should be taken to provide appropriate psycho-education about symptoms and treatment (see Chapter 3: Psycho education) and to gain informed consent before using this treatment. Choice of language and cultural assumptions will need to be revised with sensitivity to the client's culture and personal needs.

(The following section is adapted from Andrews, et al, 2003, 535-543)

Discussion points to consider with client

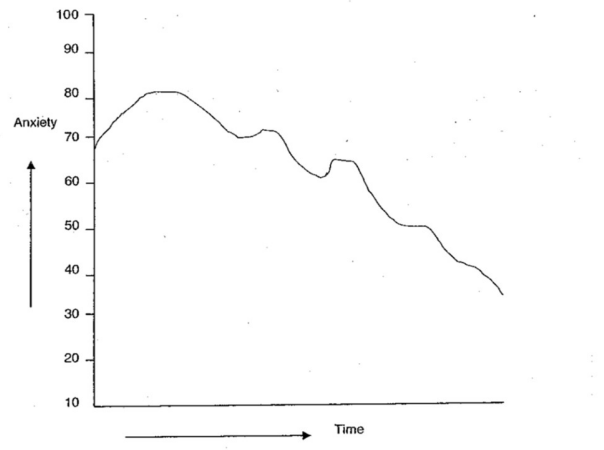
Exposure is a very difficult and painful process, but it is considered by some as the only way to recovery. As noted above, it is usually not as difficult as you fear it will be and most people get an enormous sense of achievement when they have confronted the memory or other feared situation. Strategies to help you manage anxiety and distress will be useful both before and after the exposure exercises (see section on *Managing physical symptoms* at the end of this chapter). If necessary, you can use them during the exposure exercises also, though it is recommended you only do this if you really need to. It is better to confront the full anxiety and allow it to reduce of its own accord than to use other strategies to bring it down. However, it is important that you do not feel overwhelmed at any time. Despite the best intentions (in terms of preparing your hierarchies and confronting only situations or memories that you feel ready for) the anxiety will, sometimes, be greater than you expect. On those occasions, use the coping strategies if necessary.

Multimodal treatment approaches should also be considered, including case support, referral and targeting other symptoms (e.g., sleep or anxiety) for counselling treatment.

Rationale for client

This is the most difficult and painful type of therapy. It involves confronting feared situations and traumatic memories. You should not start this therapy until you feel ready. Your counsellor will guide you through the treatment at a pace that you can manage. Most people find it is not as hard as they expected, and there is often a great sense of relief and achievement as the feared situations and painful memories are confronted and dealt with.

Not surprisingly, anxiety often makes people avoid frightening situations. It is quite normal to want to escape or stay away from situations, thoughts, memories, or feelings that are painful or distressing. However this is one of the major barriers to recovery. Avoidance and escape provide temporary relief – the anxiety reduces – but the next time the person encounters that situation again, they are likely to become anxious long before it is planned to occur. This is called "anticipatory anxiety". The more the situation is avoided, the more the person continues to believe it is dangerous. Even if the person does not avoid, the anxiety may continue to build once they are in the situation. Often people believe that if they do not leave the situation they will "lose control", "go crazy", "have a heart attack", or have some other dire consequences. At the very least, they are likely to believe that the unpleasant feelings will be intolerable. Exposure therapy aims to show that this is not the case by helping the person to confront the feared situation. The important thing to remember when you are confronting something you are frightened of (whether it is a situation or a memory) is that the *anxiety will come down* if you stay there long enough. There is no answer to the question of how long is enough. In some cases, the anxiety may drop considerably in 15 to 20 minutes. In other cases, it may take as long as an hour or more but it will reduce eventually. It is vital that you try to stay in the feared situation long enough for the anxiety to reduce. It is important to note also that anxiety often increases before it starts to drop. This temporary increase is often enough to make people avoid or escape. This pattern is shown in the following figure:



Andrews, et al (2003, 536)

You will notice that the drop in anxiety is not smooth. You may notice occasional small increases. But the general trend is downwards. Exposure is done in a controlled and gradual fashion so that discomfort is kept manageable. By building on repeated successes in facing these feared situations, you will eventually be able to confront them without anxiety and no longer avoid them.

In many ways this is a common sense approach. For example, consider a little boy who is standing on the beach when a big wave knocks him over. He becomes frightened of the sea and refuses to go to the beach the next day. How should his parents help him? In order to overcome the fear, his parents may take him for a walk along the beach, staying away from the sea, holding his hand and reassuring him. Gradually, they walk closer and closer to the water's edge. Eventually, the boy is able to go into the sea again unaided. This is a simple example, but exactly the same process applies to treating more severe and complex fears in adults.

The following section discusses how to confront activities, places, people or objects that you have become frightened of since the trauma. We call this type of exposure ***in vivo exposure*** which means "in real life". When we are confronting memories, we have to do it in imagination, so we call it ***imaginal exposure***. This is discussed in the following section. Conducting exposure therapy, the therapist will help you to construct a hierarchy – a list of feared situations in order of difficulty. Treatment involves tackling each item, one at a time, and moving on to the next only when you are confident to do so. More difficult items can be broken up into several steps. Exposure treatment can be difficult and painful, but it is the most effective way of treating many anxieties.

In vivo exposure: **Confronting activities, places, people or objects (often not appropriate for traumatized refugees)**

Instructions for client

Planning your program

1. Draw up a list of goals that you would like to achieve. These are likely to comprise places and activities that you have avoided since the trauma. The goals should be specific and should vary from relatively easy to extremely difficult. Don't worry if the worst ones seem unachievable at the moment – they will become easier as you progress through the others. List them in order of difficulty, starting with the easiest. For example:
    - To be able to go shopping at the local shopping centre
    - To be able to catch public transport into the city

    As a general rule, as you work through the list you should be aiming to confront situations that produce a SUDs level (see below) of around 70. For the first one or two, however, it is suggested that you start with ones that are a little easier than that (say, around 50) – it is important that you experience some successes early on in the process.

2. If something is too hard to try in one go, break it down into smaller steps.
3. You may want to work on more than one item at any one time, but do not overwhelm yourself. When you have mastered one (i.e., you are able to do it with minimal anxiety), move on to the next more difficult one.

Implementing your program

1. Try to do at least one of your selected goals every day. Avoiding something one day will set you back, as you will have built up the fear you are trying to reduce. Sometimes you will have bad days and feel that you are not progressing. It is important to still do something, although you may choose just to go over steps that you have already mastered.
2. You will need to do each step several times until you master it. Once you can do it without too much anxiety, it is still important to do it once in a while to make sure you don't slip back. The general rule Is: *the more you fear it, the more frequently you need to confront it*.
3. Keep a careful record of your progress. Take a sheet of paper and divide it into columns. In the first, write down your goal. In the second, note the date. In the third and fourth, write the time you started and (when you get back) the time you finished. In the fifth, write down the maximum SUDs you reached and in the sixth the SUDs level when you left the situation. The final column should be used for making any

comments about the exercise. This will help both you and your therapist keep track of your exposure progress.

4. Note to counsellor: Ask the client what strategies they have tried already to try to cope with the traumatic re-experiencing symptoms. Many clients report that they have tried to "forget" what has happened to them. Enquire about the effectiveness of this strategy. Alternatively demonstrate the ineffectiveness of thought suppression with a demonstration (e.g., ask client not to think about a white bear for 30 seconds, then ask them to reflect on what happened). Then you can use the client's experience of "forgetting" not working for them to introduce the rationale for trying an alternative strategy – exposure/facing the memories. Challenge the idea of forgetting.

Practicing the steps

1. Try to relax before you start, using the techniques described below.
2. Mentally rehearse the activity. Go through it in your mind and work out strategies to deal with difficult aspects. Practice the coping self-statements that you will say to yourself when you become distressed. Good preparation will make success more likely.
3. Go about the exercise in a slow and relaxed manner – give yourself plenty of time.
4. Keep an eye on your SUDs throughout the exercise. If they become very high (80 or more) before you've reached your goal, stop and wait for a while until the anxiety comes down a bit. When you feel ready, move on again slowly.
5. Try to stay in the situation until you feel yourself calming down. Ideally, the SUDs should reduce by half (e.g., from 70 to 35). The longer you remain in the situation, the calmer you will become and the faster you will overcome your fears.
6. Never leave the situation while your anxiety is still high. Try to face the fear, accept it, let it fade away, and then either move on or return. If you leave while the anxiety is still high it will be more difficult next time. Remind yourself that you have done really well to get this far; just hang in there until the anxiety comes down.
7. Congratulate yourself for your achievements. This is very hard work and you deserve a pat on the back. Don't put yourself down by saying that you could do this kind of thing easily before the trauma or that anyone should be able to do it without getting upset. It's a vital part of your recovery.

Imaginal exposure*:* confronting memories

Instructions for client (Client needs sufficient explanation about this method, including the permission to stop when they need)

Imaginal exposure, another form of exposure therapy, can be used to treat distressing memories of the trauma. In PTSD the most feared situation may actually be painful memories of the trauma experience. These memories can be so frightening, and cause so much distress, that the person tries to avoid or escape from them by blocking them out. Exposure is only one term used to describe this process. Some people talk about "trauma focussed work", "working through the trauma", "coming to terms with the experience" or simply "confronting the memories".

1. **What is Imaginal exposure?**

   For counsellor use:

   Analogies may be useful in explaining this process before treatment. The following examples may be useful:

   > After a trauma, we often try to file away our memory of what happened, putting it to the back of our mind. It's as if we are trying to leave it undisturbed. However, over time, two things happen. Firstly, our strength begins to wain and it becomes more of an effort to keep it sealed (that is, to stop the memories from coming back). Secondly, due to the pressure, the box begins to lose its shape and small cracks begin to appear. What we experience as symptoms (such as memories of the trauma, and having nightmares and disturbed sleep) is like the content of the box spilling out through these cracks. This is often very frightening, so we try to avoid anything that reminds us of the trauma. We try to stop thinking and talking about what happened and how we felt. In this way, the content of the box becomes a "ghost" which we have learned to fear and which we are terrified of confronting. As part of therapy, we are going to open the box and inspect the contents for what it really is. We will talk through what happened and how you felt. We will be inspecting the "ghosts" that have been created and throwing away any maladaptive and distressing beliefs that you may have about the event. We find that once the trauma has been dealt with in this way the symptoms become much less severe and less frequent.

Another analogy uses the image of the dentist:

> When dentists work on a decayed tooth, they don't just slap the filling on top of the decay. If they did it might be fine for a few weeks or months, but the problems would keep coming back as the tooth continued to deteriorate. Instead, they spend some time drilling and scraping, cleaning out all the decay before putting the tooth back together. This is a very unpleasant and painful process, but we know it is worth going through

> this short-term pain for the long-term gain. Traumatic memories are a bit like tooth decay. We need to make sure that we have confronted all aspects of the trauma before we try to put the event behind us. We need to give ourselves time to face up to even the worst parts of the experience so that there are no skeletons in the closet to come and haunt us in the future. Like the dentist's drilling, it is a painful but important part of recovery.

A final analogy comes from the work of Edna Foa:

> Suppose you have eaten a very large and heavy meal that you are unable to digest. This is an uncomfortable feeling. But when you have digested the food, you feel a great sense of relief. Flashbacks, nightmares and troublesome thoughts continue to occur because the traumatic event has not been adequately digested. Treatment will help you to start digesting your heavy memories so that they will stop interfering with your daily life. (Foa and Rothbaum, 1998:160)

Exposure-based treatments are not for everybody. In some cases, if the trauma occurred many years ago and the memories are not causing too much of a problem, it may be best not to drag everything up again.

2. Therapist-assisted Imaginal exposure

To discuss with client:

Confronting the traumatic memories is a very difficult and painful process, and is best done with the help of an experienced counsellor. There are several steps the counsellor can lead you through. First, the counsellor will explain the process, including what you will be doing, why you are doing it, and a reminder of the SUD scale, as well as answering any questions you may have. Next they will work with you to develop a hierarchy of painful memories in much the same way you developed a list of goals for your in-vivo exposure (above). If you have experienced several traumatic events, this may be simple enough. You will need to think about each event and rank them in order of how distressing they are for you to remember. If you have only experienced one event that is causing you problems, you will not need to make a hierarchy.

Your counsellor will then ask you to go through the selected event or experience in great detail, starting at the beginning and continuing through to the end, to a point where you feel relatively safe. In order to keep the distress manageable, you may initially be asked to keep your eyes open, to talk in the past tense (e.g., "I was walking along the path when I saw him coming towards me"), and to skip some of the worst details. For the procedure to be fully effective, however, you will be asked to build up (maybe over several sessions) to making your account as vivid and detailed as possible. You will eventually be asked to talk through

the whole event with your eyes closed and in the present tense (e.g., "I am walking along the path and I can see him coming towards me"), since this makes it much more real for you. You will need to be careful that you do not miss any of the details, even (or perhaps especially) the worst ones. Remember that we do not want to leave any skeletons in the closet to come out and worry you in the future. Your counsellor will repeat this process many times in the same session and/or in subsequent sessions. However, the more you go through it the quicker you will recover, so your counsellor may record the session and ask you to listen to the recording every day at home. Again, this is not an easy process, but sticking to the following steps will help you through it and help to ensure that it provides the maximum benefit.

Instructions for client:

Step 1: Preparation

- Plan an activity to do immediately afterwards (e.g., go for a walk; visit or ring a friend; do an enjoyable absorbing activity; *not* an addictive activity like watching TV or drinking; *and not* an emotional shutdown like hiding away on your own).
- Choose a private place with no interruptions (take the phone off the hook, let others know you are not to be disturbed).
- Identify two people you can contact immediately if you need help; keep their phone numbers handy.
- Briefly relax yourself and try to clear your mind of other thoughts and worries; note down your SUDs level on a piece of paper.

Step 2: Confront the memory safely

- Listen to the recording of the exposure session and try to focus on what is being said: try not to imagine other more frightening parts – just concentrate on the recording.
- Equally, try to imagine it happening as if you were experiencing it again. What can you see, hear, smell, touch, taste? What are you feeling and thinking?
- When reminded to do so on the recording, note your SUDS level. If it is above 90, take a moment to remind yourself where you are; you are safe here and now; you can feel as upset as you need to in the memory.
- Don't stop the recording in the middle; stick with the memory through to the end.

Step 3: At the end of the recording, pause and open your eyes

- Look around, feel the chair, remind yourself where you are and that you are safe.
- Note your SUDs level and use an arousal management strategy if necessary (such as breathing control or relaxation).

Step 4: Process the memory by writing down some or all of the following:

- What new (or old) pieces of the memory did you discover or became clearer?
- Are you now thinking differently about any aspects?
- What feelings or thoughts are going through your mind right now?
- What parts of the memory are still too difficult to remember or accept?
- What do you still want to change about the event or its aftermath? What can you do to achieve that?
- What did you do that you should be able to feel good about?

Step 5: Relax and do your planned activity

Self-directed Imaginal exposure

Many people find it difficult to do imaginal exposure to traumatic memories on their own. They find the process too painful and they need the support and the structure provided by a counsellor. However it is not impossible. Indeed, many people who recover from trauma without professional help are doing just that. They are thinking about the trauma often enough, for long enough, and in enough detail for the memory to lose the worst of its associated distress and for it to become modified and "sorted out" in their own mind. If you are going to attempt the process without a therapist, writing down the memory is often a useful way to do it. (Indeed, it may be helpful to do this even if you are working with a counsellor, although it is suggested that you should discuss it with them first).

The process is to follow the same 5 steps as for therapist-assisted imaginal exposure (outlined above), but substituting the writing exercise for listening to the recording of the session. Care should be taken to read through the steps and to prepare properly before starting. Select a suitable time and place so that you have enough privacy and sufficient time to do it properly.

This task is important in helping you to sort out exactly what happened. The process of "putting the pieces of the jigsaw puzzle together" seems to be very important in getting over the incident. It also works in a similar way to the imaginal exposure described above – the

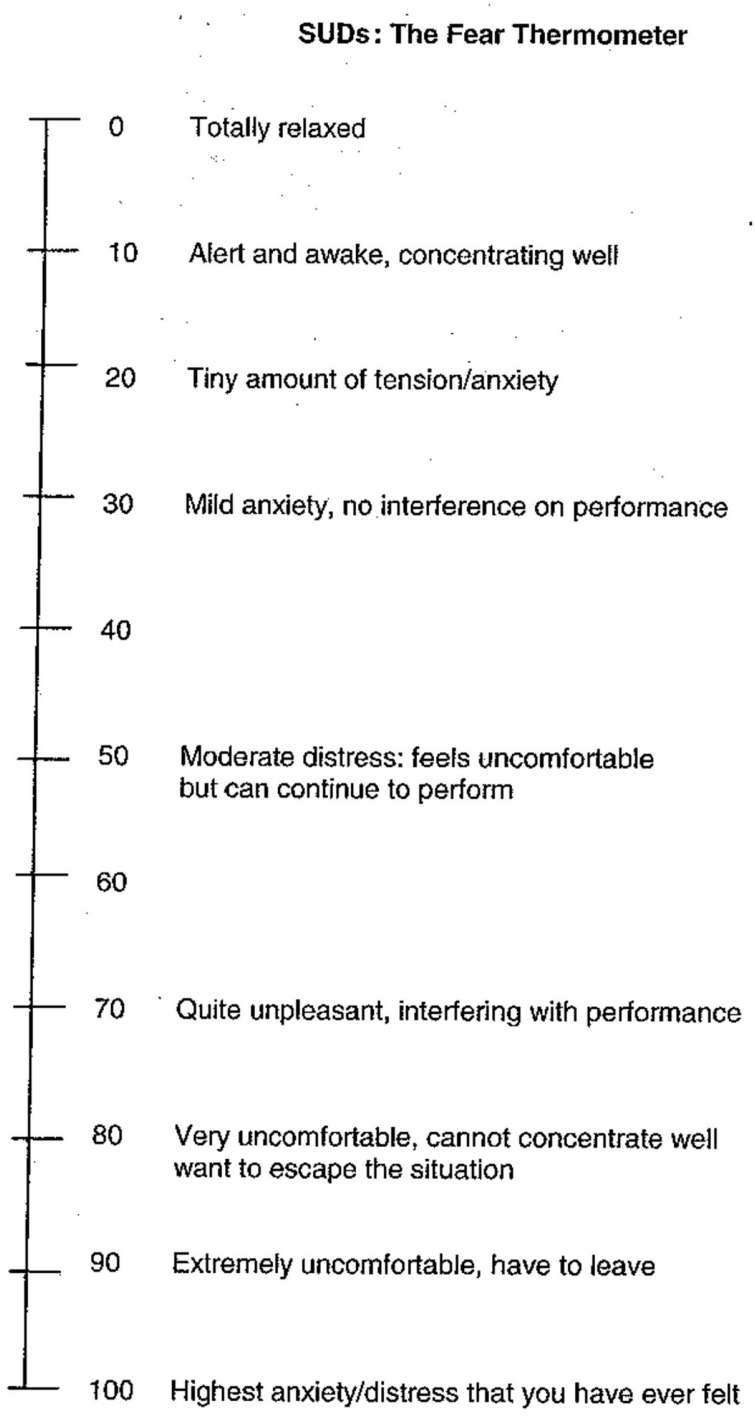
more you confront the painful memories and the bad feelings associated with them, the less powerful and distressing they will become.

The task is to take a sheet of paper, or an exercise book, and write out a detailed account of exactly what happened. (Interestingly, research suggests that it is much more effective if you write it out by hand rather than using an electronic device). Include as many sensory details as possible (sights, sounds, smells and so on). Also try to include all the thoughts and feelings that you had during the event. Do not stop yourself from feeling the emotions: even though it is painful, that is part of the recovery process. If you become too distressed, you can stop writing for a while. Make a note of your SUDs level in the margin every few minutes. This is important to compare your levels when you reread or rewrite the account. You can rewrite the account as often as you like, putting in more details or different perspectives as they come to you. On days when you do not rewrite the account, read it to yourself at least once. Again, stick to the steps outlined above when you do this. If you have kept a note of your SUDs levels in the margin, you will notice them dropping over time as you repeat the process. You will need to repeat the task until your SUDs are reasonably low (say, a maximum of about 30).

Subjective units of distress (SUDs)

adapted from Andrews, et al (2003, 527-530)

As you start to conquer your fears, it becomes very important to have a means of measuring level of anxiety and distress. It is suggested that you use a SUDs scale (below) ranging from 0 to 100 – a kind of fear thermometer – where 0 is feeling perfectly relaxed and 100 is the worst anxiety and distress you can imagine. It is useful to get into the habit of rating your anxiety. That way you become more in touch with your feelings and have a better chance of controlling them. Without some kind of measure, people tend to think in black-and white terms – you are either anxious or relaxed – when, in reality, there are many shades of grey. Using the SUDs scale will help you to keep your stress level in perspective, e.g., you may be feeling anxious, but it's only 40 – you can handle that. In the exercises following, rate your distress using the SUDs scale before you try the anxiety management strategy and again afterwards. Most exercises will result in the level coming down, if only a little.



Andrews, et al (2003, 528)

Managing physical symptoms

(see also Chapter 10: Pain)

adapted from Andrews, et al (2003, 524-525)

There are several strategies available to help manage the unpleasant physical symptoms associated with posttraumatic stress and PTSD. Some of these are discussed below under ***Hints for coping***. You can go a long way towards reducing the chronic arousal that is part of PTSD if you can get regular gentle exercise, eat properly, and try to cut down on stimulants (such as coffee, tea, cola, chocolates, cigarettes and energy drinks). Two additional specific techniques for reducing arousal are described below: a simple breathing control strategy and progressive muscle relaxation.

1. **Breathing control**. People often start to breathe faster when they are frightened or upset. An increase in breathing is part of the fight or flight response – we need more oxygen if we are to fight or run away. However, breathing too deeply and too fast when we are not using up a lot of energy tends to make us more anxious and often causes unpleasant physical symptoms such as dizziness, tightness in the chest and a feeling of being short of breath. When we are upset, we may be told to "take a few deep breaths". However, this is not quite right. When we are feeling anxious or frightened, we don't need to take a deep breath; we need to take a normal breath in and exhale slowly. Breathing out is associated with relaxation, not breathing in. While concentrating on a long, slow exhalation, it's a good idea to say a word like "relax" or "calm" to yourself. Any word that is associated with feeling peaceful and at ease will do. Try to drag out the word to match the long, slow exhalation, as in "r-e-e-e-l-a-a-a-x" or "c-a-a-a-a-a-l-m".
   The next thing to remember is to slow your breathing down. Remember that taking in too much air causes an increase in anxiety and unpleasant physical symptoms. So, what we need to do is to slow our breathing down and take in less air. We do this by taking smaller breaths and by pausing between breaths to space them out. It is also important to try to breathe in through your nose, not through your mouth. When you have taken a normal breath in through your nose, hold your breath for a count of 4 before exhaling slowly.

In summary:

Take in a normal breath through your nose with your mouth closed.

Pause briefly while you count to 4.

Exhale very slowly (mouth open or closed, whichever is most comfortable).

Say “calm” or “relax” to yourself as you exhale.

Repeat the whole sequence 6 to 10 times.

Practice this type of breathing at least twice a day. That way, when you become frightened or anxious, you will be ready to use the technique to help you to calm down. Once you have mastered this technique, it is an excellent strategy for dealing with rapid increases in anxiety that may occur when you experience memories of the trauma or find yourself in a frightening situation.

2. **Progressive muscle relaxation (PMR)**. This technique is designed to deal with the more pervasive, chronic tension and stress associated with PTSD. If you can lower your general level of arousal or tension, you will be much less likely to overreact in response to minor perceived threats. This is just like a coiled spring – the more wound up it is, the more likely it is to explode under pressure. The world will seem like a safer place.

PMR is usually done by listening to an audio recording, which will take you through a series of exercises in which you will be asked to tense up and relax various muscle groups. By gradually working through your whole body, from head to toe, you will achieve a state of physical relaxation that, with practice, you will be able to maintain through much of the day. Your counsellor will provide you with a recording to use at home.

Why progressive muscle relaxation is useful

Adapted from *Inspire Foundation* (2013b)

When people are stressed out, anxious or have an anxiety disorder, they often have really tense or tight muscles. This means that you can actually reduce the stress and anxiety you feel, if you learn to relax your muscles properly. Progressive muscle relaxation can help you with this – it's the most common type of relaxation training, and it's used by a lot of people. It involves tensing and relaxing different groups of muscles through your body.

How to do it

Progressive muscle relaxation works best if it's something that you practice daily for at least eight weeks, as it does take time for your body to get used to it (just like if you were trying a new sport or exercising).

Preparation

Make sure before trying out progressive muscle relaxation training, that you do these things:

- Find a comfortable quiet space. Make sure you're in a place free of distractions. Switch off your phone, go into a quiet room, and avoid being around other people if you think they're likely to be a distraction.
- Make sure you're comfortable. Wear comfy clothes, take off your shoes, and if you've eaten recently, give your food some time to digest.
- Sit on a chair in a comfortable position. You can also lie down if you prefer, but you're more likely to fall asleep.

The relaxation

- When you're prepared and ready, focus your mind on your right foot (you can start with your left side if you're a leftie and it feels more normal).
- Breathe in, and tense your foot muscles as hard as you can.
- Count to ten, with your muscles still tense.
- Suddenly and quickly release your foot muscles so that they're completely relaxed.
- Count to twenty.

Now, repeat the process from the start and do it again, using the same foot. You should notice more sensations the second time. When you've tensed and relaxed the same muscle twice, it's time to move on to another group of muscles.

Do exactly the same thing – tense muscles for ten seconds, relax for twenty, repeat. The idea is to relax and tense all the muscles in your body, starting with your feet and working your way up.

Recommended order of muscle tensing

1. Right foot
2. Right lower leg and foot
3. Entire right leg
4. Left foot
5. Left lower leg and foot
6. Entire left leg
7. Right hand
8. Right forearm and hand
9. Entire right arm
10. Left hand
11. Left forearm and hand
12. Entire left arm
13. Abdomen (tummy)
14. Chest
15. Neck and shoulders
16. Face.

Don't forget, if you're a leftie, you can start with your left side if it feels more comfortable. When you've completed this process, your muscles should be much more relaxed. The more you practice it, the more relaxed your muscles will be able to become over time.

Finishing a session

When you've finished your last tensing pattern:

- Relax with your eyes closed.
- Count slowly backwards from five to one.
- Get up slowly. If you get up too quickly the drop in blood pressure could cause you to fall down again or feel dizzy.

If you're having trouble

Progressive muscle relaxation training can be really hard, particularly at first. People have trouble staying focused. The main thing to remember is that the more you practice, the easier it will become. It can be really frustrating to get over the initial hurdle, but don't be discouraged.

You may also find it easier if you have someone to call out the steps to you, so that you don't

have to remember in your head which muscle group to move to next. Try and find a video or audio track which uses progressive muscle relaxation techniques if you think it might help.

Chapter 6: Sleep problems

Summary

Techniques for general sleep difficulty

- Progressive Muscle Relaxation Training
- Keeping a sleep diary
- Sleep hygiene

Types of nightmares

Assessment

Treatment

- Image Rehearsal Therapy

Other techniques for working with nightmares

- Exposure, Relaxation and Rescripting Therapy
- Lucid Dreaming Therapy
- Self-exposure Therapy
- The Testimony method

Techniques for general sleep difficulty

Progressive Muscle Relaxation training is suggested for treatment of idiopathic nightmares **(specific to an individual),** (Aurora, et al, 2010) but may be useful for some clients with PTSD who have trouble sleeping (See Chapter 5: Exposure therapy). Progressive Muscle Relaxation (PMR) involves tensing and releasing the muscles, one body part at a time, to bring about a feeling of physical relaxation and reduction in anxiety and stress.

Keeping a sleep diary (Smith, et al 2013)

Rationale: A sleep diary can be useful for identifying sleep disorders and sleeping problems and pinpointing both day and night-time habits that may be contributing to difficulties. Keeping a record of sleep patterns and problems will also prove helpful if a referral to a sleep specialist is made later.

Instructions to client: A sleep diary should include:

- what time you went to bed and woke up
- total sleep hours and perceived quality of your sleep
- a record of time you spent awake and what you did ("stayed in bed with eyes closed," for example, or "got up, had a glass of milk, and meditated")
- types and amount of food, liquids, caffeine, or alcohol you consumed before bed, and times of consumption
- your feelings and moods before bed (e.g. happiness, sadness, stress, anxiety)
- any drugs or medications taken, including dose and time of consumption

The details can be important, revealing how certain behaviours can be ruining your chance for a good night's sleep. After keeping the diary for a week, for example, you might notice that when you have more than one glass of wine in the evening, you wake up during the night.

Sleep hygiene (Smith, et al 2013)

Rationale: Regardless of your sleep problems, a consistent sleep routine and improved sleep habits will translate into better sleep over the long term. You can address many common sleep problems through lifestyle changes and improved sleep hygiene. For example, you may find that when you start exercising regularly and managing your stress more effectively, your sleep is much more refreshing. The key is to experiment. Use your sleep diary as a jumping off point. Instructions:

Simple tips for better sleep

- *Keep a regular sleep schedule***,** going to sleep and getting up at the same time each day, including the weekends.
- *Set aside enough time for sleep.* Most people need at least seven to eight hours each night in order to feel good and be productive.
- Make sure your bedroom is dark, cool, and quiet. Cover electrical displays, use heavy curtains or shades to block light from windows, or try a sleep mask to shield your eyes.
- *Turn off your TV, smartphone, iPad, and computer* a few hours before your bedtime. The type of light these screens emit can stimulate your brain, suppress the production of melatonin, and interfere with your body's internal clock. (Smith, et al 2013)

More simple tips for better sleep

Adapted from *Inspire Foundation* (2013a)

Sleep problems

Most people need between seven and nine hours sleep a night. Depression, anxiety, medication and other factors can mean that you don't get the sleep you need. To find out more about reasons people find it hard to sleep, check out our factsheet on sleeping issues.

Getting good sleep
Tips and tools a lot of people find helpful in getting good sleep:

- Lay off the alcohol, cigarettes and caffeine before bed, as they can make it harder to get to sleep, or cause your sleep to be disrupted.
- Try to reduce your TV or computer time in the evenings – artificial light can trick your body into staying awake.
- Try not to nap during the day, as this'll make it harder to sleep in the evening.
- Exercise first thing in the morning, outdoors. Sunlight can help reset your body clock.
- Learn relaxation and meditation techniques to help you switch you mind off in the evenings.

They've been tried and tested, but not all of them will work for everyone. If you're really struggling, the best and easiest way to work out how to get sleep is by working with a doctor, counsellor, psychologist or sleep specialist.

Additional tips:

- *Cooling and then warming the body* is a trigger for sleep. If you are unable to fall asleep, get up, go to the toilet if needed, and cool your body by removing unnecessary clothing, stand in a cool breeze, splash cold water on your face; then get back into bed and warm up slightly by adjusting your blankets.
- *Keep bed for sleeping (and sex).* Don’t lie in bed awake for too long. Get out of bed and do something relaxing, like reading, until you feel ready to go back to bed to see if you are ready for sleep.

Getting good help

If you're finding it difficult to sleep, and that the tactics you're trying aren't working, talk to your doctor about strategies. A doctor or other health professional can work with you to amend your routine, diet, exercise, medication and thinking until you arrive at something that works.

Nightmares

Types of nightmares

Nightmares may be idiopathic (without clinical signs of psychopathology) or associated with PTSD or other disorders including substance abuse, stress and anxiety, borderline personality, and other psychiatric illnesses such as schizophrenia-spectrum disorders. (Aurora, et al, 2010)

Eighty percent of PTSD patients report nightmares (Aurora, et al, 2010). Nightmares are generally considered to be a component of the intrusive/re-experiencing cluster of PTSD symptoms. Even when PTSD resolves, PTSD-associated nightmares can persist throughout life.

Nightmares can also be induced by use of drugs that affect the neurotransmitters noradrenaline, serotonin and dopamine. Some sleep disorders may require a medical or sleep clinic referral.

Assessment
Self-reported retrospective questionnaires and prospective logs are the most commonly used methods to assess nightmare characteristics. These have the advantage that they can distinguish nightmare frequency from distress.

Treatment

Trauma-focused CBT, particularly Image Rehearsal Therapy, has been shown to be effective treatment for nightmares in PTSD (Aurora, et al, 2010).

Image Rehearsal Therapy (IRT) (Aurora, et al, 2010) is a modified CBT technique.

Rationale: IRT acts to inhibit the original nightmare, providing a cognitive shift that empirically refutes the original premise of the nightmare.
Instructions: follow the following steps:

1. recall the nightmare
2. write it down
3. change the theme, story line, ending, or any part of the dream to a more positive one, and
4. rehearse the rewritten dream scenario so that the patient can displace the unwanted content when the dream recurs.
5. Practice this technique for 10- 20 minutes per day while awake.

Other effective techniques for working with nightmares

Exposure, Relaxation and Rescripting Therapy (Aurora, et al, 2010)
A specialized treatment targeting anxiety. This involves psycho education, sleep hygiene, and progressive muscle relaxation training. Exposure procedures such as writing out and rescripting the nightmares, homework assignments, problem solving, and coping strategies

are intended to help deal with the nightmares. This form of treatment is similar to IRT except for type of exposure utilized.

Self-exposure Therapy (Aurora, et al, 2010)

Self-exposure Therapy is a variant of CBT that utilizes a technique of "graded exposure." The patient is instructed to make a hierarchical list of anxiety-provoking events/dreams. The patient is then instructed to move through the situations on the list at his or her own rate, starting with lowest anxiety situation until the fear/anxiety has decreased. The exposure is done on a daily basis with documentation in a journal of his or her experiences.

The Testimony method (Aurora, et al, 2010)

The Testimony method is a brief variant of a trauma exposure technique. Trauma survivors are invited to tell the story of their traumatic experiences and document them in a written format with the help of the therapist.

How to help clients to understand symptoms of intrusions?

Traumatised people, or their family members, sometimes find it useful to know that people who suffer from PTSD often re-experience the traumatic events through 1/ intrusive thoughts and ideation; through 2/ dreams – they experience traumatic nightmares; and sometimes even through 3/ flashbacks and 4/ re-enactments.

Nightmares

It can also be helpful for clients who experience repetitive traumatic nightmares to understand the difference between ordinary nightmares and traumatic nightmares:

The content of ordinary nightmares is a result of so called dream mechanisms such as symbolisation, condensation, displacement of affect, etc. In traumatic nightmares, traumatised people can experience fragments of the real traumatic events.

If the client understands that the repetitive traumatic nightmares are actually not ordinary dreams, but are memory intrusion of the traumatic event, and that they differ from ordinary dreams in content and repetitiveness, such information help traumatised people to understand better the nature of these symptoms.

Understanding dreams

The way to understand repetitive nightmares is to learn to “re-enter” the dream in order to explore the “landscape”, feelings, and to ask “reality check” questions…

The landscape - the ‘space’ in the dream - circumstances and events…; to talk with the characters in the dream; to see if the events, such as ‘an accident’, have a symbolic meaning or it is a replay of real stressful/traumatic events as that replay - traumatic nightmares, is an attempt to release accumulated, blocked or unprocessed emotions …

The feelings – What are your feelings: a/in the dream? b/ when you came out of that particular ‘situation’ in he dream, and c/ how are you feeling about that now?

Before and After: What is the difference between feelings and body sensations during dreaming the event and now – to see how much processing, releasing and integration have been done thanks to the dream!….

(Not to forget: traumatic nightmares, and other forms of intrusions, are attempts at healing – discharging painful emotions and integrating fragmented, frozen traumatic memory. Processing traumatic memory in dream state is an important part of healing trauma. That is the reason why it is important to help traumatised person to regulate sleep).

The reality check questions –What do you recognise from the experience of the dream in your current life?

(We want to see the links between the events in the dream and in the current Life…not only past traumatic events….).

- Is it possible that something of these ‘dream events’ could happen, literally or Symbolically, in the future?

(Rational: indigenous and ancient people understand something that western psychology still wrestles with. They understand that there is a survival function to dreams. Your dream might show you that you need to take some actions to avoid certain situations or it might give you directions how to deal with challenging issues in you relationships... Dreams may indicate possible or probable future events…and if you don’t like that, let’s make action plan to change that).

Chapter 7: Flashbacks and intrusive thoughts

Many people with PTSD struggle in coping with flashbacks. Flashbacks are considered one of the re-experiencing symptoms of PTSD. In a flashback, a person may feel or act as though a traumatic event is happening again. A flashback may be temporary and some connection with the present moment may be maintained, or a person may lose all awareness of what is going on around them, being taken completely back to their traumatic event. For example, a rape survivor, when triggered, may begin to smell certain scents or feel pain in her body similar to that which was experienced during her assault.

Rationale for clients: Know your triggers

In coping with flashbacks, prevention is key. Flashbacks are often triggered or cued by some kind of reminder of a traumatic event (for example, encountering certain people, going to specific places), or some other stressful thoughts or experience. Therefore, it is important to identify the specific things that trigger flashbacks.

By knowing what your triggers are, you can either try to limit your exposure to those triggers, or if that is not possible (which is often the case), you can prepare for them by devising ways to cope with your reaction to those triggers.

In addition to reducing flashbacks and dissociation, knowing your triggers may also help with other symptoms of PTSD, such as intrusive thoughts and memories of a traumatic event.

Flashbacks

It is also extremely important for the client who experience flashbacks to understand flashbacks as a replay of the traumatic event that occurs during waking (not to misinterpret flashbacks as symptoms of psychosis such as hallucinations…). That's why flashbacks have been characterised as "waking nightmares". They are memories, but these memories are unlike other ordinary memories, as the clients re-experience traumatic events with all their senses: they can 'see' the people involved in the traumatic event, can 'hear' their voices...etc. as if the event was occurring right now.

Triggers of intrusions

Clients also sometimes need help to understand and identify the triggers for intrusions, either external or internal triggers. If they are able to recognise the triggers, they feel less helpless when they experience them; they feel in control, and they understand better what's going on.

Re-enactments

Another form of intrusions is so called re-enactment. Traumatised people relive the traumatic events not only in their thoughts and dreams, but also in their actions.

The re-enactment of traumatic scenes is most apparent in the repetitive play of children. The everyday play of children is free, light-spirited.... whereas the play that follows from trauma is grim, and obsessively repetitive. Posttraumatic play can be so literal that if you spot it, you may be able to guess the trauma the child has experienced.

Traumatised adults sometimes find themselves re-enacting some aspect of the trauma scene, either in literal or in disguised form, without realising what they are doing. For instance:

A victim of rape may re-enact the traumatic event by walking in the same dark, dangerous street where she was raped, with a vague fantasy of changing the outcome of the traumatic drama she experienced.

In their attempts to "undo" the traumatic moments (or "get even", or "find a solution"…) traumatised people may unconsciously recreate the same scene, hoping that this time the tragic event will end up with a some kind of "happy ending". However, they put themselves at risk of further harm.

Many of them are not fully aware of what they are doing while they are in re-enactment, or they don't understand how come they are victims of the same crime again...get raped or get mugged again, under pretty much similar circumstances...

That's why insisting on clarifying the issues about re-enactment as 'intrusions on the behavioural level' can be extremely important for the clients who are prone to re-enact traumatic scenes, and expose themselves to dangerous situations again and potential re-traumatisation.

The mind - body connection in trauma

The body also re-experiences traumatic events.

Sample:

Trauma story of a client who was tortured in a concentration camp in Bosnia.

..He was beaten by a metal bar on the sole of his feet. While he was being beaten, he was facing a brick wall in the prison cell. One day, here in Australia, he was walking down the street in his suburb, when he saw a similar brick wall of the same colour. He started experiencing a flashback, but just a few minutes into re-experiencing the traumatic event

through the flashback, his ankles became swollen and painful as if he had just been beaten again.

Obviously his body remembered trauma as well, as traumatic memories are often encoded in a sensorial, pre-verbal way in the body itself.

While I talk with clients about these "mind-body" connections, or 'broken connections' and 'miscommunication between the body and mind', I am sometimes reminded of my own experience:

I had just arrived in Australia, after the war in Bosnia. I was sitting in a restaurant in Parramatta. It was a public holiday and fireworks started. We were sitting inside and I did not see the images, I just heard the sound. And the sound of the fireworks was exactly the same as the sound of the shelling during the war in Sarajevo. In a split second, I was flooded by anxiety and I remember thinking 'This is really ridiculous... Why am I experiencing such strong anxiety when I am perfectly aware that I am not in Sarajevo... this is just the fireworks..."

But this was what my mind thought. My body had a completely different perspective to what was going on, reacting to the events recorded in my memory, not to real events in the "here and now".

Teaching clients with similar experiences how to apply some grounding techniques is an important part of psychoeducation. Also, to help them to plan in advance how to calm themselves down when they experience hyperarousal. For instance, what to do when they wake up from frightening traumatic nightmares, in the middle of the night.

Onset of symptoms of intrusions

Another area of problems that clients need clarification about is the onset of symptoms of intrusions.

Some of our clients say

'I experienced terrible events during the war in my country. Then I went to Germany. In Germany, my life wasn't easy at all, on the contrary, it was very difficult and I had many settlement problems. But for some reasons I did not constantly think about what had happened to me in my country. Only now, here in Australia, when I've finally settled..., we have bought a house, I've found a job..., now I am constantly thinking about all those painful events that I experienced in past... Why now? And why is it always the worst memory? How come that I don't re-experience pleasant dreams, or nice memories...?'

These clients need to know that a sense of safety in the present moment is a precondition for dealing with our traumatic past. It would be extremely difficult to start opening old wounds - the process which requires a lot of mental energy, while we are in the middle of a current life drama. That's why we sometimes wait for the right moment when we can afford to invest extra energy in the healing process.

So, the answer to the client's question: "Why now" is "Because now you are ready to heal".

Intrusions as a step in the healing process

How clients react to the intrusions often depends on how they view the nature of these symptoms. For many of them intrusions is a random, senseless reliving of the past trauma, and offcourse they try to avoid them.

For that reason, one of the important goals is to help the client to make sense of their symptoms, and to view their symptoms of intrusion as an important step in the healing process.

Judith Herman, in her book Trauma and Recovery, describes the repetitive reliving of the traumatic experience as spontaneous attempts to integrate the traumatic memory. Intrusions are, actually, the attempts of the brain or the mind to assimilate, to digest the traumatic experience, and in that way intrusions are a regular part of the recovery process.

If the client understands that, such information can help him to make a shift from perceiving intrusions as meaningless symptoms to perceiving them as useful in the process of healing traumas.

Instructions for clients:

Identify early warning signs

Flashbacks and dissociation may feel as though they come "out-of-the-blue." That is, they may feel unpredictable and uncontrollable. However, there are often some early signs that a person may be slipping into a flashback or a dissociative state. For example, a person's surroundings may begin to look "fuzzy," or someone may feel as though he is separating from or losing touch with his surroundings, other people, or even himself.

Flashbacks and dissociation are easier to cope with and prevent if you can catch them early on. Therefore, it is important to try to increase your awareness of early symptoms of flashbacks and dissociation. Next time you experience a flashback or dissociation, revisit what you were feeling and thinking just before the flashback or dissociation occurred. Try to identify as many early symptoms as possible. The more early warning signs you can come up with, the better able you will be to prevent future flashbacks or episodes of dissociation.

Grounding

As the name implies, grounding is a particular way of coping that is designed to "ground" you in the present moment. In doing so, you can retain your connection with the present moment and reduce the likelihood that you will slip into a flashback or dissociation.

To ground, you want to use the five senses (sound, touch, smell, taste, and sight). To connect with the here and now, you want to do something that will bring all your attention to the present moment. A couple of grounding techniques are described below.

- **Sound: Turn on loud music**
  Loud, jarring music will be hard to ignore. And as a result, your attention will be directed to that noise, bringing you into the present moment.

- **Touch: Grip a piece of ice**
  If you notice that you are slipping into a flashback or a dissociative state, hold onto a piece of ice. It will be difficult to direct your attention away from the extreme coldness of the ice, forcing you to stay in touch with the present moment.

- **Smell: Sniff some strong peppermint**
  When you smell something strong, it is very hard to focus on anything else. In this way, smelling peppermint can bring you into the present moment, slowing down or stopping altogether a flashback or an episode of dissociation.

- **Taste: a sense of taste Sweet, sour, salt & bitter**
  tastes produce saliva and sensation in the mouth, the swallow fluids via throat will the activation positive feedback loop and signal to the brain, that allow client to ground better. Often in taste likes the sourness of a lemon or bitter ginseng and the strong sensation it produces in your mouth when you bite into it can force you to stay in the present moment.

- **Sight: Take an inventory of everything around you**
  Connect with the present moment by listing everything around you. Identify all the colors you see. Count all the pieces of furniture around you. List off all the noises you hear. Taking an inventory of your immediate environment can directly connect you with the present moment.

Gardening

Everyday environment that familiar to the client the gardening having contact to the ground allow client to stabilising and feeling centre.

Religion: Praying

Praying in a form of activity of standing up or sitting down is encourage or any type of movement to grounding.

Note to counsellor: Other examples could be: Proprioception (both feet on the ground) as well as orientation to the present environment ("look around …" or the counsellor providing reminders of the nature of the present environment as has been described on p1 in *Strategies for mental distraction*).

Managing problems with thoughts
Adapted from Andrews, et al (2003, 530-533)

Rationale for client
People with PTSD are often troubled with memories or other unwanted thoughts about the trauma. It is important that you do not try to get rid of these thoughts and memories completely – thinking about what happened is an important part of coming to terms with it and putting it behind you. Equally, it is not helpful to be thinking about it all the time – that simply causes unnecessary distress and prevents you from getting on with your life. So it is a good idea to learn a few strategies to control these unwanted thoughts so you can limit them to times that do not interfere too much with other activities.
Instructions for clients

Distraction
With practice, distraction can be very effective. An example is just getting on with an activity that is absorbing (and hopefully enjoyable) to occupy your mind. Can you think of other things you could do to distract yourself? Passive activities (like reading, or watching TV) do not usually work, as your concentration may not be good enough. Rather, you may need to do something more active that involves both physical and mental aspects. Games, crafts, and other creative activities are often good.

It may also be good to practice a purely mental distraction technique that you can use anywhere, any time. There are many things you could try and the following list provides some examples. They are particularly good because no one else can see you doing them. You probably won't need to try to do them all – pick one or two that feel as though they may work for you and practice them regularly. Even with practice, you must expect the thoughts to intrude again from time to time. That's OK – just go back to the distracting thoughts as often as necessary.

Strategies for mental distraction

- *Count and relax*: breathe normally, as you might when you're just about to drop off to sleep. As you breathe in, count to yourself. As you breathe out, say "relax" to yourself. That is, when you breathe in, think "one"; as you breathe out think "relax"; as you breathe in, think "two"; as you breathe out, think "relax"; as you breathe in think "three"; as you breathe out, think "relax", and so on for 10 slow breaths several times a day. Don't worry if other thoughts intrude, just go back to the count and relax.

- *Focus* on a small area (e.g. a square metre on the wall opposite), or on an object, and describe it in minute detail – every line, shadow and shape.
- *Focus* on your surroundings with all your senses; describe in detail to yourself what you can see around you, what you can hear, what you can smell, what you can feel (sensory perceptions of touch, not emotions or anxiety symptoms). Try to describe five things you can see around you, five you can hear, five you can feel, and so on. This is particularly good as it keeps you in touch with reality "here and now".
- *Mental exercises*: e.g., counting backwards to yourself from 100 in 7s or naming an animal with each letter of the alphabet.
- *Describe* to yourself in great detail a happy experience from the past (e.g., a holiday, a family occasion, a favourite walk). Try to go through every aspect from start to finish.
- *Describe* in detail a place (perhaps from your past) where you feel safe, secure, relaxed, and happy. Where is it, what does it look like, and smell like, who is there with you, what time of day is it, how does it feel and so on.

Self-statements

Self-statements are another way of managing thought problems. When you think about it you may find that many of your thoughts lately are negative: worrying about the safety of yourself or others, concerned that you will never recover, and so on. These negative thoughts feed into your anxiety and distress, making it worse. Work out some simple things you can say to yourself to help you calm down and relax when you are in a difficult situation or when you are feeling overwhelmed by painful memories. Each event can be broken up into several stages.

Examples of self-statements for coping with stress

1. Preparing for a stressor

    - What is it I have to do?
    - What is the real likelihood of anything bad happening?
    - Don't focus on how bad I feel; think about what I can do about it.
    - I have the support of people who are experienced in dealing with these problems.
    - I have already come a long way towards recovery; I can go the rest of the way.

2. Confronting and handling a stressor

    - One step at a time; I can handle this.
    - Don't think about being afraid or anxious; think about what I am doing.
    - The feelings I'm having are a signal for me to use my coping skills.
    - There's no need to doubt myself. I have the skills I need to get through.
    - Focus on the plan. Relax, breathe easily; I'm ready to go.

3. Coping with feelings of being overwhelmed

    - Take a gentle breath and exhale slowly.
    - Focus on what is happening now, not what might happen; what is it I have to do?
    - I expect my fear to rise, but I can keep it manageable.
    - This will be over soon. I can do it.
    - This fear may slow me down, but I will not be incapacitated by it.
    - I may feel nauseated and want to avoid the situation, but I can deal with it.

4. Reinforcing self-statements

    - It was much easier than I thought.
    - I did – I got through it; each time it will be easier.
    - When I manage the thoughts in my head, I can manage my whole body.
    - I'm avoiding things less and less. I'm making progress.
    - One step at a time – easy does it. Nothing succeeds like success.

First, what can we say to ourselves when we are preparing for something difficult? This helps to re-evaluate the actual probability of the feared negative event happening. Following trauma, most people overestimate the likelihood of danger. Second, what can we say as we approach the difficult situation? This will help to reduce the desire to avoid and run away (which would only make it more difficult next time). The third stage is dealing with the feelings of anxiety and distress as they arise (to prevent them from becoming overwhelming), and the final stage is when looking back on the episode. Several examples of things you could try saying to yourself are listed above.

Read the examples carefully and work out a few self-statements you feel comfortable with. Then write them on a card that you can carry with you so it's handy when you need it. When you know you are about to do something difficult, it's a good idea to set aside some time to prepare specific cards for the occasion. For example, if you are going into the city you may write something like this on a small card that you can carry with you:

> It's natural to be nervous about going into the city given my traumatic experiences, but the likelihood of anything bad happening is very remote. Just relax and slow down my breathing. I may not feel great, but I can cope. Now, what is it I need to do?

Like everything else, the more you practice using these self-statements, the more effective they will be in helping you to manage your anxiety at difficult times.

IN THE WORLD OF EMOTIONS
(From Becoming Ourselves Again 2nd Edition)

Emotions arise to convey information. They are a response to changing states of external and internal environment, so they help us to understand our world and ourselves.
Emotions always want to tell something. There are many important insights into our personal situation that only emotions could provide: fear - signals that there is a danger; anger - that someone is penetrating our personal boundaries or that we are feeling violated; grief – that we have lost someone and something important and need to re orient or restructure our life accordingly…

But the society is engaged in ongoing campaign against emotions, accepting some aspects of our personality and rejecting others: "men should not feel fear, but it is ok if they feel anger! Women should not feel rage, they need to be soft, submissive…but, it is ok. if they feel fear…" "Never admit, even to yourself, that you feel envious!!....",etc.
Out of 7 deadly sins, 5 of them are emotions: pride, envy, lust, anger and greed…
Our life is based on the assumptions that there is something wrong with us if we feel them. So we try to fix ourselves
That is one of the reasons why we tend to 'mask' one unacceptable feeling with another, less threatening…For example, fear wears countless masks, many of which are not immediately recognise. The mask of fear could be anger, the need to control, jealousy, conflicts with others, or tension, irritability and frustration (which are often intrapsychic conflicts around inability to accept fear)…

However, the process of healing includes embracing all aspects of our being – both so called "the positive" and "negative" ones. (Actually, there are no "positive and negative" emotions – as that label indicates that some aspects of our life experiences are not acceptable. Would than be better to cal them "pleasant" and "unpleasant" feelings?).
We need to face our shadow selves and compassionately accept and heal these lost fragments of the psyche. This healing process requires digging deep inside, observing and confronting our wounded human self and all painful feelings, without classifying them as "good and bad". Every emotion we experience is an opportunity to learn and understand something about ourselves. But, if we are blocking or pushing away some emotional states (hatred, shame, humiliation, jealousy, envy, greed…), we find ourselves barricaded behind the very thing that we do not want ("What we resist it persists"); than we feel trapped because we cannot get away from the "negative" feeling.

There is a general belief that we can either suppress our feelings or express them –which usually means to "translate" them into some kind of behaviour or to 'act-out' them. But expressing or acting-out emotions is not the same as experiencing emotions directly. When we learn to feel the emotion, to fully experience it we no longer have to act it out. And than, thanks to the feedback provided with the emotion, and our ability to receive that feedback and consider the message in it, we are able to make the best possible choices in the particular situation in our life.

In an atmosphere where there is no judgement and hence no fear of "negative" emotions, it is unnecessary to wall ourselves off from our experience. In the safe environment that the counsellor provides for the client, following basic principles: 'Judge not/ Resist not/Accept all emotions and experiences', the client can feel free to explore, accept and integrate all his stressful or traumatic experiences, no matter how painful and "dark" they are.

But what does it mean to 'experience' emotions? It usually means to "be present to what it is in our world of emotions" and to 'align' all three levels of awareness: to understand them (on the mental level), to feel them (on the emotional level) and to sense them (on the body level).

It is not always easy to see the transformative effects of surrendering to "what is", and usually, when we introduce this concept of "unconditional accepting all emotions. "we can see the fear in the client's mind as he believes that if he accepts that "negative part of his personality' (such as the murderous rage towards the perpetrators who tortured or humiliated him; or hatred and spite towards the close family members…) he will be stuck with it for the rest of his life, or he might loose control over that strong affect and "do something dangerous…".
That's why it is important to understand the nature of emotions and why compassionate acceptance is our way out of emotional troubles, and that it is not a passive act of failure, defeat or giving up.
The magic of compassion works something like this:
The moment we sense the painful feeling, we say to ourselves, "I welcome this feeling. It doesn't have to go anywhere or change. It is a part of me and I accept it". The warmth (compassion), that is always there but we struggle with "access to it", moves over to this hard feeling and begins to smooth it. Our love and compassion for ourselves pour through this "unlovely" feeling and start dissolving it. Whatever we observe in our inner world transforms. Its energy moves and become unstuck; and problems related to that particular emotional state start to resolve themselves. The process of healing begins. That is the power of mindfulness!
Be become stronger and realise we can hold anything. There is no grief so great, no event so horrible, no fear so traumatic that we cannot hold it, open it and transform it. (That is what self empowerment is all about).

Then it is much easier for the clients to start noticing when they react to particular stressors in their lives, and to allow themselves to observe the feelings triggered by them, without judging themselves.

Chapter 8: Guilt

Psycho education: the goal of treatment for guilt

Guilt is a common response following loss and/or traumatic experiences with significant victimization (e.g., after war, personal victimization). When events result in severe traumatic reactions, multiple losses can occur. Guilt can occur not only in relationship to what we should have done, or shouldn't have done, but in relationship to our views about what we should be.

However, under traumatic circumstances, our reactions change and we can not be expected to do what we would do in normal circumstances. For this reason, weighing up responsibility based on normal settings for what happened during traumatic events may result in flawed assessment. Often, it doesn't even matter what type of trauma you have experienced (for example, physical, sexual abuse, combat or war). The experience of loss can be sufficient to awaken guilt in people, even if it is obviously not logical.

Rationale for clinicians: Understanding and assessing guilt

The emotion of guilt is connected with the perception of wrong-doing (of having violated a social or moral rule). A person may feel guilty without being consciously aware of it. Conscious and unconscious guilt may act as an underlying factor in behaviour, emotions and relationships. Following traumatic events, an individual may experience "real" guilt for acts of commission or omission that resulted in the physical or emotional harm of others.

Following traumatic events, guilt may be a complicated part of traumatic response; it is among the symptoms associated with more pronounced traumatic reactions. It also may result in hopelessness, depression and other problems such as self-harm or suicidal thoughts.

Guilt can undermine well-being, trauma recovery and positive relationships. Guilt can keep the person fixated in suffering; It will affect the quality of life, goal-setting and productivity. Sometimes, staying fixated on the guilty feelings, helps the person avoid other issues that are important to embark upon, falsely staying focused on the traumatic event. Although this avoidance might help functionality for a limited time, it will impede recovery and produces complications for the person and the people around them.

Whether for acts committed or omitted or for a sense of culpability, guilt can have a significant effect on the emotional and physical well-being of the guilty, the offended and others affected by the guilty party's behaviours and attitudes. Failure to resolve guilt can result in a multitude of problems including mental health difficulties (e.g., depression), negative responses from others, disrupted relationships, a more pronounced traumatic reaction, and/or immobilization.

On the other hand, guilt can also serve as a mobilizer. It can move us to re-examine ourselves

and our actions, and to act in a carefully considered positive manner that benefits the survivor and others who are affected by the event and/or the survivor's actions.

Note to counsellor: Shame is often spoken about when we look at guilt but they are quite distinct emotional experiences with shame being a far more primitive state that has very few cognitive aspects – people find it hard to talk about shame as it tends to be located deeper in our psyche.

Even though we might not agree that a client has done anything to feel guilty about, they might remain with a need to atone for something (and of course, they might have done something wrong and we do them a disservice when we reassure too much of their innocence). Rather than spend a lot of energy trying desperately to make things right, a clients might be assisted in identifying conscious, healthy behaviours that represent atonement (eg volunteering at an animal shelter if they carry guilt at having abandoned their pets when they fled).

Survivor guilt

Trauma survivors may also experience a particular type of trauma-related guilt, called survivor guilt. Survivor guilt is often experienced when a person has made it through some kind of traumatic event while others have not. They may question why they survived. They may even blame themself for surviving a traumatic event as if they did something wrong.

"Imagined" guilt (e.g., survivor guilt, guilt with an element of wishful thinking about one's ability to act) includes the types of guilt that occur in the absence of having acted harmfully. Both types of guilt include self-condemnation, and either can result in harm to self or others (e.g., through punishing acts to self or others).

Rationale for clients: What is cognitive behavioural therapy?

In cognitive therapy, your counsellor helps you understand and change how you think about your trauma. Your goal is to understand how certain thoughts about your trauma cause you stress and make your symptoms worse.

You can learn to identify thoughts about yourself, and specifically about your guilt, which are making you feel afraid or upset. With the help of your counsellor, you can learn to replace these thoughts with more helpful and less distressing thoughts.

After a traumatic event or a loss, you might blame yourself for things you couldn't have changed. For example, a soldier may feel guilty about decisions he or she had to make during war. Cognitive therapy, a type of CBT, helps you understand that the traumatic event you lived through was not your fault.

Self-blame, guilt and shame. Sometimes in trying to make sense of a traumatic event, you may blame yourself in some way. You may think you are responsible for bad things that happened, or for surviving when others didn't. You may feel guilty for what you did or did not do. Remember, we all tend to be our own worst critics. Most of the time that guilt, shame or self-blame is not justified.

Treatment: Addressing trauma-related guilt

Trauma-related guilt can be treated through CBT. Trauma-related guilt may originate in how you think or interpret a situation.

For instance, a rape survivor may feel like she should have seen her attack coming, even though it was impossible for her to predict that the assault would occur. Likewise, a combat veteran may think to himself that he should have done something different to prevent the death of a fellow soldier even though the event may have been completely out of her control.

Cognitive-behavioral therapy for trauma-related guilt focuses on helping people become more aware of the thoughts or beliefs that underlie feelings of guilt, such as through self-monitoring.

By reducing guilt, cognitive-behavioral therapy may also help increase self-compassion and acceptance.

Cognitive restructuring (see also Chapter 4: Cognitive restructuring) is preferred for patients who exhibit guilt and thoughts about responsibility. Cognitive restructuring should be considered, especially when PTSD is characterized by guilt or shame or when response to exposure alone is suboptimal.

Cognitive restructuring is used to:

- help the client alter the meaning of their traumatic events.
- replace unhelpful thoughts with more helpful and positive thoughts and beliefs
- address unhelpful thoughts and beliefs
- In vivo exposure to the events which led to guilt feelings

6 steps of cognitive restructuring

- Client identifies a situation which made them feel the guilt

- Client identifies the specific emotions elicited by guilt feeling and rates intensity of those emotions on a 1-10 scale

- Identifying thoughts involved with the negative emotions and rate the degree to which clients believe each thought.

- Gathering evidence that supports the thoughts associated with the guilt feelings and evidence that does not support the feelings.

- Client generates rational or helpful response (for example using terms such as even though/although/yet).

- Client re-rates all the negative thoughts and emotions and review.

Antecedents, Behaviour, Consequences Model
The Antecedents, Behaviour, Consequences (ABC) Model is a formalized model for examining behaviour (symptoms) in a larger context. It assumes that *behaviours* are largely determined by *antecedents* (events that precede behaviour/thoughts/mood) and *consequences* (events that follow the behaviour/thoughts/mood).
The client may be asked to consider this context with questions such as:

"What were you feeling right before you felt that?" (Affective);
"What happens to you physically before this happens? Do you feel sick?" (Somatic); "How do you normally act right before this happens?" (Behavioural)
"What thoughts go through your mind before this happens?" (Cognitive)
"Where and when does this usually happen?" (Contextual)
"Do you feel this with everyone, or just when you are around certain people?" (Relational).

- Note to counsellor:- As part of cognitive restructuring: clients sometimes feel guilty because they believe that their actions brought about what happened to them. One strategy to help with this is to rewind back in time and have the client remember the moment just before they completed the action or behaviour that they believe caused the trauma (ie: evidence checking). Ask them why they decided to do this – what information did they have available to them at the time? This can help them to realise that they made the best possible decision at that moment in time, based on the information available to them.
- Bringing in the voice of their child, parent, or relative into the room. What would they say about the situation? How did they feel about what you did/didn't do? What would you say to them? You will show compassion to family but not yourself.
- Control/lack of control – would they have made another decision at another time? Why? What were the restrictions at this time? Re-assessing the situation in hindsight.

Potential goals for re-assessing negative/positive thoughts in survivor guilt

Thank goodness, you survived!
- more people than you know are happy that you survived
- we are saddened by so many deaths
- even if the rest of your life seems insignificant to you, we are relieved that you are alive

Know that there is no offense in surviving
- it is good to survive
- it is okay to delight in being alive

Feel free to reassess your life
- reassess what is valuable to you
- make the best of your life
- making the best of your life can be a tribute to your survival and to those who died
. take the opportunity to reevaluate the meaning of your life
. is your life all it can be?
. what is or can be your purpose? your talent? your benefit to life?
- bloom where you're planted
. process the traumatic experience and its associated symptoms with appropriate assistance
. put guilt to good use

If it is in your nature to do so, cherish life
- treasure being alive
. whether you survived due to fate, a purpose, luck, chance, or "just did," long life and kindness are not guaranteed to any of us
. each day and each act of kindness can be treasured as gifts
- treasure the best of each day
- be aware of your physical mortality in good and positive ways
- allow that cherishing life may be easier after recovery from trauma

Recognize the re-awakening of old issues
- survival may have triggered old feelings of worthlessness or unworthiness
- surviving may have amplified old messages that you received about not being worthy, about being a nuisance, about not measuring up, and/or about not counting

Chapter 9: Grief

Grief is a normal response to loss. This response can have physical, emotional, cognitive and behavioural dimensions. Bereavement is loss due to the death of family or close friends. (Public Health Agency, Northern Ireland, 2012)

Eventually we will all experience the death of someone close to us, and it is a more common experience as we get older. Over the course of our lives we are likely to experience the death of parents and other family members, and of friends and colleagues.

When someone dies we enter into the process of grieving. This is not just one feeling but can be a whole range of feelings that are part of a grieving process and with coming to terms with the death.

Although there is no right or wrong way to grieve, common feelings include being stunned at the loss, not believing that the event has actually happened, longing for the deceased person, anger towards yourself, health carers or others, guilt over a last encounter or what you would have liked them to know, and sadness or depression.

It is not unusual for the bereaved person to think they hear or see the deceased person in their daily lives. This is not uncommon and can be part of the grieving process.

Traumatic loss (Cruse Bereavement Care, 2013)

A traumatic loss is one that is sudden, unexpected, and often results from horrific or frightening circumstances. Here we provide information for those affected by natural disaster, terrorist attack, suicide and other traumatic losses.

- **Traumatic loss**
- **Psycho education: Problems of traumatic grief**

'I can’t believe it’s true'

Losses for which we are unprepared, particularly if we can't be present or to hold or touch those we have lost, are difficult to make real.

What helps?

It takes a long time to take in what has happened. Spend time talking it through with others and don't worry that you are being a burden to them, that's what friends are for. Many people might find it helpful to:

- visit the place where the disaster took place
- talk with others involved
- place a wreath in a significant place
- attend memorial services or other rituals of remembrance.

In the end, there may be aspects of the loss that will never be explained. Be prepared to live with the uncertainty of not knowing; we cannot explain or control everything.

'I can't get it out of my head'

Many people are haunted by pictures in their minds of the traumatic event. While this is most likely to become a problem for eye-witnesses, television or other pictures can also 'bring home' the awfulness of the way a person might have died. Such images may occur spontaneously or, in a distorted form, as recurrent nightmares. They may be triggered by any reminder of the loss, e.g. loud noises, cries or shouts.

Some people go to great lengths to avoid any such reminders because the images are so painful. They may shut themselves up at home, avoid talking about the loss, and distract themselves with hectic activity. This kind of reaction is not uncommon and will usually improve with time. However in severe form it may become so disabling that it becomes known as 'Post-Traumatic Stress Disorder' (PTSD).

What helps?

Haunting images can sometimes be eased by talking to others, going over the events again and again until you get used to them. The images will not disappear but they will become less painful and easier to live with. If the images are stopping you from grieving or getting on with your life, then you should consult a psychiatrist or psychologist. Very effective treatments for PTSD have been developed in recent years. They do not necessarily require the prescription of medication, although this may help.

- **Problems of Grieving**

'I feel numb'

Numbness is our mind's way of protecting itself from mental pain that threatens to over-whelm us. Sometimes we may be unable to think clearly, or become confused and lose our bearings. At other times we may be unable to express feelings of any kind. In an emergency it is such 'dissociation' that enables us to keep going, searching for a lost person or engaging

in the rescue of others. It is only if it continues after the disaster is over that it becomes a problem. Usually this reflects a fear that, if we do not keep our feelings firmly under control, they will take control of us.

What helps?

Grief is the natural response to the loss of a loved person. It is more likely to give rise to problems if it is bottled up than if it is expressed. At times of loss it is normal and appropriate to express grief in any way that feels natural. Some people need to cry, others will rage and others just talk endlessly about what has happened. Try to find someone you can trust who will be a good listener and don't worry if, for a while, you look or feel helpless, that will pass. In grieving we do not forget the people we love, we gradually find new ways to remember them. Memories of the past are sometimes painful but they are our treasure, it is best not to bury them for too long. Paradoxically, if we allow ourselves to lose control of our feelings, for a while, we shall find ourselves better able to live with and to control them.

'I can't stop crying'

Grief can continue much longer than most people expect. We need to recognise that fact and not expect too much of ourselves. This said, there are some types of grief which become "stuck". Sometimes this reflects our need to punish ourselves – 'Why should I be happy now that he or she is dead?' This is most likely to arise if it is a child who has died, or if we blame ourselves for their death or for not being there for them when needed. At other times it reflects long-standing feelings of depression or helplessness.

What helps?

Grief is not like the measles, we do not go back to being the person we were before our loss. We learn to live with it, and, little by little, the pain will diminish. Grief is not a duty to the dead, those we love would not want us to suffer. Again, talking it through with a friend or bereavement volunteer from Cruse will usually help. If that is not enough or you feel continually depressed or suicidal, you should not hesitate to seek specialist help. Several treatments including Cognitive Therapies, Psycho-therapies and anti-depressant medications will be of help and it is worth discussing with your GP which of these alternatives are available and appropriate to you. Don't give up.

- **Problems of Anger and Self-Reproach**

(see also Chapter 11: Anger; and Chapter 8: Guilt)

'I feel so angry'

Anger is a very natural reaction to loss, particularly if it was caused by terrorism or other human hands. It may be directed against the perpetrators of the trauma, or against all

authorities or the people nearest to hand. Some people may find themselves hitting out wildly at the people they love the best. Occasionally ill-directed anger may even feed into or bring about a cycle of violence.

What helps?

Remember that anger can be a force for good if it is controlled and directed where it can do well rather than harm. Try to hold back from impulsive outbursts and, if you have said or done things that have hurt others, don't be too proud to apologise. They will understand.

'I blame myself, I feel so guilty'

None of us is perfect and it is easy to seize on something that we did or didn't do in our attempt to find someone to blame. Often, people end up blaming themselves. At the back of our minds we may even cling to the idea that, if we punish ourselves we will make things right again and get back the person we have lost. Sadly this magical thinking is doomed to fail.

What helps?

Sooner or later we have to accept that what has happened is irrevocable and that punishing ourselves won't change anything. Friends will often say 'You shouldn't blame yourself', and maybe they are right. But you do not choose the way you feel. Guilt and anger are not feelings that can be switched on and off at will. Rather we should try to find a creative use for our grief, to bring something good out of the bad thing that has happened.

- **Problems of Change**

'I feel so frightened'

We all know that disasters happen, but most of the time we go through life with confidence that we are safe, protected from harm and immune from significant trauma. Then disaster strikes, all in a moment the world has become a dangerous place, we can take nothing for granted, we are waiting for the next disaster. Fear causes bodily symptoms including tense muscles, racing heart, sweating, breathlessness and sleeplessness - all symptoms which, in the environment in which we evolved would have helped us to stay alive in situations of danger. But in today's world they do no such thing and are more likely to be misinterpreted as symptoms of illness.

What helps?

The first and most important thing is to recognise that the symptoms of fear are a sign of normality, at such times a racing heart is a normal heart, headaches, back aches, indigestion, even feelings of panic, are natural reactions that will decline as time passes, they are not symptoms that will lead to something worse. In addition you are not as helpless as you feel. Relaxation exercises, meditation techniques, aromatherapy or whatever helps to relax you will put you back in control.

This said, you should not expect to go back to being the secure, confident person that you were before the disaster struck. You have learned the hard way that life is never - and never was - completely safe. You have lost the illusion of invulnerability and will never quite regain it. You are older and sadder as a result. But you are also more mature. You have learned that life has its dark side, but that does not mean that you need live your life in perpetual fear. The world today is no more dangerous than it was before the disaster. Previously you had an illusion of safety, the feeling of danger is equally illusory, and it will grow less. Human beings evolved to cope with a much more dangerous world than the one in which we live today. You, and those with you, will survive.

'Life has lost its meaning'

Each person's sense of purpose and direction in life arises from a hundred and one habits of thought and assumptions about the world that we take for granted. Then, all of a sudden, we can take nothing for granted any more. Perhaps the person who died is the one we would have turned to at times of trouble and now, when we face the biggest trouble in our lives, they are not there, or, if they are, they are so overwhelmed by their own grief that we cannot burden them with ours.

What helps?

Those who have a religious faith may find it helpful to seek pastoral support; others may find spiritual help outside of formal religious frameworks. When faced with a disaster of this magnitude it takes time and hard work to adjust. It is rather like learning to cope with the loss of a limb. For a while we will feel crippled, mutilated, as if a part of ourselves is missing.

We feel as if we had lost every good thing that relied on the presence of the person we love for its meaning. But take heart, all is not lost. Now is the time to take stock, and ask yourself what really matters? When we do that we may be surprised to find that many of the things that made sense of our lives when the lost person was with us continue to make sense of our lives now that they are away. Indeed they may make more sense because they are away. When people say 'He (or she) lives on in my memory', this is literally true.

Chapter 10: Pain

There are two components to any experience of pain.

There is **the sensory component**, which provides basic information about the location and quality of the pain e.g. "a persistent dull burning ache in the foot"; and there is also **the affective component**, or how much this pain bothers us.

If we are listening to some music on the radio, the loudness of the music corresponds to **the sensory component** of the pain experience; and how pleasant or unpleasant we find this music corresponds to **the affective component**.

Using a pain scale to subjectively rate pain (on a range of 0 to 10) is valuable for assessment and for evaluating and recording the impact of treatment. Three alternative formats are shown at the end of this chapter.

Instructions to client

This is presented in the form of a script for a guided reflection.

Rate the affective component of your pain on an imaginary scale in which "0" corresponds to no intensity at all, and "10" is as intense a pain as you can imagine.

Now rate the affective part of your pain using the same scale in which "0" corresponds to "not bothersome at all" and "10" to being "bothered as much as you can imagine". You probably know that the relationship between mind and body is a powerful one. But you might not yet know just how helpful our ability to become deeply absorbed by our imaginations can be (Barber, 1996).

If you feel ready to begin to use your capacity for imagination to retrain your nervous system to help you feel better, why not just rest back in your chair right now, and allow your body to be as comfortable as you know how. That's right …..

Close your eyes, and take a very deep, relaxing breath, and hold it…, hold it…. And now, let it all the way out, as you sink deeper and deeper into the chair.

As you continue to allow yourself to breathe comfortably and restfully, as you notice the pleasant heaviness that can become more and more a part of your awareness ….. as you notice these things, I will be taking to you, and you can notice how easily you hear the sound of your voice, without having to listen. And you can understand what I say to you without any particular effort.

And all the while, the sounds around you …all the sounds you can hear …. can become more and more a part …. of your experience of comfort and well-being….with nothing to bother you… and nothing to disturb you. Just notice your breathing, pay attention to your breathing, and notice how easily you can discover that nothing else matters… nothing at all… just your comfort.

As you allow yourself to become more and more absorbed by the comfort of your breathing, you can also notice that it is more and more interesting to continue… to continue to feel each breath…as you breathe in, and as you breathe out. It's almost as if your breathing, and your awareness of your breathing, is all that matters. As if there really is nothing else at all … just your breathing, and your comfort.

You might also have begun to notice the interesting tingling sensations in the tips of your fingers. A pleasant, glowing sensation… and this interesting sensation can radiate up your finger tips, and into your hands…. Almost all of the way up into your wrists. A tingling sensation that seems to remind you of how deeply absorbed you can be… how deeply comfortable you can be.

You might notice a similar tingling sensation around your mouth and lips…. and perhaps, too, in your lower back. You might even notice this pleasant tingling sensation in the soles of your feet. You might begin to feel almost as if you are *glowing* with energy. Glowing, tingling, breathing, all in a comforting rhythm. Allowing the sound of my voice to continue to be a part of your comfort.

As you continue to feel more and more absorbed by the sensation of your breathing. I'm going to talk to that part of you that controls the sensations in your nerves. You can listen to me, or you can just float so comfortably, knowing that your nervous system is hearing everything that I'm saying to you.

It is so curious, and so very interesting…that you have the capacity to increase or decrease the sensations throughout your body. And I imagine you will feel very interested in the way that you can decrease the sensations in just that part of your body. You won't really know how you do it… at least, at first. You can be curious, you can be surprised… and you can simply notice that, … for some reason, they will just stop. Almost like a sneeze that never quite happens.

The first few times, you'll have the sense that a pain is coming, but somehow… you won't know how, at first… somehow, the sensation just seems to stop, almost before it can quite get started. Almost as if your nervous system is beginning, already to retrain those nerves to no longer send those awful, painful messages.

And, sometime later today… I don't really know when that will be … maybe ten minutes before five this afternoon…. or maybe it will more likely be ten minutes *after* five this afternoon…but I really don't know when it will be… that you will suddenly notice… how really well you are feeling… but then again, I don't really know. It may not be so mush the

time on the clock that's important here. It may be that what you are doing at that time is what is important.

Maybe you will be lifting a cup to your lips. Or, I don't know… maybe you'll be turning the pages of a book… I really can't know what you'll be doing, when you will suddenly… turn your head very slightly, almost as if you're trying to catch sight of something just out of your awareness… and, at the same time, notice how much better you're feeling than you ordinarily expect you will feel.

And you won't know how… you won't know why, really. You'll just know how you feel. *Better….. just better*.

And tomorrow morning, after you awaken, you can feel really surprised at how well you've slept, and how really rested you feel… with nothing to bother you, and nothing to disturb you.

And whenever you want to feel this kind of relaxation and comfort, all you have to do is ….rest back, in a chair, or sofa, or bed… and take a very deep, very satisfying breath, and hold it…. Hold it for a moment. Then, as you let it all the way out, these feelings …of comfort and well being… will automatically come washing over you… just like water in a hot tub… with nothing to bother you, and nothing to disturb you.

So, in a moment, when I ask you to, you can notice how really easily you find yourself breathing just a bit differently. As if each breath begins to feel more and more refreshing, and more and more energising. And, then, as your eyes open, you'll notice how really clear and awake you feel… and, maybe, how ready you are to feel surprised.

That's right, really deep breaths… more and more refreshed. Notice, now, as your eyes open, how alert…how refreshed you are. Almost as if you've just had a very restful nap.

General training in open focus

The purpose of this exercise is to develop a deep sense of space in, around, and through the body to facilitate the release of tension and pain. It is recommended that the client initially practices this exercise with eyes closed.

[If reading this exercise aloud as a guided practice, allow 15 seconds between the end of one question and the beginning of the next question.]

Guiding questions

Can you imagine that no effort is required to listen to or imagine what follows?

Can you imagine what it would be like not to concentrate - neither focusing upon nor focusing away from listening to the following questions?

Can you imagine that your imagination is very subtle and effortless and includes all your senses, not just visualisation.

Can you imagine letting your multisensory imagination respond however it may as you listen to the following questions?

Can you imagine letting your awareness centre itself on body feeling without excluding the senses of hearing, seeing, tasting, smelling, mental activity, and the sense of time?

Is it possible for you to imagine what it would feel like to sense the three-dimensional presence of your thumbs?

Is it possible for you now to imagine what it would feel like to experiences the presence of your thumbs even more sensitively than you already are?

Is it possible for you now to imagine what it would feel like if you were already experiencing your index fingers 9the fingers closest to your thumbs) as intimately as you are sensing your thumbs?

Can you imagine experiencing the three-dimensional presence of your thumbs and index fingers simultaneously?

Is it possible for you to imagine what it would feel like if you could experience the presence of your thumb and index finger on both hands and also sense the absence between your thumb and index finger on each hand simultaneously?

Can you imagine that the sense of absence in the space between your thumb and index finger can be experienced as intimately and as sensitively as you experience the sense of presence of your thumbs and index fingers?

Can you imagine the fact that your fingers are made up of atoms of matter? An atom of matter is composed of a nucleus with electrons revolving about it. The nucleus of an atom is two hundred thousand times smaller than the diameter of the atom. The electrons are many times smaller than the nucleus. In other words, can you imagine the reality that an atom of matter consists of millions of times more space than solid matter?

Can you imagine that your fingers are made up of atoms, clouds of tiny particles revolving around one another, floating in a vast space, a space that flows from outside your fingers through the spaces between the particles, in every direction?

Can you imagine that your thumbs and index fingers are clouds of particles floating in space, right where they actually are, surrounded by space and permeated by space?

Can you imagine feeling the space even more subtly and intimately?

Can you imagine experiencing your middle fingers as intimately as your thumbs and index fingers – filled with space, surrounded by space, permeated by space?

Can you imagine experiencing your ring fingers filled with space – clouds of particles, permeated by space?

Can you imagine experiencing your little fingers as fogs of feeling, permeated by space?

Can you imagine experiencing the space surrounding and permeating the clouds of feeling of all your fingers simultaneously?

Can you imagine letting this sensation of absence and presence serve as a model for experiencing other portions of your body?

For example, is it possible for you to imagine that your hands are filled with space, surrounded by space, permeated by space, and can you imagine experiencing the space of your hands and fingers as intimately as you experience the space of your fingers alone?

Can you imagine what it would feel like to experience your feet and toes as clouds of particles floating in space – as intimately as you now experience the space permeating your hands and fingers?

Can you imagine experiencing your wrists and forearms, your elbows and upper arms, filled with space, surrounded by space, just as sensitively as you experience the space of your hands and fingers?

Can you imagine experiencing your arms, hands and fingers, and your feet and toes, and now your ankles, lower legs, knees, and upper legs as clouds of feeling, permeated by space, as intimately and subtly as you feel the space of your hands and fingers and feet and toes?

Can you imagine the three-dimensional presence of your shoulders and the region between your shoulders as being filled with space, surrounded by space, permeated by space? Can you imagine experiencing this as intimately and as subtly as you feel the space of your hands and fingers, feet and toes, arms and legs?

Can you imagine experiencing your hips, the region between your hips, and your buttocks as a fog of feeling permeated by space?

Can you imagine experiencing your abdomen and navel and the region between these and your back, and your internal organs (including reproductive, eliminative, and digestive organs) as mists of feeling permeated by space?

Can you imagine what it would feel like to sense your chest and back, the region between your ribs, and all the organs inside your rib cage 9including your lungs, heart, and oesophagus) permeated by space – clouds of particles floating in space?

Is it possible for you to imagine what it would feel like to experience your neck and your throat filled with space, surrounded by space, permeated by space?

Is it possible for you to imagine experiencing your whole body from the neck down as a cloud of particles surrounded by space, permeated by space – just as sensitively as you experience the space of your hands and fingers, feet and toes?

Can you imagine that as you inhale and exhale naturally, you can feel the space inside your entire respiratory system?

Can you imagine that as you inhale naturally, you can experience your breath flowing up behind and around your eyes?

Is it possible for you to imagine that your lips are clouds of feeling filled with space, permeated by space?

Is it possible for you to imagine what it would feel like to experience your tongue, teeth and gums, jaw and chin, cheeks and cheekbones, and the regions between them filled with space, permeated by space – just as sensitively and intimately as you experience the space of your lips, hands and fingers, feet and toes?

Can you imagine the space inside your ears and the space between your ears, as intimately as you experience the space inside and between your lips, hands and fingers, feet and toes?

Can you imagine the space between your eyes and the space between each eye and the nearest temple?

Can you imagine what it would feel like to sense the space touching and permeating your eyes and eyelids, in front, behind, on the sides, and the space above and below your eyes, as intimately as you experience the space touching and permeating your lips and fingers?

Can you imagine experiencing your eyebrows, forehead, temples, the sides of your head, the back of your head, and the tip of your head as being touched and permeated by space?

Can you imagine experiencing the space between your eyelids and the back of your head?

Can you imagine now sensing your whole body simultaneously as a cloud of particles, a fog of feeling, a mist of emotion, floating in space, permeated by space – just as sensitively as you experience the space of your hands, fingers, feet, and toes?

Can you imagine feeling also the space in the whole room – in addition to the space permeating you, other people, and the objects in the room?

In addition to feeling the space, can you imagine visualising the space in the whole room?

Can you imagine hearing the three-dimensional silence in the space of the room, the silence out of which sounds arise, the silence in which sounds exist and into which they fade?

Can you imagine space surrounding and permeating the thoughts, visual images, and internal dialogues of your mind as space permeates and surrounds your entire body, feelings, and emotions?

Can you imagine seeing space, feeling space, hearing silence, and experiencing the space in your mind, all simultaneously?

Can you imagine experiencing also the sensory space in which tastes and smells occur?

Is it possible for you now to experience the space of these six senses simultaneously and equally? Can you imagine feeling space, seeing space, hearing silence, experiencing mind-space, and the space in which tastes and smells occur?

Can you imagine now including within your awareness a seventh space: the space in which you simultaneously sense past, present, and future time – a space called timelessness?

Can you imagine that the aspect of awareness that is simultaneously and effortlessly witnessing these seven spaces is also a cloud surrounded and permeated by space?

Can you imagine that this cloud of awareness can now diffuse throughout your experience of these seven spaces, witnessing these spaces from inside these spaces, immersing awareness throughout these spaces, experiencing these spaces more intimately, more subtly, more sensitively, equally, and simultaneously?

Is it possible for you to imagine participating in your everyday activities with the awareness you are experiencing now – that is, in Open Focus?

Can you imagine practicing these exercises at least twice daily?

Dissolving Pain

This exercise helps you to dissolve any pain present in your body. A beginner to this process may benefit by doing the General Training exercise first, followed immediately by this Dissolving Pain exercise.

When pain is absent consider using this exercise for dissolving the pressure of the chair upon your body, a sense of gravity, or a sense of self.

[Allow 15 second between the end of one question and the beginning of the next.]

Guiding Questions

Can you imagine adopting a gently correct posture and moving as little as possible with your eyes closed?

Can you imagine feeling the space that the whole room occupies?

Can you imagine feeling the space that your whole body occupies?

Is it possible for you to imagine feeling the space of the whole room you are in and the space your entire body occupies simultaneously?

Is it possible for you to imagine that as you inhale naturally, your breath fills the entire volume of your body?

And can you imagine that as you exhale naturally and as your breath leaves your body, your body is left occupied by space?

At the same time you're aware of the space your body occupies, is it possible for you to imagine the space on all sides of your body simultaneously?

At the same time you're aware of the space inside and the space outside of your body, can you imagine feeling the volume of any pain or discomfort you may experience?

Is it possible for you to imagine the length, width, and thickness-the dimensions and shape-of any pain or discomfort you may feel?

Can you imagine feeling the space between the centre of the pain or discomfort you feel and the back of your body?

Can you imagine feeling the space between the centre of the pain or discomfort you feel and the front of your body?

Is it possible you to imagine feeling the space between the centre of your pain and the top of your head?

Can you imagine feeling the space between your pain and the space inside your ears?

Can you imagine feeling the space between your pain and the space inside your mouth and cheeks?

Can you imagine feeling the space between your pain and the space inside your throat?

Is it possible for you to imagine feeling the space between your pain and the space inside your stomach?

Can you imagine feeling the space between your pain and the space inside your lower trunk, midsection, upper trunk, neck, head limbs, digits, and internal organs?

Is it possible for you to imagine feeling the space between your pain and the closest part of your spine?

Is it possible for you to imagine that as you inhale naturally, your breath flows though the heart of your pain?

Can you imagine that as you exhale naturally, your breath flows through the heart of your pain?

Is it possible for you to imagine that you neither reject nor encourage the feeling of pain?

Can you imagine fully accepting the feeling presence of your pain but neither encouraging nor avoiding it in any way?

Can you imagine allowing your pain to diffuse in any direction and through any region of your body where it may naturally and effortlessly go?

Is it possible for you to imagine feeling the surface area of your entire body and at the same time remain open to the feeling of your pain in the centre of your awareness?

Can you imagine feeling that the boundaries of your body are gradually dissolving, so that the space inside and the space outside of your body become continuous?

And at the same time, can you imagine that the boundaries of your pain are also dissolving, allowing your pain to spread in every direction?

At the same time you're aware of feeling your pain, is it possible for you also to attend equally to any other sensations and perceptions that are available-tastes, smells, thoughts, images, sounds, body feelings, or emotions-attending equally and simultaneously to these sensations and to the three dimensional space in which they exist?

Can you imagine that this three dimensional space permeates and pervades all of your sensations and perceptions, and your pain?

Can you imagine gently narrowing your attention and centering it upon the pain that you experience?

Can you imagine that this awareness, which is you, can intermingle with the pain, at the body location where you perceive the pain to be, gently, effortlessly moving through the pain and also letting the pain spread through you?

As awareness and pain intermingle, is it possible for you to imagine that this awareness, which is you, can dissolve right into the pain-and the pain can permeate your awareness-each remaining vulnerable to space?

As you reach the heart of the pain-that part of the pain that is most intense, the centre of the pain-can you imagine gradually opening your awareness once again and allowing the pain to spread into and through the centre of your awareness and experiencing all of the other sensations and perceptions that are available to you, to be attended to equally and simultaneously in three-dimensional space?

Can you imagine that in Open focus attention, there needn't be any movement?

Can you imagine that Open Focus is an effortless process of attention in which you can rest and function as well?

Is it possible for you to narrow your attention, and as you direct it toward your pain, is it possible for you to imagine that you can open yourself to the experience of pain more subtly and more completely as you approach it? And can you imagine allowing the pain to spread through this awareness-space, which is you?

And can you imagine that as you begin to enter the pain, you even more completely open yourself, making yourself more vulnerable to the experience of pain, surrendering yourself right into the heart, the centre of the pain? And just as you experience the most intense part of the pain, can you imagine once again letting the pain spread through you and your body and space and opening your attention to include all that is you-all attention styles, sensations, perceptions, emotions, and feelings, including the pain-all simultaneously and equally and once again coming to rest in multisensory space?

Once again, can you imagine guiding your attention toward your pain? And at the same time, can you imagine moving toward the pain and opening yourself more completely and more totally to the full experience of whatever pain you may encounter, surrendering yourself finally into the heart essence of the pain until, just as you experience the maximum pain, you once again let your pain spread through your open attention, your Open Focus, to include also all other sensations and perceptions that are present, coming to rest once again in Open Focus?

Can you imagine repeating this cycle, starting in an Open Focus permeated by three dimensional and multisensory space and narrowing your attention and directing it toward the pain, and moving toward the pain and fully experiencing all of your pain until you have

experienced the most intense part of your pain, letting the pain spread through awareness-space and returning to Open-Focus attention?

Can you imagine repeating this cycle at your own pace until your pain dissolves completely?

Rating pain: A subjective numerical rating of pain is valuable for assessment and for evaluating and recording the impact of treatment. Three alternative formats are shown below (Department of Health, Victoria, Australia, 2013):
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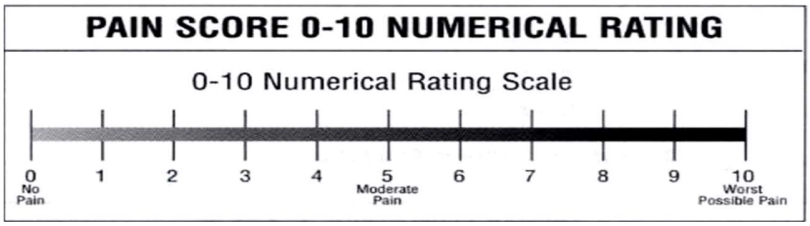
1. **Numerical rating scale (NRS)**



Instruct the client to choose a number from 0 to 10 that best describes their current pain. 0 would mean 'No pain' and 10 would mean 'Worst possible pain'.

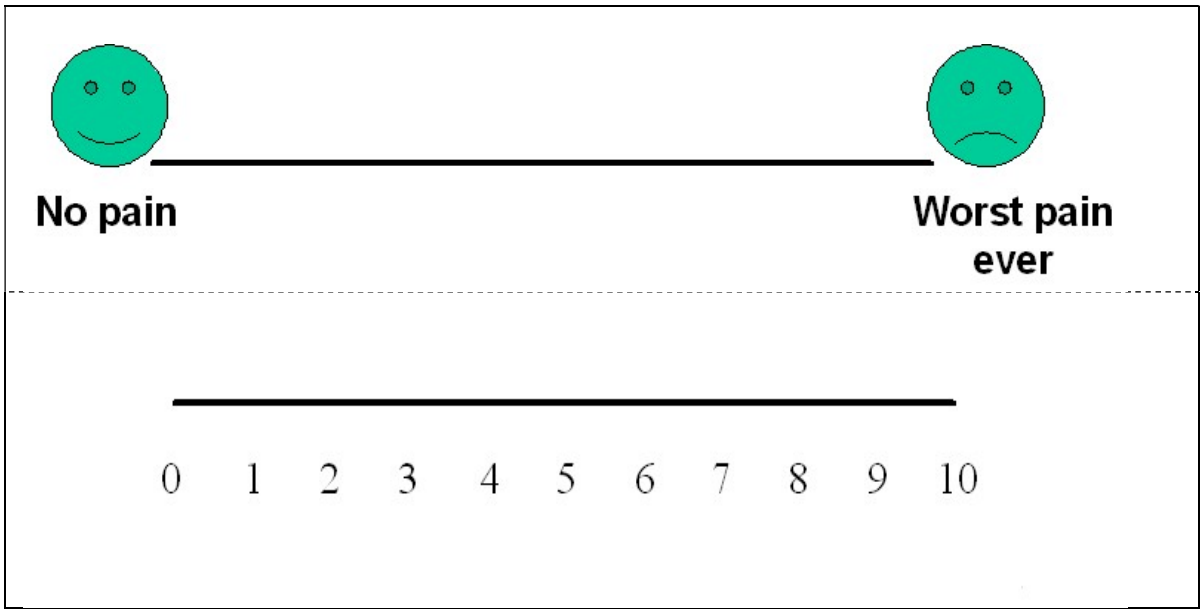
2. **Faces rating scale (FRS)**

Adults who have difficulty using the numbers on the visual/numerical rating scales can be assisted with the use of the six facial expressions suggesting various pain intensities. Ask the patient to choose the face that best describes how they feel. The far left face indicates 'No hurt' and the far right face indicates 'Hurts worst'. Document number below the face chosen.

3. Visual analogue scale (VAS)

Instructions for producing a VAS card:

- Print or photocopy the diagram on an A4 sheet ensuring that the lines are exactly 10cm in length
- Fold at the dotted line
- Do not show the client the numbered scale



Instruct the client to point to the position on the line between the faces to indicate how much pain they are currently feeling. The far left end indicates 'No pain' and the far right end indicates 'Worst pain ever'.

Chapter 11: Anger

Anger is a common emotion and is only a problem when it is too distressing or disabling, whether for the person themself or for others around them. Anger is normally a useful emotion which can help to identify and signal the need for a behavioural response in an unsatisfactory situation, often in a social context. Anger may be part of a reaction to perceived unfairness, injustice or abuse. It can also be part of a response to frustration, danger, being disregarded or misunderstood.

Problems with regulating anger in PTSD are often linked to unhelpful behaviours such as irritability, interpersonal conflict and social withdrawal.

Anger should not be confused with violence - physical or verbal. Everyone can be angry without being violent; and people can be violent without anger.

If a client discloses perpetrating or planning violence, this should be managed through an ethical and legal framework and not a therapeutic approach. The safety of others, especially children, should take priority over confidentiality and issues of completing the current treatment.

Arousal and anger

adapted from Andrews, et al (2003, 534)

Strategies for dealing with anxiety are also useful for dealing with anger (See Chapter 2 of the CBT manual discusses the techniques for the therapist to help the client to cope during treatment). Anger often acts as a stumbling block to recovery, preventing you from moving on to the next stage of treatment. The physical aspects of tension and high arousal are similar in both anxiety and anger, but the triggers that set off the feelings will often be different. Try to identify the kinds of situation that lead you to become angry. The first step in managing anger is being prepared for it. Take a sheet of paper and jot down a list of things that are likely to set you off. A major difficulty with anger is that it escalates so quickly it becomes hard to control. If you can recognise the warning signs and intervene early, you will have a much better chance of doing something about it. Think back to the last time you were angry and jot down a list of the first signs that appeared. (What happened to you physically? What happened to your thoughts? What happened to your behaviour?) Once you are more aware of the triggers and the early warning signs, you will be in a much better position to use the strategies described above to control your anger.

Three extra strategies that people find useful for dealing with anger in PTSD are:

Delay: Because anger escalates very quickly, find a way to stop yourself making the first angry response. Take a few slow, easy breaths and count to 10 before you react.

Time Out: If you feel the anger beginning to escalate, try to remove yourself from the situation. This does not mean storming out in a rage. It means explaining to the person you are with that you are not thinking too clearly and that you need a 5-minute break. Go outside or into another room and use some of your anxiety-reduction strategies to calm down. Then go back and try again.

Planning: Once you have identified the triggers, it is important to use that information to prepare yourself for high risk situations. If you are going to do something that you know is likely to make you angry, choose a good moment (e.g., no other distractions, not too tired or hungry, plenty of time). Practice what you will do or say beforehand.

From STARTTS brochure for the clients "Becoming Yourself Again":

HOW TO DEAL WITH ANGER AND UNPLEASANT FEELINGS

Imagine the following situation: you are driving and someone in front of you starts to drive in an erratic manner ('erratic' being any way other than how you think they should drive). The first thing you feel is a rush of resentment. There is a movement of anger within the physical body.
In the beginning stages of this process, you will not be able to stop that first rush of anger – and that is all right. The second thing you do is very important. The minute you feel it, say, "This is anger!" Name the emotion in your mind: "This is anger!" You want to make it clear that anger is present. Do not say "I am angry". This would make you one with it. Say, "This is anger". That statement will make two separate things: 1/ the anger and 2/ the observer of the anger.

The next step is to make your decision of how to respond. And you will soon discover that you can make a decision, no matter how strong the feeling of anger is. Your power is in your ability to make choice. You may try to "get even" (sometimes even hurting yourself in order to get revenge!) or you can choose another response…

The steps:

1/ Notice how emotional energy rises up within you. Recognise the energy, than name the emotion.
Naming it can often be freeing, because with that act you have already moved the response one step away from you.

2/ You choose how you want to respond. You can detach yourself from your same old responses.

Why Do I Get So Angry?

We are prone to feel angry and behave aggressively when we are actually worried or anxious. In the environment where we grew up it wasn't always allowed to express fear or a lack of self-confidence, especially if we are males. Therefore we are prone to "covering up" fears and anxiety by anger, and instead of experiencing fears we react with anger outbursts. For instance, in the new and unknown environment we have become aggressive towards our children, because we are afraid that without our strong control and restrictions something bad could happen to them.

How to deal with this stress in the family relationships:

• Instead of yelling at people we love and are close to for what they have said or done, it would be more effective for all of us if we could tell them why we are worried, or how their words and behaviour affect us.

• We think that others are responsible for our feelings, others have provoked us and we have to react aggressively.

But, we cannot make others responsible for our reactions! Instead of an aggressive statement like "You make me nervous and angry..." it is much better to start with "I feel unhappy when you say (or do) that ..." This way we do not attack others, she/he does not have to defend herself/himself, or fight back, so we have more space for a calm conversation about the problem.

Recognise and Accept Your Feelings!

Not everyone reacts to an event the same way. Even a tragic event may leave one person feeling sad, another angry, another fearful, another numb..., depending on the way they perceive the situation, and also depending on each person's personal history. That means that our feelings in response to an event belong to us, not to the event.

Feel a Feeling

All feelings are just feelings. No feeling is better or worse than another. A feeling may become a problem if it is not recognised and accepted.

Acceptance

To accept feelings is to embrace all of them, including so called ‘negative feelings’ such as hatred, envy, jealousy, etc... completely, without judgment or conditions. Emotional and physical blockages dissolve when we recognise and experience our feelings.

Accepting feelings is NOT Permission to DO something harmful

I am responsible for my actions and the consequences of those actions.

When I cannot accept a particular feeling, for instance anger, the energy of anger is still active, although I am not aware of that. The anger goes underground, and influences my behaviour or my body unconsciously. But, when I recognise and accept my anger, it does not

control me from the underground any longer. I am in control and I can decide what to do and what not to do, no matter how strong my feeling is.

Chapter 12: Relapse prevention

The strategies outlined in Chapter 2 of the CBT manual discusses the techniques for the therapist to help the client to cope during treatment and in the *Managing physical symptoms* section of Chapter 4: Cognitive restructuring can also be used to cope after treatment and to help prevent relapse. Additional strategies are outlined below.

Relapse prevention

adapted from Andrews, et al (2003, 546 - 548)

Recovery is not just about getting better; it is about staying better. Some simple strategies will help to get through difficult times in the future. There are a few simple points to remember in relapse prevention:

Lapses are to be expected from time to time: When you are reminded of your traumatic experience (such as hearing of a similar event, or experiencing something else frightening) it is natural for you to become a little distressed. This is part of a normal human reaction and, as long as it is not too severe or lasts too long, you may not need to consider it a problem. You can cope with being upset for a while. It becomes a problem if you are not expecting it and you tell yourself that you have "fallen in a heap" or that you are "back to square one". Simply use it as a reminder to practice your coping strategies a bit more for a few days.

Be aware of the early warning signs: Keep an eye on yourself and try to notice when you are not coping so well. The earlier that you can recognize that things are not right, the easier it will be to do something about it. The longer you leave it, the worse it will get, and the more difficult it will become to pull yourself out again. It will be easier to recognize the early warning signs if you are aware of the kinds of things that may precipitate a lapse.
Identify high risk situations: Spend some time thinking about what kinds of things may cause you to become upset. The more prepared you are, the better you will cope. The kinds of things that upset most trauma survivors are powerful reminders or news of similar incidents, an experience similar to the original trauma, and other life stresses such as financial or family problems. What kinds of things may cause you to become upset and think about the trauma again?

Generate a plan to cope: Write down on a card what you will do if and when you are upset again about the trauma. The kinds of things to include are:

> *Who will you call?* Write down names and phone numbers.
>
> *Physical coping strategies:* Which arousal management strategies work best for you? Write down one or two (such as breathing control, go for a walk, listen to a relaxation CD) as a reminder to do them.

Cognitive coping strategies: Write out a coping self-statement that you can use such as "I expect to feel upset when I'm reminded of what happened, but that's OK - I may not like it but I can cope with it. I don't have to make it worse by exaggerating it. Now, what can I do to make myself feel better?" You may wish also to jot down any other strategies that worked well for you such as your favourite distraction technique or thought stopping.

Behavioural coping strategies: Write down one or two things that you can do to get you back on track - visit a friend, go to a movie, get involved in an engrossing hobby or task.

Be positive: Remind yourself that you expected this from time to time and that you will get over it quickly. Try to view it as an opportunity to practice your skills and become a stronger person.

Get professional help if necessary: No matter how well you have recovered from the original trauma, sometimes a relapse may be just too much for you to cope with alone. Do not hesitate to get some professional help if you need it. It does not mean that you are weak or that you are back to square one, simply that you need some extra support to get over a difficult time. It may not require a lot of support.

Changing behaviours

adapted from Andrews, et al (2003, 533 - 534)

One feature of PTSD is that people can lose interest in normal activities and withdraw into themselves, cutting off from friends and things they used to enjoy. This is a particular difficulty if you are not working. It is important to address this problem directly, even if you do not feel like it. Doing nothing provides lots of opportunities for the memories to come back and is a sure way to make you feel depressed and anxious.

When you get up in the morning (or the night before), make a plan of what you will do that day. Take a sheet of paper and write down the hours (say, from 9:00 a.m. to 9:00 p.m.) on the left hand side. Then fill in each hour with what you intend to do. If you are working, that will take up much of the day. If not, you will need to try to find worthwhile activities to take up your time. Having some structure and routine to your day will do a great deal to help you feel more in control. Try to put in a broad range of activities but do not expect too much of yourself.

Possible activities for your daily timetable

Some exercise: walk, swim, cycle ride, gym
Some work: jobs around the house, study, chores, voluntary work
Something for fun: a movie, museum, art gallery, zoo, window shopping
Some social activities: visit friends; meet someone for coffee; a club or society
Some anxiety management practice: relaxation, breathing, self-statements

Can we prevent chronic PTSD?

Can we prevent the symptoms of constriction and further complications that can lead to Chronic PTSD? Can we do anything to help the clients to understand the negative consequences of their attempts to avoid intrusions?

There is an interesting theory in Eastern medicine and the energy healing modalities about two types of tension – dynamic and static tension.
According to the theory, when the body is in a state of dynamic tension - which is like a free flow of energy through a wave-like cycle of tension and relaxation, the body immediately, automatically goes into a healing mode whenever unusual stress is encountered.
If we are in a state of static tension – which means that the body and mind system is frozen, or there is a resistance to experiencing the cycle of tension – relaxation, then the healing response is inhibited.

Some physical illnesses, emotional and mental problems are related, in one or another way, to static tension.
Any methods that help us to move from a state of static tension to a dynamic one will release blocked, frozen, or excessive tension and stimulate the natural healing response. This is where the techniques of exposure in CBT such as flooding techniques fit into, or narrative... or the physical movement, or story telling as a therapeutic method of dealing with children's trauma but also with their normal developmental fears.
When children listen to fairytales – Cinderella, The Little Red Riding Hood, Hansel and Gretel, etc. , their fears such as separation anxiety for example, are reactivated by the exposure to the frightening events in the fairytale. But the happy ending and the mechanism 'repetition compulsion' – insisting to be told the same story many times, with the same line of events (the mechanism similar to the mechanism of intrusion in PTSD!), provide the possibility for the resolution of the aroused tension and overcoming the particular fear reactivated by the fairytale. (Different fairytales activate different developmental fears, and when the child says "Don't tell me that story any longer (it's 'boring'…), tell me something else…", we know that he most probably has managed to overcome that particular fear, and is ready to deal with other "emotional issues and dramas", triggered by other " ('more interesting') stories.

Trauma tends to keep the memory "frozen" in a sort of "snapshots" of one or more images of the traumatic events.
If we follow this theory, then we can understand all intrusions – images and thoughts, traumatic nightmares, flashbacks, even behavioural re-enactments, as an attempt to

“unfreeze” memories, to melt them away, and to discharge the accumulated pain, horror and tension.

But the key point in psycho education is to help traumatised people to give themselves permission to go through the whole cycle of tension – relaxation, to allow themselves to experience intrusions.

Off course, this is possible only if they do not fear intrusions. And they don’t fear intrusions if they understand that intrusions are not signs of dangerous mental illness... flashbacks are not hallucinations or indicators of psychotic nervous break down..... etc. Than they can understand that... yes, intrusions are very unpleasant, but there is a positive element in allowing intrusions to unfold in our mind.

What is that positive element?
Traumatised people act “as if the real traumatic event is recurring again and again. But through allowing intrusions and observing them, they learn that they are actually not reacting to the events in the external world... not to real danger, but to the thoughts and images in their own mind. And intrusions, and the accompanied sensations of hyperarosal, will subside, and eventually disappear.

When clients are free from the fears associated with these symptoms, knowing that intrusions are a part of the healing process, they can allow themselves to experience them with a minimum amount of discomfort. And sometimes even watch them with curiosity.

- Note to counsellor:- Use techniques of ‘Safety establishment’ (support networks explored, identify family, plan for what to do)
- Empowerment, (using skills they already possess.
- Being grounded in reality
- Providing them with tools to deal with the situation
- Framing final session as a moment to reflect on the tools learnt and that you can take these to the real world and practice. Giving clients the option to return to you in the future if they need further assistance using these tools.
- Therapist’s view as an expert in the client’s eyes that they do not need further support at that point in time gives confidence to the client to move forward.

✍Notes

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