Young Australians with moderate to severe mental health problems: Client data and outcomes at Children and Young People's Mental Health

Abstract

Objective: Almost a quarter of young Australians experience a mental health issue that may become chronic if left untreated. Children and Young People's Mental Health (CYPMH) is a specialist tertiary service for young people with moderate to severe mental health problems on the Central Coast, in Australia. CYPMH strives for continuous improvement of the youth mental health clinical model, and this includes ongoing review and evaluation of the service. This paper presents an overview of client data and service use collected over a one year period specific to the Youth Mental Health (YMH) component of the service. **Method:** Client data, including demographic characteristics, service usage, presenting issues, and standardised outcome measures, was analysed using SPSS. Clinicians routinely collect Mental Health Outcomes and Assessment Tools (MH-OAT) measures at different points in a client's episode of care, and each of these measures was analysed separately. Wilcoxon Z and a series of McNemar's tests were used to report on the difference between admission and discharge scores. **Results:** During a designated one year period, 830 referrals to YMH were received. The most prevalent presenting issue was suicidal ideation followed by deliberate self-harm and depression. A comparison

of admission and discharge outcome scores shows significant improvement by discharge on a range of measures. Specifically, analysis identified significant differences between admission and discharge HoNOSCA and CGAS scores for young people aged 12-17 and HONOS scores for young people aged 18-24. **Conclusion:** The clinical outcomes for young people are positive with improvements seen on a range of outcome measures.

Almost a quarter of young Australians experience a mental health issue that becomes chronic if left untreated (1, 2). About 75% of mental disorders in adults commence before the age of 25 years (3, 4). Epidemiological data demonstrates that 75% of major psychiatric disorders and substance use disorders have their onset by age 24 (5). Any future reduction in the health and social burden that results from mental ill health depends on our capacity to engage and treat those with emerging disorders effectively (6). A focus on early intervention and ensuring that young people have easy access to youth friendly mental health services is key to the management and treatment of developing mental health problems (7-10).

Children and Young People's Mental Health (CYPMH), under the Central Coast Local Health District, is a community based specialist tertiary service for children and young people on the Central Coast, in Australia. CYPMH follows the key principles for youth mental health services, and aligns with the direction of the International Youth Mental Health Declaration. Specifically, CYPMH is committed to the principles of early intervention and improving early access, is integrated, collaborative and youth friendly. While CYPMH predominantly provides care for young people aged 12-24 with moderate to severe mental health problems and mental illness (including first episode psychosis), service expansion has seen the development of services for women in the perinatal period and families where the parent(s) experience complex drug and alcohol and/or mental health issues and there are child protection concerns. CYPMH is the lead agency for headspace Gosford, a key national initiative which provides a 'one-stop shop' for young people (12-25 years), including clinical services for young people with mild to moderate mental health problems.

The current paper focusses on the Youth Mental Health (YMH) component of the service. The YMH component of the service consists of three teams, the Consultation and Assessment Team (CAT), the Brief Intervention Team (BI) and the YMH team. Working closely with, but positioned alongside YMH is the Young People and Early Psychosis Intervention (YPPI) team. The CAT team is the access point of the service; most referral agencies consult with a CAT clinician for client suitability prior to referring, which means that the vast majority of referrals meet referral criteria and are accepted into the service. The young person referred to CYPMH is assessed by a CAT clinician, who then transfers the young person to the most appropriate team (BI, YMH or YPPI).

BI offers short term interventions of up to eight weeks in the form of clearly defined care packages for young people who require a time-limited follow-up service. The YMH team provide care for young people aged 12-24 years with moderate to severe mental health problems or illness (other than psychosis). While all young people aged 12-17 who present with moderate to severe mental health are accepted into the service, young people aged 18-24 must be treatment naïve and not have had significant contact with mental health services in the past. Young people aged 18-24 who have had a previous episode of care are referred to Adult Mental Health Services. This is because only three positions to work with young people aged 18-24 sit with CYPMH. The remaining resources are allocated to Adult Mental Health. YMH clinicians have caseloads of 15-20 clients and utilise an assertive intensive case management approach. There is a focus on outreach to engage young people and holistic assessment/treatment and recovery. (For a more detailed description of the service model see Howe, Batchelor (7)).

CYPMH is committed to ongoing service development and improvement, and to do so, we carefully collate and examine client and service data, including outcome measures. Monitoring and evaluating outcomes for individuals with psychiatric disorders are crucial aspects of service delivery (11, 12), and this is the focus of this paper. This paper presents an overview of client data and service use collected over a one year period. Specifically, this paper presents an overview of client data, including demographic data and presenting issues, and includes an analysis of the standardised outcome measures that are routinely collected at different points in a client's episode of care. Much of the evidence base for youth mental health services in Australia results from data collected at headspace centres, and regards the experience of young people with mild to moderate mental health issues (13-15). In comparison, the evidence base for tertiary youth mental health services is limited, and the current paper contributes to this literature.

Methods

When a young person is referred to the service, a CAT clinician records client specific information into a central database. The recorded data includes demographic data (such as sex, age, suburb etc.), presenting issues and referring agency. Unless a mental health assessment has already been completed by the referring agency (which is the case for 30% of referrals), a CAT clinician also performs an initial mental health assessment, and completes a number of standardised outcome measures.

YMH clinicians are mandated to complete the Mental Health Outcomes and Assessment Tools (MH-OAT) measures at different points in the client's episode of care. Typically, MH-OAT measures are collected on admission, every 13 weeks (reviews), and on discharge. All measures are either completed by the young person's allocated case manager or the young person him or herself. All clinicians receive training on how to complete the measures as part of their orientation to the service.

MH-OAT measures are a set of standardised clinical outcome measures designed to support the assessment, monitoring and review of mental health care across New South Wales (NSW). MH-OAT was developed to ensure clinicians have a standard way of recording the way they work with consumers and carers. This helps mental health services work more efficiently and effectively and ensures NSW meets the National Standards of Mental Health Care (12, 16).

The MH-OAT measures are split for children and adolescents aged up to 17 years and adults who are over 18 years of age to reflect the clinical needs of the each age group. The child and adolescent measures used for clients aged 12-17 include the Health of the Nation Outcomes Scales for Children and Adolescents (HoNOSCA), Children's Global Assessment Scale (CGAS), and Strengths and Difficulties Questionnaire, both the self-report (SDQ) and the parent report (SDQP). The HoNOSCA and CGAS are clinician rated, and the SDQ and SDQP are client or parent rated. The measures used for clients aged 18-24 are the Health of the Nation Outcomes Scale (HoNOS), Kessler 10 (K-10), and the Activity and Participation

Questionnaire (APQ-6). The HoNOS is clinician rated and the K-10 and APQ-6 are client rated.

The HoNOSCA and HoNOS examine the health and social functioning of children and adolescents or adults respectively (17). The HoNOSCA comprises of 15 items, and the HoNOS of 12 items measuring symptomatology and functioning of clients, and consist of four subscales which assess behavioural, impairment, symptomatic and social domains. Both measures are rated on a 5-point Likert scale (ranging from 0=no problem to 4=severe problem) and rate the most severe problem that occurred during the two weeks preceding the rating event. The sum of all individual item-scores determines the overall well-being, with higher scores indicating poorer wellbeing.

The CGAS gauges children and adolescents' level of general functioning in the last 3 months on a hypothetical continuum of health (100) to illness (0)(18). The SDQ and SDQP are behavioural screening questionnaires designed to identify the presence of clinically significant issues (19). The SDQ consists of four subscales including emotional symptoms, conduct problems, hyperactivity and peer problems which combine to produce the total SDQ score. The SDQ is designed for young people and adults over 10 years of age; the SDQP is designed for parents.

The K-10 measures a client's level of psychological distress experienced in the last four weeks on a scale of 1 (none of the time) to 5 (all of the time)(20). The APQ-6 measures vocational activity and social participation for. It comprises six questions

regarding work, study, community activities, desire to change and what health services can do to assist (21).

We collated and examined client data for a designated one year reporting period from 1st July 2011 to 30th June 2012. Information specific to client demographics, presenting issues and referral agencies was collected from a central database maintained by the front end of the service, CAT. As CAT refers clients to BI, the YMH team and YPPI, this data relates to all clients that received any of these services.

While the client data collected from this central database upon referral is inclusive of all clients, the outcomes data reported in this paper is limited to clients who received a service by BI or YMH (not YPPI). Admission and discharge MH-OAT scores are reported for clients that received an intervention with BI or YMH only. Outcome measure data for YPPI clients is not presented. Information on young peoples' outcomes (MH-OAT) measures was collected from NSW Health's Friendly Information System for Community Health (FISCH). All data for BI and YMH clients with both admission and discharge scores was imported into the Statistical Package for Social Science (SPSS) version 21.0 for windows. Each measure was analysed separately. Wilcoxon Z and a series of McNemar's tests were used to report on the difference between admission and discharge scores. The Wilcoxon Z test is a non-parametric test used to compare differences between two related samples for data that is not normally distributed. This test is used to compare changes in admission and discharge scores. The McNemar test is used to test the difference between paired proportions where there are two discrete dichotomous variables. In the

current study, the variables are 'clinically significant' versus 'not clinically significant'. The NcNemar test is used to determine if the difference in proportion of clinically significant versus not clinically significant between admission to discharge is statistically significant.

Results

Client characteristics and service use

During the designated reporting period there were 830 referrals to YMH from 759 unique clients, who were accepted for an assessment. The vast majority, 92% of clients, only presented once during this reporting period to the service. Of the eight per cent (n=64) who presented more than once, 57 presented to YMH twice and 7 presented three times. The majority of referrals are from clients who are referred to the service for the first time (n=617; 74%).

The two leading referral agencies for CYPMH are a state wide 24-hour mental health telephone access service (Mental Health Telephone Access Line; 34%; n=283) and the acute assessment team of Central Coast Adult Mental Health (34%; n=282). The remaining referring agencies are inpatient units (13%; n=105), other local mental health services (8%; n=65), general practitioners (6%; n=53) and other CYPMH services including headspace (5%; n=42).

The majority of referrals (61%) had no previous specialist mental health treatment. The remaining clients had previous ambulatory mental health care (28%), previous inpatient psychiatric admissions (2%) or both of the above (9%). The majority of clients were female (58%; n=478).

Although the YMH component of CYPMH is a specialised service for 12-24 years old, clients under the age of 12 can be referred into the service if their assessment indicates the need for the YMH team to manage acute risk of harm to self or others. During the designated reporting period, 21 referrals (3%) were from clients under 12 years of age, of which three young people aged 11 were accepted. The majority of clients fall within the ages of 13-17 years with over three quarters of the clients under 18 years of age (78%). Of the 830 clients referred, 1655 presenting issues were recorded. A maximum of five issues were recorded for each client. Over half of all clients presented with two or more issues (n=547; 66%), a quarter of clients presented with 3 issues n=212; 26%), 7% (n=59) presented with 4 issues and 1% (n=11) presented with 5 issues.

The most common presenting issues reported during this period, in order of prevalence, include suicidal ideation (38%), deliberate self-harm (22.7%), depression (21.3%), anxiety (14.7%), anger/aggression (11.2%), psychosis/psychotic symptoms (10%), overdose (8.4%), drug/alcohol use (7.8%), behavioural issues (7.5%), suicide attempt (6.6%), situational crisis (6.1%) and family issues (5.3%). It is important to note, however, that as 30% of psychiatric assessments are conducted by the referring agencies, there is likely to be some variability in what is perceived as the presenting issue as well as how presenting issues are coded. For example, while

some may code on overdose as "overdose" others may code this as a suicide attempt. To help overcome this limitation, CAT clinicians work closely with referring agencies and offer training and support so that assessments are conducted comparatively.

Of the 830 referrals, 22% (n=183) were not transferred to a team within CYPMH but were discharged to external agencies. The three most common reasons clients were not referred internally are mild to moderate mental health problem (which does not meet the moderate to severe referral criteria as described later in this paper); a mental health history (which does not meet the referral criteria that clients over the age of 18 are treatment naïve); and the client declined the service. Of the remaining 647, 348 young people were transferred to the BI team, 212 were transferred directly to youth mental health and 87 clients were transferred to the YPPI team for an assessment and treatment.

The experience of young people aged 12 to 17

During the designated reporting period, there were 472 clients aged 11-17 years who following assessment were transferred to either BI or YMH. The average length of treatment for these clients was 171 days. To meet referral criteria into either one of these teams, young people require a CGAS score of less than 50 or less than 70 if they also have a HoNOSCA score of 3 or 4 on at least one item, which indicates a clinically significant problem that requires active monitoring and intervention by a specialist mental health service.

There were 959 MH-OAT collections evenly split between admissions (n=370, 78%) and discharges (n=377, 80%), with considerably less reviews (n= 212, 45%). In total, 191 matched admission and discharge scores were recorded for 182 unique YMH clients aged 12-17 years.

While matched admission and discharged scores were collected for just over 40% (191/472) of clients aged 12-17 years referred during the designated reporting period, this refers to matched scores for at least one of the MH-OAT measures, not all of the MH-OAT measures. Specifically, there are 122 matched HoNOSCA scores, 116 matched CGAS scores, 10 matched SDQ scores, and 5 matched SDQP scores.

The low matched admission and discharge scores for SDQ and SDQP were too small to warrant testing. Low completion rates on client and parent/carer rated measures is a well-established challenge (22), and more needs to be done to adequately engage clients in their own treatment and recovery (23).

HoNOSCA

Matched admission and discharge HoNOSCA scores were completed for 122 clients (approximately 26% of clients aged 12-17). Wilcoxon Z was used to examine any statistical differences between admission and discharge for the overall HONOSCA scores as well as the subscales. As shown in Table 1, clients significantly improved from admission to discharge on the overall total HoNOSCA score as well as on each individual subscale.

Table i: Mean admission and discharge HoNOSCA scores for clients 12-17 years.

Table 2 shows the individual items of HONOSCA (1-13). These were analysed using a series of McNemar tests which examined if there is a statistically significant difference between the number of young people scoring in the clinical range (i.e. scoring 2 or above) on admission versus the number of young people scoring in the clinically significant range on discharge. Items 14 and 15 were excluded as these items are concerned with problems for the child, parent or carer relating to lack of information or access to the service. These are not direct measures of the child's mental health.

Table ii: Description of the HoNOSCA items.

Figure 1 shows the number of 12-17 year olds who scored in the clinically significant range on the HoNOSCA items on admission and discharge. The analysis demonstrates that at discharge significantly less clients scored in the clinical range on all of the HoNOSCA items except for item 11 (self-care and independence). The non-significant difference for item 11 is likely due to a floor effect. On admission few clients scored on this item and so there was little room for change.

The most common issues faced by 12-17 year olds accessing the service regard problems with emotional and related symptoms (item 9) and problems with family life and relationships (item 12); these were reported by 86% and 73% of young people respectively. Problems with over-activity, attention or concentration (item 2) and non-

accidental self-injury (item 3) were also very prevalent (61.6% and 65.6% respectively).

On admission the greatest proportion of young people (86%) scored in the clinical range for item 9 (problems with emotional and related symptoms), whilst at discharge the greatest proportion of young people (45%) scored in the clinical range for item 12 (problems with family life and relationships). The item with the largest decrease in young people scoring in the clinical range from admission to discharge was item 3 (non-accidental self-injury), with 65% of young people scoring in the clinical range at admission and 7% scoring in the clinical range at discharge.

Figure i: Number young people 12-17 years scoring in clinical range (ie scoring 2 or above) on HoNOSCA items on admission and discharge

CGAS

Matched admission and discharge CGAS scores were completed of 116 young people aged 12-17 (approximately 25% of clients aged 12-17). Wilcoxon Z was used to examine any statistical differences between admission and discharge scores. The mean score on admission was 57.91 (*SD* 10.40), and on discharge 71.89 (*SD* 12.51). The change between these two means scores is statistically significant (Wilcoxon Z = -8.26, *p* = .000). Scores between 60-51 indicate "variable functioning with sporadic difficulties or symptoms in several areas, but not all social areas; disturbance would be apparent to those who encounter the child in a dysfunctional setting or time, but not to those who see the child in other settings" (24). Scores

between 71-80 indicates "no more than slight impairment in functioning at home, at school or with peers; some disturbance of behaviour or emotional distress may be present in response to life stressors but these are brief and interference with functioning is transient; such children are only minimally disturbing to others and are not considered deviant by those who know them" (24).

The experience of young people aged 18 to 24

During the designated time period, 88 clients aged 18-24 years were referred to either BI or YMH 18-24 years. The average length of treatment for these clients was 129 days.

There were 227 MH-OAT collections largely made up of discharges (n=123, 54%) with markedly less admissions (n=56, 25%), and reviews (n=48, 21%). In total, 40 matched admission and discharge scores were recorded for 40 unique clients, which is 45% (40/88) of clients aged 18-24 years. While matched admission and discharge scores were collected for 45 clients, this refers to matched scores for at least one of the MH-OAT measures, not all of the MH-OAT measures.

There were low numbers of matched admission and discharge scores for both K-10 (10 matched scores) and the APQ-6 (1 matched score only). Consequently, despite positive changes between admission and discharge scores, this carries no statistical significance. Therefore K-10 and APQ-6 results are not reported. Only HoNOS results (29 matched scores) are reported given the larger number of matched admission and discharge scores for this measure.

HoNOS

Matched admission and discharge HoNOS scores were completed for 29 clients aged 18-24. Wilcoxon Z was used to examine any statistical differences between admission and discharge for the overall HONOS scores as well as the subscales.

As shown in Table 3, clients significantly improved from admission to discharge on the overall total HoNOS score as well as the behavioural, social and symptomatic subscales. There was no significant difference between admission and discharge on the impairment scale, which is likely due to a 'floor effect', as client scores on this subscale were low even prior to the intervention (at admission), so therefore there was little room for positive change.

Table iii: HoNOS admission and discharge scores for clients over 18 years.

Table 4 shows the individual items of HONOS (1-10). These were analysed using a series of McNemar tests which examined if there was any significant difference in the numbers of young people scoring in the clinical range on admission versus discharge.

Table iv: Description of the HoNOS items

Figure 2 shows the number of 18-24 year olds who scored in the clinically significant range on HoNOS items on admission and discharge. On admission the greatest

proportion of young people (72.4%) scored in the clinical range for item 7 (problems with depressed mood) and item 8 (other mental and behavioural problems), whilst at discharge the greatest proportion of young people (52%) scored in the clinical range for item 8 (other mental and behavioural problems). The item with the largest decrease in young people scoring in the clinical range from admission to discharge was item 2 (non-accidental self-injury), with 62.5% of young people scoring in the clinical range at admission and 5% scoring in the clinical range at discharge.

The McNemar's tests demonstrate that there is a statistically significant difference between the number of young people aged 18-24 who scored in the clinical range at admission versus the number of young who scored in the clinical range at discharge for items 1, 2, 6, 7, 8 and 9.

Figure ii: Number of YMH clients scoring in clinical range on HoNOS items on admission and discharge

Discussion and Conclusion

To inform ongoing service development and to ensure treatment is effective and meets the needs of young people, we collated and examined client data for a one year period. The data shows that a well-designed and youth friendly service can attract a large number of young people. During a designated one year period, 830 referrals were received, of which the majority were aged between 13-17 years. Three

quarters of young people who accessed YMH during this reporting period were under 18. While a number of studies have found that young people aged 18-24 are less likely to engage with youth mental health services than those aged 12-17 (8, 25), it is likely that the lower numbers of young people aged 18-24 accessing CYPMH is, at least in part, because young people aged 18-24 who are not treatment naïve are not accepted into the service.

The most prevalent presenting issue was suicidal ideation followed by deliberate self-harm and depression. The high prevalence of suicidal ideation and deliberate self-harm are similar to those reported by an assertive outreach service seeing the most 'at risk' young people (26). The majority of clients were female (58%; n=478). This is consistent with other studies that have found that males are less likely than females to seek help (8, 25).

A comparison of admission and discharge outcome scores shows significant improvement by discharge on a range of measures. In particular, analysis identified significant differences between admission and discharge HoNOSCA and CGAS scores for young people aged 12-17 and HONOS scores for young people aged 18-24. Even though the clinical outcomes for young people with matched scores are positive, and while this is most likely due to the YMH intervention, it is important to note that this change could have occurred naturally, or may be due to other factors. Given that this study is based on a naturalistic design, without a control group or a standardised approach to treatment, the findings of this study need to be interpreted with caution.

Despite the need to interpret positive changes between admission and discharge scores with caution, outcomes measures provide very valuable information in terms of the clients' experience of mental illness and recovery, from both the consumers' as well as clinicians' perspective. To assist clinicians as well as service providers in providing the most suitable care, it is crucial that outcomes measures are consistently completed. While the quality of the data has increased significantly over time, both nationally (27) as well as locally, more need to be done to ensure that the measures are completed consistently and used in a manner that is clinical meaningful (23, 27). In particular, the MH-OAT measures, both the clinician and client rated ones, could be more consistently and effectively used as a tool to engage clients in their own recovery process (12, 23), and training staff to use measures accordingly is an area of focus at CYPMH.

The current paper contributes to the limited evidence base regarding youth mental health client and outcomes data.

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Figures and tables

Scale	N	Admission Mean (SD)	Discharge Mean (SD)	Wilcoxon Z	P
HoNOSCA Total	122	15.42(6.18)	7.52(5.75)	-8.743	0.000
HoNOSCA subscale- *Behavioural*	121	5.41 (2.66)	2.21 (2.53)	-8.426	0.000
HoNOSCA subscale - *Impairment*	120	1.28 (1.62)	.79(1.26)	-3.561	0.000
HoNOSCA subscale - *Symptoms*	120	3.87(2.16)	1.51(1.35)	-8.44	0.000
HoNOSCA subscale – *Social*	120	5.24 (3.004)	3.25(2.667)	-6.467	0.000

Table i: Mean admission and discharge HoNOSCA scores for clients 12-17 years.

HoNOSCA	Description
Item 1	Problems with disruptive, antisocial or aggressive behaviour
Item 2	Problems with over-activity, attention or concentration
Item 3	Non-accidental self-injury
Item 4	Problems with alcohol, substance or solvent misuse
Item 5	Problems with scholastic or language skills
Item 6	Physical illness or disability problems
Item 7	Problems associated with hallucinations, delusions or abnormal perceptions
Item 8	Problems with non-organic somatic symptoms
Item 9	Problems with emotional and related symptoms
Item 10	Problems with peer relationships
Item 11	Problems with self-care and independence

Item 12	Problems with family life and relationships
Item 13	Poor school attendance

Table ii: Description of the HoNOSCA items.
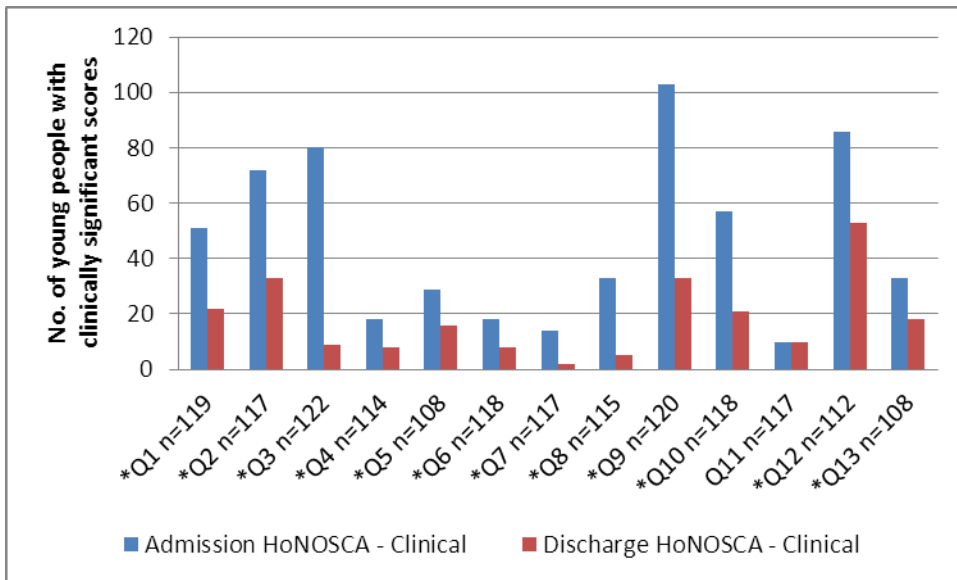
Figure i: Number young people 12-17 years scoring in clinical range (ie scoring 2 or above) on HoNOSCA items on admission and discharge
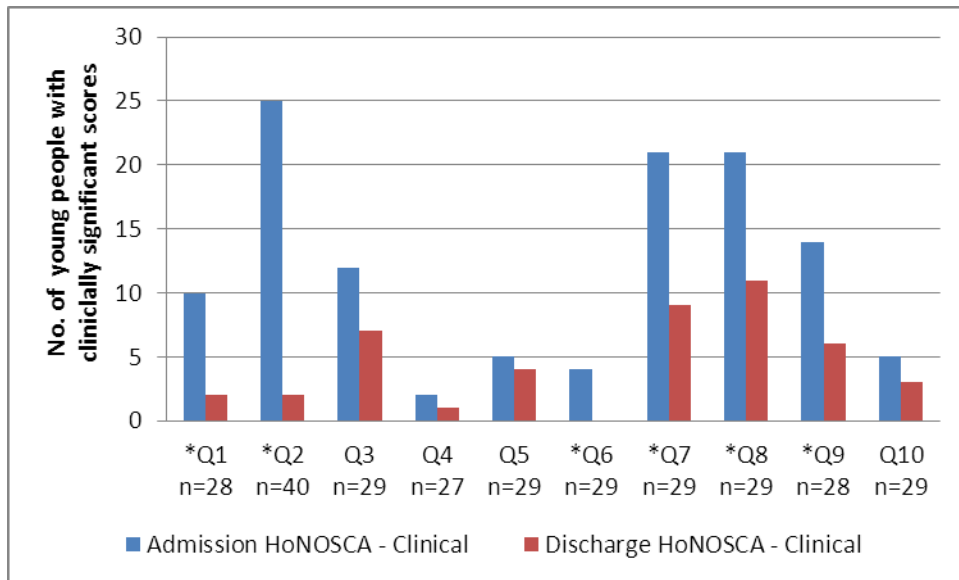
* $P<.05$ for McNemar's test.

Scale N=29	N	Admission Mean (SD)	Discharge Mean (SD)	Wilcoxon Z	P
HoNOS Total	29	12.48 (6.1)	6.03 (5.51)	-4.38	.000
HoNOS subscale Behavioural	29	4.62 (2.70)	1.66 (1.63)	-4.06	.000
HoNOS subscale Impairment	29	.86(1.27)	.79 (1.32)	-0.25	.804
HoNOS subscale – Symptoms	29	4.28 (2.13)	1.86 (1.66)	-4.32	.000
HoNOS subscale – Social	29	3.00 (2.88)	1.72 (2.05)	-2.79	.005

Table iii: HoNOS admission and discharge scores for clients over 18 years.

HoNOS	Description
Item 1	Overactive, aggressive, disruptive or agitated behaviour
Item 2	Non-accidental self-injury
Item 3	Problem drinking or drug-taking
Item 4	Cognitive problems
Item 5	Physical illness or disability problems
Item 6	Problems associated with hallucinations and delusions
Item 7	Problems with depressed mood
Item 8	Other mental and behavioural problems
Item 9	Problems with relationships

Item 10   Problems with activities of daily living

Table iv: Description of the HoNOS items

Figure ii: Number of YMH clients scoring in clinical range on HoNOS items on admission and discharge

* *P*<.005 for McNemar's test