The Effectiveness and Characteristics of Communication Partner Training Programs for Families of People with Dementia: A Systematic Review

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Abstract

Background and Objectives: Communication partner training (CPT) is essential in dementia care. Despite families being the largest group of community carers, previous reviews primarily focus on formal carers. This study aimed to understand the characteristics and effectiveness of CPT for families of people with dementia.

Research Design and Methods: The systematic review included intervention/protocol studies on dementia CPT for families, excluding formal carers and programs not focused on communication. CINAHL, PsycINFO, SpeechBITE, Medline, SCOPUS, and Embase were searched between 30th November and 6th December 2021. After deduplication, 3172 records were screened. Quality assessment used JBI Critical Appraisal tools and the Mixed Methods Appraisal Tool. Data synthesis utilised three reporting tools, the International Classification of Functioning, Disability and Health, and content analysis.

Results: Of 30 studies (27 programs) there were 10 quasi-experimental, five RCTs, four mixed-methods, four case studies, four qualitative, and two protocols. Studies were published between 1998-2021 and included 671 family members. Characteristics varied with 7/27 programs including consumers during creation and one program including telehealth. One study included all reporting tool criteria. Programs typically used four intervention functions, with 12/27 programs addressing three behaviour change areas. 33/74 outcome measures targeted the 'Environment' of the person with dementia. Studies showed positive improvements in communication skills and knowledge, with mixed results on behaviour/psychosocial outcomes. Qualitative results identified improvements in conversation and attitudes.

Discussion and Implications: CPT for families improves communication outcomes, however quality of studies varied significantly. Future research should address gaps in telehealth, consumer involvement, and intervention descriptions.

Background and Objectives

Dementia is an umbrella term for conditions that cause brain atrophy and neuronal degeneration (Kumar et al., 2015). Consequent cognitive decline contributes to communication impairments such as difficulty following conversation, repetitiveness, or tangentiality (Dijkstra et al., 2004). Impaired communication is challenging for the person with dementia and their families. As communication changes are linked to higher rates of depression, isolation, and stress (Braun et al., 2010), supporting families in communication is essential to dementia care.

The World Health Organisation's Global Action Plan on the Public Health Response to Dementia (World Health Organisation, 2017) advocates for accessible evidence-based training programs. The Lancet Commission report (Livingston et al., 2020) also encourages carer training as an effective nonpharmacological approach to addressing changed behaviours. Communication partner training (CPT) is one such program where families are trained to use supportive communication strategies (Simmons-Mackie et al., 2016). Previous systematic reviews on CPT in dementia have shown a positive impact on communication and psychosocial outcomes (Eggenberger et al., 2013; Morris et al., 2018; Nguyen et al., 2018). Eggenberger et al. (2013) found that across home care settings, all studies showed significant improvements in knowledge and/or use of communication strategies, with some showing improved quality of life, carer satisfaction, and changed behaviours. Morris et al. (2018) updated this review and found similar results with improved knowledge of strategies reported in all studies (Morris et al., 2018). The review by Nguyen et al. (2019) included a meta-analytical comparison and found statistically significant improvements in knowledge, however, the significant heterogeneity within included studies made meta-analysis difficult to interpret.

A key limitation of previous systematic reviews is the lack of focused CPT data on families. The systematic review by Nguyen et al. (2018) included informal carers (33% of total participants), however,

results were not compared between formal vs. informal carers. Although other reviews like Morris et al. (2018) do separate data between formal and informal carers, community workers were still included within the "informal carer" group. Given family members are the largest group of carers in the community, accounting for over 70% of carers (Brown et al., 2017), it is important to address the significant knowledge gaps in family-based CPT.

Previous systematic reviews have not investigated digital health options for CPT. Although Nguyen et al. (2018) suggested online healthcare as an area for future research, no further investigation into potential reasons for limited digital health options has been undertaken. With the increasing prevalence of dementia and the limitations of the health workforce across rural areas, in addition to the recent worldwide pandemic, there is an increasing need for digital health interventions (Knapp et al., 2022). A greater understanding of current digital health CPT interventions in dementia and their feasibility is therefore essential to support the accessibility of CPT.

Another limitation in previous systematic reviews is understanding the applicability of CPT to real-world clinical populations and the lived experience of dementia. Previous systematic reviews describe intervention creation and characteristics in varying depth, with limited analysis of the role of consumers in the creation of programs (Eggenberger et al., 2013; Morris et al., 2018; Nguyen et al., 2018). No previous systematic review has described key components of interventions according to intervention taxonomy, which is important to investigate clinical accessibility and potential for behaviour change. For clinicians implementing these programs, clarifying key intervention characteristics facilitates delivery as intended and evidence-based care (Hoffman et al., 2014). To know whether current programs are clinically applicable, understanding the components of CPT interventions is essential.

Although previous studies provide general information on outcome measures (Nguyen et al., 2018), no classification scheme has previously been applied. Framing outcome measures within the International Classification of Functioning, Disability and Health (ICF) (World Health Organisation, 2001) may allow for more systematic exploration of outcome measures to identify the most commonly targeted domains across CPT programs and recognise limitations. Framing within the ICF also allows for more standardised comparison across aetiologies to identify gaps in outcome measures for people with dementia compared to other conditions.

Finally, no systematic reviews have analysed impact of dementia CPT based on qualitative data, with previous reviews of qualitative findings addressing only intervention acceptability (Morris et al., 2018). Analysis of qualitative feedback on intervention outcomes may enable an understanding of the real-life impact of CPT programs from the perspective of families and people with dementia and identify elements of interventions viewed as essential by participants.

To address these gaps, the aim of this systematic review was to understand the characteristics and effectiveness of CPT programs, specifically for family members of people with dementia. The research questions were:

1. What are the characteristics of CPT programs, including how they are designed, implemented, and described?

2. What are the outcome measures used in family-based CPT programs, and what domains of the ICF do they reflect?

3. How effective are CPT programs for people with dementia and their families?

Research Design and Method

The review was conducted and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). A protocol was pre-registered with the search strategy later modified (https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=292973). Small modifications were made during the review process to enhance data analysis, including use of the Behaviour Change Wheel (BCW) (Michie et al., 2011), content analysis for qualitative data, and JBI Quality Analysis tools (Joanna Briggs Institute, 2017), which were not updated on the protocol. The PRISMA flowchart and checklist can be found in Supplementary 1 and 2, respectively, in the Online Supplementary Material.

Search Strategy

The following six databases were systematically searched between 30th November 2021 and 6th December 2021: CINAHL, PsycINFO, SpeechBITE, Medline, SCOPUS, and Embase. Databases were searched for CPT intervention studies or protocols as per search strategy in Supplementary 3. All databases were searched by full-text, excluding SCOPUS which was searched by title/keyword/abstract. The search strategy was adapted to the requirements of each database, with search terms trialled by the first two authors (NF, EP), in consultation with university librarians. Citations were downloaded into Endnote and uploaded into Covidence, with screening occurring between 11th January and 22nd June 2022 (Covidence, 2022).

Eligibility Criteria

The review included English peer-reviewed articles of qualitative and/or quantitative design or published protocols. Communication interventions were included where a significant proportion of the program was focused on CPT, which was defined as interventions directed at the communication partner of the person with dementia that teaches strategies to improve communication (Simmons-Mackie et al., 2016). Collaborative team discussion determined that 'significant proportion' would be defined as (1) communication was a substantive amount (over 50%) of content included across the study background, program provision, and outcomes, and/or (2) the authors identified the intervention as a communication-focused program (e.g., in title, aims, or background), and (3) communication outcomes were measured quantitatively or qualitatively. Articles were included if a family member was the primary participant, with the person with dementia having any form of dementia or primary progressive aphasia (PPA). Studies in which formal carers were the primary participant were excluded. The full text screening tool (Supplementary 4) was constructed based on the original PROSPERO protocol.

Study Selection

A total of 4648 records were identified with 1476 duplicates, leaving 3172 records for screening. The first two authors (NF, EP) independently screened the title and abstract of 33% of articles (n=1051), with inter-rater reliability (Landis & Koch, 1977) close to almost perfect agreement (k = 0.801). The first author then independently screened the remaining articles. Any discrepancies were discussed between the first two authors, and if consensus could not be reached, another author was consulted. The same process occurred during full text screening, with 24% (n=39) of papers reaching almost perfect

agreement (k = 0.974) and the first author screening the remaining articles. After exclusion, a total of 30 studies were included in data analysis.

Data Extraction and Analysis

A summary of data extraction tools is available in Supplementary 5. Data was extracted by the primary author using an author extraction tool, the Intervention Taxonomy (ITAX) (Schulz et al., 2010), the Template for Intervention Description and Replication Checklist (TIDieR) (Hoffmann et al., 2014), the Behaviour Change Wheel (Michie et al., 2011), and the ICF (World Health Organisation, 2001). The author extraction tool was used to collected data regarding study design, participants, outcome measures, and quantitative outcomes. Data collected via the ITAX and TIDieR both provided information regarding the mode, materials, location, schedule, intervention characteristics, and tailoring/adaptability. The ITAX provided data on scripting, sensitivity to participant characteristics, and treatment implementation, and the TIDieR data collection included the name, rationale, schedule, modifications, and intervention fidelity. Intervention content was mapped onto the Intervention Functions and the COM-B model of the Behaviour Change Wheel to examine elements relating to behaviour change. This replaced two elements of the ITAX. Specifically, the Interventions Functions replaced the 'Treatment Content Strategies', and the COM-B model replaced 'Mechanisms of Action', as the Behaviour Change Wheel provided more detailed descriptions than the original ITAX guidelines. The ITAX and TIDieR were also used to describe the completeness of intervention reporting through a checklist system, with ITAX calculated out of 10 instead of 12. Outcome measures were mapped to the ICF using ICF code descriptions available online (WHO, 2023). All data extracted was reviewed with at least two authors and inserted into tables by the primary author (NF) in consultation with two authors (EP, RR).

Qualitative outcomes were analysed via qualitative content analysis (Graneheim et al., 2017). As the study examined effectiveness from participants' perspectives, a hermeneutic approach with inductive analysis was selected, aligning with latent projective content analysis, to search for categories arising from the data while also interpreting the meaning of participants' experiences (Graneheim et al., 2017; Kleinheksel et al., 2020). Trustworthiness was ensured by reviewing the coding process and definitions with the second author and reaching consensus on all coding and categories created, as per Graneheim et al. (2017). All authors reviewed the analysis and provided feedback throughout the study.

Meta-analysis was not deemed feasible given the significant heterogeneity of included papers, as found in previous systematic reviews (Nguyen et al., 2018).

Risk of bias and quality assessment

Quality assessment for randomised controlled trials (RCT), quasi-experimental designs, qualitative designs, and case reports was completed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklists (Joanna Briggs Institute, 2017). Mixed method designs were assessed using the Mixed Methods Appraisal Tool (MMAT) (Hong et al., 2018). The primary author (NF) and another author (IC) independently reviewed each paper, then discussed any discrepancies until a consensus was reached. For any queries or ongoing discrepancies, a third author (EP) was consulted.

When categorising the methodology of studies, it was identified that some studies included both qualitative and quantitative elements but lacked detailed descriptions of both elements. The authors decided that, when a study included a methodology, some description of data analysis, and presentation of results for both qualitative and quantitative elements, this was classified as mixed-methods. When a study lacked one or more of these elements, the study was not categorised as mixed

methods. For example, Done & Thomas (2001) briefly discussed results from an open-ended interview, but did not include description of the qualitative method, and so was considered as quantitative.

Results

Study Characteristics

A summary of study characteristics is provided in Table 1. Within the 30 studies, there were 27 unique CPT programs identified, noting that one of these programs (Meyer et al., 2020) included elements of another program (Liddle et al., 2012). Most studies were conducted in USA (n=8), UK (n=6) and Canada (n=6). Fewer studies were from Australia (n=2), Germany (n=2), Korea (n=2), Netherlands (n=2), South Africa (n=1), and Brazil (n=1). Most studies were quasi-experimental (n=10), followed by RCTs (n=5), mixed-method studies (n=4), case studies (n=4), qualitative studies (n=4), and protocols (n=2). There has been increasing research in the field over time (1990-1999: n=4; 2000-2009: n=4; 2010-2019: n=15) with seven studies published in the past two years (2020-2021: n=7).

A total of 671 family members were included across studies. For studies that reported mean age (n=24), this ranged from 39 to 90 years of age. From the 25 studies that described gender, there were 440 female and 172 male family members. A total of 431 (64.2%) family members were spouses, 64 (9.5%) were children, 2 (0.29%) were parents, 1 (0.14%) was a grandchild, and 165 (24.59%) were not stated or other (e.g., friend). The 30 studies included family members of people with Alzheimer's disease (n=18), frontotemporal dementia (n=5), vascular dementia (n=5), mixed dementia (n=5), and primary progressive aphasia (n=4). Two studies included other types of dementia and 10 studies did not state the dementia diagnosis. Of the 12 studies that reported mean Mini Mental State Examination (MMSE; Arevalo-Rodrigues et al., 2014), the mean ranged from 24 to 12.95, representing mild to moderate cognitive decline. For studies that reported mean age of the person with dementia, it ranged from 60 to

81. From the 25 studies that described gender of people with dementia, 148 participants were male and 101 were female.

Quality Analysis

The quality appraisal outcomes can be found in Table 2 and 3. Of the five RCTs, two had true randomisation. Three RCTs had allocation concealment and blinded outcome assessors. Three RCTs had identical or similar treatment groups at baseline compared to the control. Four RCTs used per-protocol analysis. Three RCTs used reliable outcome measures. Of the 11 quasi-experimental studies, four had control groups, three used reliable outcome measures, and no study took multiple measures of outcomes pre and post. In the five studies with mixed-method designs, confounding was not accounted for in any study. One study adhered to the quality criteria of each mixed-method component. Two studies provided adequate rationales for using a mixed-method design. The three case studies met all applicable criteria. Of the five qualitative studies, no study stated the philosophical perspective. Two studies did not address the influence or background of the researcher, and two studies did not describe ethical approval. Some studies acknowledged these quality issues in their limitations.

Intervention Characteristics

Complete data on intervention characteristics is available in Supplementary 6. Regarding background, programs were created based on existing evidence (n=10), existing theories/models/frameworks (n=3), a combination of the two (n=4), or were pre-existing tested programs designed for other aetiologies (e.g., aphasia) but modified for dementia (n=6). Four programs did not clearly describe the background. Five programs reported including consumer feedback (Barnes & Markham, 2018; Ingersoll-Dayton et al., 2013; Jokel et al., 2017; Kouri et al., 2011; Liddle et al., 2012), with the two protocols planning to include consumer feedback (Brown et al., 2021; Volkmer et al., 2018). One program used pre-testing with consumers in addition to validation with professionals,

although the validation process was unclear (Kouri et al., 2011). Two protocols and one study indicated long-term consumer involvement, one through a steering group (Volkmer et al., 2018), one through authorship (Jokel et al., 2017), and the other as 'partners' in the project (Brown et al., 2021). However, the frequency or amount of input was not specified. Four programs provided limited details on the degree of consumer involvement (Barnes & Markham, 2018; Ingersoll-Dayton et al., 2013; Liddle et al., 2012; Meyer et al., 2020).

Regarding interventionist, programs were most frequently delivered by speech pathologists (n=12), social workers (n =3), psychologists (n=2), specialist program-specific trainers (n=2), or a mix of different professionals (n=2). Seven programs did not specify the interventionist.

A variety of materials were used across the 27 CPT programs. CPT programs included pamphlets (n=13), videos (n=9), pictures and other media (n=7), PowerPoint slides (n=5), and workbooks (n= 1). One program was delivered via an app (Brown et al., 2021). Seven programs used a manual for implementation. Five programs involved the creation of individualised communication aids, and four programs implemented a life story approach to facilitate CPT.

Regarding dosage, the frequency and length of programs varied significantly, but was not always reported. The length of programs ranged from one (Spilkin & Bethlehem, 2003) to 18 sessions (Thorgrimsen et al., 2002), with a mean of six sessions. Most programs (n=18) held weekly sessions with the remainder being biweekly (n=2), fortnightly (n=1), two sessions in one sitting (n=1), or a one-off session (n=1). Four programs varied the number of sessions depending on participant needs. Four studies did not state session frequency. The mean session length was 82 minutes, ranging from 45 (Liddle et al., 2012) to 150 minutes (Haberstroh et al., 2011; Morris et al., 2021). Four studies specified a time range for each session (e.g., 60-90 minutes) (Olthof-Nefkens et al., 2018). Four programs did not state session length.

There were some clear patterns in intervention delivery. Most programs were held in-person (n=26), with the remainder being via an app (n=1), via video with a clinician present to answer questions (n=1), and one with a mix of in-person and telehealth delivery (n=1). Programs were mostly delivered individually (n=16), with some delivered as a group (n=9) or with a mix of individual and group components (n =1).

Reporting of Intervention Descriptions

Studies varied in their reporting of items according to TIDieR and ITAX criteria (Supplementary 7, 8). Only one CPT study (Berwig et al., 2020) and one CPT protocol (Volkmer et al., 2018) reported all applicable TIDieR items. The fewest number of reported items was five by Brown et al. (2021) ad Roque et al. (2008). "How" (modality) was reported most frequently (all studies). "Actual Fidelity" and "Modifications to the Study" were reported least frequently (both in 4/30 studies).

Of the ITAX, one CPT study achieved complete reporting of all items (Berwig et al., 2020). Three studies reported nine ITAX items (Volkmer et al., 2018; Williams et al., 2018; Williams et al., 2021) with one study reporting the lowest number of only two ITAX items (Brown et al., 2021). The most reported item was the "Mode" of intervention (all studies). The least reported item was "Sensitivity to Participants" by nine studies.

Intervention Functions and COM-B

The mapping of training components onto intervention functions of the Behaviour Change Wheel and their corresponding COM-B target is shown in Supplementary 6. CPT programs used between one to six intervention functions, with a median of four intervention functions per program. The most

common intervention functions used were "Education" and "Training" (26/27 programs). This function included practising skills (e.g., Orange & Colton-Hudson, 1998), discussing strategies (e.g., Barnes & Markham, 2018), educational modules (e.g., Small & Perry, 2012), or role-plays (e.g., Ripich et al., 1999). "Modelling" and Enablement" were used in 12 programs, with activities including video feedback/examples to model behaviours (e.g., Berwig et al., 2020; Liddle et al., 2012), verbal reflection on performance (e.g., Volkmer et al., 2018) or problem-solving discussions (e.g., Haberstroh et al., 2011). "Environmental Modifications" were used in 13 programs such as reminder cards (Ingersoll-Dayton et al., 2013). Six programs used "Persuasion", such as positive feedback on use of strategies (e.g., Olthof-Nefkens et al., 2018). Six programs used "Incentivisation" where conversational success was emphasised as a reward for the use of strategies (Ingersoll-Dayton et al., 2013; Small & Perry, 2012). No programs used "Coercion" or "Restriction".

A total of 12 of the 27 programs clearly addressed Capacity, Motivation, and Opportunity as represented within the COM-B. A total of 14 programs addressed two areas (Capacity and Motivation), and one program addressed one area (Opportunity) (Kindell et al., 2019). A total of 26 programs reported Psychological Capacity (e.g., education) and Reflexive Motivation (e.g., feedback), 14 programs reported Automatic Motivation (e.g., model imitation). 11 programs reported Physical Opportunity (e.g., practice in daily activities), and three programs included Social Opportunity (e.g., peer support).

Outcome Measures

There were 74 different outcome measures identified across the 30 studies (Supplementary 9, 11). A total of 57 measures had been previously developed in other studies, with 17 new measures created by 12 studies. For the person with dementia, 23 measures assessed communication, and 14 assessed other factors, such as behaviour or mood. For the family member, 31 measures assessed mood, relationship, or attitudes, with 18 measures assessing their use of communication skills.

Based on the ICF, 33 measures evaluated the 'Environment' of the person with dementia, and 32 measured the 'Activity/Participation' of the family member. It was noted that 29/32 outcomes targeting 'Activity/Participation' of the family member overlapped with outcomes measuring the 'Environment' of the person with dementia. A total of 22 measures related to the 'Activity/Participation' of the person with dementia. A total of 18 measures targeted the Body Function/Structure of the family member, with 16 measuring that of the person with dementia. No measures targeted 'Personal' aspects within the ICF. A total of 40 measures evaluated multiple components of the ICF.

As quality-of-life (QOL) measures often span across multiple ICF areas, they were not allocated to an ICF domain. There were five QOL measures used across studies. Three measures assessed the QOL of the person with dementia and two assessed that of the family member. Six outcome measures were not categorised, as the ICF domain was not clear (general health, goal attainment, or therapy readiness/engagement).

Quantitative Outcomes

There were 23 studies that reported quantitative results. Overall, studies showed a positive impact of CPT for people with dementia and their families. Tabular data of results is shown in Supplementary 10.

Use of strategies by families was the most frequently reported improvement, showing positive change (either statistically or from descriptive evaluation) in ten studies. Two studies reported improvements in between-group comparisons (Kouri et al., 2011; Ripich et al., 1999), with the remaining reporting within-group comparison improvements. An increase in observed use of strategies by the family member was statistically significant in six studies (Haberstroh et al., 2011; Jokel et al., 2017; Kouri et al., 2011; Ripich et al., 1999; Roque et al., 2009; Williams et al., 2018). For example, the "FOCUSED"

program by Ripich et al. (1999) found increased choice question use compared to open-ended questions at post-intervention. Similarly, the "TANDEM" program by Haberstroh et al. (2011) found statistically significant improvement in reported strategy use in standardised diaries (p< 0.001). Four studies that did not test for significance also reported an increase in raw scores pre- and post-intervention (Chesneau et al., 2021; Orange & Colton-Hudson, 1998; Spilkin & Bethlehem, 2003; Troche et al., 2019).

Six studies found statistically significant improvements in knowledge of strategies by family members, four finding between-group improvements (Done & Thomas, 2001; Jokel et al., 2017; Kouri et al., 2011; Ripich et al., 1998), one finding within-group improvements (Morris et al., 2018), and one with significant group-by-time effects (Liddle et al., 2012).

The communication of the person with dementia improved in six studies. One study showed between-group improvements (Jokel et al., 2017), with the remaining finding within-group improvements. Three studies found statistically significant improvements (Done & Thomas, 2001; Jokel et al., 2017; Williams et al., 2018), such as the 10-week program "CARE" (Williams et al., 2018), which demonstrated a significant improvement in the ratio of sociable to unsociable communication across all sessions. Three additional studies did not test significance but reported improvements in communication post-intervention (Chesneau et al., 2021; Cress & King, 1999; Troche et al., 2019). However, two studies found no difference in the communication of the person with dementia (Barnes & Markham, 2018; Thorgrimsen et al., 2002)

Regarding conversation, the occurrence of communication breakdowns reduced significantly in two studies, one between-group (Barnes & Markham, 2018) and one in group-by-time comparisons (Ripich et al., 1998), with two within-group studies reporting reduced occurrence without testing for significance (Orange & Colton-Hudson, 1998; Spilkin & Bethlehem, 2003). Two studies (Kouri et al., 2011;

Williams et al., 2021) did not find significant changes in breakdowns, however, Williams et al. (2021) did find a significant increase in resolution of misunderstandings post intervention.

Considering changed behaviours such as agitation, two studies found statistically significant improvements (Gerritsen et al., 2019; Kouri et al., 2011) with one study reporting improvements without statistical testing (Berwig et al., 2020). One study was between-subject analysis (Kouri et al., 2011), with remaining studies being within-subject analysis. Two studies did not find statistically significant improvements in behaviours (Liddle et al., 2012; Thorgrimsen et al., 2002).

Results on psychosocial outcomes varied across studies. Family strain (also referred to as "burden" in the literature) was significantly reduced in two within-group studies (Gerritsen et al., 2019; Morris et al., 2021) and reduced descriptively in two within-group studies (Berwig et al., 2020; Troche et al., 2019). Three studies found no difference in strain (Done & Thomas, 2001; Haberstroh et al., 2011; Liddle et al., 2012), with one finding increase in strain post-training, attributed to characteristics of the participant (Ha et al., 2021). Family member self-efficacy showed statistically significant improvements in two between-group studies (Jokel et al., 2017; Kouri et al., 2011), but one study found no difference in self-efficacy (Barnes & Markham, 2018). One study found significant within-group improvements in family mood (Haberstroh et al., 2011); however, six studies did not find statistically significant improvements in anxiety, depression or affect for both the person with dementia (Ha et al., 2021; Liddle et al., 2012) or their family member (Barnes & Markham, 2018; Gerritsen et al., 2019; Liddle et al., 2012; Ripich et al., 1998; Thorgrimsen et al., 2002). QOL of the person with dementia between intervention and control improved significantly in one study (Haberstroh et al., 2011), and descriptively in one study (Berwig et al., 2020). One study did not find improvements in QOL for the person with dementia (Thorgrimsen et al., 2002).

Qualitative Outcomes

Ten studies reported qualitative outcomes. Overall, CPT was reported as a positive experience for both the family member and the person with dementia. There were seven main categories found during content analysis, as shown in Table 4. Further details on specific codes are available in Supplementary 11.

The category '*Considerations for the Content and Delivery of CPT Programs'* identified helpful aspects of interventions, such as videos, written materials, the home environment, delivery in the earlier stages of dementia, and an empathetic interventionist. Telehealth was a feasible option. Involving the person with dementia was beneficial, but participants acknowledged a need for additional cognitive supports to enhance participation. '*Techniques Used in CPT Programs'* identified a range of conversational strategies and communication aids, such as clarifying the topic. Participants reported that communication strategies were beneficial and easily integrated into daily life. However, some participants identified that strategies were not always remembered or successful, specifically the strategy 'keep things simple' (Meyer et al., 2020).

'*Impact of Strategies on Improving Conversation'* identified improvements in communication and the experience of conversation. Participants reported talking more and for longer with a greater variety of topics. Conversation was also reported as more enjoyable and positive. *'Varying Emotional Impact for People with Dementia and their Families'* identified positive and negative aspects to CPT. For the family member, CPT reduced irritability and stress, but participants acknowledged that the caring role was still challenging. A life story approach specifically led to some negative emotions relating to past events.

'*Impact on Relationships and Connection'* identified a greater connection between the family member and the person with dementia. Participants reported greater engagement and awareness of

changes, leading people to be more considerate and kinder. However, a life story approach was

reported to cause conflict due to differing perspectives on past events. '*Improving Attitudes Towards*

Dementia through CPT' highlighted three key improvements to people's attitudes of dementia, (a)

increased insight and understanding of dementia, (b) improved sense of self-worth/empowerment and

confidence for the person with dementia and the family member, and (c) greater acceptance of

changes. However, family members identified that an awareness of these changes could be discouraging

and instigate fear for future changes. '*Enhancing Daily Life and Activities'* identified positive changes in

real-life activities. A life story approach was beneficial to discussing activities without needing to also

talk about dementia and could be used as a dynamic resource with contents updated over time.

Discussion and Implications

This systematic review describes the current state of CPT programs for family members of

people with dementia. In contrast, previous systematic reviews of CPT in dementia have focused on

both formal and informal carers in their analysis (Eggenberger et al., 2013; Morris et al., 2018; Nguyen et

al., 2018). The current review focuses solely on family members providing insight into the impact of CPT,

not just as a mechanism to support care activities, but to facilitate social communication and

relationships. This review highlights the qualitative impact of CPT on relationships, where people felt

greater connection and engagement. Previous systematic reviews described the development of CPT

interventions, such as adaption from previous programs (Nguyen et al., 2018) or use of theoretical

models (Morris et al., 2018). Our review additionally considers the role of consumers in the creation of

CPT programs. There are many benefits to consumer involvement in intervention design, including

higher quality health outcomes, increased autonomy, improved satisfaction with care, and improved

wellbeing (Aged Care Quality and Safety Commission, 2022), leading to recent moves to further involve

consumers in dementia research (Hendriks, 2013). However, in our review, only seven programs included consumer involvement in the creation of their programs, with the level of involvement not always specified. For CPT to be specific to the lived experience of dementia and lead to better outcomes, autonomy, and wellbeing, new CPT interventions need to include consumers during creation. Frameworks such as the Involvement Matrix (Smits et al., 2020) could be used to enhance reporting of consumer involvement throughout project stages.

This systematic review also adds upon Nguyen et al. (2018)'s descriptive findings of intervention characteristics by systematically collecting data on multiple intervention components, including delivery, schedule, and materials used. This data can support the creation of future CPT programs such as planning the intervention schedule, based on the knowledge that most dementia CPT programs are on average six weeks in duration. Speech pathologists are the main providers of CPT, which aligns with their role as specialists in communication disorders. As dementia rehabilitation requires a multidisciplinary approach, with CPT often part of broader multicomponent interventions, involving other disciplines such as social work and psychology could have additional benefits, especially on psychosocial outcomes. The analysis of qualitative data also highlighted valuable components of interventions from the view of the participants. Although videos were only used in nine studies, qualitative data reported the value of and preference for videos within CPT to provide clear models of strategies or as video feedback to facilitate behaviour change.

Another unique contribution of this review is the analysis of intervention functions and behaviour change components within CPT programs. No previous systematic review in dementia CPT has used the Behaviour Change Wheel (Michie et al., 2011) to identify components of behaviour change. This model is gaining prominence in communication research, especially in aphasia. For example, van Rijssen et al. (2021) evaluated CPT intervention for health staff by identifying COM-B elements that led to behaviour change. This study found changes in psychological capability, automatic motivation, and

reflective motivation, which also reflects the most common COM-B components found in our study. Analysis using the COM-B framework may support the embedding of theoretically informed training components in future programs.

There is an increasing need for research into telehealth interventions in dementia (Gately et al., 2019). Although only one study in our review used components of telehealth (Meyer et al., 2020), the qualitative data from this study provided positive findings relating to the feasibility and benefit of telehealth, such as allowing easier access, especially in rural communities, without affecting quality of intervention delivery. The lack of telehealth interventions identified by this systematic review suggests a gap in current CPT programs. In the new COVID world, telehealth is an essential or even preferred form of health delivery, enabling greater access to care regardless of distance or mobility. As with all technology, one barrier was familiarity with technology. Since Meyer et al. (2020), there have been significant advances in telehealth due to the global pandemic. Because of this, CPT delivery via telehealth is now more commonplace across healthcare, such as in brain injury and stroke rehabilitation (Masuku et al., 2022), and may be more successful or easier for participants compared to a few years ago. Future research should identify whether telehealth CPT interventions could be accessible and feasible for family members of people with dementia.

The assessment of intervention reporting via the ITAX (Schulz et al., 2010) and TIDieR (Hoffman et al., 2014) provided new insights into the characteristics of current dementia CPT interventions. No other systematic reviews in dementia CPT have utilised either tool to investigate reporting of intervention descriptions (Eggenberger et al., 2013; Morris et al., 2018; Nguyen et al., 2018). These tools allow for comparison across other studies in CPT and dementia. Wallace et al. (2021) similarly applied the TIDieR in a review of online peer-support interventions for caregivers of people with dementia, traumatic brain injury, Parkinson's Disease, multiple sclerosis, and stroke survivors. They found that only three of the 18 included studies identified 75% or more of TIDieR components. Our findings indicated

more complete reporting of CPT interventions within dementia, with 11/30 studies identifying 75% or more TIDieR components. However, consistent with our findings, Wallace et al. (2021) also found that planned/actual fidelity and modifications to intervention were the most frequently missing elements within included studies. Use of such reporting tools when reporting interventions may support more complete and clear reporting and subsequent implementation of interventions into the real-world setting.

Mapping outcome measures onto elements of the ICF identified the variety of outcome measures that have been used in dementia CPT. Many of these outcome measures assessed the support or attitudes of the family member, highlighting the role of the environment of the person with dementia in facilitating successful communication. These environmental tools concurrently targeted the activity and participation of the family member, such as in their use of communication strategies. However, as per our quality analysis, reliability and validity of the outcome measures were not always described in all studies. Future studies should seek to include reliable outcome measures for the person with dementia across all key areas of the ICF, to allow measurement of the impact of CPT on the person's environment, their activities, and their participation in communication-based activities.

Our findings on the effectiveness of dementia CPT interventions for families align with previous systematic reviews (Eggenberger et al., 2013; Morris et al., 2018; Nguyen et al., 2018), with consistent quantitative improvements in strategy use and knowledge. Although some similarities exist, such as in the median schedule of six sessions typically once a week, identifying factors that contribute to successful CPT is difficult due to extensive heterogeneity in content and implementation, as well as unclear reporting of interventions. For example, timing of CPT implementation in terms of stage of dementia was not consistently reported for successful programs, with only four of these 14 studies reporting MMSE (ranging between 16.81 – 19). The lack of consistent data means that an ideal implementation time is unclear. Further research should ensure that all relevant aspects of participants

and interventions are clearly reported to allow for comparison between programs and to more clearly identify characteristics that contribute to CPT success.

Effective studies all included education and training intervention functions, with ten studies including another intervention function such as modelling, environmental restructuring, or enablement. Such intervention functions may therefore be important to implement CPT successfully. However, specific behaviour change techniques were not investigated in this study. There are no clear minimum standards for implementing CPT, or specification of which training techniques should be used to promote behaviour change. Individual studies have attempted to identify some key elements of CPT, such as Johnson et al. (2017) and O'Rourke et al. (2018). However, these studies do not provide clear conclusions regarding which techniques are essential for behaviour change. Future research should therefore investigate behaviour change techniques used across successful CPT programs to come to a greater consensus on the critical ingredients of programs in dementia and across populations.

Our review adds further qualitative data by highlighting strategies that were reported as beneficial by participants, such as asking one thing at a time, or supporting the person with dementia with word finding. Some of our quantitative findings on changed behaviours also reflected Nguyen et al. (2018) who found improved behaviour management skills in carers. However, our study did not find consistent improvements, with 2/5 studies failing to find statistically significant improvements (Liddle et al., 2012; Thorgrimsen et al., 2002). The inclusion of life story work/reminiscence (Thorgrimsen et al., 2002) could explain some of these results, with our qualitative analysis finding negative emotions and increased conflict post-intervention (Kwak et al., 2018). When comparing characteristics of Liddle et al. (2012) to other studies that did show improvements in changed behaviour (Gerritsen et al., 2018; Berwig et al., 2018; Kouri et al., 2011), the CPT intervention provided in Liddle et al (2012) was much shorter compared to these other programs (one session vs. 4-5 weekly sessions). Additionally, opportunities for active practice and feedback on use of skills was a core component of all three

successful programs (e.g., video feedback), whereas Liddle et al. (2012) involved watching a video only. This may have affected skill acquisition of the family members, while still demonstrating improvements in knowledge. As mentioned, investigating the specific behaviour change techniques used across programs may identify key components of successful CPT program to inform a minimum standard for CPT that will improve both communication and changed behaviours.

Chesneau et al. (2021) identified that the caregiving role can still be challenging and distressing, despite the significant benefits of CPT on conversation. Our quantitative outcomes reflected this, with no significant improvements in anxiety and depression for people with dementia or their family members, and only 4/8 studies finding improvements in carer strain. This finding contrasts with other systematic reviews, where Morris et al. (2018) identified RCTs that did find improvements in anxiety and depressive symptoms of the carer. This contrasting finding may be due to the inclusion of multicomponent interventions by Morris et al. (2018), such as a cognitive rehabilitation program that found improvements in carer psychological symptoms (Judge et al., 2013). As our systematic review specifically investigated communication-focused programs, rather than multicomponent interventions, improving strain, anxiety, and depression may require additional psychological interventions that are not offered in a sole CPT program, with communication is one of many key aspects in supporting carer wellbeing. Our results on strain, anxiety, and depression may also be due to the inclusion of family members only, in addition to a significantly greater proportion of female family members. Seidel and Thyrian (2019) found that family carers perceive greater levels of strain compared to professional carers, with female family carers rating even higher strain compared to male family carers. This therefore highlights the greater strain that occurs for family members, especially women, which may not be improved solely through CPT. For family carers, CPT programs should be paired with additional carer training to support this caring role. Involving other disciplines, such as social work and psychology, may be beneficial to address these outcomes.

Limitations

There were some limitations within this systematic review. To gain a comprehensive understanding of all family-based CPT programs in the literature, this review did not exclude studies based on quality. Therefore, some findings are drawn from low quality studies. This limitation was also noted in Nguyen et al. (2018) who reported this may be due to poor reporting rather than poor research methods. Many included studies were feasibility or pilot studies, which may also impact quality ratings as in their nature are designed to be a 'pilot' rather than a comprehensive intervention study. Additionally, the quality analysis tools used (Johanna Briggs Institute, 2017) provided descriptive data rather than a specific quality rating for each study. Because of the lack of specific quality ratings, there was no systematic process to identify high vs. low quality studies. However, as the TIDieR and ITAX were used to assess quality of reporting and whether studies followed established reporting taxonomies, such criteria could also be used to further indicate quality of studies. The reader should take this into account when interpreting the findings. Additionally, meta-analysis was not possible within this systematic review due to the heterogeneity of studies included. Future studies could attempt meta-analysis within subsections of data that have more consistent homogeneity, particularly with frequently used outcome measures. In addition, this study only included intervention studies/protocols and did not include other studies that reviewed or described interventions and their outcomes (e.g., McCrae et al., 2020). Reporting bias may further be present as only studies that were published in English were included due to pragmatic reasons.

Conclusion

There are a range of CPT programs in the literature, with varying implementation, creation, and delivery. CPT is an effective intervention to improve use of communication strategies and knowledge for families of people with dementia. Although some studies suggest that CPT may reduce changed behaviours (e.g., agitation), further research is needed to explore the impact of CPT on changed behaviours and what factors may influence changed behaviours, such as duration of program, inclusion of active training techniques, or use of life story. There was no evidence of CPT improving anxiety or depression, with few studies finding improvements in carer strain. For family members with dual caring roles, strain and anxiety/depression may be better addressed through multicomponent interventions. When delivering CPT, speech pathologists should ensure that education and active training components (e.g., practice and feedback) are consistently embedded. However, future research is needed to identify the minimum behaviour change techniques required for CPT programs to be effective, not only for communication, but across other psychosocial outcomes. There are prominent gaps in current CPT programs for families, including the lack of online options, lack of consumer involvement in the development of CPT programs, and incomplete intervention descriptions impacting implementation and accessibility. Future CPT programs should consider online options and be created together with consumers to ensure programs are relevant, useful, and accessible. Outcome measures used in future CPT research should target the communicative environment, activities, and participation of the person with dementia and their families. Finally, future CPT studies should thoroughly report interventions to ensure that programs are accessible and implementable by clinicians in the real-world setting. Making CPT programs easily available will be essential to support conversation, social connection, and relationships between people with dementia and their families.

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Tables

Table 1. Study Details

Author. Place. Design	Aim	Intervention Description	Intervention Description	Development of Program	Family Member Characteristics	Person with Dementia Characteristics	Statistical Analysis	Key Findings
Barnes & Markham (2018). UK. RCT	Test acceptability of intervention and outcome measures, and measure for significance	Communication training using cognitive behavioural therapy and self-efficacy. [SLP]	Communication training using cognitive behavioural therapy and self-efficacy.	Literature review; Consultation with FC and content validity exercise with dementia care professionals	M:F = 12:43 Spouse = 35 Child = 15 Not Stated = 5 Mean Age = 67	AD = 21 VD = 8 Mixed = 18 Age Range = 55-91 MMSE mean = 24	Normally distributed data: t-test; non-parametric data: Mann-Whitney U-test	Statistically significant improvement in occurrence of difficult communication scenarios. Statistically significant improvement in 'value' ACQOL score. No change in anxiety/depression.
Berwig et al. (2020). Germany. Quasi-Experimental	Identify outcomes and instruments for evaluating effectives; identify clinically significant effects	Counselling using video feedback on supporting elements (FSE). [TR]	Counselling using video feedback on supporting elements (FSE)	Adaptation of pre-existing program based on literature.	M:F = 0:5 Spouse = 4 Parent = 1 Mean Age = 62.2	M:F = 4:1 FTD = 5 Mean Age = 60 FRS Stage Range = Moderate to Very Severe	Clinical significance; C-values	QUALIDEM, NPI, NPI-D, and QCPR results in favour of intervention. Nil clinically significant changed in MM Instrument.

Brown et al. (2021). USA. Protocol	Assess effectiveness of AAC plus as an adjunct to care and caregiving.	Customisable AAC to support communication during care activities and facilitate discussions about health. N/A	Customisable AAC to support communication during care activities and facilitate discussions about health.	User-informed design with users as partners in project.				t-test; chi-squared test; Mann-Whitney U-test or Kruskal-Wallis; Generalised linear mixed models	
Chesneau et al. (2021). Canada. Mixed-Method	Explore effects of AID-COM on carers of people with early-stage AD	Psychoeducational program on AD with training materials and leaflet. N/A	Psychoeducational program on AD with training materials and leaflet	Evidence/ Literature Based	M:F = 0:5	n = 5		Descriptive statistics Coding	Increase in frequency of use and effectiveness of strategies.
Cress & King (1999). Canada. Case Study	To address cued comprehension and augment communication.	Creation and practice of communication boards and strategies. SLP	Creation and practice of communication boards and strategies	Evidence/ Literature Based	M:F = 1:2	M:F = 1:0 PPA = 1 Age = 60		Descriptive outcomes	Increased use of communication boards, cueing, and of augmented expression
Done & Thomas (2001). UK. RCT	Enhance knowledge about communication strategies and reduce problems and distress	Group discussion of videos comparing unsuccessful and successful communication. SLP	Group discussion of videos comparing unsuccessful and successful communication.	Not described.	N = 45	Not stated	Not stated		Improved awareness of strategies, improved more in workshop than booklet only. Reduction in report of problem behaviours in both groups.

Gerritsen et al. (2019). Netherlands.Mixed-Method	Improve communication and decrease carer strain and changed behaviours of people living with dementia.	Conversations between dyad recorded and played back for feedback, focusing on basic interaction principles. [TR]	Conversations between dyad recorded and played back for feedback, focusing on basic interaction principles.	Modification of pre-existing program used in childcare.	M:F = 1:9 Spouse = 5 Adult child = 4 Not specified = 1 Mean age = 64.8	M:F = 6:4 AD:FTD:VD = 1:1:3 Mixed = 2 Other = 1 Not stated = 2 Mean age = 80	Wilcox signed ranks tests	Non-significant results on positive and negative affect. Significant difference in competence. Significant decrease in restlessness.
Ha et al. (2021). Korea. Quasi-experimental	Examine change in marital relationship and impact of age, gender, and cognitive functioning.	Use photographs to reflect on life as a couple, train communication skills for the dyad. [SW]	Use photographs to reflect on life as a couple, train communication skills for the dyad.	Modification of pre-existing program (CLSA; Ingersoll-Dayton et al., 2013) to Korean context.	M:F = 18:19 Mean Age = 74.2 Spouse = 37	M:F = 19:18 Mean MMSE = 20.6 AD = 37 Mean age = 75.5	Repeat t-tests; repeated measures analysis of variance using generalized linear models	Nil significant change in marital relationship, talkativeness, depression, or mutuality. Improved talkativeness in younger male participants.
Haberstroh et al. (2011). Germany. Quasi-experimental	Increase caregivers use of strategies for maintaining communication to improve QOL.	Psychoeducative training to learn and practice strategies based on "TANDEM" model of communication. [PSY]	Psychoeducative training to learn and practice strategies based on "TANDEM" model of communication.	Based on theoretical model TANDEM.	M:F = 10:12 Spouse = 18 Adult Child = 4 Mean Age = 68.6	M:F = 11:11 AD = 17 VD = 4 Mixed = 1 Mean MMSE = 19 Mean Age = 76.6	Interrupted time-series analysis	Frequency of reported strategy use increased significantly. QOL of persons with dementia enhanced significantly compared to control.

Ingersoll-Dayton et al. (2013). USA. Mixed-Method	Examine feasibility and acceptability of intervention Couples Life Story Approach (CLSA)	Use photographs to reflect on life as a couple, train communication skills for the dyad. [SW]	Use photographs to reflect on life as a couple, train communication skills for the dyad.	Based on Legacy Therapy approach and literature. Obtained feedback from consumers.	M:F = 7:13 Spouse = 20 Mean age = 72.2	M:F = 14:6 Mean MMSE = 23.5 Mean age = 74	Descriptive statistics; Qualitative coding	100% follow through by interventionist on most components except for two. Mostly positive reaction, some negative.
Jokel et al. (2017). Canada. Quasi-experimental	Assess feasibility and effectiveness of PPA education and training group program.	Cueing for word retrieval, individualised strategies and education. [SLP]	Cueing for word retrieval, individualised strategies and education.	Members of planning team (consumers) as authors.	M:F = 3:7 Spouse = 10 Mean age = 67	M:F = 7:3 PPA = 10 Mean age = 69	Wilcox Sign-ranked test and r statistic	Significant improvement in communication quality and relationship.
Kindell et al. (2019). UK. Qualitative	Explore everyday conversation and examine how life story work could support communication.	Creation of individualised life story format based on individual need. [N/A]	Creation of individualised life story format based on individual need	Based on evidence and pre-existing literature on memory books / wallets and life story.	M:F = 2:3 Spouse = 5 Mean age = 68.2	M:F = 3:2 Semantic Dementia = 5 Mean age = 68.2	Cross-case analysis of narrative data and qualitative analysis	Themes: Interactional connections; emotional connections; emotional challenges; new connections; practical connections; and future impact.
Kouri et al. (2011). Canada. RCT	Develop intervention for communication of caregiver and test effectiveness.	Psychoeducational approach with five modules based on communication	Psychoeducational approach with five modules based on communicatio	Based on Self-Efficacy Theory and literature relating to AD. Validated by	M:F = 9:41 Spouse = 18 Adult Child = 26 Other FM = 6	AD = 50	t-test; Chi-Square; Analysis of Covariance; analysis of variance (ANOVA).	Significant increase in knowledge. Significantly different scores in degree of

		and cognitive changes. N/A	n and cognitive changes.	dementia experts.	Mean age = 62			disturbance and self-efficacy.
Kwak et al. (2018). Korea. Qualitative	Explore how older couples experience CLSA.	Use photographs to reflect on life as a couple, train communication skills for the dyad. SW	Use photographs to reflect on life as a couple, train communicatio n skills for the dyad.	Modification of pre-existing program (CLSA; Ingersoll-Dayton et al., 2013) to Korean context.	M:F = 24:32 Spouse = 56 Mean age = 75.07	M:F = 32:24 AD = 56 Mean age = 76.46	Thematic Content Analysis	Key Themes: Emotional benefits; Positive Evaluation of Life as a Couple; Changes in Communication ; Identifying Loss
Liddle et al. (2012). Australia. RCT	Improve caregiving experience and identify impact on person with dementia.	Video program providing education and examples of strategies. SLP	Video program providing education and examples of strategies.	Based on evidence with knowledge-translation approach. Consumer input.	M:F = 5:24 Spouse = 22 Adult child = 4 Parent = 1 Other = 2 Mean Age = 68.7	M:F = 21:8 AD = 12 FTD = 2 VD = 4 Not Stated Type = 11 Mean Age = 76.9	t-test; Mann-Whitney U tests; Chi-Square or Fisher's exact test; ANOVA); logistic regression; Wilcoxon signed rank tests.	Significant difference in pre-post scores for intervention group in knowledge. Nil significant change in remaining outcomes. 85% reported training was very useful.
Meyer et al. (2020). Australia. Qualitative	Evaluate feasibility and acceptability whether it can be delivered via telehealth.	Psychoeducatio nal approach to training on CPT strategies and hearing aids using video resources. OTH	Psychoeducati onal approach to training on CPT strategies and hearing aids using	Based on research/evide nce and pre-existing program.	M:F = 3:3 Spouse = 4 Adult Child = 1 Mean Age = 74.8	M:F = 2:4 Mean Age = 81	Template Analysis	Themes: appropriateness of resources; considerations for telehealth; knowledge and use of

			video resources.					strategies; impact of intervention
Mooney et al. (2018). USA. Quasi-Experimental	Increase number and variety of communication modes	Group education and training on communication modes. OTH	Group education and training on communicatio n modes	Based on existing evidence with systematic instruction approach.	M:F = 3:3 Mean age = 64	M:F = 3:2 PPA = 5 Mean age = 67	Descriptive analysis	Increased use of different communication modes (book, script, key-wording)
Morris et al. (2021). UK	Improve stress, communication, mentalisation, and understanding	Group training targeting psychological, relationship and communication needs of carers. PSY	Group training targeting psychological, relationship and communicatio n needs of carers.	Based on Communication Empowerment Framework and person-centred principles.	M:F = 37:122 Spouse = 98 Not stated = 61 Mean Age = 59	AD = 44 VD = 23 Mixed = 8 Not stated = 73	Mixed-effects multilevel analyses and models. Bootstrapping for non-normal outcome variables.	Significant improvement in communication knowledge and skills. Significant reduction in perceived stress. High satisfaction.
Olthof-Nefkens et al. (2018). Netherlands. Qualitative	Describe essential elements of logopaedic intervention and understand value of approach.	Logopaedic intervention with communication aids with evaluation and modification. SLP	Logopaedic intervention with communicatio n aids with evaluation and modification.	Existing practical guidelines on communication and AAC.	M:F = 2:2 Spouse = 4 Mean age = 69.75	M:F = 2:2 AD = 3 FTD = 1 Mean age = 70.75	Framework analysis	Participants found advice useful, communication aids useful, and appreciated attitude of SLP.
Orange & Colton-Hudson (1999). Canada. Case Study	Improve language performance, decrease burden, reduce challenging behaviours, and	Conversational analysis to identify conversation breakdowns, repair patterns,	Conversational analysis to identify conversation breakdowns, repair patterns, and	Based on trouble-source-repair sequence paradigm and Communication Enhancement	M:F = 0:1 Spouse = 1 Age = 74	M:F = 1:0 AD = 1 MMSE = 17 Age = 77	Conversational Analysis (Descriptive)	'Other' trouble sources reduced. Increased use of strategies by communication partner.

	reduce communication breakdown.	and identify strategies. [N/A]	identify strategies.	Model of Ageing.				Frequency of problematic behaviours nil difference. Burden increased slightly. Increased awareness of communication by communication partner.
Ripich et al. (1998). USA. Quasi-Experimental	Does communication training impact affect, depression, general hassles, health, and knowledge?	Systematic program with education and techniques to enhance communication. [SLP]	Systematic program with education and techniques to enhance communication.	Material used an adaptation of "FOCUSED" program (Ripich, 1996)	M:F = 7:30 Spouse = 18 Not Stated = 12 Mean Age = 61.675	AD = 30 Mean MMSE = 16.875 Mean Age = 78.14	Independent sample t-tests; Chi square analyses; ANOVA	Significant improvements in knowledge for "FOCUSED" group. Significant decrease in communication hassles. No change in depression.
Ripich et al. (1999). USA. Quasi-Experimental	Do specific question types result in more successful communication; does training affect questioning patterns?	Systematic program with education and techniques to enhance communication. [SLP]	Systematic program with education and techniques to enhance communication.	Material used an adaptation of "FOCUSED" program (Ripich, 1996)	M:F = 18:36 Spouse = 18 Not Stated = 22 Mean Age = 62.4	AD = 54 Mean MMSE = 17.23	ANOVA and logistic regression; Descriptive statistics	Successful communication highest for yes/no questions. Significant improvement in question use at six months.

Roque et al. (2008). Brazil. Quasi-Experimental	Verify effectiveness of a training program to facilitate communication strategies.	Group intervention with brief discussion on communication and dementia. SLP	Group intervention with brief discussion on communication and dementia.	Not described.	M:F = 0:7 Adult Child = 6 Other = 1 Mean Age = 48	M:F = 2:5 AD = 7 Mean Age = 74.60	Wilcoxon test (paired samples) and Spearman correlation	Increased frequency of strategy use. Positive correlation between use and effectiveness of strategies. No change in efficacy pre-post intervention.
Small & Perry (2012). Canada. Qualitative	Pre-test and refine CPT program and evaluate study protocols.	Compensatory strategies practiced in contexts of meaningful communication .OTH	Compensatory strategies practiced in contexts of meaningful communication.	Based on biopsychosocial perspective on communication (ICF, 2001) and literature.	Spouse = 6 Mean Age = 72	AD = 6 Mean MMSE = 18 Mean Age = 66	Descriptive analysis	Reported increased use of strategies. Positive impacts of training and challenges identified.
Spilkin & Bethlehem (2003). South Africa. Case Study.	Facilitate optimal conversation through memory book and conversation analysis.	Individual memory book. Conversation analysis to identify strategies. SLP	Individual memory book. Conversation analysis to identify strategies.	Based on conversation analysis methodology and existing evidence.	M:F = 0:1 Adult child = 1 Mean Age = 55	M:F = 1:0 AD = 1 Mean Age = 85	Conversational analysis principles	Increase in maximal turns, introduced more topics, increased questioning, and improved topic maintenance.
Thorgrimsen et al. (2002). UK. RCT	Assess feasibility and effectiveness of	Training carers to facilitate reminiscence	Training carers to facilitate reminiscence	Based on existing evidence/literature and	M:F = 5:6 Spouse = 9 Adult Child = 1	M:F = 5:6 Mean MMSE = 12.95	Not stated.	No significant change in measures affecting person

	reminiscence intervention.	and training strategies. [N/A]	and training strategies.	program manual (Bruce et al., 1999).	Mean Age = 73.2	Mean Age = 76.2		with dementia. Descriptive improvement in communication abilities and in relative stress.
Troche et al. (2019). USA. Quasi-Experimental	Improve communication and reduce unproductive communication behaviours	Communication partner training program focusing on acknowledging and revealing competence. [SLP]	Communication partner training program focusing on acknowledging and revealing competence.	Adapted from pre-existing program (SCA; Kagan, 1998), "FOCUSED" (Ripich et al., 1998; 1999) and "TANDEM" (Haberstroh et al., 2011)	M:F = 0:4 Spouse = 4	M:F = 4:0 AD = 4 Mean MOCA = 16.25 Mean Age = 73.5	Descriptive Statistics; Correlation analysis	Improvement in scores on MSC and MPC. Reduction in unproductive behaviours by communication partner. Overall caregiver burden reduced. Positive correlation between MSC and MPC.
Volkmer et al. (2018). UK. Protocol.	Establish treatment fidelity, refine protocol, and acceptability of intervention.	Communication training program for people with PPA and communication partner. [SLP]	Communication training program for people with PPA and communication partner.	Adapted from pre-existing program (BCA; Beeke et al., 2013). Feedback from steering group.			ANOVA; Poisson Trend Test for occurrence of barriers/facilitators. Descriptive statistics for feasibility; Thematic analysis	

Williams et al. (2018). USA. Mixed Method	Examine outcomes of intervention on relationship-focused communication in couples.	Ten education modules on a variety of communication issues and strategies. N/A	Ten education modules on a variety of communication issues and strategies.	Developed from literature and clinical experience.	M:F = 5:10 Spouse = 15 Mean Age = 77.38	M:F = 10:5 Mean MMSE = 16.81 Mean Age = 80.31	Generalised linear mixed growth model and ratio score	Significant improvement in facilitative communication compared to disabling communication, and ratio of sociable to unsociable communication.
Williams et al. (2020). USA. Quasi-Experimental	Examine effect of intervention on misunderstandings, resolutions, and number of words in conversation.	Ten education modules on a variety of communication issues and strategies. N/A	Ten education modules on a variety of communication issues and strategies.	Developed from literature and clinical experience.	M:F = 5:10 Spouse = 15 Mean Age = 77.38	M:F = 10:5 Mean MMSE = 16.81 Mean Age = 80.31	Generalised linear mixed growth model for simple to complex misunderstandings and successful to unsuccessful resolutions.	Significant relationship between resolution of misunderstandings and number of intervention sessions. Successful resolutions increased from session one to 10.

Notes: AD= Alzheimer's Dementia; FTD = Frontotemporal Dementia; VD = Vascular Dementia; PPA =Primary Progressive Aphasia; RCT = Randomised Controlled Trial; M:F = Male:Female; MMSE = Mini-Mental State Examination; ACQOL = Adult Carers Quality of Life Scale; FRS = Frontotemporal Dementia Rating Scale; QUALIDEM = Quality of Life for People with Dementia; NPI = Neuropsychiatric Inventory; NPI-D =Neuropsychiatric Inventory-Caregiver Distress Scale; QCPR = Quality of Carer-Patient Relationship; MM = Marte Meo; AAC = Augmentative and Alternative Communication; AID-COM = Aid for Communication; QOL = Quality of Life; SLP = Speech-language pathologist; MOCA = Montreal Cognitive Assessment; MSC = Measure of Support in Conversation; MPC = Measure of Participation in Conversation; CPT = Communication Partner Training; SLP = CPT delivered by speech-language pathologist (SLP); PSY = CPT delivered by psychologist; SW = CPT delivered by social worker; TR = CPT delivered by certified trainer of program; OTH = CPT delivered by other professional or multiple professionals; N/A = Interventionist information not available.

Table 2. Quality Assessment: Mixed-Methods Appraisal Tool (MMAT)

	Qualitative					Quantitative RCT					Quantitative non-randomized					Quantitative descriptive					Mixed methods				
	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5
Berwig et al. (2020)	√	√	√	?	√						√	√	√	x	√						√	√	√	√	x
Chesneau et al. (2021)	√	√	√	√	√						√	x	x	x	x						x	x	x	√	x
Gerritsen et al. (2019)	√	√	√	?	√						√	√	x	x	?						√	√	√	√	x
Ingersoll-Dayton et al. (2013)	√	√	√	√	√											√	√	√	N/A	N/A	x	x	x	√	√
Williams et al. (2018)	√	√	?	?	?						√	√	?	?	?						x	x	x	√	x

Notes: RCT = Randomised Controlled Trial

Table 3. Quality Assessment: Johanna Briggs Institute (JBI)

Randomised Controlled Trials	1	2	3	4	5	6	7	8	9	10	11	12	13
Barnes & Markham (2018)	√	√	x	N/A	N/A	x	x	x	x	x	√	√	√
Done & Thomas (2001)	x	√	?	N/A	N/A	?	√	x	x	√	x	?	√
Kouri et al. (2011)	?	?	x	N/A	N/A	√	√	√	x	√	√	√	√
Liddle et al. (2012)	?	?	√	N/A	N/A	√	?	√	x	√	x	√	√
Thorgrimsen et al. (2002)	√	√	√	N/A	N/A	√	√	√	?	√	√	?	√
Quasi-Experimental Designs	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**				
Ha et al. (2021)	√	√	√	x	x	√	√	√	√				
Haberstroh et al. (2011)	√	√	√	√	x	√	x	√	√				
Jokel et al. (2017)	√	√	√	√	x	√	√	x	?				
Mooney et al. (2018)	√	√	√	x	x	√	√	x	?				
Morris et al. (2021)	√	√	√	x	x	√	√	x	√				
Ripich et al. (1998)	√	x	√	√	x	x	x	x	√				
Ripich et al. (1999)	√	√	√	√	x	√	√	√	√				
Roque et al. (2008)	√	√	x	x	x	√	√	x	√				
Troche et al. (2019)	√	√	√	x	x	√	√	x	√				
Williams et al. (2021)	√	√	√	x	x	√	√	x	√				
Case Reports	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**					
Cress & King (1999)	√	√	√	√	√	√	N/A	√					
Orange & Colton-Hudson (1998)	√	√	√	√	√	√	N/A	√					
Spilkin & Bethlehem (2003)	√	√	√	√	√	√	N/A	√					
Qualitative Studies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**			
Kindell et al. (2019)	x	√	√	√	√	x	√	√	√	√			
Kwak et al. (2018)	x	√	√	√	√	x	x	√	?	√			
Othorf-Nefkens et al. (2018)	x	√	√	√	√	√	√	√	√	√			
Meyer et al. 2012	x	√	√	√	√	√	√	√	√	√			
Small et al. (2012)	x	√	√	?	?	√	x	x	x	?			

Notes: RCT = Randomised Controlled Trial

Table 4: Qualitative Outcomes

Category	Subcategory and Key Points	Studies	Quote Example
Considerations for the Content and Delivery of CPT Programs	Visual and Written Training Materials • Videos helpful for demonstration and reflection • Videos preferred over written material • Bite-sized chunks with simple and clear wording helpful	Chesneau et al., 2021; Gerritsen et al., 2019; Meyer et al., 2020; Small & Perry, 2012	*"Videos helped. We saw that we were acting in a certain way and that we should act differently" [Family member, Chesneau et al (2021)]*
	Involving Person with dementia in CPT Program • Easier to talk about the disease • Need to support cognitive changes and treat person with dementia as equal to enhance participation	Ingersoll-Dayton et al., 2013; Kwak et al., 2018; Olthof-Nefkens et al., 2018	*"What I really appreciate is that both of us were involved in the therapy. This makes it so much easier to talk about the disease" [Family member, Olthof-Nefkens et al. (2018)]*
	Delivery of the Intervention • Earlier intervention in home setting preferred • Telehealth feasible • Positive and empathetic interventionist important	Ingersoll-Dayton et al., 2013; Meyer et al., 2020; Small & Perry, 2012	*"Very happy to have Trainers come to their home, they dod not need to go out, easier to schedule sessions" [Researcher, Small & Perry (2012)]*
Techniques used in CPT Programs	Helpful Conversational Strategies • Verbal strategies (divert conversation to help finish topic, solve word finding difficulties together, speak slowly, clarify topic, ask one thing at a time, repeat key information, use simple sentences) • Nonverbal strategies (use gesture, gain attention via touch, tolerate silence, reduce external stimuli)	Chesneau et al., 2023; Ingersoll-Dayton et al., 2013; Gerritsen et al., 2019; Meyer et al., 2020	*"One strategy that I like to use when my mother is looking for her words is to try to find these words with her. It's like playing a game, she likes it too, she's happy when she finds the word" [Communication Partner, Chesneau et al. (2021)]*
	Helpful Conversational Aids • Written communication strategies; List of topics • "Letter to a friend" on strategies • Memory notebooks; Whiteboards	Kindell et al., 2012; Olthof-Nefkens et al., 2018; Chesneau et al., 2021; Meyer et al., 2020	*"I also tried the memory notebook, and I see that when she writes in it, she is happy. So when I go to see her, I make her write in her notebook, a little more each time" [Family member, Chesneau et al., 2021]*
Impact of Strategies on Improving Conversation	Improvements in Participation and Communication • Communication overall better • Talking for longer and more • Larger variety of topics being used • Memory and word finding better supported • Easier to move to different topics	Chesneau et al., 2021; Kindell et al., 2012; Kwak et al., 2018; Meyer et al., 2020	*"We used to talk only when necessary before the intervention; however, now we talk to each other every day." Family member, Kwak et al. (2018)]*

	Improvements in the Experience of Conversation • More enjoyable communication • Facilitated positive experiences and emotions • Made conversations more pleasant	Chesneau et al., 2021; Williams et al., 2018; Gerritsen et al., 2019)	*"What [person with dementia] really likes are the pictures of [personal events]. When we sit down together and look at them, it's fantastic, it all comes back in his mind…"* [Family member, Chesneau et al. (2021)]
The Varying Emotional Impact for People Living with Dementia and their Families	Emotional Impact on Family Member • Reduced irritability and stress • Life story cathartic and nostalgic • Life story resulted in negative emotions due to remembering hardships, guilt, loss, and changes associated with dementia • Despite CPT, role of carer still challenging	Chesneau et al., 2021; Gerritsen et al., 2019; Meyter et al., 2020l Kwak et al., 2018; Kindell et al., 2012; Ingersoll-Dayton et al., 2013	*"Although the proportions were low, more caregivers than care recipients noted that the intervention was a painful reminder of losses that had occurred in their lives and of the memory gaps in the person with dementia"* [Researcher, Ingersoll-Dayton et al. (2013)]
	Emotional Impact on Person with dementia • Improvements in anxiety • More calm	Chesneau et al., 2021; Meyer et al., 2020	*"Since incorporating memory and communication strategies learnt in a daily plan, anxiety levels were reduced"* [Researcher, Meyer et al. (2020)]
Impact on Relationship and Connection	• Greater awareness of thoughts contributed to closeness • Greater engagement, connectedness, and compliments • communication partner more considerate, compassionate, and kind • Life story led to conflicts due to different perspectives on life story events	Berwig et al., 2020; Ingersoll-Dayton et al., 2013; Kwak et al., 2018; Gerritsen et al., 2019; Small & Perry, 2012	*"What I felt [for my husband] was well described [in the life story book]. It was a good opportunity to express our affection for each other that has been hidden for a long time"* [Person with Dementia, Kwak et al. (2018)]
Improving Attitudes Towards Dementia Through CPT	Insight/Understanding into the Lived Experience of Dementia • Education cards helped friends understand better • communication partner increased insight into own behaviour • Highly valued the ability to support the person with dementia in their communication	Gerritsen et al., 2019; Olthof-Nefkens et al., 2019; Williams et al., 2018	*"The SLT suggested to write a letter, which could be read by our family, friends or other people at a moment when you're not able to explain what bothers you, but you find it important to let others know what's going on…"* [Family member, Olthof-Nefkens et al. (2019)]
	Self-Confidence and self-worth • Improved confidence of family member • Reduced feelings of guilt of family member • Increased sense of achievement, identity, and self-worth for person with dementia • Feelings of empowerment for person with dementia	Chesneau et al., 2021; Gerritsen et al., 2019; Kindell et al., 2012; Olthof-Nefkens et al., 2018	*"One dyad told us they made the texts together with their children. This person with dementia stated that making the thematic texts gave her the feeling she is actively doing something about the disease"* [Researcher, Olthof-Nefkens et al. (2018)]
	Participants' acceptance of dementia and associated changes • Helped family react better to communication changes	Chesneau et al., 2021; Gerritsen et al., 2019;	*"In short, the training helped me to have better reactions. How to act and react to a situation… and to understand*

	• Awareness of cognitive changes could be discouraging and lead to fear of cognitive changes occurring	Kwak et al., 2018; Williams et al., 2018		*what's going on in his brain. Have the right attitude" [Family member, Chesneau et al. (2021)]*
Enhancing Daily Life and Activities	• Positive change in real-life daily activities, such as taking up a long-wanted hobby or visiting past places • Beneficial being able to talk about activities without explicitly having to talk about dementia • Life story a dynamic resource (updated over time)	Kwak et al., 2012; Kindell et al., 2012		*"During the intervention, they visited the local districts where they lived in their early years of marriage. At the end of the intervention, they also planned to travel to their hometown there they had first met each other" [Researcher, Kwak et al. (2018)]*

Notes: CPT = Communication Partner Training