Evidence Compass

Technical Report

What is the effectiveness of outreach services for improving mental health?

A Rapid Evidence Assessment

Disclaimer

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Acknowledgements

The Remembrance Foundation was funded by the Department of Veteran Affairs to conduct this Rapid Evidence Assessment. The Remembrance Foundation is grateful to Phoenix Australia for the work they have conducted to investigate the evidence basis of assertive outreach service delivery models. In particular, we acknowledge the work of the following staff members from Phoenix Australia who were responsible for preparing this report: Dr Tracey Varker, Ms Loretta Watson, Ms Kari Gibson, Dr Olivia Metcalf, Dr Dzenana Kartal and Professor Meaghan O'Donnell.

Suggested citation:

Varker, T., Gibson, K., Watson, L., Metcalf, O., & O'Donnell, M. (2018). *What is the effectiveness of outreach services for improvement mental health? A Rapid Evidence Assessment.* Report prepared for the Department of Veterans' Affairs. Phoenix Australia Centre for Posttraumatic Mental Health.

Table of Contents

Glossary of Terms

Term	Definition
ADF	Australian Defence Force
BTB	Beat the Blues
CAREPATH	Care for Patients at Home
CBT	Cognitive-behavioural therapy
CFNM	Calgary Family Nursing Model
DVA	Department of Veterans' Affairs
EUC	Enhanced usual care
IH-CBT	In-Home Cognitive-Behavioural Therapy
LV	Listening visits
MDD	Major depressive disorder
MI	Motivational interviewing
MISSION	Maintaining Independence and Sobriety through Systems Integration, Outreach, and Networking
PEARLS	Program to Encourage Active Rewarding Lives
PICO	Patient, problem or population; Intervention; Comparison, control, or comparator; Outcome
PDP	Perinatal Dyadic Psychotherapy
PPD	Postpartum depression
PST	Problem-solving treatment
PTSD	Posttraumatic stress disorder
RCT	Randomised controlled trial
REA	Rapid evidence assessment

SHV	Standard home visitation
UC	Usual care
US	United States
VA	United States Department of Veterans Affairs
WLC	Wait-list control

Executive Summary

- The current challenges facing treatment of veterans with mental health issues have been well-documented. Outreach services offer a flexible modality for engagement and facilitation of mental health treatment. Outreach services broadly defined are varied types of support services that are provided in settings where individuals live, spend considerable time, or seek services from (Van Citters & Bartels, 2004).

- The aim of this rapid evidence assessment (REA) was to assess the evidence related to outreach services, entailing face-to-face contact with a trained professional or paraprofessional in a mobile or home environment, for increasing quality of life, promoting access to services, and increasing functioning and mental health among adults with PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder, or substance-use disorder.

- Literature searches were conducted to identify studies that investigated the efficacy of outreach services for one or more of the following outcomes: quality of life; functioning in employment (readiness for work, application for work, obtainment of employment, days in employment); relationship functioning (conflict resolution, satisfaction in relationship, engagement in relationship counselling or related support service); attitudes towards, contact with, or use of mental health services; hospital admissions; or symptoms of any of the following disorders: PTSD, anxiety, depression, adjustment, alcohol use, substance-use. Studies were excluded if the full text was unavailable, if the paper was not peer-reviewed, if the primary outcome measures were not the focus of the review (as specified above), or if the article did not concern the population of interest (i.e., adult populations or veteran populations specifically). Only articles published from 2007 onwards were included.

- Studies were systematically assessed for quality of methodology, risk of bias, and quantity of evidence. Due to the diversity of the included studies, a formal ranking of the evidence was not possible. Instead, a narrative assessment was made as to the direction, consistency, generalisability, and applicability of the findings to the population of interest.

- Fourteen studies met the inclusion criteria for review. Of these, 10 studies originated from the US, and there was one study each from Australia, Iceland, The Netherlands, and Japan. Three outreach service models were reviewed here, including case management (*n* = 1), comprehensive (*n* = 8), and targeted (*n* = 5), defined broadly as:

    - **Case management** outreach service model was defined as those that focused on screening, assessment, referral and linkage, monitoring, and encouraging treatment or medication compliance.

    - **Targeted therapeutic** outreach service model was defined as those that included some type of mental health treatment component.

    - **Comprehensive** outreach service model was distinguished by incorporating components of both case management and targeted therapeutic interventions.

- Targeted therapeutic and comprehensive outreach service models were further defined based on the theoretical approach used for the treatment component, specifically:

    - Interventions that incorporated one or more components of cognitive behavioural therapy (CBT) or CBT-informed treatment

    - Interventions that incorporated supportive or relational types of therapy, such as those built upon supportive psychotherapy or attachment theory

    - Interventions that focused on physical exercise rather than psychological therapy.

- Overall, the quality of the studies was fair, meaning that the studies had some methodological limitations. Limitations included clustered randomisation design (as opposed to true randomisation), small sample sizes, short-term or no follow-up periods, lack of clinician-rated outcomes, and failure to appropriately blind outcome assessors.

- Initial findings provide evidence of a beneficial effect for outreach models, especially those that offer a comprehensive outreach service that incorporate CBT-informed therapeutic approaches.
- The evidence suggests that the construction of an outreach model to support veterans that involves face-to-face home visitation is worthy of exploration as a novel means of service delivery. It is essential that a comprehensive evaluation plan is built around a veteran specific outreach model to ensure its efficacy.

Introduction

Overview

The current challenges facing treatment of veterans with mental health issues have been well-documented. Outreach services offer a flexible modality for engagement and facilitation of mental health treatment. Outreach services broadly defined are varied types of support services that are provided in settings where individuals live, spend considerable time, or seek services from (Van Citters & Bartels, 2004). A significant strength of outreach services is that they emphasise a collaborative approach with the patient and can either link clients with traditional medical treatment models or alternatively, provide treatment directly to the individual. There is strong interest for use of outreach models in veteran mental health care within the veteran community however, there has been no review of the evidence regarding their effectiveness. This REA reviews three key models of outreach services and their efficacy for reducing mental health symptoms in veteran cohorts and the broader adult population.

The need for more flexible models of mental health care

Government inquiries into the state of mental health sector in Australia have emphasised the need to increase access to effective mental health care within the general community (Commonwealth of Australia, 2009; Department of Health and Ageing, 2005). Evidence shows that less than half of Australians with a psychiatric disorder have received any intervention targeting that disorder in the preceding 12 months (National Mental Health Commission, 2014). This means that more than half of people who experience mental illness currently do not access any mental health treatment (National Mental Health Commission, 2014).

Similar concerns have been raised about the adequacy of available services to meet the psychosocial and mental health needs of veterans (Keller & Tuerk, 2016). Despite demonstrated need for mental health support (Hodson, McFarlane, Van Hooff, & Davies, 2011), many veteran cohorts who stand to benefit from mental health care do not seek or receive treatment (Cohen et al., 2010; Sandweiss et al., 2011). Recent US research reported that less than half of military personnel who screened positive for Posttraumatic Stress Disorder (PTSD) or Major Depressive Disorder (MDD) sought help (Tanielian & Jaycox, 2008). Delay in treatment initiation is also common. Among veterans with a psychiatric diagnosis, one US report identified a median lag time of approximately 7.5 years between an initial mental health visit and commencement of a course of mental health care minimally adequate for the individual’s needs (Maguen, Madden, Cohen, Bertenthal, & Seal, 2012). Further, veterans who do seek help often discontinue treatment pre-emptively, reducing treatment efficacy (Elbogen et al., 2013). As many as 68 percent of the 117 returned veterans sampled in a US study terminated psychological treatment before treatment was complete (Garcia, Kelley, Rentz, & Lee, 2011). Untreated PTSD can become chronic, with deleterious consequences, including unemployment, suicide, poverty, hospitalisation and poor physical health (Marshall et al., 2001; Murdoch et al., 2011; Smith, Schnurr, & Rosenheck, 2005). The unique challenges in mental health care facing veteran populations has led researchers to conclude that facilitating mental health treatment engagement and retention should be among the highest priorities for veteran services (Spoont et al., 2014).

In addition to issues with facilitation and retention in mental health care, there are complex barriers to care that veterans face, relative to the general population. These challenges are faced at all stages of a veteran’s post-military life. For example, in the early stages of separation from military, some individuals may experience the transition process out of the ADF and the adjustment to civilian life as a significant adverse event, which can subsequently exacerbate risk of mental ill-health (National Mental Health Commission, 2017). Throughout the life span, despite the range of services available, there may also be a lack of awareness among veterans about services and supports available to them (National Mental Health Commission, 2017), and regarding the potential benefits derived from mental health treatment (Stecker, Fortney, Hamilton, & Ajzen, 2007). Some veterans carry negative attitudes towards mental health care, which has also been identified as a major factor impeding treatment engagement (Kim, Britt, Klocko, Riviere, & Adler, 2011). Aspects of military culture, such as the high value placed on stoicism and the assumption that individuals should be capable of resolving their own problems can prohibit veterans from asking for help and promote the belief that treatment is unnecessary (Bird, 2015; Brown, Creel, Engel, Herrell, & Hoge, 2011). Perceived or actual stigma attached to mental illness and treatment can likewise present a barrier to accessing treatment (Bird, 2015; Brown et al., 2011), as can structural impediments such as long wait times for existing services, impaired physical health or ability, and proximity to care (Bird, 2015; Boscarino, 2006; Brooks et al., 2012; Hoge et al., 2008). Furthermore, there is often inadequate engagement with the families of veterans, which is another avenue through which veterans may be encouraged to access care (National Mental Health Commission, 2017).

As such, it is vital that continued research is undertaken to investigate the potential efficacy of novel and underutilised interventions, most particularly those that entail innovative service models that have the potential to overcome known barriers to accessing treatment or sustaining engagement in treatment among veteran populations.

Defining outreach

Outreach services are varied types of support services that are provided in settings where individuals live, spend considerable time, or seek services from (Van Citters & Bartels, 2004). Common elements of outreach services include ‘case finding’ in order to identify individuals requiring support, assessment of individuals’ needs, care planning, referral or linkage to appropriate services, advocacy on behalf of the individual, and/or treatment (Hanley, Matthews, & Lewis, 2011; Van Citters & Bartels, 2004). Treatment components of outreach services targeted towards mental health can also vary, incorporating strategies such as motivational interviewing, behavioural activation, goal setting, problem-solving, supportive listening, or in some cases, a structured course of a particular type of therapy such as Cognitive Behavioural Therapy (CBT). Outreach services might be provided by peers (in the case of peer-support or peer-mentoring), or by varied professionals, often social workers, case managers, youth or family workers, or nurses. Although there is no universal definition for outreach services, for the purposes of this review, outreach was defined broadly as *any type of support or intervention that incorporated face-to-face contact with a professional or paraprofessional in the client’s home or home-like setting*.

Under this broad definition, outreach services can be further defined by their approach. Some research has endeavoured to meaningfully classify types of outreach services, although there is no current consensus in the literature. Thompson, Lang, and Annells (2007), in their review of in-home community nurse-led mental health interventions for older persons, differentiate between ‘screening’ interventions, whereby the primary goal is to screen patients for mental health symptoms or diagnoses, and ‘comprehensive’ outreach service models, whereby nurses provided additional services including implementation of individualised care plans, provision of psychosocial support, mental health assessment and delivery of mental health interventions. Comparably, Van Citters and Bartels (2004), in their review of the efficacy of mental health outreach services for older adults, delineate ‘caseidentification’ strategies from models of care targeting the improvement of psychiatric symptoms. ‘Case identification’ referred to outreach models that focused upon identification of individuals requiring mental health support and referral to appropriate treatment services. Models that targeted psychiatric symptoms entailed delivery of a care management protocol, usually by a multidisciplinary team. A third review of home-based interventions to prevent and treat postpartum depression differs by distinguishing non-directive counselling interventions from CBT interventions (Leis, Mendelson, Tandon, and Perry (2009).

Drawing upon the aforementioned categorisations of outreach service models for guidance, a distinction was made for the purpose of this review between the ‘case management’ outreach service model, ‘targeted therapeutic’ outreach service model, and ‘comprehensive’ outreach service model:

The **case management** outreach service model was defined as studies that included one or more of the following components: screening for mental health symptoms, assessment of client needs and goals, referral and linkage to treatment or support services, and monitoring or encouraging treatment or medication compliance. Inevitably, all studies within this category also entailed some degree of supportive listening, incidental counselling, and rapport building.

The **targeted therapeutic** outreach service model was defined as those that included some type of mental health treatment component. Within this category further delineation was made for the purpose of discussion between models that incorporated one or more components of CBT or CBT-informed treatment, and models that incorporated supportive or relational types of therapy, such as those built upon supportive psychotherapy or attachment theory. CBT-informed interventions often included techniques such as motivational interviewing, behavioural activation, structured problem solving, stress reduction skill training, or redressing thinking habits or styles, and were commonly manualised interventions. Interventions that incorporated supportive or relational types of therapy tended to focus upon the quality of the client-outreach provider relationship and used this relationship to explore other relationships in the client's life, or to provide support to the client in a non-directive and unstructured manner. Common components of these interventions were supportive/reflective listening, validation, provision of encouragement and reassurance, collaborative problem-solving, and the provision of information.

The **comprehensive** outreach service model incorporated components of both case management and targeted therapeutic interventions. Often, a single outreach provider delivers both case management and targeted therapeutic support, although in other cases, a different provider is responsible for the different elements of the intervention, which is delivered by a multidisciplinary team.

The case for outreach

Outreach is a model of care that carries potential for improving access to mental health treatment among veterans (Crawford et al., 2015). Although formal outreach support tailored to the mental health needs of veterans is not currently available in Australia (Bird, 2015), there is emerging evidence that the potential acceptability and utility of outreach services for veterans is high. Evidence from a study investigating treatment preferences and barriers to care among US veterans with PTSD symptoms showed that outreach can benefit veterans and their families by ensuring they are well informed about the services available to support them in meeting their goals, and could facilitate a more veteran-centric mental health care experience (Crawford et al., 2015). Similarly, Hanley et al. (2011), in their exploration of best practices for the psychosocial rehabilitation of Australian veterans, reported that the provision of support, specifically assessment, care planning, facilitating consumers through the healthcare system and coordination of services (defined as 'case management'), stands to enhance coordination and early detection of mental health needs among veterans. In doing so, they argue, such services stand to decrease the likelihood of veterans with mental illness remaining undetected by organisations positioned to provide treatment and support. There has never been an implementation and evaluation of an outreach model with Australian veterans.

More broadly, an Australian Government inquiry reported that consumers and carers alike are seeking greater community-based care to enable persons with mental illness to live stable and fulfilling lives (Commonwealth of Australia, 2006). Community-based care has varied definitions, but for the purpose of the inquiry was commonly understood to include outreach services and home-based forms of assistance (Commonwealth of Australia, 2006). According to one mental health consumer network that provided a submission to the inquiry, home visits are especially important for mental health consumers that are isolated in the community, as they provide a key means of providing support and advocacy (Commonwealth of Australia, 2006). Indeed, the provision of outreach services to adults in non-institutional community-based settings in Australia generally has been recommended multiple times as a potential mechanism for increasing access to mental health care among vulnerable populations (Van Citters & Bartels, 2004).

Despite the professed utility of outreach services and their potential to overcome certain barriers that prohibit access to care among veterans, there has not yet been a systematic review of the evidence available to inform their use with Australian veteran populations. Indeed, although there have been a small number of systematic reviews surmising the level of evidence for certain types of outreach services for specific populations (e.g. the efficacy of home-based interventions to prevent morbidity and institutionalisation or improve mental health among older persons (Mayo-Wilson et al., 2014; Thompson et al., 2007; Van Citters & Bartels, 2004), and the efficacy of home visitation programs for the prevention or treatment of depressive symptoms among new mothers (Ammerman, Putnam, Bosse, Teeters, & Van Ginkel, 2010; Leis et al., 2009), there has been no systematic review evaluating the efficacy of professional outreach services entailing face-to-face contact for improving mental health among adult populations generally.

This Rapid Evidence Assessment (REA) was undertaken in recognition of this gap in evidence. The aim of this REA was to determine the level of evidence for home-based outreach services entailing face-to-face contact with a professional or paraprofessional for improving mental health and related psychosocial outcomes. The specific outcomes of interest included improvements in symptoms associated with psychiatric disorders (i.e. posttraumatic stress disorder, depression, anxiety, adjustment disorder, alcohol-use or substance-use disorder). Other outcomes of interest included improvements in quality of life, increased level of functioning in terms of employment, family relationships, or relationships between partners, increased access to mental health services, decrease in hospital admissions, and improvements in attitudes towards accessing services or treatment. Although the REA was undertaken with a view towards examining the utility of outreach services for veterans particularly, given the lack of veteran-specific studies pertaining to the efficacy of outreach services, articles examining any adult population were considered inscope for the review. It is anticipated that evidence to support the use of outreach services for adult populations generally will prove informative for veteran populations specifically, and for the family members of veterans.

Method

The review utilised a rapid evidence assessment (REA) methodology. The REA is a research methodology which uses similar methods and principles to a systematic review, but makes concessions to the breadth and depth of the process in order to suit a shorter timeframe. The advantage of an REA is that it utilises rigorous methods for locating, appraising, and synthesising the evidence related to a specific topic of enquiry. To make an evidence assessment rapid, however, the methodology places a number of limitations in the search criteria and in how the evidence is assessed. For example, REAs often limit the selection of studies to a specific time frame (e.g., last 10 years), limit the number of databases searched, and limit selection of studies to peer-reviewed, published, English studies (therefore not including unpublished pilot studies, difficult-to-obtain material, and/or non-English language studies). Also, while the strength of the evidence is assessed in a rigorous and defensible way, it is not necessarily as exhaustive as a well-constructed systematic review and meta-analysis. A major strength of an REA is that it can inform policy and decision makers more efficiently by synthesising evidence in a particular area within a relatively short space of time and at less cost than a systematic review/meta-analysis.

Defining the research question

The components of the question were precisely defined in terms of the population, the interventions, the comparisons, and the outcomes (PICO – refer to Appendix 1). Operational definitions were established for key concepts for each question, and from this, specific inclusion and exclusion criteria were defined for screening studies. As part of this operational definition, the population of interest was defined as veterans and adult patients more broadly with PTSD, depression, anxiety, adjustment, alcohol-use or substance use disorders (or subclinical features of one or more of these disorders); the intervention was defined as outreach involving home-based or mobile face-to-face visiting by any trained professional or paraprofessional; and the outcomes were defined as improvements in quality of life, increased levels of functioning in regards to employment or relationships, improved attitudes towards, or increased use of, mental health services, and improvements in mental health symptoms.

Search strategy

To identify the relevant literature, systematic bibliographic searches were performed to find relevant trials from the following databases: EMCARE, Medline, and PsycINFO. Each database was searched separately for articles published in the previous 10 years (from 1st January 2008 to 5th January 2018) and the following limits were applied to each search:

- English language
- Humans

Search terms

Search terms specific to the intervention and outcomes of interest were included in searching the Title/s, Abstract/s, MeSH terms, and Keywords lists:

Outreach: 'home visit*', 'home*base*', ‘mobile service’ or outreach

Condition: 'Posttraumatic stress disorder', PTSD, 'post*traumatic stress', 'post*traumatic stress syndrome', PTSS, depression, MDD, 'major depress* disorder', dysthymia, 'depressive disorder*', ‘anxiety disorder*', 'panic disorder', 'panic attack', agoraphobia, GAD, ‘adjustment disorder’, 'substance*related disorder*', 'addictive disorder', 'substance*use disorder*', 'substance*induced disorder*', 'alcohol*related disorder', 'alcohol*use disorder', 'drug abuse', 'drug*use disorder*'

An example of the search strategy conducted in the Medline database appears in Appendix 2.

Paper selection

Papers were included in the review of the evidence if they met all of the following inclusion criteria.

Included:

1. Internationally and locally published peer-reviewed research studies
2. Research papers that were published from inception to 5th January 2018
3. Human adults (i.e., ≥ 18 years of age)
4. English language
5. Sample consisting of individuals with PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder or substance-use disorder (sub-clinical or clinical diagnoses)
6. Papers where outreach entailing face-to-face home or mobile visiting by a trained professional or paraprofessional is the mode of service delivery
7. Papers where outreach targets individuals with mental health problems (subclinical or clinical diagnoses), i.e., PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder or substance-use disorder
8. Papers that include outcome data that assessed changes in at least one of the following domains:
    a. Quality of life
    b. Functioning in employment (readiness for work, application for work, obtainment of employment, days in employment)
    c. Relationship functioning (conflict resolution, satisfaction in relationship, engagement in relationship counselling or related support service)
    d. Attitudes towards, contact with, or use of mental health services e. Hospital admissions
    f. PTSD
    g. Anxiety
    h. Depression
    i. Adjustment
    j. Alcohol use
    k. Substance-use
9. All study designs were included.

Excluded:

1. Non-English papers

2. Papers where a full-text version is not readily available
3. Children (Mean age of sample ≤ 17 years of age)
4. Grey literature (e.g. government reports, conference abstracts, theses, media - newspapers, magazines, television, book chapters)
5. Validation studies
6. Protocol studies, unless outcome data was also reported
7. No quantitative outcome data reported.
8. Outreach services that do not entail face-to-face contact in a mobile or home location (e.g. telephone or internet based outreach)
9. Papers where outreach was provided by a peer

Information management

A screening process was adopted to code the eligibility of papers acquired through the search strategy. Papers were directly imported into the bibliographic tool Endnote X5. Screening for duplicates was performed in Endnote. References were then imported into the Covidence software package for screening and for full text review.

All records that were identified using the search strategy were screened for relevance against the inclusion criteria. Initial screening for inclusion was performed by one reviewer using Covidence, and was based on the information contained in the title and abstract. A second reviewer independently screened 10 percent of articles. It was found that there was 98 percent inter-rater agreement between the two reviewers. Differences of opinion were resolved through discussion and the final set of articles was agreed upon by both reviewers.

Full text versions of all studies which satisfied this initial screening were obtained. In screening the full text paper, one reviewer made the decision on whether the paper should be included or excluded, based on the pre-defined inclusion and exclusion criteria. A subset of 10 percent of articles were reviewed by a second, independent reviewer. It was found that there was 91 percent inter-rater agreement between the two reviewers. Consistent with the previous stage of the review, differences of opinion were resolved through discussion and the final set of articles was agreed upon by both reviewers.

The final set of papers that met the criteria for inclusion were subjected to data abstraction. The following information was extracted: (i) study design, (ii) sample size, (iii) intervention and comparison description, (iv) participant characteristics, (v) primary outcome domains, (vi) secondary outcome domains, (vii) bias, and (viii) quality assessment.

Evaluation of the evidence

The quality and risk of bias were examined for each study. This reflected how well the studies were conducted, including how the participants were selected, allocated to intervention groups, managed, and followed-up, and how the study outcomes were defined, measured, analysed, and reported. An assessment was conducted for each individual study with regard to the quality and risk of bias criteria utilising a modified version of the Chalmers Checklist for appraising the quality of studies of interventions (see Appendix 3). Two independent raters rated each study according to these criteria, and together a consensus agreement was reached as to an overall rating of ‘Good’, ‘Fair’, or ‘Poor’.

Due to the diversity of interventions encompassed under the definition of ‘outreach’, and the diversity of populations sampled for which evidence regarded the efficacy of outreach is available, it was not possible to meaningfully rank the body of evidence as a whole. Instead, a narrative review was undertaken, which outlined the level of evidence available for each subtype of outreach service incorporated in the review.

In creating this narrative review, five key components that contributed to the overall evaluation of the evidence were considered (Varker et al., 2015):

1. The **strength of the evidence base**, in terms of the quality and risk of bias, quantity of evidence, and level of evidence (study design)
2. The **direction** of the study results in terms of positive, negative, or null findings
3. The **consistency** of the study results
4. The **generalisability** of the body of evidence to the target population (i.e., veterans)
5. The **applicability** of the body of the evidence to the Australian context.

The first three components provided a gauge of the internal validity of the study data in support of efficacy for an intervention. The last two components considered the external factors that may influence effectiveness, in terms of the generalisability of study results to the intended target population and applicability to the Australian context.

Conclusions concerning the strength of the evidence base corresponding to each type of outreach intervention also considered:

a) The quantity of evidence. This reflected the number of studies that were included in the review pertaining to each subtype of outreach intervention, and the number of participants in relation to the frequency of the outcomes measures (i.e., the statistical power of the studies).

b) The level of evidence. This reflected the study design. Details of the study designs included in this REA were assessed against a hierarchy of evidence commonly used in Australia (Merlin, Weston, & Tooher, 2009):

   a. Level I: A systematic review of RCTs

   b. Level II: An RCT

   c. Level III-1: A pseudo-RCT (i.e., a trial where a pseudo-random method of allocation is utilised, such as alternate allocation)

   d. Level III-2: A comparative study with concurrent controls. This can be any one of the following:

      i. Non-randomised experimental trial [this includes controlled before-andafter (pre-test/post-test) studies, as well as adjusted indirect comparisons (i.e., utilise A vs B and B vs C to determine A vs C with statistical adjustment for B)] ii. Cohort study iii. Case-control study iv. Interrupted time series with a control group

   e. Level III-3: A comparative study without concurrent controls. This can be any one of the following:

      i. Historical control study ii. Two or more single arm study [case series from two studies. This would include indirect comparisons utilised (i.e., A vs B and B vs C to determine

      A vs C where there is no statistical adjustment for B)] iii.

      Interrupted time series without a parallel control group

   f. Level IV: Case series with either post-test or pre-test/post-test outcomes.

Results

The following section presents the flowchart relating to the number of records identified at each stage of the REA (refer to Figure 2). From all the sources searched, 14 original publications and three additional studies based on secondary analyses met the full inclusion criteria and were included in the results of this REA.

The majority of the studies were excluded because the study was either not a treatment trial for outreach services (28.6% of excluded studies), or the patient population was out of scope (33.3% of excluded studies), with other reasons being that the intervention was out of scope, and that the targeted outcomes were not reported.

Of the 14 original studies that met the inclusion criteria for review, the vast majority were sourced from the US (*n* = 10, 71.4%), and there was one study each from Australia, Iceland, The Netherlands, and Japan. All studies were published between 2008 and 2016.

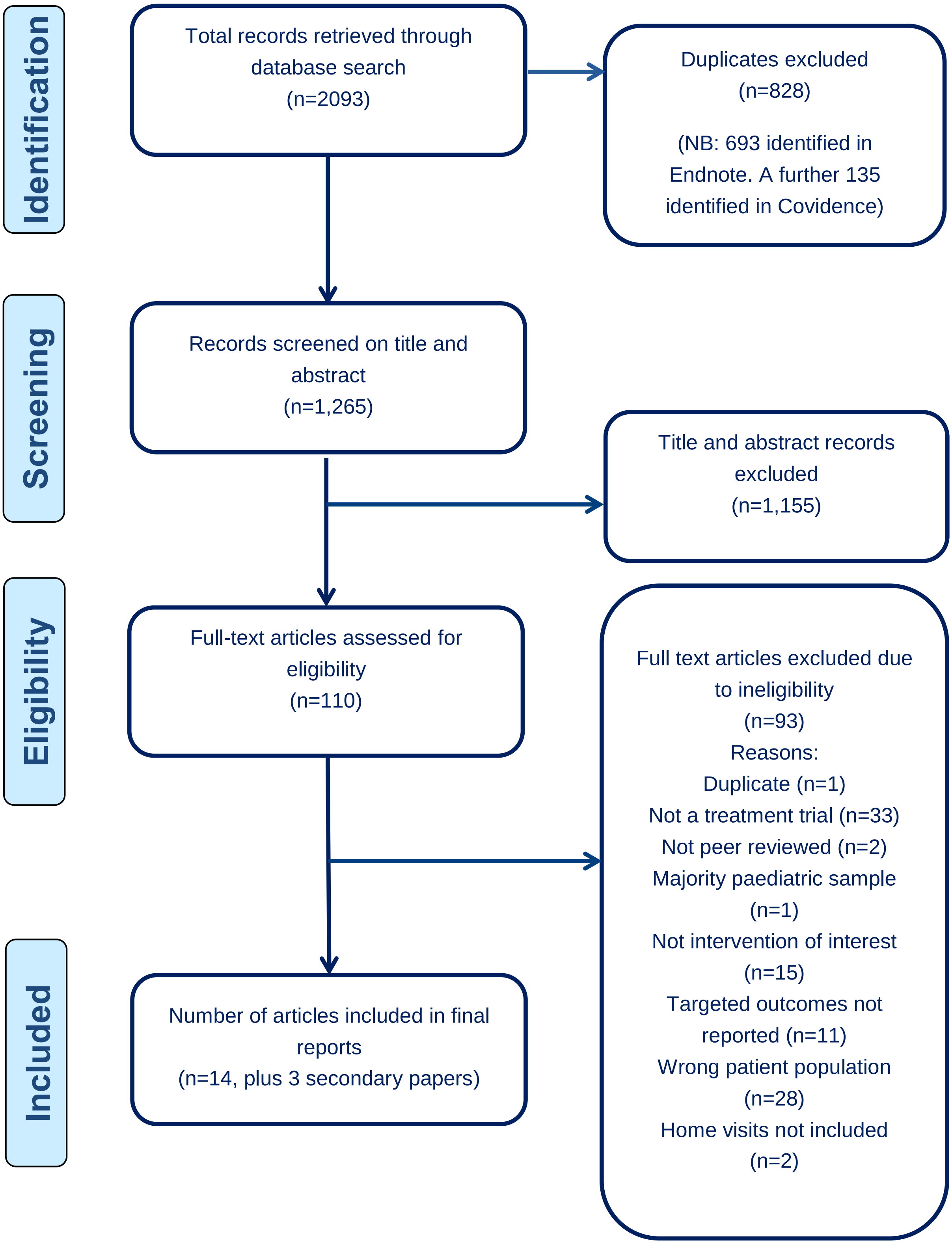

Figure 2: Flowchart representing the number of records retrieved at each stage of the rapid evidence assessment

Summary of the Evidence

A total of 14 articles were included in this review, plus three secondary studies. A summary of the studies is found in the evidence profile presented in Appendix 4. Studies have been grouped according to the outreach service model, defined as either case management, comprehensive, or targeted.

Case management

Case management is defined as an outreach service which includes the following components: screening and risk management, needs assessment, goal-setting, referral and linkage, medication and treatment compliance monitoring, basic education, and basic psychosocial support and/or incidental counselling. Formal therapeutic components are notably absent from case management models.

One study evaluated the effectiveness of a case management model. This study targeted depressive symptoms and anxiety in 306 predominately older female patients with a positive screen for depression (Bruce et al., 2015). This cluster RCT delivered either the Depression Care for Patients at Home (Depression CAREPATH) intervention (*n* = 12 nursing teams), or enhanced usual care (EUC) (*n* = 9 nursing teams). Depression CAREPATH was delivered by nurses trained to manage depression at routine home visits by weekly (i) symptom assessment, (ii) management of adverse effects and adherence to antidepressant medications, (iii) coordination of care with physicians or specialists, (iv) education for patients and families, and (v) goal-setting. Nurses delivering the control intervention followed their agencies’ standard procedures for depression. No significant group differences were found at three- or six-month follow-up, but a significant group difference was found at 12month follow-up, with significantly lower depression severity found for the intervention group. Among the subgroup with moderate to severe depression (*n* = 208), depression severity decreased over time for both groups, but to a significantly greater degree in the intervention group. There was no intervention effect among patients with mild (sub-syndromal) depression (*n* = 98).

Targeted

The targeted therapeutic outreach service model involves any type of therapeutic intervention provided to support psychological wellbeing. This type of outreach does not include the components of case management/care coordination described in the preceding section. Five papers reported on studies which evaluated targeted outreach interventions, which were informed by either CBT (Ciechanowski et al., 2010; Sampson, Villarreal, & Rubin, 2016) or supportive or relational therapy (Goodman, Guarino, & Prager, 2013; Tamaki, 2008; Thome & Arnardottir, 2013).

Cognitive-behavioural informed

The first of two targeted therapeutic studies that contained CBT componentry aimed to reduce depression in 80 US adults with epilepsy (Ciechanowski et al., 2010). Participants with clinically significant acute or chronic depression were randomly allocated to receive either the Program to Encourage Active Rewarding Lives (PEARLS) or usual care (UC). PEARLS was a home-based, collaborative care intervention involving public health, psychiatric and epilepsy professionals. Components of the intervention were (i) problem solving treatment (PST); (ii) behavioural activation; and (iii) psychiatric consultation. Participants received approximately 16 in-home visits from counsellors trained in PEARLS over the 12 months study period. The control group could seek mental health care, but no additional services were provided. Significantly greater reductions in depressive symptoms across a 12 month period were evident among the PEARLS group compared to the control group. Improvements in overall quality of life did not significantly differ between the two groups, however the intervention group fared significantly better on the emotional wellbeing subscale of quality of life measure compared to the control group.

Using a pre-post design, the second targeted therapeutic CBT-based study addressed postpartum depression (PPD) in 14 low-income women at risk of PPD in the US (Sampson et al., 2016). Social workers delivered five home visits which comprised one motivational interviewing (MI) session to foster engagement and retention, and four problem solving therapy (PST) sessions for symptom reduction. PST sessions included problem identification, brainstorming possible solutions, goal-setting, and developing action plans. There was a significant reduction in the depression scores from pre-test to post-test (i.e., after the fourth PST session) using two depression measures. The small, uncontrolled nature of this study limits the confidence in the findings.

Supportive

Three targeted therapeutic studies informed by supportive or relational therapy were included in this review. The first was a very small RCT (*n* = 18) which evaluated the effectiveness of a home visit mental health nursing intervention for reducing PPD and improving quality of life in Japanese post-partum women (Tamaki, 2008). Women with clinically diagnosed depression were randomly allocated to receive either four weekly home visits by a mental health nurse, or UC. Home visits comprised (i) active listening; (ii) providing support and acceptance of the woman; (iii) psycho-education on depressive symptoms; (iv) advice on coping strategies; and (v) increasing access to social or family support. Controls received routine post-natal community care. At post-treatment both groups reduced significantly in depression symptoms, with no significant group differences. At posttreatment 100% of women in the intervention group and 67% of women in the control group no longer had clinical diagnoses of depression. Furthermore, the intervention group reported significant increases in quality of life, as well as significantly greater scores relative to the control group on three of the four quality of life subscales.

A small pre-post study evaluated targeted therapeutic outreach services informed by supportive or relational therapy (Thome & Arnardottir, 2013). This was an antenatal family nursing intervention designed to reduce emotional distress, including depressive and anxious symptoms in women and their partners. Icelandic couples (*n* = 39) received four home nursing visits guided by the Calgary Family Nursing Model (CFNM). The focus of care of the CFNM is on the relationship between family members, and the model allows clinicians to focus on clinical issues in such a way that helps family members deal with complex and difficult life situations. At post-treatment, 49% of women and 25% of men showed clinically significant improvements in depressive symptoms.

A final very small, pre-post study involved mother-infant dyads in the US (*n* = 6) who received Perinatal Dyadic Psychotherapy (PDP; Goodman et al., 2013). PDP is an intervention for the early treatment of PPD. It comprises promotion of maternal mental health, well-being and functioning, and facilitation of optimal mother-infant relationships. Self-reported assessments of depression severity and anxiety at both post-intervention and three month follow-up revealed significant improvements. Results from these two small, uncontrolled studies should be interpreted bearing in mind their significant limitations.

Comprehensive

An outreach service which comprises components of, or involves simultaneous delivery of, both case management and therapeutic interventions have been termed comprehensive outreach models in this report. Comprehensive models were further divided into three groups, based on their theoretical components. Four studies were CBT-informed (Ammerman et al., 2013; Ammerman et al., 2011; Gitlin et al., 2013; Smelson et al., 2013), three studies were informed by supportive or relational therapy (Flemington, Waters, & Fraser, 2015; Segre, Brock, & O'Hara, 2015; Zolnoski, Stacks, Kohl-Hanlon, & Dykehouse, 2012), and the final study was largely based on physical activity without psychological therapy (Prick, de Lange, Twisk, & Pot, 2015).

CBT-informed

Four US studies evaluated the effectiveness of a comprehensive outreach service model which incorporated therapeutic components of CBT. These studies addressed maternal depression (Ammerman et al., 2013; Ammerman et al., 2011), depressive symptoms in older African Americans (Gitlin et al., 2013), and treatment engagement, rehospitalisation rates and d substance use and related behaviours in homeless veteran (Smelson et al., 2013).

Two cluster RCTs evaluated CBT-informed models. One compared the effectiveness of Beat the Blues (BTB), a multi-component, home-based intervention for alleviating depressive symptoms and improving quality of life in older African Americans, with a wait list control (WLC) group (Gitlin et al., 2013). Senior centre members and homebound elderly persons were randomised to receive either BTB, delivered by trained social workers, (*n* = 106) or WLC (*n* = 102). BTB comprised five interrelated components (i) care management involving an assessment of unmet care needs; (ii) referral and linkage to social and medical services; (iii) depression education; (iv) stress reduction techniques; and (v) behavioural activation. At four months, the BTB group showed significantly greater improvements in depression, quality of life, and anxiety compared to controls. Furthermore, a greater proportion of BTB participants had entered remission for their depression relative to controls (43.8% and 26.9%, respectively), and showed clinically meaningful reductions in depression severity (64.0% and 40.9%, respectively). Five BTB participants and 11 WLC participants worsened by the four-month follow-up. Between four and eight months there was no further significant improvements.

A second clustered RCT evaluated In-Home Cognitive Behavioural Therapy (IH-CBT) for reducing maternal depression (Ammerman et al., 2013). IH-CBT is an adaptation of CBT designed specifically to address depression in high risk, first-time mothers participating in home visitation with the goal of enhancing feasibility, engagement, and impact. IH-CBT was combined with standard home visitation (SHV) and delivered by social workers to 47 young depressed mothers and compared to SHV alone. Significant improvements in depressive symptoms and general functioning were found for both groups at post treatment and at three-month follow up, with no further significant change from post-treatment to three-month follow-up. The intervention was significantly more effective than the comparison condition on all outcome measures, including two self-report and one clinician rated measure of depression and GAF scores of functioning. Post-treatment, 70.7% of participants in the intervention group compared to 30.2% of participants in control group no longer met criteria for MDD.

An earlier cohort study also evaluated the effectiveness of IH-CBT for reducing maternal depressive symptoms in 359 young, low-income depressed mothers compared to controls (Ammerman et al., 2011). Within the comparison group, 20% of participants received mental health treatment in the community. Depression scores reduced significantly in both groups, with significantly larger reductions in the intervention group. Additionally, 46.9% and 32.8% of the intervention group showed partial or full resolution of MDD, respectively. Receiving external mental health treatment for mothers in the comparison group did not significantly impact depression scores.

The fourth CBT-informed study trialled an intervention designed for 333 predominately male, homeless veterans with alcohol/substance use disorder and a co-occurring psychiatric disorder in residential care transitioning to outpatient VA care (Smelson et al., 2013). Maintaining Independence and Sobriety through Systems Integration, Outreach, and Networking (MISSION) focuses on engaging and retaining homeless veterans in care. The 12-month intervention included four therapeutic components: (i) integrated mental health and substance-use disorder treatment delivered via Dual Recovery Therapy; (ii) assertive community treatment using Critical Time Intervention case management; (iii) peer support; and (iv) vocational support. Those receiving the MISSION intervention also received treatment as usual, which included intensive individual and group based treatments and support while in residential care, followed by a discharge plan and referrals to standard veteran and community-based services upon leaving residential care. Veterans in the control group received treatment as usual only. Veterans receiving MISSION demonstrated significantly greater outpatient session attendance relative to the control group following exit from residential care, and showed a significant decline from baseline in the number of psychiatric hospitalisation nights. Veterans in both groups showed statistically significant improvements in substance use and related problems at 12 months, however, there were no significant differences between groups at 12-month follow-up.

Supportive

Three studies evaluated the effectiveness of a comprehensive outreach service model which incorporated therapeutic components of supportive or relational therapy. These studies addressed maternal depression (Flemington et al., 2015; Segre et al., 2015) and parental mental health problems associated with child maltreatment (Zolnoski et al., 2012).

A RCT conducted in the US compared the effectiveness of an augmented usual home visiting service, “Listening Visits” (LV), with that of a wait-list control group in treating postpartum depression in 66 depressed mothers (Segre et al., 2015). Visits comprised (i) greeting the client and finding a private place to talk; (ii) providing a brief review of the previous visit; (iii) getting an update about the previous week; (iv) using the key LV skills of reflective listening and problem-solving; and (v) summarising to provide closure to the session. WLC comprised standard social and postpartum health care services. Depressive severity, depressive symptoms, and quality of life significantly improved among intervention recipients as compared with controls. Additionally, a greater percentage of women in the intervention group compared to those in the comparison group experienced clinically significant improvements from the baseline to the eight-week assessment on all measures.

Two further observational studies evaluated the effectiveness of a comprehensive outreach service model which incorporated therapeutic components of supportive or relational therapy, aimed at mothers and families, respectively. One was a retrospective medical record review of 40 Australian mothers who had been enrolled in a 12 month nurse home visiting program (Flemington et al., 2015). Low power prevented significance testing. The manner in which results were reported prohibits meaningful interpretation of depression outcomes.

A second observational study involved a small home visitation program for 17 US families aimed at reducing parenting risk factors associated with child abuse and neglect (Zolnoski et al., 2012). On average, families were visited twice per month and offered phone support on an as needed basis during the 21-month trial period. Significant reductions were found for depression and anxiety post-intervention. Fifteen percent of parents showed consistently high depression levels, 23% showed a decrease in depression, and 53.5% showed a decrease in anxiety. Treatment fidelity was not monitored, therefore there was no way to assess what actually happened during home visits, making it difficult to assess the quality of the intervention.

Exercise

One RCT incorporated physical exercise into a comprehensive outreach service model for reducing the psychological distress of community-dwelling caregivers of patients with dementia (Prick et al., 2015). Caregiver-patient dyads (*n* = 111) from The Netherlands received either a multi-component intervention or minimal intervention plus usual care. The intervention comprised two components which were directed at both the caregiver and the person with dementia. The first component was physical exercise, the goal of which was to motivate physical activity of both recipients, with caregivers being taught to guide the person with dementia in a personalised program of physical exercises. The second component was support, comprising psycho-education, communication skills training and planning of pleasant activities. The controls received minimal intervention consisting of written information bulletins and monthly phone calls comprising emotional support by listening.

Analyses showed no benefits to caregivers over time on any of the outcome measures. Caregiver depression scores rose over time in the intervention group. One reason that the authors proposed for this was that the intervention may have raised caregivers' awareness of the physical and mental incapacities of care recipients. Alternatively, it may be that the increased burden of having to teach the person with dementia new skills may have led to an increase in the caregiver depression scores.

Discussion

Outreach services are designed specifically to bring support to individuals who would otherwise be unlikely to access help. Outreach services targeting mental health problems stand to improve the mental health and wellbeing of adults who risk passing through the healthcare system unrecognised or unsupported. Such services maybe especially relevant for veterans, who historically have shown relatively low levels of engagement in traditional mental health models (Cohen et al., 2010; Sandweiss et al., 2011). Low levels of engagement are due to a complex interplay of factors, such as having an increased likelihood of co-morbidity, which complicates the clinical presentation and subsequent treatment pathways of veterans, as well as barriers to care, such as perceived stigma towards mental health treatment and physical barriers to care such as being rurally located, or having physical impairments that limit ability to access conventional treatment (Bird, 2015; Boscarino, 2006; Brooks et al., 2012; Hoge et al., 2008; National Mental Health Commission, 2017). For veterans who do engage with traditional mental health models, drop-out rates and non-response rates remain high. Reported dropout and non-response rates for veterans receiving PTSD treatment, for example, are higher than any other population with PTSD (Bradley, Greene, Russ, Dutra, & Westen, 2005). Facilitating mental health treatment engagement and retention has been deemed among the highest priorities for veteran services (Spoont et al., 2014). Consequently, outreach services are a promising modality for the mental health treatment of veterans unable to access care.

The aim of this review was to assess the evidence related to outreach services for adults with a range of mental health problems. The outreach services reviewed in this REA were extremely diverse, in that they were delivered across a range of home or home-like settings; with individuals, families, and/or carers; and with a wide range of populations, such as new mothers and homeless veterans. Moreover, the outreach services in the review varied significantly in content, ranging from unstructured to highly theoretically informed and manualised. The services also varied significantly in duration and intensity, and were delivered by a variety of professionals with divergent levels of training. Such diversity inhibits the ability to systematically rank the evidence. Instead, the following section presents a high level narrative summary of the overall evidence for outreach services for veterans and adult populations more broadly with mental health problems.

The **strength of the evidence** base was assessed in terms of quantity, quality and level of the evidence. Of the 14 primary studies, seven were RCTs, which are considered the highest level of study design methodology in the standardised, universal hierarchy of evidence. Of these RCTs, the quality and assessment process conducted indicated that the majority (86%) had fair quality ratings. Limitations of the studies included clustered randomisation design (as opposed to true randomisation), small sample sizes, short-term or no follow-up periods, lack of clinician-rated outcomes, and failure to appropriately blind outcome assessors. While the quantity of RCTs in this study were reasonable, it should be noted that no RCT received the highest rating for study design.

The outreach service model with the strongest evidence base was comprehensive outreach, in contrast to either case management only, or models incorporating only therapeutic components. More specifically, the strongest evidence supported comprehensive outreach models that incorporated one or more therapeutic components informed by CBT. Four studies identified in this review fell into this category - two RCTs and two cohort studies (Ammerman et al., 2013; Ammerman et al., 2011; Gitlin et al., 2013; Smelson et al., 2013). These studies explored the effects of both case management strategies combined with delivery of a therapeutic intervention in a range of populations, including homeless veterans. All four studies received fair ratings in regards to quality of the evidence. The findings were **consistent** across studies, in that significant reductions in mental health outcomes were seen across all four studies post-treatment.

The primary outcome for three of these studies was changes in depressive symptoms, while the primary outcomes for the forth study were outpatient session attendance, number of psychiatric hospitalisations, and problems associated with addiction. Significant improvements were demonstrated in the primary outcomes in each study. In those studies primarily concerned with depression, improvements in mental health outcomes after receiving outreach services were significantly greater in the intervention group compared to the control group. In the fourth study, which examined outpatient session attendance, number of psychiatric hospitalisations, and problems associated with addiction, only outpatient session attendance differed significantly between groups, in favour of the intervention group. It should also be noted that only the intervention group showed significant reductions in psychiatric hospitalisations.

The specific CBT-informed therapeutic components within these interventions varied. In the studies by Ammerman et al. (2011) and Ammerman et al. (2013), social workers delivered a manualised CBT protocol across 15 sessions. In the study by Gitlin et al. (2013), social workers delivered up to 10 sessions incorporating psychoeducation, stress reduction techniques, behavioural activation, coping skills and personal activity goal setting and action plans. In the study by Smelson et al. (2013), outreach workers and peer specialists delivered Dual Recovery Therapy incorporating skills training for relapse prevention, coping, problem solving, and communication, as well as behavioural learning and motivational techniques (Ziedonis & Stern, 2001).

The cohort study conducted by Smelson et al. (2013), is worthy of particular attention, as it was the only study included in the review that involved veterans. This study targeted unemployed, homeless veterans with a diagnosis of substance abuse or dependence and a co-occurring mental health problem. Participants were provided with a wraparound intervention, Maintaining Independence and Sobriety through Systems Integration (MISSION), in addition to standard care to support their transition from a residential facility to independent living in the community. The intervention included the therapeutic components described above, together with assertive case management, peer support and vocational support. The primary aim of the intervention was to support veterans to engage in an array of outpatient mental health and community-based services in order to facilitate their engagement in the community. While all participants showed statistically significant improvements in substance use and related problems by the end of the intervention (at 12 months), those who received the intervention attended a significantly greater number of outpatient sessions relative to the control group, and unlike the control group, showed a significant decline in number of psychiatric hospitalisations. Although conclusive recommendations cannot be made on the basis of this study alone, the findings provide early evidence that a comprehensive outreach model might be useful for veterans.

In addition to significant reductions in mental health outcomes in all four CBT-informed studies, one study (Ammerman et al., 2011) also found that compared to mothers receiving CBT-informed outreach, the control group who sought external (i.e. traditional medical model) mental health treatment had no improvements in their depression scores. This finding indicates that at-risk populations who do not experience symptomatic improvement with traditional medical models of care may particularly benefit from outreach services. More research is needed to support this preliminary finding.

The remainder of the outreach service models reviewed here (case management; comprehensive supportive; comprehensive exercise; targeted supportive; and targeted CBTinformed) have unknown levels of evidence supporting their use, due to the poorly designed studies that have evaluated their effectiveness to-date. This does not mean that these models are ineffective at producing psychological improvement. Rather, it means that at this point in time, there is insufficient evidence to confidently conclude their impact.

Of these service models, comprehensive supportive and targeted therapeutic CBT-informed models had greater evidence than the other models identified. The level of evidence for these two models was comparable, involving in both cases one RCT of fair quality. The RCT by Segre et al. (2015) demonstrated that six counselling visits entailing empathic listening and collaborative problem-solving provided in the home resulted in significantly greater reductions in depressive symptoms and improvements in quality of life among depressed postpartum women relative to standard onsite social or prenatal/postpartum health care services. The RCT by Ciechanowski et al. (2010) demonstrated that eight home visits focused upon improving problem-solving skills and social and physical activation (with psychiatric consultation as required), followed by brief, monthly phone calls to assess patient health and utilisation of problem solving skills, resulted in significantly greater improvements in emotional well-being among adults with epilepsy relative to usual care. Home visits also led to improvements in depression across time, although significant between-group differences in depression were not identified.

The use of telephone contact in the latter RCT as an adjunct to face-to-face outreach services is of particular note. Given sufficient evidence has been demonstrated previously to support the use of video-teleconferencing and telephone-delivered interventions to support mental health (Varker, Brand, Ward, Terhaag, & Phelps, in press), there is potential for outreach services to be complemented by these models of service delivery to provide a costeffective and efficacious support service to veterans. This potential is worthy of further investigation.

In addition to examining the strength of the evidence, the review also examined the **direction** of the study results in terms of positive, negative or null findings. The vast majority of the studies showed either a positive direction or unclear direction of outreach services on a range of mental health and wellbeing outcomes. For the studies that found an unclear direction, this may be due to low power resulting from small sample size or methodological issues, meaning that better designed studies with larger samples may find a positive effect.

Only one study found a negative direction (i.e., a significant worsening of mental health outcomes in participants) (Prick et al., 2015). This study looked at the effect of a comprehensive model of outreach delivered to both patients with dementia and their family caregivers. A home-visiting coach provided instruction on physical exercise suitable for dementia patients, education about dementia, and instructed caregivers in behavioural management strategies and pleasant activity scheduling suitable for dementia patients. The key element of the intervention that stood to benefit caregivers was the physical exercise component, to the extent that caregivers opted to participate in exercise alongside the dementia patient they cared for. In this study the depression symptoms of carers worsened post-treatment. This finding is likely due to the effect of changes in the carer-patient relationship attributable to the intervention, rather than the fact the treatment was delivered in an outreach modality.

The **generalisability** of the body of evidence refers to how well the findings generalise to the target population (i.e. veterans). The majority of outreach services targeted depression symptoms. While depression is a common disorder in veterans, none of the studies targeted PTSD, which is a particularly important psychological condition for veterans.

Although the diversity of the findings limits the ability to conclude make a quantitative evaluation of the evidence, the diversity also creates confidence in the findings. Outreach itself is an exceptionally diverse modality, varying in content, length, intensity, mode and location of delivery. The findings from this REA reflect this diversity. The fact that positive findings were found across a range of variables in RCTs of fair quality indicates that outreach services have significant potential as a flexible, robust method of mental health care capable of meeting a wide range of needs. One RCT that investigated a CBT-informed comprehensive outreach service found that mental health outcomes were not affected by a range of variables, including presence of comorbidity, therapist type (nurses, social workers, mental health professionals), home visitation model, or type of depression diagnosis (Ammerman et al., 2013). In other words, despite a diverse population, positive outcomes for mental health symptoms were found overall for this CBT-informed comprehensive outreach service.

Regardless, it is important to note that the overall population in the findings does differ from veterans in a number of key ways. The majority of the study samples were non-veteran and non-trauma exposed, and usually non-complex in terms of the mental health presentations. This underscores in part the generalisability of the findings to the Australian veteran population. However, the diversity of the population is likely to highly generalise to the female partners of veterans, in that many of the studies involved civilian female populations and caregivers. Specifically, seven studies sampled exclusively pre-, peri- or post-natal women (Ammerman et al., 2013; Ammerman et al., 2011; Flemington et al., 2015; Goodman et al., 2013; Sampson et al., 2016; Segre et al., 2015; Tamaki, 2008) and three additional studies recruited a majority female sample (Bruce et al., 2015; Gitlin et al., 2013; Zolnoski et al., 2012). In contrast, three studies had close to equal proportion of female and male participants (Ciechanowski et al., 2010; Prick et al., 2015; Thome & Arnardottir, 2013) and only one study had a majority male sample (Smelson et al., 2013). It may therefore be useful to consider whether outreach services might be extended to support the family unit in addition to the veteran. In addition, the findings of these studies with civilian women in the pre-, peri- and post-natal periods may also generalise well to female veterans in the pre-, peri- or post-natal period.

The **applicability** of the evidence base relates to how the body of the evidence applies to the Australian context. The majority of studies were conducted in the US, and only one Australian study met the inclusion criteria. This is unsurprising, given that formal outreach support tailored to the mental health needs of veterans is not currently available in Australia (Bird, 2015). Geographically, Australia is particularly well suited to outreach services in that it is a large country with significant distances separating major cities and a significant minority of individuals located rurally. While recognising that there are significant differences between the Australian and US medical system, it is reasonable to assume that successful findings identified in the studies would be replicated if the same models of outreach were delivered with Australian cohorts.

In summary, the review found preliminary evidence indicating that outreach services that use a comprehensive model will prove beneficial to mental health, most particularly those that incorporate elements of CBT. Case management, comprehensive supportive, comprehensive exercise, targeted supportive, and targeted cognitive behavioural have unknown levels of evidence supporting their use. However, comprehensive models that include supportive therapies and targeted therapeutic interventions that include elements of CBT are regarded as worthy of further research.

Future directions

The findings from this REA indicate that the evidence for outreach services for treatment of mental health conditions is emerging, and initial findings appear encouraging in so far as there is suggestive evidence of a beneficial effect for comprehensive outreach service models that incorporate CBT-informed therapeutic approaches. This benefit is mainly evidenced in regard to reductions in depressive symptoms. Unfortunately, few studies investigated other psychosocial outcomes of interest, such as improvements in quality of life, increased level of functioning in terms of employment, family relationships, or relationships between partners, increased access to mental health services, decrease in hospital admissions, and improvements in attitudes towards accessing services or treatment. An important exception was the study by Smelson et al. (2013) that targeted homeless veterans, which included as primary outcome variables rates of rehospitalisation and level of treatment engagement, both of which improved significantly following participation in a comprehensive CBT-informed outreach service model.

The evidence suggests that the development of an outreach model to support veterans that entails face-to-face home visitation is worthy of exploration as a novel means of service delivery. Such models may be an efficacious adjunct to existing services, and stand to benefit veterans not presently engaged in treatment. Given the nature of the evidence available, which draws upon samples of limited generalisability to the Australian veteran population, any such model, if piloted, should incorporate a clear evaluation strategy to ensure it is effective with the targeted population. The current evidence suggests an outreach model may also benefit the female partners of veterans. This claim in made in recognition that the majority of participants included in the studies that comprise this review were female and of young age.

There is insufficient evidence available to provide conclusive advice on the specific components that should be incorporated in an outreach service to maximise benefits to mental health. However, the greatest evidence so far is for comprehensive models that incorporate CBT-informed approaches together with basic components of care common to case management models generally (i.e. screening, risk management, needs assessment, referral and linkage). The choice of outreach model must also be considered with respect to the different time and costs involved in providing the different outreach models examined in this review. This suggests that evaluation of an outreach model should include some kind of economic analysis.

While telehealth was explicitly excluded in this review in order to necessarily constrain the scope, it has significant potential to link in with outreach services in order to maximise engagement and reach. Future research should explore the role for telehealth to extend outreach services and potentially increase engagement and utilisation.

Limitations

The findings from this REA should be considered alongside its limitations. In order to make this review ‘rapid’, some restrictions on our methodology were necessary. These limitations included: the omission of non-English language papers and reference lists of included papers not being hand-searched to find other relevant studies. Similarly, although we did evaluate the evidence in terms of its strength, consistency, and generalisability, these evaluations were not as exhaustive as in a systematic review methodology. We made a qualitative judgement based on the level of evidence about the certainty of our estimates of prevalence. We did not use a meta-analysis methodology to combine or synthesise the results in a statistical way. Lastly, it is important to consider that our methodology allowed for a wide range of trial methodologies. We included studies that used methodologies such as single case studies or case series designs, which are often excluded from systematic reviews. Our inclusion of a wide range of study designs was in recognition of the emerging nature of this body of literature.

Importantly, any comments about the potential for effectiveness of the interventions outlined above are based on the data (both outcomes and adverse events) reported in these studies. Needless to say, safety considerations for any future studies would need to be thoroughly investigated in the first instance. For the purpose of this review, a number of highly diverse service approaches were subsumed into three broad categories. This rendered results more easily interpretable and was considered appropriate given the purpose of the review. However, inevitably such broad classifications obscure significant differences between approaches; differences that future research might show to be clinically relevant.

The information presented in this REA is a summary of information presented in available papers. We recommend readers source the original papers if they would like to know more about a particular intervention or study.

Conclusion

The current evidence base concerning the efficacy of outreach models for improving adult mental health shows preliminary evidence of a beneficial effect. This benefit is mainly evidenced in regard to reductions in depressive symptoms. The strongest evidence is for models that offer a comprehensive outreach service incorporating CBT-informed therapeutic approaches. The evidence currently available to support this conclusion was judged overall to be ‘fair’ in light of methodological limitations, including clustered randomisation design (as opposed to true randomisation), small sample sizes, short-term or no follow-up periods, lack of clinician-rated outcomes, and failure to appropriately blind outcome assessors.

Insufficient evidence is available to draw conclusions concerning the efficacy of other outreach services models examined in this review. However, comprehensive models that include supportive therapies and targeted therapeutic interventions that include elements of CBT are regarded as worthy of further research.

On the basis of this evidence, the development of an outreach model to support veterans that entails face-to-face home visitation is deemed worthy of exploration as a novel means of service delivery. In light of the nature of the evidence available, which draws upon samples of limited generalisability to the Australian veteran population, any such model, if piloted, should incorporate a clear evaluation strategy to ensure it is effective with the targeted population. There is additional scope to explore opportunities to extend outreach services to the wider family unit, and to augment face-to-face outreach models with telehealth models. Further research examining the potential for such combined services is suggested.

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Appendix 1

Population Intervention Comparison Outcome (PICO) framework

This question was formulated within a Population Intervention Comparison Outcome (PICO) framework. Application of a PICO framework helps to structure, contain and set the scope for the research question. Inclusion of intervention and comparison components is dependent on the question asked, and may not be appropriate for all question types.

- **What is the effectiveness of outreach services for increasing quality of life, promoting access to services, and increasing functioning and mental health, among veterans and adult populations more broadly with PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder, or substance-use disorder?**
- **PICO format**: In adults with diagnoses (single or comorbid) or sub-clinical features of PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder, or substance-use disorder, is there evidence that outreach services entailing home-based visits or mobile support will lead to improvements in quality of life, greater access to services, increased functioning in regards to employment and intimate relationships, or improved mental health?

P Patient, Problem, Population	**I** Intervention	**C** Comparison (*optional*)	**O** Outcome (*"more effective" is not acceptable unless it describes **how** the intervention is more effective)*
Patient – veterans or adults more generally with symptoms of PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder or substance-use disorder. Problem – PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder or substance-use disorder.	Outreach targeting individuals with PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder or substance-use disorder. Outreach must include home visits or mobile work	Any comparison	Improvements in quality of life Increased level of functioning (in terms of employment, family relationships and relationships between partners) Increased access to mental health services

Population –veterans and adults generally			Decrease in hospital admissions Improvements in attitudes towards accessing services/treatment Improvements in PTSD, depression, anxiety, adjustment disorder, alcohol-use disorder or substance-use disorder.

Appendix 2

Example search strategy

The following is an example of the search strategy conducted in the Medline database:

Step	Search Terms	No of records
S1	Outreach: ('home visit*' or 'home*base*' or ‘mobile service’ or outreach).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	20,185
S2	'Posttraumatic stress disorder' or PTSD or 'post*traumatic stress' or 'post*traumatic stress syndrome' or PTSS	27,464
S3	Depression or MDD or 'major depress* disorder' or dysthymia or 'depressive disorder*'	413,489
S4	'Anxiety disorder*' or 'panic disorder' or 'panic attack' or agoraphobia or GAD	61,816
S5	‘adjustment disorder’	963
S6	'substance*related disorder*' or 'addictive disorder' or 'substance*use disorder*' or 'substance*induced disorder*' or 'alcohol*related disorder' or 'alcohol*use disorder' or 'drug abuse' or 'drug*use disorder*'	17,479
S7	2 OR 3 OR 4 OR 5 OR 6	483,248
S8	7 AND 1	1
S9	limit 8 to (english language and humans and yr="2008 - Current")	618

Appendix 3

Quality and bias checklist

Chalmers Checklist for appraising the quality of studies of interventions (NHRMC, 1999)

Completed		
Yes	No	
		1. **Method of treatment assignment**
		☐ Correct, blinded randomisation method described OR randomised, double-blind method stated AND group similarity documented
		☐ Blinding and randomisation stated but method not described OR suspect technique (eg allocation by drawing from an envelope)
		☐ Randomisation claimed but not described and investigator not blinded
		☐ Randomisation not mentioned
		2. **Control of selection bias after treatment assignment**
		☐ Intention to treat analysis AND full follow-up
		☐ Intention to treat analysis AND <25% loss to follow-up
		☐ Analysis by treatment received only OR no mention of withdrawals
		☐ Analysis by treatment received AND no mention of withdrawals OR more than 25% withdrawals/loss-to-followup/post-randomisation exclusions
		3. **Blinding**
		☐ Blinding of outcome assessor AND patient and care giver (where relevant)
		☐ Blinding of outcome assessor OR patient and care giver (where relevant)
		☐ Blinding not done
		☐ Blinding not applicable
		4. **Outcome assessment (if blinding was not possible)**
		☐ All patients had standardised assessment
		☐ No standardised assessment OR not mentioned
		5. Additional Notes
		☐ Any factors that may impact upon study quality or generalisability

Appendix 4

Evidence profile

Case management

Authors & year	Design	Total Sample Size	Intervention (I) and Comparison (C) and participants for I and C	Focus of intervention Method of delivery Type of professional delivering service	Population Mean age (SD) Gender (%)	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
Bruce et al. (2015)	Cluster randomised controlled trial. Assessment conducted during intervention at 3, 6 and 12 months.	306	(I) Depression Care for Patients at Home (Depression CAREPATH) *n* = 185. (C) Enhanced usual care *n* = 121.	(I) Depression CAREPATH involves assessment of depressive symptoms, coordination of care, monitoring of adherence and management of adverse effects from antidepressant medication, education for patients and their families, and assistance with meeting patients' short-term goals. Delivered in weekly home visits by trained nurses. (C) Enhanced usual care entailed depression management following standard procedures (not described). Delivered in weekly home visits by a nurse.	Medicare home health care patients (eligible due to presence of a medical condition) ≥ 65 years of age who screened positive for depression. USA Mean age: 76.5(8) 69.6% Female	- Depressive symptoms (HAM-D)	

<table>
<tr><th>Authors & year</th><th>Design</th><th>Total Sample Size</th><th>Intervention (I) and Comparison (C) and participants for I and C</th><th>Focus of intervention
Method of delivery
Type of professional delivering service</th><th>Population
Mean age (SD)
Gender (%)</th><th>Primary Outcome domain (Measure(s))</th><th>Secondary Outcome domain (Measure(s))</th></tr>
<tr><td colspan="8">Results: No significant group differences in depression severity was found at 3-month or 6-month follow up. A significant group difference was identified at 12-month follow up ($p < .05$). Among the subgroup with moderate to severe depression (i.e. a HAM-D score ≥ 10, $n = 208$), depression severity decreased over time for both the intervention and comparison groups, but significantly more in the intervention group. Significant group differences were found at 3-month (effect size not reported), 6-month ($d = .32$), and 12-month ($d = .49$) follow up. This effect occurred irrespective of medication use (half of the sample were taking antidepressants at baseline). Among those with mild depression (i.e. HAM-D score ≤ 10, $n = 98$) there were no significant betweengroup differences.</td></tr>
</table>

Comprehensive

Authors & year	Design	Total Sample Size	Intervention (I) and Comparison (C) and participants for I and C	Focus of intervention Method of delivery Type of professional delivering service	Population Mean age (SD) Gender (%)	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
CBT-informed interventions							
Ammerman et al. (2011)	Cohort study. Assessment conducted postintervention (4.5 months).	359	(I) In-home CBT comprising 15, 60-min weekly sessions + 1 booster session a month following treatment, + standard home visiting *n* = 118 (C) Standard home visiting n = 241. **NB:** 19.9% of comparison group received mental health treatment elsewhere.	(I) CBT included behavioural activation, identification of automatic thoughts and schemas, thought restructuring, relapse prevention. Delivered by social workers. (C) Standard home visiting targeted child health and development, nurturing the mother-child relationship, maternal health and self-sufficiency, and links to community services. Delivered by nurses, social workers, or related professionals or paraprofessionals.	First time mothers ≥ 18 years of age enrolled in a home visitation program with depression USA Mean age: (I) 22.57 (4.96) (C) 20.15 (3.94) 100% Female	- Depression symptoms (BDI-II) - Depression diagnosis (PRIME-MD)	- Maternal attitudes (MAQ) - Panic disorder (BPHQ subscale) - Functional impairment (BPHQ item) - Psychosocial stressors (BPHQ subscale)

Results: BDI-II scores reduced significantly in both groups, with significantly larger reductions in the intervention group (p < .01). The intervention group was significantly more likely to show a 50% reduction in BDI-II scores than the comparison group (*p* < .01), and was significantly more likely to become asymptomatic (*p* < .05). Additionally, 46.9% and 32.8% of the intervention group showed partial or full resolution of major depressive disorder respectively on the PRIME-MD. Within the comparison group, there was no significant difference in depression scores between mothers who did (*n* = 48) and mothers who did not (*n* = 193) receive external mental health treatment (*p* > .05).

The intervention group showed significant improvement in maternal attitudes (*p* < .01), reduced stress associated with most of the psychosocial stressors assessed (*p* < .01), and reduced functional impairment (*p* < .001). There was no significant reductions in diagnostic status of panic disorder. Interactions between pre-post outcomes and number of home visits received were not significant.

Authors & year	Design	Total Sample Size	Intervention (I) and Comparison (C) and participants for I and C	Focus of intervention Method of delivery Type of professional delivering service	Population Mean age (SD) Gender (%)	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
Ammerman et al. (2013)	Cluster randomised controlled trial. Assessment conducted postintervention (5 months) and 3 months following intervention.	93	(I) In-home CBT comprising 15, 60-min weekly sessions + 1 booster session a month following treatment, + standard home visiting *n* = 47. (C) Standard home visiting (frequency of sessions at discretion of provider) *n* = 46.	(I) CBT included behavioural activation, identification of automatic thoughts and schemas, thought restructuring, relapse prevention. Delivered by social workers. (C) Standard home visiting targeted child health and development, nurturing the mother-child relationship, maternal health and self-sufficiency, and links to community services. Delivered by nurses, social workers, or related professionals or paraprofessionals.	Mothers ≥ 16 years 2-10 months postpartum enrolled in community-based home visiting program diagnosed with depression USA Mean age: 21.9(4.8) (I) 22.4(5.2) (C) 21.5(3.9) 100% Female	- Depressive symptoms (HDRS, EPDS, BDI-II) - Depression diagnosis (SCID) - General functioning (GAF)	- Consumer satisfaction

Results: Significant improvements in depressive symptoms and general functioning were found for both groups at post treatment and at 3-month follow up. There was no further significant change from post-treatment to 3 month follow-up. The intervention was significantly more effective than the comparison condition on all outcome measures. Effect sizes post-treatment varied between .65 - .90, and between .55 - .6 at follow up. No significant between group differences in dropout rates were identified.

Post treatment, 70.7% of participants in the intervention group compared to 30.2% of participants in control group did not meet criteria for major depressive disorder. Participants reported high levels of satisfaction with the intervention and the retention rate was relatively high (48.9%). Treatment outcomes were not moderated by comorbidity, therapist, home visitation model, or type of depression diagnosis (i.e. single episode versus recurrent episode). Close to one third of participants in the comparison group (34.9%) obtained treatment for depression (either medication or psychotherapy) during the treatment period, and 44.7% did likewise between post-treatment and follow up periods.

* A second article by Ammerman et al. (2015) titled ‘Depression improvement and parenting in low-income mothers in home visiting’ reports additional findings from the same trial. In this article the authors report results concerning parenting stress, nurturing parenting and child adjustment, and analyse the relationships between these variables and depression. No significant differences in parenting stress, nurturing parenting, or child adjustment were identified between groups.

Authors & year	**Design**	**Total Sample Size**	**Intervention (I) and Comparison (C) and participants for I and C**	**Focus of intervention** **Method of delivery** **Type of professional delivering service**	**Population** **Mean age (SD)** **Gender (%)**	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
Gitlin et al. (2013)	Cluster randomised controlled trial. Assessment conducted postintervention (4 months) and 4 months following intervention (intervention group only).	208	(I) Behavioural intervention (Beat the Blues), entailing 10 x 1-hour home visits delivered over 4 months, initially weekly then fortnightly, *n* =106 (C) Wait-list control, *n* = 102	(I) The intervention was delivered by social workers trained in the intervention. It targets care management, referral and linkage, depression knowledge, stress reduction techniques, and behavioural activation. (C) The comparison group were permitted to receive external treatment during the trial.	African Americans with depressive symptoms Mean age: 69.6(8.57) (I) 68.9(8.9) (C) 70.3(8.4) 78.4% Female	- Depressive symptoms (PHQ-9)	- Depressive symptoms (CES-D) - Behavioural activation (modified Behavioural Activation Scale) - Depression knowledge and efficacy - Well-being - Anxiety (10-item State Anxiety Scale) - Functional difficulties

Results: At 4 months, the intervention group showed significantly greater reductions in depression (PHQ-9 mean change -2.9, *p* = .001, CES-D mean change -3.7, *p* < .001), and significantly greater improvements in depression knowledge, quality of life, behavioural activation, anxiety (*p* < .001), and function (*p* = .014), relative to comparison group. Effect sizes for all outcomes measures were moderate to large. After treatment, a greater proportion of the intervention group (43.8%) had entered remission (i.e. PHQ-9 score between 0 and 4) relative to the comparison group (26.9%), *p* = .02, and a greater percentage of intervention participants (64%) showed clinically meaningful reductions in depression severity (i.e. a decrease of ≥ 5 points) relative to the comparison group (40.9%). Five participants in the intervention group and 11 participants in the comparison group worsened by 4 months. The withdrawal rate was significantly greater for the intervention group. In total, 182 participants completed the 4-month assessments and 160 participants completed the 8 month assessments (4 months post intervention) respectively. When the intervention was repeated at 4 months with a subset of the comparison group, participants showed similar levels of benefit to those reported above.

Authors & year	**Design**	**Total Sample Size**	**Intervention (I) and Comparison (C) and participants for I and C**	**Focus of intervention** **Method of delivery** **Type of professional delivering service**	**Population** **Mean age (SD)** **Gender (%)**	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
***** A second article by Gitlin, Roth & Huang (2014) titled 'Mediators of the impact of a home-based intervention (Beat the Blues) on Depressive Symptoms among Older African Americans' reports on mediators of the relationship between the intervention and depression outcomes, with participants who completed 4-month follow up assessment (*n* = 179). Mediators examined were depression knowledge and efficacy, state anxiety, behavioural activation, and formal care service utilisation. The intervention was found to have a significant positive effect on depression outcomes and three of the four mediating factors (*p* < .001). Service utilisation was not affected by the intervention. Behavioural activation, depression knowledge increase, and anxiety reduction were independent mediators of the relationship between intervention and depression symptoms and together accounted for over 60% of interventions total effect on depression.							

Smelson et al. (2013)	Cohort study. Assessment conducted during intervention at 6 and 12 months.	333	(I) Maintaining Independence and Sobriety through Systems Integration, Outreach, and Networking (MISSION), plus TAU *n* = 218 (C) TAU *n* = 115	MISSION is a 12-month wraparound intervention designed for homeless veterans with psychopathology aiming to facilitate rapid community engagement and achievement of personal goals, including engaging in mental health and substance abuse treatment services. Delivery is via a case manager and peer specialist team, commencing while the veteran is in residential care. 2.5 hours of individual and group sessions a week for 10 months reducing to two times per month during months 11–12. TAU: Housing and psychosocial support	Chronically homeless veterans with a diagnosis of substance abuse or dependence and a co-occurring mental health problem USA Mean age: 46.5 (8.35) 3.9% Female	- Rehospitalisation rates / treatment engagement (self-reported inpatient psychiatric admissions; outpatient treatment attendance) - Alcohol and drug use, and related behavioural health outcomes (ASI)	
Results: Compared with TAU alone, individuals receiving MISSION demonstrated significantly greater outpatient session attendance within the 30 days before the 12-month follow up assessment. Participants in the intervention group, but not those in the control group, showed a significant decline from baseline in the number of psychiatric hospitalisation nights. Individuals in both groups both showed statistically significant improvements in substance use and related problems at 12 months, with those in MISSION less likely to drink to intoxication and experience							

Authors & year	**Design**	**Total Sample Size**	**Intervention (I) and Comparison (C) and participants for I and C**	**Focus of intervention** **Method of delivery** **Type of professional delivering service**	**Population** **Mean age (SD)** **Gender (%)**	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
serious tension or anxiety. However, there were no significant differences between groups at 12-month follow-up. Compared with TAU alone, the intervention was effective in augmenting usual care and engaging and retaining homeless veterans in treatment, however, the augmented program resulted in no additional improvement in substance abuse problems.							

Supportive interventions							
Flemington, Water & Fraser (2015)	Retrospective case file review. Assessment conducted during intervention at infant age 6 weeks, 12 weeks, and 6 months.	40	(I) Nurse home visiting program entailing weekly home visits from birth to infant age 6 weeks, then fortnightly home visits until infant age 6 months.	(I) Targeted the establishment of trusting relationship between nurse and family, promotion of maternalinfant attachment, parent adoption of health promoting behaviours, promotion of positive parenting practices, reduced parental stress, improved maternal mood, reduced potential for child abuse, and promotion of available support systems. Delivered by trained nurses.	Mothers enrolled in a nurse home visiting program who met one of the following criteria: history of mental illness, in a violent relationship, with drug or alcohol problems Australia Mean age: NR 100% Female	- Suitability of home environment (HOME) - Maternal responsivity (HOME)	- Depression (EPDS)
Results: The manner in which results were reported prohibits meaningful interpretation of depression outcomes.							

Authors & year	**Design**	**Total Sample Size**	**Intervention (I) and Comparison (C) and participants for I and C**	**Focus of intervention** **Method of delivery** **Type of professional delivering service**	**Population** **Mean age (SD)** **Gender (%)**	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))

<table>
<tr><td>Segre, Brock, & O’Hara (2015)</td><td>Randomised controlled trial.
Assessment conducted postintervention (8 weeks).</td><td>66</td><td>(I) Listening Visits + usual home visits or social services n = 41
C: Wait list control (delayed LV) + TAU n = 25</td><td>(I) Key therapeutic components were empathic listening and collaborative problem-solving. Listening visits comprised 6 visits (30-50 minutes) within 8 weeks (M = 4.78 visits).
Delivered during home visits (3 sites, 25 providers) or in an ob-gyn clinic (1 site, 1 provider) by trained providers all of whom had low levels of prior counselling experience
(C) Usual social or prenatal/postpartum health care services</td><td>Depressed pregnant women or mothers of young children
USA
(I) Mean age: 27.4(5.49)
(C) Mean age: 24.6(6.10)
100% Female</td><td>- Depression diagnosis (SCIDI/NP)
- Depressive symptoms (EPDS; IDASGD)
- Depression severity (HRSD)
- Quality of life (Q-LES-Q)</td><td>- Impairment of function because of sad mood (WSAS)</td></tr>
<tr><td colspan="8">Results:. Depression for both groups improved significantly from pre- to post-treatment. Depression severity, depressive symptoms, and quality of life improved significantly more for the LV group compared with the WLC group from baseline to the 8-week assessment. Using reliable change indices, a greater percentage of women in the LV group compared to the WLC group were found to experience clinically significant improvements from the baseline to the 8-week assessment on all primary measures.</td></tr>
<tr><td>Zolnoski, Stacks, KohlHanlon, & Dykehouse (2012)</td><td>Pre-post comparison.
Assessment conducted postintervention (10 months).</td><td>17</td><td>(I) Home visitation program, modelled off the Health Families America and Parents as Teachers programs.</td><td>Program offered primary health care, mental health treatment and parent education. Family goals were established at commencement of intervention. Home visits scheduled 2/month with phone assistance as required.
Delivered by nurse, social worker and paraprofessional. Primary home</td><td>Parents (child 0-5 years) referred due to concerns regarding any of: food, housing, parent mental health, parent knowledge, parent-child relationship, child</td><td>- Parenting behaviours and attitudes (AAPI-2)
- Parent mental health (BSI, depression and anxiety subscales)</td><td></td></tr>
</table>

Authors & year	Design	Total Sample Size	Intervention (I) and Comparison (C) and participants for I and C	Focus of intervention Method of delivery Type of professional delivering service	Population Mean age (SD) Gender (%)	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
				visitor assigned to family was decided based upon family's needs.	health or development. Nearly half of sample scored in clinically significant range for depression or anxiety (41.2% and 58.8% respectively). USA Mean age: 32.5 (11.1) 82.4% Female	- Child language development (Bayley III) - Child problem behaviour (BITSEA)	
Results: Frequency of visitation varied from 0.47 to 1.66 visits per month (*M* = .86). Significant reductions were found for depression (*p* = .022) and anxiety (*p* =.02) post-intervention. Fifteen percent of parents showed consistently high depression levels, 23% showed a decrease in depression, and 53.5% showed a decrease in anxiety. No significant changes were identified in parenting behaviours and attitudes, child language improvements or reductions in problematic child behaviours. Half of the participants demonstrated greater high-risk parenting postintervention.							
Exercise interventions							

Authors & year	Design	Total Sample Size	Intervention (I) and Comparison (C) and participants for I and C	Focus of intervention Method of delivery Type of professional delivering service	Population Mean age (SD) Gender (%)	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))
Prick, de Lange, Twisk, & Pot (2015)	Randomised controlled trial. Assessment conducted postintervention (3 months) and 3 months following intervention.	111 dyads	(I) Multi-component dyadic intervention delivered during 8, 1 -hour home visits over 3 months *n* = 57 dyads (C) TAU *n* = 54 dyads	(I) Education about dementia, communication skills for caregivers, pleasant activity scheduling, and physical exercise, conducted by a trained home-visiting coach (C) Routine medical care plus information bulletins and monthly telephone calls	Dyads (*n* = 111) comprising community-dwelling people with dementia and a family caregiver with some depressive symptoms (CES-D score > 5). The Netherlands Caregivers: Mean age: 72(10.09) 72% female. Care receivers: Mean age: 77(7.46) 70% Male	- Caregiver's mood (CES-D)	- Caregiver's burden - Caregiver's general health

Results: Analyses showed no benefits to caregivers over time on any of the outcome measures. Self-reported depression was assessed at baseline (*M* = 10.84, *SD* = 6.85), and at 3-month (*M* = 13.71, *SD* = 8.18) and 6-month (*M* = 13.62, *SD* = 7.18) follow-up post-intervention using the Dutch version of the CES-D. Depression scores rose over time in the intervention group. One reason proposed for this was that the intervention may have raised caregivers' awareness of the physical and mental incapacities of care recipients. Additionally, adherence to some components of the intervention was low.

Targeted

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CBT-informed interventions							
Ciechanowski et al. (2010)	Randomised controlled trial. Assessment conducted 6 and 12 months following baseline assessment.	80	(I) Problem-solving treatment targeting depression (PEARLS Program) *n* = 40 (C) Usual care *n* = 40	(I) PEARLS is a collaborative care intervention involving problemsolving skills, behavioural activation, and psychiatric consultation, comprising 8, 50-minute in-home sessions weekly then fortnightly across 19 weeks, followed by monthly telephone calls. Delivered by a trained social worker (C) Usual care involved sending a letter reporting depression diagnosis to participant's physician encouraging treatment Both groups received pharmacotherapy review and management from study psychiatrist.	Persons with epilepsy ≥ 18 years of age with depression USA Mean age: 43.9 (11) 52.5% Female	- Depressive symptoms (HSCL-20)	- Quality of life (QOLIE-31) - Frequency of seizures
Results: Participants in the intervention group received a mean of 6.2 visits (*SD* = 3.0) during the 19-week active phase of treatment, and a mean of 2.5 telephone contacts (*SD* = 2.3) during the subsequent follow-up period. There was a significant group by time interaction (*p* = .005). At 6 months, the average change in depressive symptoms from baseline was -.18 (*SD* = .7) for the comparison group, and -.48 (*SD* = .7) for the intervention group. Between 6- and 12-months, symptoms increased for the comparison group but decreased further for the invention group. At 12 months, the average change in depressive symptoms from baseline was -.11 (*SD* = .5) for the comparison group and -.56 (*SD* = .56) for the intervention group. The proportion of participants							

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whose symptoms as measured by the HSCL-20 reduced by >50% did not differ significantly between groups. Three participants in the intervention group achieved remission by 6 months and a further two participants in the intervention group achieved remission by 12 months. There was a significant group by time interaction (*p* = .01) for emotional well-being with improvements at 6 months and further improvements at 12 months for the intervention group, compared to a worsening of symptoms at 6 months and negligible change at 12 months for the comparison group. No significant group differences were found for any other subscale of the QOLIE-31. *A second article by Chaytor et al. (2011) titled 'Long-term outcomes from the PEARLS randomised trial for the treatment of depression in patients with epilepsy' reports additional findings from the same trial concerning longer-term outcomes from the intervention (including an 18-month post-treatment assessment). The intervention group showed significantly lower scores on depression (HSCL-20, *p* < .05) and suicidal ideation (HSCL-20, *p* < .02), and higher scores on emotional wellbeing (QOLIE-31, *p* < .02) (but not overall wellbeing ratings) post-treatment and at each follow-up time period over 18 months. Seven participants in total achieved >50% reduction in symptoms by 18 months, six of who achieved remission. Three of these participants belonging to the intervention group and 3 belonged to the comparison group. 33.3% of intervention participants versus 10.7% of comparison participants received > 40% reduction in symptoms by 18 months. No significant differences in parenting stress, nurturing parenting, or child adjustment were identified between groups.							
Sampson, Villarreal, & Rubin (2016)	Pre-post comparison. Assessment conducted postintervention (5 weeks) and 3 months following intervention.	14	(I) Problem-Solving Therapy (PST)	PST was adapted for low-income women at risk of post-partum depression, delivered across 5 home visits. It comprised motivational interviewing (1 session) and problem-solving therapy (4 sessions). Delivered by case workers	Low-income pregnant mothers at risk for post-partum depression USA Mean age: 24(5.0) 100% Female	- Depression symptoms (EPDS) - Depression severity (PHQ-9)	
Results: There was a significant reduction in the average EPDS score from pre-test (*M* = 13.36, *SD* not reported) to post-test (after the fourth PST session) (*M* = 7.69, *SD* not reported), *p* < .05, with a within-group effect size of 1.03. Depression severity was measured with the PHQ-9 at the beginning of each PST session. Assessments were conducted at four time points: the start of the first three sessions of PST and at the end of the fourth session of PST. There was a significant reduction in depressive symptoms from pre-test (*M* = 10.85, *SD* not reported) to time point 4 (*M* = 5.23 *SD* not reported), *p* < .05, within-group effect size = 1.24. The intervention had a 93% retention rate.							

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Supportive interventions							
Goodman, Guarino & Prager (2013)	Pre-post comparison. Assessment conducted postintervention (timing NR) and following intervention (timing NR).	6	(I) Perinatal Dyadic Psychotherapy (PDP)	PDP included a mother-infant psychotherapy component and an infant-oriented component focused on promoting positive mother-infant interactions, entailing 8, 1-hour home visits delivered over 3 months weekly then fortnightly. Delivered by trained nurses trained	Mothers ≥ 18 years of age with acute postpartum depression USA Mean age: 32(5.02) 100% Female	- Depression (EPDS, SCID-I)	- Anxiety diagnosis (SCID-I) - Anxiety symptoms (STAI) - Self-esteem (MSRI) - Parenting stress (PSI-SF) - Mother-infant interaction - Infant social emotional development (Still Face Procedure)
Results: All participants achieved remission of depression, which was maintained at follow-up. Significant differences in mean scores at baseline, post-treatment and follow up were found for depression (*p* = .02), state anxiety (*p* < .01), self-esteem (*p* = .01). Follow-up tests identified differences between baseline and post-treatment, which were maintained at follow up for depression and anxiety, and partially maintained at follow up in the case of self-esteem.							

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Tamaki (2008)	Randomised controlled trial. Assessment conducted 1 week and 6 weeks following intervention.	18	(I) Home visits, in addition to usual care *n* = 9 (C) Usual care *n* = 9	(I) Session content included active listening, providing support and acceptance, depression psychoeducation, and advice on coping. 4, 1-hour weekly home visits delivered by a mental health nurse (C) A post-partum visit at home with a midwife or public health nurse, and a 4-month post-partum checkup at a community-based centre.	Women ≥ 18 years of age with depression recruited 1-2 months post birth. Japan Mean age: 33.81(4.34). 100% Female	- Depression (EPDS, SCIDPND) - Quality of life (WHO/QOL-26)	- Satisfaction and meaning derived from home visits
Results: The intervention group showed a significant amelioration of depressive symptoms by 1 week and 6 weeks post-intervention (based upon mean EPDS score) (*p*<.05). Reduction in depressive symptoms across time for the control group were not significant. Between-group differences in depression scores, however, were not significant. At 1 week, 5 of 7 women in the intervention group, compared to 3 of 9 women in the control group, no longer met criteria for depression (SCID-PND). At week 6, 0 women in the intervention group, compared to 3 women in the control group, no longer met criteria for depression (SCID-PND). The intervention group showed significant improvements by 1 week post intervention in average quality of life scores (WHO/QOL-26, *p=.02*), and on four subscales of quality of life: physical (*p*=.02), psychological (*p*=.02), environmental (*p*=.03), and global (*p*=.02) subscales. They also showed significant improvements by 6 weeks post intervention in average quality of life scores (WHO/QOL-26, *p=.03*), and on three of the same four subscales: physical (*p*=.03), environmental (*p*=.02), and global (*p*=.03). No significant group differences were found for the control group on any quality of life parameter across time. Between-group differences were evident at 1 week post-intervention on the WHO/QOL-26 psychological subscale (*p*-.04), and at 1 week and 6 weeks post-intervention on average scores and the physical, environment, ad global subscales. Qualitative findings showed perceived benefits from the intervention, attributed to setting mind at ease, clarifying thoughts, improving coping abilities, and removing feelings of withdrawal from others. Two women in the intervention group ceased prematurely.							

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Thome & Arnardottir (2013)	Pre-post comparison. Assessment conducted postintervention (timing NR)	39 couples	(I) Antenatal family nursing home-visiting intervention	(I) Four home visits delivered weekly or monthly, involving parenting couple (sessions 1 and 4) or mother only (sessions 2 and 3). Session content focused on discussion of parenthood as a transitional period, importance of partner support, and infant-parent interaction (with audio-visual material to stimulate discussion). Delivered by nurse.	Women in last two trimesters of pregnancy who reported experiencing distress, and their partners. Iceland. Mean age: women 27 (5.1), men 30 (5.6) 54% Female	- Depression and anxiety (EDS, STAI) symptoms self-esteem (RSES) - Dyadic adjustment (DAS)	
Results: At entry, 57.3% of women who completed pre-test EDS (*n*=61) scored ≥ 12 on the EDS. Twenty-four of the 49 women (49%) who completed pre-post tests showed clinically significant improvements on the EDS (4 - 14 points), but five of these women remained in the clinical range (score ≥ 12). In total, 14 women remained in clinical range post intervention on the EDS, and 26 women remained in the clinical range post intervention on either EDS or STAI scales. At entry, 25% of men who completed pre-test EDS (*n* = 40) scored ≥ 9 on the EDS. Ten of the 40 men (25%) who completed pre-post tests showed clinically significant improvements on the EDS (drop in score between 4 and 10 points). Two men below clinical range pre-test progressed into the clinical range by post-test, rising by 4-10 points. Only one-third of male participants followed the recommendation to attend a minimum of 2 home-visiting sessions, meaning results are not clearly attributable to the intervention. In total, six men reported high scores postintervention on either EDS or STAI, of whom 6 lived with partners who also maintained high scores on either the EDS or STAI.							