The effects of cognitive behaviour therapy for major depression in older adults

Submitted by

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Thesis submitted in fulfilment of the requirements for the degree of Master of Clinical Science (Evidence Based Healthcare)

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The University of Adelaide

December 2011

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List of abbreviations

AMD: Age-related macular degeneration
BDI: Beck Depression Inventory
CBT: Cognitive behavioural therapy
CBGT: Cognitive–behavioural group therapy
CI: confidence interval
DSM-IV-TR: Diagnostic and Statistical Manual of Mental Disorders
DSSI: Duke Social Support Index
ECT: Electroconvulsive therapy
GDS: Geriatric Depression Scale
HDRS: Hamilton Depression Rating Scale
ICD-10 International Statistical Classification of Diseases and Related Health Problems
JBI: Joanna Briggs Institute
JBI-MAStARI: The Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument
LSI: Life satisfaction index
MADRS: Montgomery Åsberg Depression Rating Scale
MD: Major depression
MDD: Major depressive disorder
MDSEQ: Macular Degeneration Self-Efficacy Scale
OAPES: Older Adult Pleasant Events Schedule
RCT: Randomised controlled trial
SD: Standard deviation
LOT-R: The Life Orientation Test Revised

TAU: Treatment as usual
WMD: Weighted mean differences
WHOQOL: World Health Organisation Quality of Life scale
AGECAT: Automated Geriatric Examination for Computer Assisted Taxonomy)

Dedication

"This thesis is dedicated to my dear parents and my loving family who provided me the opportunities, facilities and encouragement for a good education"

THE UNIVERSITY OF ADELAIDE

Faculty of Health Sciences

Joanna Briggs Institute

Thesis declaration

I certify that this thesis entitled:

The effects of cognitive behaviour therapy for major depression in older adults

and submitted for the degree of Master of Clinical Science (Evidence Based Healthcare), is the result of my own research. This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Rasika Sirilal Jayasekara and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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Rasika Sirilal Jayasekara

Date: 01 December 2011

Acknowledgements

I would like to express my grateful appreciation and sincere thanks to my principal supervisor, Professor Jennifer Abbey and Co-supervisor Dr Craig Lockwood the Joanna Briggs Institute, the University of Adelaide, for their excellent guidance, great understanding and encouragement during my candidature.

I would equally like to express my sincere thanks to Professor Alan Pearson, Executive Director and Professor of Evidence-based Healthcare, the Joanna Briggs Institute, the University of Adelaide, for his guidance and encouragement. I also appreciate the kind cooperation and friendship of all staff and postgraduate colleagues of the Joanna Briggs Institute.

Last, but certainly not least, my sincere thank should go my wife, Subhashini, whose interest and encouragement, love and companionship mean everything to me. Finally, I must thank my son Rajith and my daughter Thenumi for believing in me – You make my life so beautiful.

Executive summary

The effects of cognitive behaviour therapy for major depression in older adults

Objectives

The objective of this systematic review was to examine the effects of cognitive behavioural therapy (CBT) for older adults with depression when compared to standard care, specific medication and other therapies.

Inclusion criteria

This review considered only randomised controlled trials (RCTs) assessing the effectiveness of CBT as a treatment for older adult with major depression when compared to standard care, specific medication, other therapies and no intervention. The review included trials in which patients were described as elderly, geriatric, or older adults, or in which all patients were aged 55 or over. Major depression was diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) and the World Health Organization's International Statistical Classification of Diseases and Related Health Problems (ICD-10) criteria.

Search strategy

The search was limited to English language papers published from 2003 to July 2011. A three-step search strategy was developed using MeSH terminology and keywords to ensure that all materials relevant to the review were captured. An initial limited search of MEDLINE and CINAHL was undertaken followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe the article. A second search using all identified keywords and index terms was then undertaken in major databases (MEDLINE; CINAHL; Cochrane Central Register of Controlled Trials; Controlled Trials; EMBASE; Current Contents; PsycINFO; Ageline). Thirdly,

the reference list of all identified reports and articles were searched for additional studies.

Methodological quality

Each paper was assessed by two independent reviewers for methodological quality prior to inclusion in the review using The Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI). Meta-analyses were performed using Review Manager 5 software (2011).

Results

A total of seven randomised controlled trials (RCT) were included in the review. Two trials involving 159 older adults with depression compared CBT versus treatment as usual (TAU) using Beck Depression Inventory (BDI) and the pooled data of two trials found no statistically significant differences in reduction of depression after 3-4 months of the intervention (Weighted mean differences [WMD] -2.61, 95% CI -5.82 to -0.6) and 6-10 month follow-up (WMD -3.05, 95% confidence interval [CI] -6.41 to -0.32). Three trials involving 97 older adults with depression compared CBT and TAU in reduction of depression using Geriatric Depression Scale (GDS) and found a significant difference between CBT and control groups (WMD -2.83, 95% CI -4.02 to -1.64), however significant heterogeneity was observed (chi-square 10.09, df=2, I^2=80% p=0.006) in both fixed and random effects models. Individually, four trials that compared the CBT with TAU found that CBT is an effective treatment for older adults with depression.

Conclusion

The key finding of this review is that cognitive-behavioural therapies are likely to be efficacious in older people when compared to treatment as usual. This finding is consistent with the findings of several systematic reviews and meta-analyses undertaken across a wider age range. However, the small size of included trial, the nature of the participants, and the heterogeneity of the interventions has considerable implications with regard to generalising these findings to clinical populations.

Keywords

Cognitive behavioural therapy, Depression, Older Adult, Systematic review

Chapter 1 Introduction

1.1 Introduction

Depression is a substantive cause of disability worldwide (World Health Organisation, 2011a). Major depression (MD) or major depressive disorder (MDD) is a leading cause of morbidity and mortality in the elderly, with an estimated prevalence of ~3% in the general population and 15% to 25% among nursing home residents (Schultz, 2007; St John, Blandford, & Strain, 2006; Wei et al., 2005). If left untreated there is evidence of an increased risk of morbidity and mortality, with an associated economic and societal burden (Lockwood, Page, & Conroy-Hiller, 2004; Smits et al., 2008). At its worst, depression can lead to suicide, a tragic fatality associated with the loss of about 850 000 lives every year worldwide (World Health Organisation, 2011a).

The treatments for depression among older adults include antidepressants, electroconvulsive therapy, cognitive behaviour therapy, psychodynamic psychotherapy, reminiscence therapy, and exercise (Frazer, Christensen, & Griffiths, 2005a). Pharmacotherapy is an accepted and often front-line treatment for depression (Lockwood et al., 2004). However, some people, despite taking medication, continue to experience symptoms and/or disabling adverse effects (Candy et al., 2008; Mottram, Wilson, & Strobl, 2006). There is thus a growing need to consider alternative forms of treatment for depression. Cognitive behavioural therapy (CBT), a form of psychotherapy, is regarded as a non-pharmacological intervention that can provide depressed individuals with the skills with which to manage their own illness (Lockwood et al., 2004). CBT has no known adverse side effects, unlike antipsychotic medications and, has the potential to go on assisting the individual long after the symptoms subside and the therapy ceases. However, the usefulness of CBT as an intervention in moderate to severely depressed older adults has not been adequately evaluated. Despite a large number of systematic reviews, clinical studies and guidelines published on cognitive behaviour therapy for older adults with depression,

there is no high quality evidence from well-designed systematic review to inform best practice.

1.2 Background

1.2.1 Depression in older adults

Depression is a common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy and poor concentration (World Health Organisation, 2011a). Older depressed people may have cognitive symptoms of recent onset, such as forgetfulness and, a more noticeable slowing of movements (Andreescu & Reynolds, 2011; Wilkins, Kiosses, & Ravdin, 2010). Depression often coexists with physical disorders common among the elderly, such as stroke, other cardiovascular diseases, Parkinson's disease, and chronic obstructive pulmonary disease (Wilkins et al., 2010).

Depression can be reliably diagnosed in primary care. The most widely used criteria for diagnosing depression are found in the American Psychiatric Association's revised fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) and the World Health Organization's International Statistical Classification of Diseases and Related Health Problems (ICD-10). The DSM-IV-TR classify major depressive disorder as a mood disorder (American Psychiatric Association, 2000a) and ICD-10 uses the name recurrent depressive disorder (World Health Organization, 2007). The depression level is measured on scales such as the Hamilton Depression Rating Scale (HDRS), (Hamilton, 1960), Montgomery Åsberg Depression Rating Scale (MADRS) (Montgomery & Asberg, 1979) Geriatric Depression Scale (GDS), (Gompertz, Pound, & Ebrahim, 1993), Beck Depression Inventory (BDI) (Beck, Ward, & Mendelson, 1961).

The most common treatments for depression are medication, electroconvulsive therapy (ECT) and psychotherapy. Epidemiological data has found that the widespread use of antidepressants is associated with a significant decline in suicide rates in most countries with traditionally high baseline suicide rates (Rihmer & Akiskal, 2006). Approximately 50-60% of patients are supposed to improve clinically

as a consequence of antidepressant treatment (Schneider & Olin, 1995). These findings are supported by a systematic review of antidepressant versus placebo in the treatment of depression in elderly (Mottram et al., 2006). It is evident that older, frail depressed patients are particularly prone to side effects of antidepressants (Arroll et al., 2009; Schatzberg, 2007; Seitz et al., 2011). Older patients are more prone to the cardio-vascular side effects of antidepressants (Pacher & Kecskemeti, 2004). The anticholinergic side effects of many of these antidepressants are likely to promote cognitive dysfunction (Knegtering, Eijck, & Huijsman, 1994; Moskowitz & Burns, 1986). The World Health Organization has recommended that if antidepressants treatment is required for older people, tricyclic antidepressants (TCA) should be avoided if possible (World Health Organisation, 2011b). Therefore antidepressant medication may limit the effectiveness of treatment for depression in elderly people.

ECT can have a quicker effect than antidepressant therapy and thus may be the treatment of choice in emergencies such as severe depression where a patient is severely suicidal (American Psychiatric Association, 2000b). Although the efficacy of ECT has been established in a considerable number of studies, it is still a controversial treatment (Van der Wurff et al., 2003). The use of ECT is subject to legal restriction in some parts of the world. A Cochrane review failed to find randomised evidence on the efficacy and safety of ECT in subpopulations of depressed elderly patients (Van der Wurff et al., 2003). There is thus a growing need to consider alternative forms of treatment for depression in elderly people.

1.2.1 Cognitive behavioural therapy for depression

In the 1970s, psychology underwent a cognitive revolution that led to a greater interest in the significance and relevance of cognitive processes to therapy (Grant, 2010). The increasing interest in cognitions resulted in the development of the various cognitive behavioural therapies (Eifert & Plaud, 1993; Grant, 2010). The theoretical structure and a basic method for CBT were outlined by Aaron Beck in a classic series of papers published in the 1960s and then elaborated in a treatment manual for depression (Eifert, Forsyth, & Schauss, 1993; Eifert & Plaud, 1993). Contributions from behaviour therapy research and studies of cognitive processes in mental disorders

enriched the clinical practice of CBT (Cautela & Kearney, 1990; Sweet & Loizeaux, 1991).

CBT is an action-oriented treatment approach that has become a widely used psychotherapy for major mental disorders. CBT methods were initially developed for depression and anxiety disorders and, later they were modified for many other conditions (Linehan et al., 1991; Linehan, Heard, & Armstrong, 1993). CBT has also been adapted for use as an adjunct to medication in the management of mental disorders (Binks et al., 2006; Henschke et al., 2010; Martinez-Devesa et al., 2010; P. Montgomery & Jane, 2003).

The underlying assumption behind CBT is that individuals can positively influence their symptoms by changing their behaviour and thought processes. CBT approaches are based on three fundamental propositions that cognitive activity affects behaviour, that cognitive activity can be monitored and altered and that desired behaviour change may be affected through cognitive change (Dobson, 2001; Grant, 2010). In CBT, therapists aim to work collaboratively with clients to understand the link between thoughts, feelings and behaviour and, to identify and modify unhelpful thinking patterns, underlying assumptions and idiosyncratic cognitive schema (Grant, 2010). CBT can provide depressed individuals with the skills with which to manage their own illness.

1.2.2 Significance of this study

Reviews and meta-analyses of the voluminous literature on CBT outcome studies have concluded that CBT is a highly effective approach for the treatment of depression (Gaffan, Tsaousis, & Kemp-Wheeler, 1995; Oei & Dingle, 2008). Most Clinical Practice Guidelines advocate the additional benefit of supporting antidepressant medication with CBT (NICE, 2009). Despite the wealth of evidence evaluating CBT for depression, little attention has been given to its effect on older adults and there is no high quality evidence from well-designed systematic reviews to inform best practice among older adults.

The Cochrane Collaboration Depression, Anxiety and Neurosis Group (CCDAN) systematically search for, collect and collate primary studies on a range of mental

health conditions. The group have found lack of high quality evidence from currently available Cochrane review, for example (Wilson, Mottram, & Vassilas, 2008). All identified systematic reviews related to this topic include a variety of study designs including non-randomised studies (Bortolotti et al., 2008; Cuijpers, van Straten, & Smit, 2006; Cuijpers et al., 2009; Frazer, Christensen, & Griffiths, 2005b; Peng et al., 2009). Given prevailing uncertainty over the effectiveness of CBT approach as a treatment for depressed older adults, a comprehensive review of the effectiveness and acceptability of CBT is required to inform and update clinical practice and future clinical guideline development.

1.3 Purpose of the review

The purpose of this review was to examine the effects of CBT for older adults with depression when compared to standard care, specific medication and other therapies.

1.4 Review question

How effective is CBT compared with other interventions, placebo or standard treatment in achieving relapse prevention and improving mental status for older adults with depression?

1.5 Definitions

1.5.1 Cognitive behavioural therapy

For the purposes of this review, CBT was based on the definition employed by Jones, Cormac, Silveira da Mota Neto, & Campbell (2004). The intervention was classified as ‘well-defined’ if it clearly demonstrated that: (i) the intervention involved recipients establishing links between their thoughts, feelings and actions with respect to the target symptom; and (ii) correction of recipients’ misconceptions, irrational beliefs and reasoning biases was related to the target symptom. A further component of the intervention should have involved one or both of the following: (i) the recipient monitoring his or her own thoughts, feelings and behaviours with respect to the target

symptom; and (ii) the promotion of alternative ways of coping with the target symptom.

1.5.2 Depression

Depression is a mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy, and poor concentration (World Health Organisation, 2011a).

1.5.3 Older adults

Older adults are described in the literature using a range of terms, including: elderly, geriatric, or older people or people aged 55 or over. For this review, any RCT describing persons over the age of 55 will be accepted regardless of the specific term used to describe them.

1.6 Theoretical framework

The systematic review process was derived from the Joanna Briggs Institute's (JBI) systematic review method. The theoretical and conceptual underpinning of the meanings of the terms *effects or effectiveness* is considered as the extent to which an intervention, when used appropriately, achieves the intended effect (Pearson, Wiechula, & Lockwood, 2005). Traditionally, the evidence based practice movement has focussed on the results of quantitative evidence considering the randomised controlled trial (RCT) as the gold standard to answer questions of effectiveness (The Joanna Briggs Institute, 2011). This review addressed questions about the effects of a healthcare intervention (CBT), it should focus primarily on randomised trials, because randomisation is the only way to prevent systematic differences between baseline characteristics of participants in different intervention groups in terms of both known and unknown (or unmeasured) confounders (Higgins & Green, 2011).

The systematic review is essentially an analysis of the available literature (that is, evidence) and a judgement of the effectiveness or otherwise of a practice, involving a series of complex steps (The Joanna Briggs Institute, 2011). A systematic review uses explicit, systematic methods that are selected with a view to minimizing bias, thus providing more reliable findings from which conclusions can be drawn and decisions

made (Higgins & Green, 2011) The key characteristics of a systematic review are: (i) a clearly stated set of objectives with pre-defined eligibility criteria for studies; (ii) an explicit, reproducible methodology; (iii) a systematic search that attempts to identify all studies that would meet the eligibility criteria; (iv) an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias; and (v) a systematic presentation, and synthesis, of the characteristics and findings of the included studies (Higgins & Green, 2011).

This systematic review contains meta-analyses. Meta-analysis is the use of statistical methods to summarize the results of independent studies (Higgins & Green, 2011). By combining information from all relevant studies, meta-analyses can provide more precise estimates of the effects of health care than those derived from the individual studies included within a review (Centre for Reviews and Dissemination, 2008; Higgins & Green, 2011).

1.7 Summary of the thesis

Chapter 2: Methodology and Method

This chapter describes the theoretical and practical perspectives of conducting a systematic review. It is divided into two sections.

1. Systematic review methodology: The theoretical and conceptual underpinnings of the systematic review methodology.

2. Systematic review method: A step-by-step description of the systematic review method [systematic review protocol] is presented in this section.

Chapter 3: Results

This chapter presents the results of the systematic review. This chapter is divided into two sections: the first section describes the included studies encompassing the results of the search, type of studies, type of participants and type of interventions. The second section presents the effects of the intervention including meta-analysis of studies.

Chapter 4: Discussion

The aim of this chapter is to discuss the key findings of the systematic review.

1.8 Conclusion

This chapter has described the background of the study and briefly summarised the importance of conducting this systematic review. This chapter also introduced the systematic review process and the theoretical framework of the study. Finally this chapter provided a brief introduction of the contents of each chapter of this thesis.

Chapter 2 Methodology and Method

2.1 Introduction

Globally, healthcare services are challenged by increasing service utilisation demands and calls for cost effectiveness (Pearson, 2004; Pearson & Field, 2005; White & Schmidt, 2005). On the other hand, the rapid explosion of medical, nursing and health sciences research, together with modern technology over the past fifty years has led to an enormous growth in knowledge available to clinicians, and a concomitant expansion in the range of healthcare interventions that clinicians are required to be knowledgeable of (NHS, 2001; Pearson, 2004; Pearson & Field, 2005). All of these factors make it difficult to know which information should be used as the basis for clinical practice. Systematic reviews respond to this challenge by identifying, appraising and synthesizing research-based evidence and presenting it in an accessible format (Ferreira Gonzalez, Urrutia, & Alonso-Coello, 2011; Pearson & Field, 2005). This thesis reports on the methods and findings of a review of the effects of forms of CBT in order to identify best practice.

There is a strong global consensus for the methodology and methods associated with systematic reviews of the effects of interventions. The Joanna Briggs Institute methods that form the basis of this chapter are congruent with the methods of the Cochrane Collaboration (an international not for profit agency that focuses on reviews of the effects of health care interventions) and the Center for Reviews and Dissemination. Each of these organisations has published guidance on methods that are a good fit with international standards for the synthesis of quantitative data. This chapter draws on those standards and describes the theoretical and practical perspectives of conducting a systematic review. It is divided into two sections.

1. **Systematic review methodology:** The theoretical and conceptual underpinnings of the systematic review methodology.

2. **Systematic review method:** A step-by-step description of the systematic review method [systematic review protocol] is presented in this section.

2.2 Systematic review methodology

2.2.1 History of systematic reviews

Methods of conducting reviews of the health care literature have been used since the 1970s in an effort to synthesize findings from numerous primary studies and to increase the generalizability of data about a phenomenon (Jackson, 1980). Methods to improve review rigour continue to evolve because of the complexity of conducting a thorough review (Whittemore & Knafl, 2005). The lack of rigour in the creation of traditional reviews went largely unchallenged until the late 1970s when several researchers exposed the inadequacies of the process and the consequent bias in recommendations (Mulrow, 1987).

A British epidemiologist, Archibald Leman Cochrane (1909-1988), who drew attention to the lack of information about the effectiveness of healthcare interventions with particular reference to medicine, wrote in his book (Cochrane, 1979); " *It is surely a great criticism of our profession that we have not organised a critical summary, by speciality or sub-speciality, adapted periodically, of all relevant randomized controlled trials'*. A few years after his death, this proved to be the rallying point that led to the creation of the Cochrane Collaboration in 1993 (www.cochrane.org) (Chalmers, 2006). In addition to collating a database of trials, the Cochrane Collaboration produces and disseminates a growing library of systematic reviews of healthcare interventions worldwide.

The inadequacy of traditional reviews and the need for a rigorous systematic approach were again emphasised in 1992 with the publication of two landmark papers (Antman et al., 1992; Lau et al., 1992). These papers reported two important findings; (i), if original studies of the effects of thrombolytic agents after acute myocardial infarction had been systematically reviewed, the benefits of therapy would have been apparent as early as the mid-1970s. (ii) narrative reviews were inadequate in summarising the current state of knowledge. These reviews either omitted mention of effective therapies or suggested that the treatments should be used only as part of an ongoing investigation (Antman et al., 1992; Lau et al., 1992).

Systematic reviews have increasingly been used to inform best available evidence on healthcare interventions and to improve the health service management and policy planning of international healthcare organisations including the World Health Organisation (Khan et al., 2006). Currently there are three major not for profit organisations; the Cochrane Collaboration (www.cochrane.org), the Joanna Briggs Institute (JBI) (http://www.joannabriggs.edu.au) and the Campbell Collaboration (www.campbellcollaboration.org) produce and disseminate systematic reviews worldwide.

2.2.2 Systematic review methodology

Narrative literature reviews of healthcare research are at risk of bias because the review author can preferentially include studies that support a particular view or approach (Antman et al., 1992; McAlister et al., 1999; Montori, Swiontkowski, & Cook, 2003). In comparison, a systematic review is defined as a review of scientific studies that uses explicit, systematic and therefore reproducible methods to locate, select, appraise and synthesise relevant and reliable evidence (NHS, 2001) that minimises the potential for bias. Systematic reviews are research reviews that combine the evidence of multiple studies regarding a specific clinical problem to inform clinical practice and are the method of choice for evidence-based practice initiatives (Higgins & Green, 2011).

The systematic review is the core of the evidence-based practice process (Pearson, 2004), and it is a form of research (NHS, 2001; Pearson & Field, 2005; White & Schmidt, 2005). Systematic reviews are considered as the highest level of evidence (Level I) (NHMRC, 1999), and are used to inform policy and decision-making in organising and delivering health and social care (NHS, 2001).

A systematic review attempts to collate all research evidence that fits pre-specified eligibility criteria in order to answer a specific research question. It uses explicit, systematic methods that are selected with a view to minimizing bias, thus providing more reliable findings from which conclusions can be drawn and decisions made (Higgins & Green, 2011). The key characteristics of a systematic review are:

- a clearly stated set of objectives with pre-defined eligibility criteria for studies;
- an explicit, reproducible methodology;
- a systematic search that attempts to identify all studies that would meet the eligibility criteria;
- an assessment of the validity of the findings of the included studies, for example through the assessment of risk of bias; and
- a systematic presentation, and synthesis, of the characteristics and findings of the included studies (Higgins & Green, 2011).

Systematic reviews provide a rational synthesis of the research base with same rigorous standards as primary research. Needleman (2002) compared the research design of systematic reviews and clinical trials (Table 1). The quality of a systematic review and the reliability of its results were found to be contingent on both the quality of the contributing studies and the quality of the methodology used to produce the systematic review (Crowther & Cook, 2007).

Table 1 Analogy between a systematic review and the design of a clinical trial (Needleman, 2002)

Clinical trial	Systematic review
Based on stated hypothesis	Based on stated focused question
Pre-stated protocol specifying: - patient recruitment search strategy - patient inclusion/exclusion criteria - interventions - outcome measures to be assessed - data analysis	Pre-stated protocol specifying: - search strategy - study inclusion/exclusion criteria - intervention/exposure of interest - outcome measures to be assessed - data analysis

In a systematic review data may be analysed using quantitative or qualitative methods. Meta-analysis is the most common statistical methods used for summarising quantitative data. Combining the results of two or more studies gives a more reliable and precise estimate of an intervention's effectiveness than one study alone (Centre for Reviews and Dissemination, 2008). If possible the results are statistically combined into a meta-analysis in which the data are weighted and pooled to produce

an estimate of effect (Crombie & Davies, 2009; Higgins & Green, 2011). Meta-analysis is most often used to assess the clinical effectiveness of healthcare interventions; and provides a precise estimate of treatment effect, giving due weight to the size of the different studies included (Crombie & Davies, 2009). However meta-analysis is not always possible or sensible. Similarly, meta-analysis of poor quality studies could be seriously misleading (Centre for Reviews and Dissemination, 2008). However, when used appropriately, meta-analysis has the advantage of being explicit in the way that data from individual studies are combined, and is a powerful tool for combining study findings, allowing meaningful conclusions to be drawn across studies.

The nature of systematic reviews has changed over the years and significant progress has been made regarding what constitutes appropriate evidence for inclusion in a review (Pearson, 2004; Pearson & Field, 2005). Traditionally, the evidence based practice movement has focussed on the results of quantitative evidence (considering the RCT as the gold standard) to answer questions of effectiveness (Pearson, 2004). Increasingly, however, systematic reviews are used to establish appropriateness, meaningfulness and feasibility of healthcare interventions (Pearson, 2004; Pearson & Field, 2005).

The risk of bias during the review process is minimised by having two or more independent reviewers for data extraction and data analysis. However as the results of this lengthy process, systematic reviews are time consuming and expensive research activity (JBIEBNM, 2001). However the finding of a systematic review is not only a summary of a healthcare intervention, it is also a summary of what further research is needed.

2.3 Systematic review method/protocol

2.3.1 Introduction

The need for rigour in the production of systematic reviews has led to the development of a formal scientific process for their conduct (Ferreira Gonzalez et al., 2011; Pearson & Field, 2005). The systematic review protocol ensures that the review is conducted with the same rigour expected of all research (JBIEBNM, 2001). Systematic reviews should be based on a peer-reviewed protocol enabling replication of the review and transparency of the review process. The review protocol sets out the methods to be used in the review and reduces the risk of introducing bias into the review.

The aim of the following systematic review was to examine the best available evidence on the effects of cognitive behaviour therapy for major depression in older adults. This review utilised Joanna Briggs Institute's (JBI) systematic review approach as outlined in JBI Reviewers Manual (JBI, 2008).

2.3.2 Objectives

To review the effects of CBT for older adults with major depression when compared to standard care, specific medication and other therapies

2.3.3 Question

How effective is CBT compared with other interventions, placebo or standard treatment in achieving relapse prevention and improving mental status for older adults with major depression?

The following sub-questions were used to explore the intervention:

- What is the most effective CBT method?
- What is the most effective phase of depression (acute or psychotic status) to use CBT?
- Who is the most effective mental health professional to deliver CBT?

2.3.4 Method

2.3.4.1 Inclusion criteria

Types of studies

All randomised controlled trials (RCTs) assessing the effectiveness of CBT as a treatment for older adult with major depression when compared to standard care, specific medication, other therapies and no intervention were considered. In the absence of RCTs, other research designs such as quasi-experimental studies, case-controlled studies and cohort studies were examined. However, descriptive studies and expert opinion were excluded. All studies were categorised according to the JBI Levels of Evidence (Appendix I).

Types of participants

The review included trials in which patients were described as elderly, geriatric, or older adults, or in which all patients were aged 55 or over (many North American trials of older adult populations use a minimum cut-off of 55 years). The review included trials with subjects of either sex. Where possible, participants were categorised as community or long term care residents.

Major depression was diagnosed according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) and the World Health Organization's International Statistical Classification of Diseases and Related Health Problems (ICD-10) criteria. Where trials failed to employ diagnostic criteria, the severity of depression was described by the use of standardised rating scales, including the Hamilton Depression Rating Scale, Beck Depression Inventory, Montgomery and Asberg Rating Scale and the Geriatric Depression Rating Scale. Trials including participants with an explicit diagnosis of dementia or Parkinson’s disease and other mental illnesses were excluded. The review included trials conducted in primary, secondary, community, nursing homes and in-patient settings.

Types of interventions

The review focused on interventions designed to assess the effects of CBT for older adult with major depression. The label cognitive behavioural therapy has been applied to a variety of interventions, accordingly, is difficult to provide a single, unambiguous definition. In order to be classified as CBT the intervention must clearly demonstrate the following components (Jones et al., 2004):

i. the intervention involves the recipient establishing links between their thoughts, feelings and actions with respect to the target symptom;
ii. the intervention involves the correction of the person's misperceptions, irrational beliefs and reasoning biases related to the target symptom.
iii. the intervention should involve either or both of the following:
    - the recipient monitoring his or her own thoughts, feelings and behaviours with respect to the target symptom; and
    - the promotion of alternative ways of coping with the target symptom.

In addition, all therapies that did not meet these criteria (or that provide insufficient information) but were labelled as 'CBT' or 'Cognitive Therapy' were included as 'less well defined' CBT.

Types of outcome measures

The review categorised outcomes into those measured in the shorter term (within 12 weeks of the onset of therapy), medium term (within 13 to 26 weeks of the onset of therapy) and longer term (over 26 weeks since the onset of therapy).

Primary outcomes

i. Depression level as assessed by (Hamilton Depression Rating Scale, Beck Depression Inventory, Montgomery or Asberg Rating Scale or the Geriatric Depression Rating Scale).
ii. Relapse (as defined in the individual studies)
iii. Death (sudden, unexpected death or suicide).

Secondary outcomes

i. Psychological well being (as defined in the individual studies)
ii. Mental state

iii. Quality of life
iv. Social functioning
v. Hospital readmission
vi. Unexpected or unwanted effect (adverse effects), such as anxiety, depression and dependence on the relationship with the therapist

2.3.4.2 Search strategy

The search strategy aimed to find both published and unpublished studies. The search was limited to English language papers published from 2003 to July 2011. A three-step search strategy was developed using MeSH terminology and keywords to ensure that all materials relevant to the review were captured. An initial limited search of MEDLINE and CINAHL was undertaken followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe the article. A second search using all identified keywords and index terms was then undertaken. Appendix II) Thirdly, the reference list of all identified reports and articles were searched for additional studies.

The databases included:

- MEDLINE
- CINAHL
- Cochrane Central Register of Controlled Trials
- Controlled Trials
- EMBASE
- Current Contents
- PsycINFO
- Ageline

The search for unpublished studies included:

- Digital Dissertations (Proquest)
- Conference Proceedings
- MEDNAR

Experts in the field were contacted for ongoing and unpublished trials. Experts were identified through journal publications.

The Initial keywords were:

Diagnosis: depression, major depressive disorder, mood disorder, affective disorder

Intervention: cognitive behavior therapy, cognitive behaviour therapy, cognitive therapy, cognitive psychotherapy, cognitive therapies

Population: elder* or geriatri* or senil* or older or "old age" or "late life" or "aged, 55-and-over"

2.3.5 Methodological quality

2.3.5.1 Critical appraisal

All papers selected for retrieval were assessed by two independent reviewers for inclusion criteria and methodological validity prior to inclusion in the review. Since the review evaluated the experimental studies only, The Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Appendix III) was used to evaluate each study's methodological validity. There was no substantive disagreement on any of the papers. Any study that underwent the critical appraisal process and was subsequently rejected from the review was recorded in the 'Table of excluded studies' (Appendix IV).

2.3.5.2 Data extraction

Data were extracted from papers included in the review using JBI-MAStARI (Appendix V). In this phase of the review, the general and contextual data of included studies was extracted in relation to their population, interventions, study methods and outcomes. In addition, relevant information were presented on all included studies in the 'Characteristics of included studies' table (Appendix VI).

2.3.5.3 Measures of intervention effect

For continuous outcomes, weighted mean differences (WMD) between the post-intervention values of the intervention and control groups were used to analyse the size of the effects of the interventions.

2.3.5.4 Assessment of heterogeneity

The amount of heterogeneity was quantified and evaluated to determine whether the observed variation in the study results was compatible with the variation expected by chance alone (Higgins & Green, 2011). Heterogeneity was assessed through examination of the forest plots and quantified using the I^2 statistic.

2.3.5.5 Data analysis and synthesis

Meta-analyses were performed using Review Manager 5 software (Review Manager [RevMan], 2011). Where there was no evidence of statistical heterogeneity, a fixed effect model was used in the first instance to combine data. However, a substantial statistical heterogeneity was detected, and results were recalculated using a random effects model.

In addition, a descriptive narrative of included studies was provided to make a meaningful discussion.

2.4 Conclusion

This chapter has described the systematic reviews as a research methodology and the rationale for selecting this methodology to examine the effects of CBT for older adults with major depression. This chapter also introduced the systematic review process. The next chapter presents the results of the systematic review.

Chapter 3 Results

3.1 Introduction

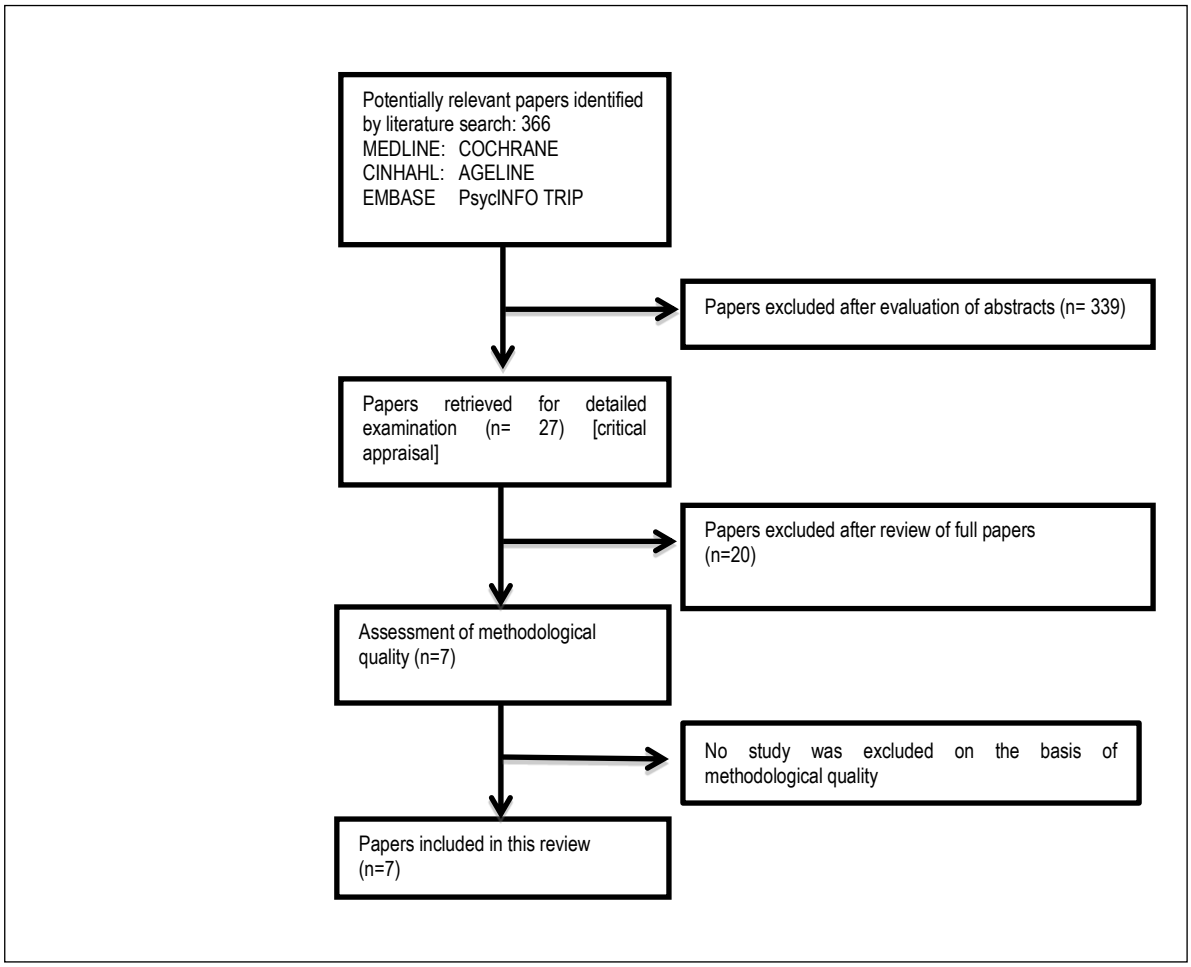
The aim of this chapter is to present the results of the systematic review. This chapter is divided into two sections: the first section describes the included studies encompassing the results of the search, type of studies, type of participants and type of interventions. The second section presents the effects of the intervention including meta-analysis of studies.

3.2 Description of studies

3.2.1 Results of the search

A total of 366 papers were identified as potentially relevant to the review question in the first and second steps of the literature search. Based on the title and abstract of the papers, 27 papers that appeared relevant to the review topic were retrieved for critical appraisal. Twenty papers were excluded due to incongruity with the review objectives, and/or outcomes (Appendix IV). In the reference list search of selected studies (*n*=7) no additional papers were identified that met the inclusion criteria. No study was excluded on the basis of methodological quality; this was not an a-priori decision, but based on assessment of internal validity using a standardised appraisal instrument. A total of seven randomised controlled trials (RCT) were included in the review (Appendix VI). Figure 1 illustrates the study selection process.

Figure 1 Flowchart of study selection process



3.2.2 Types of studies

This systematic review includes seven RCTs (Arean et al., 2005; Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008; Serfaty et al., 2009; Spek et al., 2008; Wilkinson et al., 2009). The included trials were of parallel design and all participants were randomised to therapeutic or control conditions. Three trials included more than two arms. The following table summarises treatment allocation, interventions and sample sizes (Table 2).

Table 2 Interventions and sample sizes

Study	Arm 1	Arm 2	Arm 3
(Arean et al., 2005) N=67	Cognitive–behavioural group therapy (CBGT), (n=18)	Clinical case management (CCM), (n=26)	Combination (CBGT + CCM) (n=23)
(Brody et al., 2006) N=32	Age-related macular degeneration (AMD) self-management program (n=12)	control conditions (n=20)	
(Hyer et al., 2008) N=25	Group, individual, and staff treatment GIST (n = 13)	Treatment as usual (TAU) (n = 12).	
(Laidlaw et al., 2008) N=40	CBT: (n=20)	TAU: (n=20)	
(Serfaty et al., 2009) N=204	TAU plus CBT (n=70).	TAU plus a talking control (TC n=67)	TAU (n=67).
(Spek et al., 2008) N=301	Internet-based CBT (n=102)	Group CBT (n=99)	Waiting-list (N=100)
(Wilkinson et al., 2009) N=45	CBT-G/antidepressant combination (n=22)	Antidepressant (n=23)	

3.2.2.1 Risk of bias in included studies

All trials were described as randomised, two employed stratified randomisation (Arean et al., 2005; Hyer et al., 2008) and three trials used a computer-generated randomisation scheme to assign participants (Brody et al., 2006; Laidlaw et al., 2008; Serfaty et al., 2009). The remaining two trials reported that participants were randomised without describing the actual process (Spek et al., 2008; Wilkinson et al., 2009). None of the included trials were double blinded. The poor reporting of concealment of allocation leads to concerns regarding a risk of selection bias. The nature of the intervention also increases the risk of performance and detection bias. The included RCTs did not report the results of all the outcomes mentioned in published protocols or methods sections. This necessitates that all studies included in this review are considered as moderate risk of bias.

3.2.3 Types of participants

Trials variously described patients as elderly, geriatric, senile or older adults;, different minimum ages are used, however all patients included in the trials were aged 55 or over. One trial included patients over 50 years (mean age=55 years, S.D.=4.6) (Spek et al., 2008). Participants were diagnosed with depression, major depression, major depressive disorder (MDD), and sub-threshold depression and three RCTs employed the Diagnostic and Statistical Manual (DSM -IV) for the diagnosis of depression (Arean et al., 2005; Laidlaw et al., 2008; Wilkinson et al., 2009). In addition most trials required a score above a cut off on a variety of scales used in depression measurement. Table 3 summarises details of population, diagnosis and severity of depression and outcome measurements.

Table 3 : Population, diagnosis and severity of depression and outcome measurements

Study	**Age/population**	**Diagnosis/severity of depression**	**Outcome Measurement**
(Arean et al., 2005)	Older adult participants (Age 65.30 +_ 5.87); Low-income (household income less than or equal to $15,000)	Depression (DSM–IV) Severity: 21-item Hamilton Depression Rating Scale (HDRS)	21-item HDRS Short-Form Health Survey (SF-36) to measure overall functioning. Older Adult Pleasant Events Schedule (OAPES) Rathus Assertiveness Scale The Arizona Social Support Interview Schedule
(Brody et al., 2006)	Older adult volunteers (mean age 81.5) with advanced age-related macular degeneration (AMD)	Major or minor depressive disorder Severity: significant depressive symptoms (>5 points) on the 15-item Geriatric Depression Scale (GDS-15)	Geriatric Depression Scale (GDS-15) The Life Orientation Test Revised (LOT-R) 11-item Duke Social Support Index (DSSI)
(Hyer et al., 2008)	Older adults (GIST group mean age: 78 years; TAU: 81 years)	MDD, adjustment disorder with depression) Severity: geriatric depression scale–short form (GDS-SF) score of >5	GDS-SF, Life satisfaction index Z (LSI-Z)
(Laidlaw et al., 2008)	Older adults (60 years and over diagnostic criteria Mean age: 74	Major Depressive Disorder (DSM IV) Severity: Schedule for Affective Disorders and	17-item HDRS Beck Depression Inventory (BDI-II) 15-item GDS Beck Hopelessness Scale

		Schizophrenia— Life time version (SADS-L); & 17-item HRSD	(BHS) World Health Organisation Quality of Life scale (WHOQOL)
(Serfaty et al., 2009)	Older adults: aged 65 years or older (mean [SD] age, 74.1 [7.0] years)	Depressive Disorder: computerized diagnostic program AGECAT (Automated Geriatric Examination for Computer Assisted Taxonomy) Severity: BDI-II	BDI-II Beck Anxiety Inventory, Social Functioning Questionnaire, and Euroqol.
(Spek et al., 2008)	People over 50 years (mean age=55 years, S.D.=4.6)	Sub-threshold depression (but no DSM-IV) Severity: Depression Scale (EDS) score of 12 or more	21-item BDI-II The World Health Organization CIDI
(Wilkinson et al., 2009)	Older adults aged 60 and over and taking antidepressant medication Mean age: CBT: 72.7; TAU: 75.2	Major depression (DSM-IV) Severity: BDI-II	Montgomery Asberg Rating Scale for Depression (MADRS) BDI-II

3.2.4 Types of intervention

All studies employed a cognitive behavioural intervention in addition to standard care. Arean, et al., (2005) compared cognitive–behavioural group therapy (CBGT), clinical case management (CCM) and combination (CBGT + CCM). Brody, et al., (2006) compared AMD self-management program with control or usual care. Hyer, et al., (2008) compared group, individual, and staff treatment (GIST) with treatment as usual (TAU). Two trials compared CBT with TAU (Laidlaw et al., 2008; Serfaty et al., 2009). Spek, et al., (2008) compared internet-based CBT, Group CBT with waiting-list. Wilkinson, et al., (2009) compared CBT-G/antidepressant combination with antidepressant. Table 4 provides details of the interventions including description of CBT programs, duration and the professional group who conducted CBT programs.

Table 4: Details of the intervention

Study	Description of CBT	Duration/ therapist
(Arean et al., 2005)	Cognitive–behavioural group therapy (CBGT): Group format: The treatment consists of three modules lasting 4 weeks each: changing dysfunctional thinking through cognitive restructuring methods, increasing pleasant activities, and improving interpersonal relationships through assertion training.	Duration: 6 month Groups met once a week for 2 hr in the first 16 weeks of therapy and monthly thereafter for a total of 18 sessions. **Professional**: CBT therapist
(Brody et al., 2006)	Age-related macular degeneration (AMD) self-management program consisting of cognitive and behavioural elements including health education and enhancement of problem-solving skills. The tape recorded education condition consisted of a series of 12 hours of health lectures.	12-hour self-management program was a 6-week AMD education program **Professional**: (BLB) in public health and behavioural medicine
(Hyer et al., 2008)	The group, individual, and staff treatment (GIST) program integrates 1 to 2 individual sessions and a coach (staff/peer) and participant session into the overall treatment. By the end of session 1, participants are expected to have at least 1 short-term positive goal identified. Positive goals are intended to provide a motivated focus for the group member that eventuates in improved mood and behaviour.	13 weekly group sessions, which last 75 to 90 minutes each **Professional**: CBT therapist
(Laidlaw et al., 2008)	The CBT treatment consisted of cognitive and behavioural elements of treatment. The cognitive element trained participants to become skilled in self-monitoring and recording of negative cognitions so as to develop ways in which they could effectively challenge these cognitions and hence promote symptom relief.	On average participants received 8.0 (4.7 SD, range 2–17) sessions of CBT **Professional**: Cognitive therapists
(Serfaty et al., 2009)	CBT focusing on exploring patients' beliefs about the negative effects of physical ill health;(2) Talking Control (TC), consisting of similar length and number of sessions in which the therapist showed interest and warmth, but did not challenge dysfunctional beliefs, give advice, or focus on emotional issues	up to twelve 50-minute sessions **Professional**: CBT therapist
(Spek et al., 2008)	The group CBT protocol Coping with Depression Course which consists of on psycho-education, cognitive restructuring, behaviour change, and relapse prevention. The internet-based CBT : as a self-help intervention .	Group CBT:10 weekly group sessions Internet: eight modules Professional: **No professional** support
(Wilkinson et al., 2009)	CBT-G was delivered by a clinical psychologist with a diploma in cognitive therapy. A CBT-G manual was written for the study	10 weeks; 8 sessions (90-min sessions) **Professional**: a clinical psychologist

3.3 Effects of interventions

3.3.1 Cognitive behaviour therapy versus treatment as usual

Four trials compared the cognitive behavioural therapies with treatment as usual (Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008; Serfaty et al., 2009). These four trials employed the Beck Depression Inventory (BDI) and Geriatric Depression Scale (GDS) to measure the outcome. Laidlaw, et al., (2008) and Serfaty, et al., (2009) compared CBT versus TAU using BDI and no statistically significant differences were observed in reduction of depression after 3-4 months of the intervention (WMD -2.61, 95% CI -5.82 to -0.6) and 6-10 month follow-up (WMD -3.05, 95% CI -6.41 to -0.32) (Figure 2 & Figure 3).

Figure 2 Analysis 1.1: Cognitive behavioural therapy vs Treatment as usual, Reduction in Depression (Beck Depression Inventory (BDI): 3-4 months post treatment

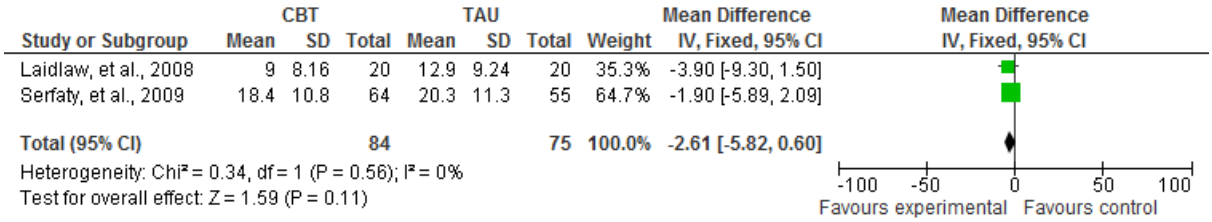
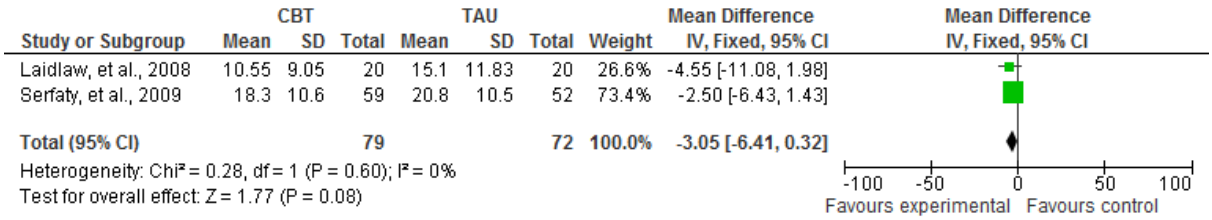


Figure 3 Analysis 1.2: Cognitive behavioural therapy vs Treatment as usual, Reduction in Depression (Beck Depression Inventory (BDI): 6-10 months post treatment



Three trials compared CBT and TAU in reduction of depression using GDS (Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008). A significant difference was identified between CBT and control groups (WMD -2.83, 95% CI -4.02 to -1.64), however significant heterogeneity was observed (chi-square 10.09, df=2, I^2=80% p=0.006) in both fixed and random effects models (Figure 4 & Figure 5). Sensitivity analysis showed a statistically significant difference between CBT and control groups (WMD -1.58 95% CI-3.02, -0.15) when removing the Hyer, et al., (2008) study,

however, such exploratory analysis does not provide rigorous evidence for the effectiveness of an intervention (Figure 6).

Figure 4 Analysis 1.3 Cognitive behavioural therapy vs Treatment as usual, Reduction in Depression (Geriatric Depression Scale (GDS) (Fixed Effect)

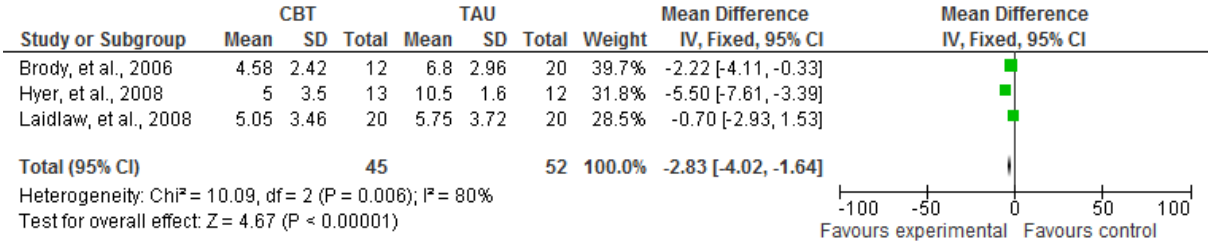


Figure 5 Analysis 1.4 Cognitive behavioural therapy vs Treatment as usual, Reduction in Depression (Geriatric Depression Scale (GDS) (Random Effect)

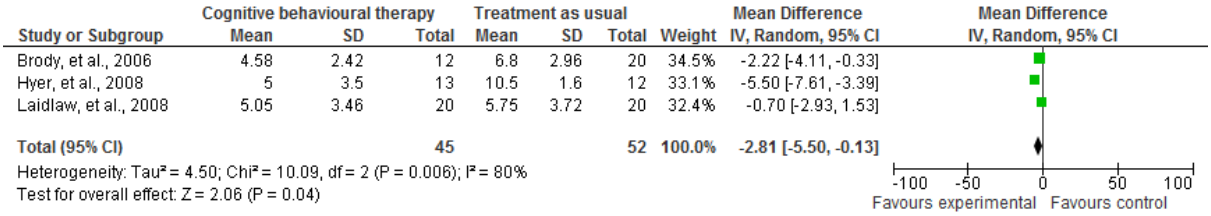
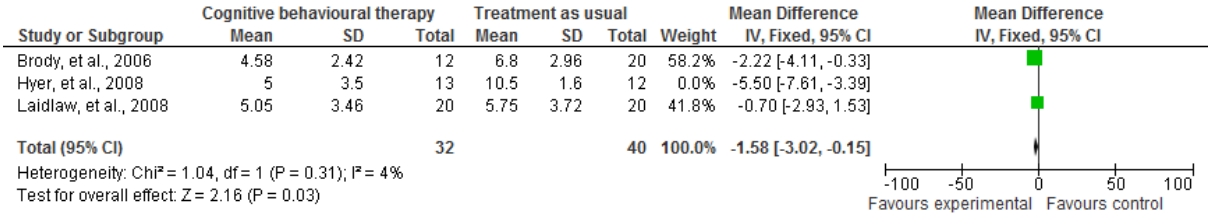


Figure 6 Analysis 1.5 Cognitive behavioural therapy vs Treatment as usual, Reduction in Depression (Geriatric Depression Scale (GDS) (Fixed Effect) without Hyer, et al., (2008)



3.3.1.1 Narrative summary

Not all the included trials compared interventions that could be summarised statistically in meta-analysis. Two trials compared CBT with TAU (Laidlaw et al., 2008; Serfaty et al., 2009). Another two trials also used CBT approach [Group, individual, and staff treatment GIST (Hyer et al., 2008); and age-related macular degeneration (AMD) self-management program (Brody et al., 2006) and can be considered as CBT interventions].

Laidlaw, et al., (2008) reported findings of a randomised controlled trial that examined the effect of CBT compared with treatment as usual (TAU) for late life depression in a UK primary care setting. One hundred and fourteen participants formed the population, with a sample of 44 meeting the inclusion criteria and 40 supplying data allowing analysis from general practitioners in Fife and Glasgow. All participants had a diagnosis of major depressive disorders with mild-to-moderate symptoms. Participants were randomly assigned to receive either TAU alone or CBT alone. CBT was then compared to TAU at the end of treatment; designated at 18 weeks for the purposes of assessment and at three and six- months follow-up from the completion of treatment.

The study found that a significant difference in outcome between the groups was found with participants in the CBT treatment condition recording significantly lower Beck Hopelessness Scores (BHS) at 6 months follow-up after the end of treatment (BHS: $F_{(1, 37)} =6.12$, $p=0.018$) in comparison to participants in the treatment as usual condition who appear to experience little change in levels of hopelessness (Laidlaw et al., 2008). However overall, participants in both groups in this study benefited from treatment with significantly reduced scores on primary measures of mood at end of treatment, and at 3 and 6 months follow-up from the end of treatment (BDI: $F_{(3.74, 146.003)} =16.94$, $p<0.0005$, GDS: $F_{(1.87, 72.84)} =18.13$, $p=0.0005$, HRSD: $F_{(1.89, 73.69)} =27.56$, $p=0.0005$, BHS: $F_{(3.74, 145.87)} =3.34$, $p=0.014$, PSWI: $F_{(3, 117)} =3.23$, $p=0.025$, WHOQOL, Psychological domain: $F_{(2.53, 98.67)} =6.5$, $p=0.001$, WHOQOL, Social Relationships domain: $F_{(1.99, 77.84)} =6.05$, $p=0.004$) (Laidlaw et al., 2008).

A single-blind, randomised controlled trial with 4-month and 10-month follow-up visits was conducted to determine the clinical effectiveness of CBT delivered in primary care for older people with depression (Serfaty et al., 2009). A total of 204 people aged 65 years or older (mean [SD] age, 74.1 [7.0] years) with a Geriatric Mental State diagnosis of depression were recruited from primary care and were randomised to treatment as usual (TAU n=67), TAU plus a talking control (TC n=67), or TAU plus CBT (n=70). The TC and CBT were offered over 4 months (Serfaty et al., 2009).

Intent-to-treat analysis found improvements of −3.07 (95% confidence interval [CI], −5.73 to −0.42) and −3.65 (95% CI, −6.18 to −1.12) in Beck Depression Inventory-II (BDI-II) scores in favour of CBT vs TAU and TC, respectively (Serfaty et al., 2009). Compliance Average Causal Effect analysis compared CBT with TC. A significant benefit of CBT of 0.4 points (95% CI, 0.01 to 0.72) on the BDI-II per therapy session was observed (Serfaty et al., 2009). The cognitive therapy scale showed no difference for nonspecific, but significant differences for specific factors in therapy. Ratings for CBT were high (mean [SD], 54.2 [4.1]). Serfaty et al., (2009) concluded that CBT is more effective than empathetic listening (talking control) and usual care in the management of depressed patients 65 years or older.

A randomised controlled trial was conducted to assess the effectiveness of a self-management program for age-related macular degeneration (AMD) in reducing depressive symptoms (Brody et al., 2006). Thirty-two depressed older adult volunteers (mean age 81.5) with advanced AMD were randomised to either a self-management program (n=12) or one of two control conditions (n=20). Participants were included if they met major or minor depressive disorder with significant depressive symptoms (>5 points) on the 15-item Geriatric Depression Scale (GDS-15). AMD self-management program provided cognitive and behavioural elements including health education and enhancement of problem-solving skills (Brody et al., 2006).

Depression outcomes (measured by Geriatric Depression Scale (GDS-15)) showed GDS-15 improvement was greater in the self-management group than in controls (Z= -1.86, *P*=.03). Participants in the self- management group reported less depression on

the GDS-15 than controls (10 of 12 (83%), compared with 8 of 20 (40%)), These findings may support the effectiveness of an AMD self-management program for depressed older adults with advanced vision loss (Brody et al., 2006).

A small randomised controlled trial was conducted to assess the effect of a form of cognitive behavioural therapy called group, individual, and staff treatment (GIST), compared with TAU in long-term care (Hyer et al., 2008). Eligible residents (n=25) with a geriatric depression scale–short form (GDS-SF) score of >5 were randomised to GIST (n = 13) or TAU (n = 12) (Hyer et al., 2008). There were significant differences between GIST and TAU in favour of GIST on the GDS-S and LSI-Z (Hyer et al., 2008). The GIST group maintained improvements over another 14 sessions. After crossover to GIST, TAU members showed significant improvement from baseline. Participants also reported high subjective ratings of treatment satisfaction. This trial demonstrated GIST to be more effective for depression than standard treatments (Hyer et al., 2008).

Individually, above four trials that compared the cognitive behavioural therapies with TAU found that CBT is an effective treatment for older adults with depression. Following Table 5 and Table 6 summarise the findings of above studies.

Table 5: CBT Vs TAU: Primary outcome: Depression level

Study	Intervention/sample	Key results
(Brody et al., 2006) N=32	AMD self-management program (CBT)(n=12) Vs control conditions (n=20)	GDS-15 was greater in the self-management group than in controls (z= -1.86, p=.03), indicating that participants in the self-management group reported less depression on the GDS-15 than controls
(Hyer et al., 2008) N=25	Group, individual, and staff treatment GIST (n = 13) Vs Treatment as usual (TAU) (n = 12).	Post-GDS (Student *t* = -4.77 (p<.001) significant improvement in self-reported depressive symptoms in GIST group
(Laidlaw et al., 2008) N=40	CBT: (n=20) Vs TAU: (n=20)	a significant main effect of treatment condition on the BDI scores at 6 months follow-up BDI: F(1, 37)=6.18, p=0.018
(Serfaty et al., 2009) N=204	TAU plus CBT (n=70) Vs TAU (n=67)	Intent-to-treat analysis found improvements of −3.07 (95% CI, −5.73 to −0.42) and −3.65 (95% CI, −6.18 to −1.12) in BDI-II scores in favour of CBT

Table 6: CBT Vs TAU: Secondary outcomes

Study	Outcomes	Key Results
(Brody et al., 2006) N=32	The Macular Degeneration Self-Efficacy Scale (AMDSEQ) 11-item Duke Social Support Index (DSSI)	AMD-SEQ: z=2.27, p=.01 DSSI (z=1.9, p=.03)
(Hyer et al., 2008) N=25	Life satisfaction index Z (LSI-Z)	LSI-Z : p < .01.
(Laidlaw et al., 2008) N=40	Beck Hopelessness scores (BHS) World Health Organisation Quality of Life scale (World Health Organisation Quality of Life scale (WHOQOL))	BHS: $F_{(1,37)}$=6.12, p=0.018 WHOQOL: ($F_{(1, 37)}$=5.05, p=0.03)
(Serfaty et al., 2009) N=204	Euroqol Social Functioning Questionnaire	No reportable data available

3.3.2 Group cognitive behaviour therapy versus other interventions

Arean, et al., (2005) compared cognitive– behavioural group therapy (CBGT), clinical case management (CCM) and combination (CBGT + CCM) Spek, et al., (2008) compared internet-based CBT, Group CBT with waiting-list. Wilkinson, et al., (2009) compared Group CBT/antidepressant combination with an antidepressant. The included papers provide a variety of CBT evaluation instruments and different outcome measures.

Arean, et al., (2005) reported findings of a randomised controlled trial that compared cognitive– behavioural group therapy (CBGT), clinical case management (CCM), and their combination (CBGT + CCM) to treat depression in low-income older adults. Sixty-seven older adults with major depressive disorder or dysthymia were randomly assigned and entered into 1 of the 3 treatment conditions for 12 months. Significant differences were found at the 12-month follow-up. CBGT + CCM had significantly lower depression scores than CBGT at 12 months, $t(108)= 2.56$, $p= .01$. There was a trend toward a significant difference between the CCM and CBGT conditions, $t(108) = 1.88$, $p= .06$, and no difference between CCM and CBGT + CCM ($p = .42$) (Arean

et al., 2005). Compared with CBGT, both CCM and CBGT + CCM had greater improvement from pretreatment to 12 months, $t_{(108)} = 2.26$, $p = .03$ and $t_{(108)} = 2.89$, $p < .01$, respectively (Arean et al., 2005). There was a significant effect for treatment over time on physical functioning, $F_{(6, 121)} = 2.67$, $p = .02$, with differences at 6- and 12-month follow-up. At 6 months, both CBGT and CBGT + CCM participants showed greater improvements in functional outcomes than CCM, $t_{(121)} = 3.21$, $p < .01$ and $t_{(121)} = 2.60$, $p = .01$, respectively (Arean et al., 2005).

The principal finding of this study was that the combination of CCM and CBGT resulted in significantly lower depressive symptoms 12 months after treatment than CBGT alone, but that CBGT resulted in better physical functioning than CCM or the combined intervention. These results suggest that the individual components of each intervention may produce different outcomes in this population of older adults, with CBGT + CCM being more effective for well-being and CBGT for functioning (Arean et al., 2005).

Spek et al., (2008) conducted a randomised controlled clinical trial with one-year follow-up to determine the effect of internet-based cognitive behavioural therapy for sub-threshold depression in people over 50 years (mean age=55 years, S.D.=4.6). A total of 191 women and 110 men with subthreshold depression were randomised into internet-based treatment, group CBT, or a waiting-list control condition. The study found no difference in the effects of internet based CBT and group CBT (p=0.08) (Spek et al., 2008) . In the waiting-list control group, the study found a pretreatment to follow-up improvement effect size of 0.69, compared with 0.62 in the group CBT condition and, 1.22 with the internet-based treatment condition (Spek et al., 2008) . Simple contrasts showed a significant difference between the waiting-list condition and internet-based treatment (p=0.03) and no difference between both treatment conditions (p=0.08) (Spek et al., 2008).

A pilot randomised controlled trial was conducted to determine the effectiveness of a brief cognitive behavioural group intervention to reduce recurrence rates in late life depression (Wilkinson et al., 2009). Forty-five adults aged 60 and over who had met ICD-10 criteria for major depression in the previous year and were still taking

antidepressant medication were randomly allocated to CBT-G/antidepressant combination or antidepressant alone (Wilkinson et al., 2009). Depression severity was measured at baseline, randomisation and 6 and 12 months following commencement of CBT-G using the Montgomery Asberg Rating Scale for Depression (MADRS). One-year recurrence rates on the MADRS were lower in participants receiving CBT-G [5/18 (27.8%)] compared with controls [8/18 (44.4%)] although this did not achieve statistical significance (adjusted RR 0.70 [95% CI 0.26–1.94]) (Wilkinson et al., 2009). In contrast, overall scores on the secondary outcome measure, the Beck Depression Inventory, increased in participants receiving CBT-G (Wilkinson et al., 2009). Wilkinson et al., (2009) concluded that brief group cognitive behaviour therapy (CBT-G) is a feasible and acceptable treatment with older adults in remission/recovery from depressive illness.

Based on the results of three trials, a conclusion cannot be made the effectiveness of group cognitive behavioural therapies compared with other interventions. Table 7 summarises above three trials findings.

Table 7: Primary outcomes: depression level

Study	Intervention/sample	Key Results
(Arean et al., 2005) N=67	Cognitive– behavioural group therapy (CBGT), (n=18) Vs Clinical case management (CCM), (n=26) Vs Combination (CBGT + CCM) (n=23)	Compared with CBGT, both CCM and CBGT + CCM had greater improvement from pretreatment to 12 months, $t(108) = 2.26$, $p = .03$ and $t(108) = 2.89$, $p < .01$, respectively
(Spek et al., 2008) N=301	Internet-based CBT (n=102) Vs Group CBT (n=99) Vs Waiting-list (N=100)	Internet-based CBT differed significantly from the waiting-list condition (p=0.04) but did not differ significantly from group CBT (p=0.13)
(Wilkinson et al., 2009) N=45	CBT-G/antidepressant combination (n=22) Vs Antidepressant (n=23)	One-year recurrence rates on the MADRS were encouragingly lower in participants receiving CBT-G [5/18 (27.8%)] compared with controls [8/18 (44.4%)] although this did not achieve statistical significance (adjusted RR 0.70 [95% CI 0.26–1.94]).

3.4 Conclusion

The aim of this chapter was to present the results of the systematic review. This systematic review included seven RCTs that were graded as having a moderate risk of bias. The results included meta-analysis compared to CBT with TAU. A detailed discussion about results of this systematic review will be presented in the discussion chapter.

Chapter 4 Discussion

4.1 Introduction

Depression is a major health problem in many societies. Depression diminishes overall quality of life and has been associated with significant disability in physical, interpersonal, and social role functioning (Hyer et al., 2008). Although pharmacotherapy is an accepted and often front-line treatment for many people with depression, it is evident that antidepressant medication may limit the effectiveness of treatment for depression in elderly people (World Health Organisation, 2011b). Over the past few decades, a consensus has evolved that CBT can be an effective treatment for depression in older adults; however, little attention has been given to its effect on older adults. There was no high quality evidence from well-designed systematic reviews to inform best practice among older adults. Therefore the purpose of this systematic review was to examine the effects of CBT for older adults with depression when compared to standard care, specific medication and other therapies.

This systematic review includes seven RCTs with moderate quality (Arean et al., 2005; Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008; Serfaty et al., 2009; Spek et al., 2008; Wilkinson et al., 2009). The aim of this chapter is to discuss the main results of the systematic review. This chapter is divided into two sections: the first section describes the key findings of the review. The second section discusses the effectiveness of cognitive behaviour therapies.

4.2 Key findings

4.2.1 Cognitive behaviour therapy versus treatment as usual

4.2.1.1 Primary outcomes: depression level

Four trials compared CBT with TAU (Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008; Serfaty et al., 2009) and the pooled data from two studies found no statistically significant differences in reduction of depression after 3-4 months of the intervention (WMD -2.61, 95% CI -5.82 to -0.6) or at 6-10 month follow-up (WMD -3.05, 95% CI -6.41 to -0.32).

Meta-analysis was also undertaken with three trials specific to depressed older adults comparing CBT and TAU in reduction of depression using GDS (Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008). However significant heterogeneity was observed (chi-square 10.09, df=2, I^2=80% p=0.006) in both fixed and random effects models. The heterogeneity appears to be related to the study by Hyer et al (2008) and is linked to the difference in mean between the TAU group when compared with the other studies. Meta-analysis of studies with smaller sample sizes tends to become skewed when there is one study that has a substantially different (nearly double the size) post-test mean result when compared with the post-test mean results of the other included studies. Sensitivity analysis showed a statistically significant difference between CBT and control groups (WMD -1.58 95% CI-3.02, -0.15) when removing the Hyer, et al., (2008) study, however, such exploratory analysis does not provide rigorous evidence for the effectiveness of an intervention.

Individually, four trials that compared the cognitive behavioural therapies with TAU (Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008; Serfaty et al., 2009) found that CBT is an effective treatment for older adults with depression. There is no data available on other primary outcomes; relapse and death (sudden, unexpected death or suicide).

4.2.1.2 Secondary outcomes

The secondary outcomes of this review were; psychological well-being (as defined in the individual studies), mental state, quality of life, social functioning; hospital readmission and unexpected or unwanted effects.

Brody, et al. (2006) measured satisfaction in terms of frequency, content, and quality of support and social interaction with family and friends to evaluate expectations for handling defined situations related to AMD. The study found a significant differences on the AMD-SEQ ($z=2.27$, $p=.01$), indicating that the self-management group experienced greater gains in efficacy than the control groups. Furthermore, the self-management group showed growth on the DSSI ($z=1.9$, $p=.03$) (Brody et al., 2006).

Hyer, et al. (2008) reported a statistically significant difference in favor of GIST on Life satisfaction index Z (LSI-Z)($p < .01$). Laidlaw, et al., (2008) found that CBT participants achieved significantly better outcome on the Beck Hopelessness scores at 6 months follow-up (BHS: $p=0.018$). Serfaty, et al. (2009) measured a multiple outcomes including health-related quality of life; and social function. The study reported no significant changes with time or by intervention group.

4.2.2 Group cognitive behaviour therapy versus other interventions

4.2.2.1 Primary outcomes: depression level

Three trials compared the group cognitive behavioural therapies with other interventions. Arean, et al., (2005) compared cognitive– behavioural group therapy (CBGT), clinical case management (CCM) and combination (CBGT + CCM). Spek, et al., (2008) compared internet-based CBT, Group CBT with waiting-list. Wilkinson, et al., (2009) compared Group CBT/antidepressant combination with an antidepressant. Based on the results of three trials presented in the previous chapter, a conclusion cannot be made the effectiveness of group cognitive behavioural therapies compared with other interventions.

4.2.2.2 Secondary outcomes

Only one trial has provided data relevant to a secondary outcome. Arean, et al. (2005) measured overall functioning and found that both CBGT and CBGT + CCM participants showed greater improvements in functional outcomes than CCM. At 12 months, participants in the CBGT-alone condition had greater improvements in functional outcomes than CCM ($p = .01$) (Arean et al., 2005).

4.3 Discussion

4.3.1 The effectiveness of cognitive behavioural therapies

In this systematic review, the meta-analysis of CBT compared with TAU found no statistically significant differences in reduction of depression, however individual trials found that CBT is an effective treatment for older adults with depression. A reliable conclusion based on a pooled estimate of effect cannot be made on the effectiveness of group cognitive behavioural therapies compared with other interventions. Individually, it can be suggested that cognitive behavioural therapies are better than treatments as usual. However, the small sample size of included trials, the varied demographics of the participants, and the heterogeneity of the interventions has considerable implications with regard to generalising these findings to clinical populations.

The findings from this review are largely consistent with other research on the effectiveness of CBT. A meta-analysis which was used to integrate the results of 89 controlled studies of treatments involving 5,328 older adults received pharmacotherapy or psychotherapy found that psychotherapy and pharmacotherapy did not show strong differences in effect sizes (Pinquart, Duberstein, & Lyness, 2006). A meta-analysis of 25 studies revealed that psychological treatments have moderate to large effects on depression in older adults (standardized mean effect size d=0.72) (Cuijpers et al., 2006). In a recent systematic review, a meta-analysis showed that, compared with placebo, psychotherapy was more effective in reducing depression scores (standardized mean difference [SMD] –0.92; 95% CI –1.21, –0.36) (Peng et al., 2009). Similarly a Cochrane review of five trials (153 participants) found that

cognitive behavioural therapy was more effective than waiting list controls (WMD-9.85, 95% CI -11.97 to -7.73) (Wilson et al., 2008). However major limitations of these studies were the inclusion of non-randomised studies (Pinquart et al., 2006) and broadly defined interventions (e.g. psychotherapy) (Cuijpers et al., 2006; Peng et al., 2009; Wilson et al., 2008).

Furthermore, studies comparing CBT or other evaluated psychotherapies against psychopharmacology for depression showed that psychotherapy delivered in conjunction with pharmacotherapy is significantly more efficacious in treating depression than is pharmacotherapy alone (de Maat et al., 2007; Hollon et al., 2005). A systematic review of 16 trials with 932 patients concluded that psychological treatment combined with antidepressant therapy is associated with a higher improvement rate than drug treatment alone (Pampallona et al., 2004). The combination treatment of CBT and anti-depressants had a lower risk of discontinuation compared with anti-depressants (RR 0.81; 95% CI 0.65, 1.01) (National Collaborating Centre for Mental Health, 2010).

However the use of CBT as a treatment for older adults with depression remains uncommon despite recognition of its efficacy. Potential barriers to older receiving CBT may include invalid beliefs that older people are unlikely to benefit from psychotherapy (Laidlaw et al., 2008). This commonly held, yet invalid belief can be traced back to Freud's assertion that older people lack the mental flexibility to change or to benefit from psychotherapy (Pinquart & Sorensen, 2001). However, older people report very positive towards CBT therapies as a treatment option for depression (Hanson & Scogin, 2008; Landreville et al., 2001). It is evident that many older people are unable to access CBT services. Some authors have suggested this problem has been created by the increasing cost of the required services (Beach et al., 2010) and insufficient numbers of trained therapists both in primary care and in specialist mental health services (Hoifodt et al., 2011).

4.3.2 Cognitive behavioural therapy delivery methods and therapists

An objective of this systematic review was to examine the most effective CBT method or approach. This systematic review found little evidence to support the effectiveness of group cognitive behavioural therapies compared with other interventions based on available evidence. Although all included trials met the Jones et al (2004) operational definition of CBT, individual trials have used different CBT delivery methods, including: group format (Arean et al., 2005; Spek et al., 2008; Wilkinson et al., 2009); individual format (Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008; Serfaty et al., 2009); and self-management formats (Brody et al., 2006). The intensity of CBT interventions employed in the included trials ranged from 2 to 18 sessions and the duration was between six weeks to six months. A wide variety of CBT delivery methods, duration and number of sessions contributes to clinical heterogeneity, making it difficult to conclude which is the most effective form of CBT delivery methods (Table 4). In spite of the evidence clinical heterogeneity, this systematic review found no differences among studies in terms of severity of depressive status (mid-moderate- severe) at baseline.

This review set out to identify the most effective mental health professional to deliver CBT, and found that five studies have used trained CBT therapists to deliver the CBT interventions (Arean et al., 2005; Brody et al., 2006; Hyer et al., 2008; Laidlaw et al., 2008; Serfaty et al., 2009). While the Wilkinson et al. (2009) study investigated the effectiveness of a clinical psychologist to deliver CBT, professional therapists were not used in the study by Spek et al. (2008). Generic competences are those employed in any psychological therapy, reflecting the fact that all psychological therapies, including CBT, share some common features (Roth & Pilling, 2007). CBT therapists using any accepted theoretical model would be expected to demonstrate an ability to build a trusting relationship with their clients, relating to them in a manner which is warm, encouraging and accepting (Roth & Pilling, 2007). Without building a good therapist–client relationship, technical interventions are unlikely to succeed (Roth & Pilling, 2007).

4.4 Conclusions

4.4.1 Implication for practice

The key finding of this review is that cognitive-behavioural therapies are likely to be efficacious in older people with depression when compared to treatment as usual. This finding is consistent with the findings of several systematic reviews and meta-analyses undertaken across a wider age range. However, the small size of included trials, the varied participant demographics, and the heterogeneity of the interventions has considerable impact with regard to generalising these findings to wider clinical populations of older adults.

From a clinical perspective, the results of this systematic review indicate that psychological treatments derive from CBT can be used as a first line option in treating depression in older adults. This is important because many people with depression are reluctant to accept anti-depressive medication, and this review shows that the CBT treatment is a good alternative to pharmacotherapy. Finally the treatment choice for older adults with depression should be based on treatment availability, costs, and preferences.

4.4.2 Implications for research

There are remarkably few randomised controlled trials examining the effect CBT interventions in older adults. It was evident as this review only found seven relevant studies during the comprehensive search of the literature. Clearly, more research in this area is needed. Although this review included only randomised trials, the quality of these studies was not optimal, and there is a need for high-quality studies.

Further research should focus on addressing the effect of combined versus single treatments, the longer term effects of CBT and combined treatments and effective delivery methods. It is also essential that future research should examine on more specific issues often confronting older people with depression. These include an examination of efficacy and modification of CBT in the context of managing older frail patients, patients in nursing home or residential aged care facilities, patients

experiencing pain or suffering from visual or sensory impairment. Outcome measures should be broader than just scores on depression rating scales and should include assessments such as quality of life and treatment satisfaction.

This systematic review also makes it clear that there are many issues still to be addressed, such as establishing the optimal duration and intensity of CBT, assessing cost effectiveness, and understanding the impact of co-morbidities on the effectiveness of CBT for depression.

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Appendix I

JBI Level of Evidence

Level of Evidence	Feasibility, Appropriateness, Meaningfulness	Effectiveness	Economic Analysis
I	Meta-synthesis of research with unequivocal synthesised findings	Meta-analysis (with homogeneity) of experimental studies (e.g. RCT with concealed randomisation)	SR (with homogeneity) of Level 1 economic studies
II	Meta-synthesis of research with credible synthesised findings	One or more RCT, retrospective cohort studies or untreated control groups in RCTS. Retrospective cohort study or follow-up of untreated control patients in an RCT	SR (with homogeneity) of Level 2 economic studies Analysis comparing a limited number of alternative outcomes against appropriate cost measurement, and including a sensitivity analysis incorporating clinically sensible variations in important variables
III	a. Meta-synthesis of text/opinion with credible synthesised findings b. One or more single research studies of high quality	Case-series (and poor quality prognostic cohort studies)	Analysis without accurate cost measurement but including a sensitivity analysis incorporating clinically sensible variations in important variables
IV	Expert opinion	Expert opinion, or physiology bench research, or consensus	Expert opinion, or based on economic theory

Appendix II

Keywords

Population:

aged.mp
older adults.mp
elderly.mp
aging.mp.
ageing.mp
older people.mp.
gerontology.mp
Elder* or Geriatri* or Senil* or Older or “Old Age” or
“Late Life”

Condition:

depressive.mp
mood.mp.
depression.mp.
depressed.mp
Depress* or Dysthymi* or “Adjustment Disorder*”
or “Mood Disorder*” or “Affective Disorder” or “Affective Symptoms”)

Intervention:

{[(*cogniti* AND (*behavio* or therap*)) OR (*cogniti* and
(*technique* or *restructur* or *challeng*)) OR (*self* and (*instruct*
or *management* or *attribution*)) OR (*rational* and
emotiv)
(COGNITIV* and BEHAVIO* and THERAP*) or (COGNITI*
and (TECHNIQUE* or THERAP* or RESTRUCTUR*
or CHALLENG*)) or (ATTRIBUTION* or (SELF and (INSTRUCT*
or MANAGEMENT* or ATTRIBUTION*))) or
(RET or (RATIONAL and EMOTIV*)) or “COGNITIVETHERAPY”/

Generic search strategy

1. older adult* or older people or elderly or elder*
2. aged or aging or ageing or senil*
3. geriatri* or gerontology.
4. “Old Age” or “Late Life”
5. **Or/1-4**
6. depress*or depress* disorder*

7. dysthymi* or “adjustment disorder*” or “mood disorder*” or “affective disorder” or “affective symptoms”

8. or/6-7

9. [(cogniti* AND (behavio* or therap*)] or (cognitive therap*)

10. (cogniti* and (technique* or restructur* or challeng*)

11. (self* and (instruct* or *management* or *attribution*)

12. (rational* and emotiv*)

13. Or/9-12

14. (randomized controlled trial or controlled clinical trial or clinical trial).pt.

15. (Placebos or Research Design or Comparative Study or Evaluation Studies or Follow-up Studies or Prospective studies or Cross-over studies or Randomized controlled trials or Random allocation or Double-blind method or Single-blind method or Clinical trials).sh.

16. ("clinical trial" or ((singl* or doubl* or trebl* or tripl*) and (mask* or blind*)) or "latin square" or placebo* or random* or control* or prospective*).tw.

17. Or/14-16

18. 5 AND 8 AND 13 AND 17

19. limit 18 to (english language and humans)

Cochrane Central Register of Controlled Trials

ID	Search
#1	(older adult* or older people or elderly or elder*).tw. or (aged or aging or ageing or senil* or geriatri*).tw. in Clinical Trials
#2	(depress*).tw. or (depress* disorder*).tw. or (dysthymi* or adjustment disorder* or mood disorder* or affective disorder or affective symptoms).tw. in Clinical Trials
#3	(cognitive therap*).tw. or (cogniti* adj (behavio* or therap*)).tw. or (cogniti* adj (technique* or restructur* or challeng*)).tw. or (self adj (instruct* or management* or attribution*)).tw. or (rational* and emotiv*).tw. in Clinical Trials
#4	(#1 AND #2 AND #3)

Ovid MEDLINE

Database: Ovid MEDLINE(R) <2003 to July Week 3 2011
Search Strategy:
---
1 (older adult* or older people or elderly or elder*).tw.
2 (aged or aging or ageing or senil* or geriatri*).tw. (
3 or/1-2
4 depress*.tw. 5 depress* disorder*.tw.
6 (dysthymi* or adjustment disorder* or mood disorder* or affective disorder or affective symptoms).tw.
7 or/4-6
8 cognitive therap*.tw.
9 (cogniti* adj (behavio* or therap*)).tw.
10 (cogniti* adj (technique* or restructur* or challeng*)).tw.
11 (self adj (instruct* or management* or attribution*)).tw.
12 (rational* and emotiv*).tw.
13 or/8-12
14 3 and 7 and 13
15 randomized controlled trial.pt.
16 controlled clinical trial.pt.
17 randomized.ab.
18 placebo.ab.
19 drug therapy.fs.
20 randomly.ab.
21 trial.ab.
22 groups.ab.
23 or/15-22
24 14 and 23

EMBASE

Database: EMBASE <1980 to July Week 3 2011>
Search Strategy:
---
1 (older adult* or older people or elderly or elder*).tw.
2 (aged or aging or ageing or senil* or geriatri*).tw.
3 or/1-2
4 depress*.tw.
5 depress* disorder*.tw.
6 (dysthymi* or adjustment disorder* or mood disorder* or affective disorder or affective symptoms).tw.
7 or/4-6
8 cognitive therap*.tw.
9 (cogniti* adj (behavio* or therap*)).tw.
10 (cogniti* adj (technique* or restructur* or challeng*)).tw.
11 (self adj (instruct* or management* or attribution*)).tw.
12 (rational* and emotiv*).tw.
13 or/8-12
14 exp randomized controlled trial/
15 (random$ or placebo$).ti,ab,sh.
16 ((singl$ or double$ or triple$ or treble$) and (blind$ or mask$)).tw,sh.
17 controlled clinical trial$.tw,sh.

18 or/14-17
19 3 and 7 and 13 and 18
20 limit 19 to (abstracts and english language)

CINAHL

#	Query	Limiters/Expanders
S17	S4 and S8 and S12 and S16	Expanders - Apply related words Search modes - Boolean/Phrase
S16	S13 or S14 or S15	Expanders - Apply related words Search modes - Boolean/Phrase
S15	AB "randomi?ed controlled trial"	Expanders - Apply related words Search modes - Boolean/Phrase
S14	AB randomi?ed	Expanders - Apply related words Search modes - Boolean/Phrase
S13	(MH "Clinical Trials+")	Expanders - Apply related words Search modes - Boolean/Phrase
S12	S9 or S10 or S11	Expanders - Apply related words Search modes - Boolean/Phrase
S11	AB "major depression"	Expanders - Apply related words Search modes - Boolean/Phrase
S10	AB depress* disorder*	Expanders - Apply related words Search modes - Boolean/Phrase
S9	(MH "Depression") or (MH "Geriatric Depression Scale")	Expanders - Apply related words Search modes - Boolean/Phrase
S8	S5 or S6 or S7	Expanders - Apply related words Search modes - Boolean/Phrase
S7	(MH "Geriatrics")	Expanders - Apply related words Search modes - Boolean/Phrase

S6	AB older adult* or older people or elderly or elder*	Expanders - Apply related words Search modes - Boolean/Phrase
S5	(MH "Aged") or (MH "Aging")	Expanders - Apply related words Search modes - Boolean/Phrase
S4	S1 or S2 or S3	Expanders - Apply related words Search modes - Boolean/Phrase
S3	AB "cognitive behaviour therapy"	Expanders - Apply related words Search modes - Boolean/Phrase
S2	(MH "Cognitive Therapy") OR (MH "Behavior Therapy") OR (MH "Cognitive Therapy (Iowa NIC) (Non-Cinahl)")	Expanders - Apply related words Search modes - Boolean/Phrase
S1	AB cbt	Expanders - Apply related words Search modes - Boolean/Phrase

AgeLine, PsycINFO

#	Query	Limiters/Expanders
S5	S1 and S2 and S3 and S4	Expanders - Apply related words Search modes - Boolean/Phrase
S4	AB "Clinical Trials" or AB randomi?ed or AB "randomi?ed controlled trial"	Expanders - Apply related words Search modes - Boolean/Phrase
S3	AB depress* or AB depress* disorder* or AB "major depression"	Expanders - Apply related words Search modes - Boolean/Phrase
S2	AB (older adult* or older people or elderly or elder*) or AB (aged or aging or ageing or senil* or geriatri*)	Expanders - Apply related words Search modes - Boolean/Phrase

S1	AB cbt or AB ("cognitive therapy" OR "behavior therapy") or AB "cognitive behaviour therapy"	Expanders - Apply related words Search modes - Boolean/Phrase

Clinical Trials.gov

Found 4 studies with search of: depression OR depressive disorder OR major depression | cognitive behaviour therapy OR cognitive therapy OR behaviour therapy | Senior

Current Contents Connect®

4 #3 AND #2 AND #1
Databases=SBS, CM, LS Timespan=All Years

3 Title=(cognitive therap* or (cogniti* adj (behavio* or therap*)) OR (cogniti* adj (technique* or restructur* or challeng*))) OR Title=(self adj (instruct* or management* or attribution*)) OR Title=(rational* and emotiv)
Databases=SBS, CM, LS Timespan=All Years

2 Title=(older adult* or older people or elderly or elder*) OR Title=(aged or aging or ageing or senil* or geriatri*)
Databases=SBS, CM, LS Timespan=All Years

1 Title=(depress*) OR Title=(depress* disorder) OR Title=(major depression)
Databases=SBS, CM, LS Timespan=All Years

Appendix III

Critical Appraisal Checklist for Experimental Studies

NOTE:
This appendix is included on page 62 of the print copy
of the thesis held in the University of Adelaide Library.

The Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI)

Appendix IV

Excluded studies

Bockting, C. L., Spinhoven, P., Wouters, L. F., Koeter, M. W., & Schene, A. H. 2009. Long-term effects of preventive cognitive therapy in recurrent depression: a 5.5-year follow-up study. *J Clin Psychiatry,* vol. 70, no. 12, pp. 1621-1628.

Bortolotti, B., Menchetti, M., Bellini, F., Montaguti, M. B., & Berardi, D. 2008. Psychological interventions for major depression in primary care: a meta-analytic review of randomized controlled trials. *General Hospital Psychiatry,* vol. 30, no. 4, pp. 293-302.

Brody, B. L., Roch-Levecq, A. C., Thomas, R. G., Kaplan, R. M., Brown, S. I., Brody, B. L., et al. 2005. Self-management of age-related macular degeneration at the 6-month follow-up: a randomized controlled trial. *Archives of Ophthalmology,* vol. 123, no. 1, pp. 46-53.

Chernyak, N., Petrak, F., Plack, K., Hautzinger, M., Muller, M. J., Giani, G., et al. 2009. Cost-effectiveness analysis of cognitive behaviour therapy for treatment of minor or mild-major depression in elderly patients with type 2 diabetes: study protocol for the economic evaluation alongside the MIND-DIA randomized controlled trial (MIND-DIA CEA). *BMC geriatrics,* vol. 9, no., pp. 25.

Christensen, H., Griffiths, K. M., & Jorm, A. F. 2004. Delivering interventions for depression by using the Internet: randomised controlled trial. *BMJ: British Medical Journal,* vol. 328, no. 7434, pp. 265-268.

Conradi, H. J., de Jonge, P., Kluiter, H., Smit, A., van der Meer, K., Jenner, J. A., et al. 2007. Enhanced treatment for depression in primary care: long-term outcomes of a psycho-educational prevention program alone and enriched with psychiatric consultation or cognitive behavioral therapy. *Psychol Med,* vol. 37, no. 6, pp. 849-862.

Cuijpers, P., van Straten, A., & Smit, F. 2006. Psychological treatment of late-life depression: a meta-analysis of randomized controlled trials. *International Journal of Geriatric Psychiatry,* vol. 21, no. 12, pp. 1139-1149.

Cuijpers, P., van Straten, A., Warmerdam, L., & Andersson, G. 2009. Psychotherapy versus the combination of psychotherapy and pharmacotherapy in the treatment of depression: A meta-analysis. *Depression and Anxiety,* vol. 26, no. 3, pp. 279-288.

DeRubeis, R. J., Hollon, S. D., Amsterdam, J. D., Shelton, R. C., Young, P. R., Salomon, R. M., et al. 2005. Cognitive therapy vs medications in the treatment of moderate to severe depression. *Archives of General Psychiatry*, vol. 62, no. 4, pp. 409-416.

Doering, L. V., Cross, R., Vredevoe, D., Martinez-Maza, O., & Cowan, M. J. 2007. Infection, depression, and immunity in women after coronary artery bypass: a pilot study of cognitive behavioral therapy. *Alternative Therapies in Health & Medicine*, vol. 13, no. 3, pp. 18-21.

Floyd, M., Scogin, F., McKendree-Smith, N. L., Floyd, D. L., & Rokke, P. D. 2004. Cognitive therapy for depression - A comparison of individual psychotherapy and bibliotherapy for depressed older adults. *Behavior Modification*, vol. 28, no. 2, pp. 297-318.

Frazer, C. J., Christensen, H., & Griffiths, K. M. 2005. Effectiveness of treatments for depression in older people. *Medical Journal of Australia*, vol. 182 (12), no., pp. 627-632.

Jarrett, R. B., & Thase, M. E. 2010. Comparative efficacy and durability of continuation phase cognitive therapy for preventing recurrent depression: Design of a double-blinded, fluoxetine- and pill placebo-controlled, randomized trial with 2-year follow-up. *Contemporary Clinical Trials*, vol. 31 (4), no., pp. 355-377.

Konnert, C., Dobson, K., Stelmach, L., Konnert, C., Dobson, K., & Stelmach, L. 2009. The prevention of depression in nursing home residents: a randomized clinical trial of cognitive-behavioral therapy. *Aging & Mental Health*, vol. 13, no. 2, pp. 288-299.

Mitchell, P. H., Teri, L., Veith, R., Buzaitis, A., Tirschwell, D., Becker, K., et al. 2008. Living well with stroke: design and methods for a randomized controlled trial of a psychosocial behavioral intervention for poststroke depression. *Journal of Stroke & Cerebrovascular Diseases*, vol. 17, no. 3, pp. 109-115.

Peng, X. D., Huang, C. Q., Chen, L. J., & Lu, Z. C. 2009. Cognitive behavioural therapy and reminiscence techniques for the treatment of depression in the elderly: a systematic review. *Journal of International Medical Research*, vol. 37, no. 4, pp. 975-982.

Shamsaei, F., Rahimi, A., Zarabian, M. K., & Sedehi, M. 2008. Efficacy of pharmacotherapy and cognitive therapy, alone and in combination in major depressive disorder. *Hong Kong Journal of Psychiatry*, vol. 18, no. 2, pp. 76-80.

Valaitis, R. 2004. Websites offering information about depression or cognitive behaviour therapy reduced depressive symptoms. *Evidence-Based Nursing,* vol. 7, no. 3, pp. 78-78.

van't Veer-Tazelaar, P. J., van Marwijk, H. W., van Oppen, P., van Hout, H. P., van der Horst, H. E., Cuijpers, P., et al. 2009. Stepped-care prevention of anxiety and depression in late life: a randomized controlled trial. *Archives of General Psychiatry*, vol. 66, no. 3, pp. 297-304.

Wilson, K., Mottram, P. G., & Vassilas, C. 2008. Psychotherapeutic treatments for older depressed people. *Cochrane Database of Systematic Reviews,* vol., no. 1.

Appendix V

Quantitative Data Extraction Form

Author_____ Record No_____

Journal_____

Year _____

Reviewer_____

Method _____

_____

Setting _____

_____

Participants

_____

Number of Participants

Group A ☐ Group B ☐ Group C ☐

Interventions

Group A _____

Control _____

Group B _____

Intervention 1 _____

Group C _____

Intervention 2 _____

Outcome Measures

Definition _____

Other Outcome Measures

Outcome Description	Scale/Measure

Results

Dichotomous Data

Outcome	Control Group Number /total number	Treatment Group number/total number

Continuous Data

Outcome	Control Group mean & SD (number)	Treatment Group mean & SD (number)

Authors Conclusions:

Comments:

Appendix VI

Included studies

Reference	Type of study	Interventions	N	Population	Methodological Quality	Outcomes	Results	Author Conclusion
(Arean et al., 2005)	RCT, 3 arms	Cognitive–behavioral group therapy (CBGT), (n=18) Clinical case management (CCM), (n=26) Combination (CBGT + CCM) (n=23)	67	67 older adult participants (Age 65.30 +_ 5.87); Low-income (household income less than or equal to $15,000) MMSE 28.22 2.08	Moderate quality Yes: 5 No: 4 Unclear: 1	21-item Hamilton Depression Rating Scale (HDRS) Short-Form Health Survey (SF-36) to measure overall functioning. Older Adult Pleasant Events Schedule (OAPES) Rathus Assertiveness Scale The Arizona Social Support Interview Schedule	Results at **6 months** suggest trends toward significant differences at that time point, and CBGT tended toward showing less improvement than CCM at 6 months, *t*(108) = 1.73, *p* = .08 **12-month follow-up**. CBGT + CCM had significantly lower depression scores than CBGT at 12 months, *t*(108)= 2.56, *p*= .01. There was a trend toward a significant difference between the CCM and CBGT conditions, *t*(108) = 1.88, *p*= .06, and no difference between CCM and CBGT + CCM (*p* = .42).	The individual components of each intervention may produce different outcomes in this population of older adults, with CBGT + CCM being more effective for well-being and CBGT for functioning.
(Brody et al., 2006)	RCT, 2 arms	AMD self-management program (n=12) One of two control conditions (n=20).	32	Depressed older adult volunteers (mean age 81.5) with advanced age-related macular degeneration (AMD) Major or minor	Moderate quality Yes: 7 No: 2 Unclear: 1	Geriatric Depression Scale (GDS-15) The Life Orientation Test Revised (LOT-R)21	**At 6-month follow-up** The change on the GDS-15 was greater in the self-management group than in contr*ols (Z= -1.86, P=.03), indicating* that participants in the self- management	These findings may support the effectiveness of an AMD self-management program for depressed older adults with advanced

				depressive disorder with significant depressive symptoms (>5 points) on the 15-item Geriatric Depression Scale (GDS-15)			group reported less depression on the GDS-15 than controls the self-management group, 10 of 12 (83%) of the participants, compared with 8 of 20 (40%) in the control group, showed a reduction in depressive symptoms of 2 or more points (P=.02).	vision loss from AMD.
(Hyer et al., 2008)	RCT, 2 arms	Group, individual, and staff treatment GIST (n = 13) TAU (n = 12).	25	Older aduts with a geriatric depression scale–short form (GDS-SF) score of >5	Moderate quality Yes: 7 No: 2 Unclear: 1	Geriatric depression scale-short form (GDS-S), Life satisfaction index Z (LSI-Z)	There were significant differences between GIST and TAU in favour of GIST on the GDS-S and LSI-Z. The GIST group maintained improvements over another 14 sessions. After crossover to GIST, TAU members showed significant improvement from baseline. Participants also reported high subjective ratings of treatment satisfaction.	This trial demonstrated GIST to be more effective for depression in LTC than standard treatments.
(Laidlaw et al., 2008)	RCT, 2 arms	CBT: (n=20) TAU: (n=20)	40	Age 60 years and over and able to achieve a primary diagnosis of Major Depressive Disorder using DSM IV diagnostic	High quality Yes: 9 No: 1 Unclear: 0	17-item Hamilton Depression Rating Scale Beck Depression Inventory (BDI-II)	**At 6-month follow-up** Participants in both cohorts improved with treatment, showing reduced scores on primary measures of mood at end of treatment and at 6-month follow-up	Significant reductions in depressive symptoms were achieved by CBT alone and TAU alone both at the end of treatment and at 6-

				criteria			from the end of treatment.	month follow-up.
(Serfaty et al., 2009)	RCT, 3 arms	TAU plus CBT (n=70). TAU plus a talking control (TC n=67) Treatment as usual (TAU n=67).	204	People aged 65 years or older (mean [SD] age, 74.1 [7.0] years) with a Geriatric Mental State diagnosis of depression	High quality Yes: 9 No: 1 Unclear: 0	Beck Depression Inventory-II (BDI-II) scores collected at baseline, end of **therapy (4 months), and 10 months** after the baseline visit. Beck Anxiety Inventory, Social Functioning Questionnaire, and Euroqol.	Intent-to-treat analysis found improvements of −3.07 (95% confidence interval [CI], −5.73 to −0.42) and −3.65 (95% CI, −6.18 to −1.12) in BDI-II scores in favor of CBT vs TAU and TC, respectively. Compliance Average Causal Effect analysis compared CBT with TC. A significant benefit of CBT of 0.4 points (95% CI, 0.01 to 0.72) on the BDI-II per therapy session was observed. The cognitive therapy scale showed no difference for nonspecific, but significant differences for specific factors in therapy. Ratings for CBT were high (mean [SD], 54.2 [4.1]).	CBT is more effective than empathetic listening and usual care in the management of depressed patients 65 years or older.
(Spek et al., 2008)	RCT, 3 arms	Internet-based CBT (n=102) Group CBT (n=99) Waiting-list (N=100)	301	Sub-threshold depression in people over 50 years (mean age=55 years, S.D.=4.6) and an Edinburgh Depression Scale (EDS)	Poor quality Yes: 4 No: 3 Unclear: 3	21-item Beck Depression Inventory – second edition	Study found no difference in effects of internet basedCBT and group CBT (p=0.08). In the waiting-list control group, the study found a pretreatment to follow-up improvement effect size of 0.69,	People aged over 50 years with subthreshold depression can still benefit from internet-based CBT 1 year after the start of treatment.

				score of 12 or more, but no DSM-IV diagnosis of depression, access to the internet and the ability to use the internet			which was 0.62 in the group CBT condition and 1.22 with the internet-based treatment condition. Simple contrasts showed a significant difference between the waiting-list condition and internet-based treatment (p=0.03) and no difference between both treatment conditions (p=0.08).	
(Wilkinson et al., 2009)	RCT, 2 arms	CBT-G/antidepressant combination (n=22) Antidepressant (n=23)	45	Adults aged 60 and over who had met ICD-10 criteria for major depression in the previous year and were still taking antidepressant medication	Moderate quality Yes: 7 No: 2 Unclear: 1	Montgomery Asberg Rating Scale for Depression (MADRS) Beck Depression Inventory	**One-year** recurrence rates on the MADRS were lower in participants receiving CBT-G [5/18 (27.8%)] compared with controls [8/18 (44.4%)] although this did not achieve statistical significance (adjusted RR 0.70 [95% CI 0.26–1.94]). In contrast, overall scores on the secondary outcome measure, the Beck Depression Inventory, increased in participants receiving CBT-G.	Brief group cognitive behaviour therapy (CBT-G) is a feasible and acceptable treatment with older adults in remission/recovery from depressive illness