A systematic review into the effectiveness of occupational therapy for improving function and participation in activities of everyday life in adults with a diagnosis of depression

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Abstract

Background: Depression is a common mental health disorder, the symptoms of which can disrupt functioning and lead to reduced participation in everyday activities. Occupational therapy is routinely provided for people with such difficulties; however, the evidence underpinning this intervention for depression has yet to be systematically assessed.

Method: A systematic review of the effectiveness of occupational therapy for people with a diagnosis of depression, using the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) was undertaken. Seven databases were searched using terms for depression combined with terms associated with occupational therapy. Due to heterogeneity in study design and outcome measures, a best evidence synthesis was undertaken as an alternative to meta-analysis.

Results: Of 1962 articles identified, 63 full texts were assessed and six met the inclusion criteria. Studies were carried out in Canada, Germany, the Netherlands, Taiwan and the United Kingdom. There was strong evidence for the effectiveness of occupational therapy return-to-work interventions for improving depression symptomology, limited evidence for occupational therapy lifestyle interventions for reducing anxiety and suicidal ideation, and limited evidence for improving work participation. No studies evaluated individualised client-centred occupational therapy, highlighting a gap in research.

Limitations: Incomplete reporting within studies and heterogeneity prevented meta-analysis. English language restrictions were applied.

Conclusions: Whilst overall the evidence base for occupational therapy for depression is limited, strong evidence was found for the effectiveness of occupational therapy return-to-work interventions, which is important given the costs associated with mental ill-health and work absence. Further research is needed to strengthen the evidence base.

Keywords: Depression, Mental health, Occupational therapy, Effectiveness, Functioning, Return-to-Work.

Introduction

Worldwide, depression is the leading cause of disability linked to disease and is characterised by a loss of interest in activities as well as difficulty carrying out everyday activities (World Health Organisation, 2017). The level of disruption to function depends on the severity of the episode, but can be substantial and affect participation in everyday activities including self-care, work, social and leisure functioning (Bonder, 2010). Occupational therapy aims to enable people to participate in the daily activities they want or need to do and so improve health, well-being and quality of life (World Federation of Occupational Therapists, 2012). There is currently limited research evidence relating to the effectiveness and impact of occupational therapy in mental health generally (Gutman, 2009; Bullock & Bannigan, 2011). A scoping review of the literature relating to the effectiveness of occupational therapy for people with a diagnosis of depression also identified a dearth of published research.

Globally, not all staff currently employed as occupational therapists in the mental health field spend all their clinical time delivering occupational therapy due to a rise in generic or generalist working (Lloyd et al., 2004; Fox, 2013; Michetti and Dieleman, 2014). Whilst standards for community mental health services in the UK for example highlight occupational therapy as essential provision (Royal College of Psychiatrists, 2016), staff shortages and cost saving initiatives have seen occupational therapy positions reduced. Occupational therapists therefore spend less time delivering occupational therapy and more time undertaking generic mental health practitioner tasks, often seen as a higher priority within services under pressure. In the United States this change has impacted negatively upon the quality of patient care as well as on professional identity and multi-disciplinary team working (Fox 2013). Evidence to support best practice is essential not only to ensure the delivery of high-quality effective interventions (World Health Organisation, 2004), but also so that limited health care resources can be used to achieve the best outcomes for service users. The limited evidence for the effectiveness of occupational therapy in mental health therefore puts the profession, and the service users who benefit from its interventions, at continued risk from cost-savings due to austerity. The purpose of this systematic review was to answer the question: Does occupational therapy improve function and participation in activities of everyday life in adults with a diagnosis of depression?

Methods

This systematic review was undertaken and is reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) (Moher et al., 2009) and The Joanna Briggs Institute Reviewers' Manual (Aromataris and Munn, 2017). The review protocol was registered with PROSPERO in March 2018: https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=89613, (Christie et al., 2018). All stages of the review process including selection of studies, quality appraisal and data extraction were independently considered by two reviewers (LC and JI) with disagreements resolved through discussion and where a consensus was not reached, a third reviewer (DD) was consulted for a majority decision. The PICO model was used to develop the search strategy: the patient/problem (P), intervention/exposure (I); comparison intervention/exposure (C) and the clinical outcome of interest (O).

The population of interest (P) was adults with a primary diagnosis of depression. The intervention (I) was occupational therapy as defined as an intervention designed to enable participation in activities of everyday life with the goal of promoting health and well-being (World Federation of Occupational Therapists, 2012). This included occupational, functional and vocational interventions designed to increase function or optimise participation in activities of everyday life, delivered or facilitated by a qualified occupational therapist. The comparison (C) was no occupational therapy.

The outcomes (O) of primary interest were change in occupational performance, level of function or participation in activities of everyday life or change in satisfaction in these. There were no restrictions on secondary outcomes to ensure that all outcomes relevant to practice were included (Khan et al, 2011). Studies relating to children and young people under the age of 18 and people with a diagnosis of organic brain disorder (or a suspected organic cause to their depressive illness) were excluded, as were studies relating to people with bipolar disorder because this diagnosis is treated separately in the UK's National Institute for Health and Care Guidance (National Institute for Health and Clinical Excellence, 2009, updated 2018) (National Institute for Health and Clinical Excellence, 2014b, updated 2020). Only studies in English were included.

The following electronic databases were searched: AMED, CINAHL, The Cochrane Library, EMBASE, MEDLINE, PsycINFO and OT Seeker. The search strategy used the keywords: "Depression" OR "Depressive illness" OR "Affective disorder" OR "low mood" OR "Mood disorder" AND "Occupational therapy", OR "Vocational rehabilitation" OR "self-care" OR "Leisure" OR "daily living" OR "life-skills"

OR “skill” OR “productive” OR “independence” OR “participation OR “everyday life”. The inclusion dates for the searches were January 1993 to February 2019. Searches were conducted in March 2017 and repeated in February 2019. At stage one, titles and abstracts were screened against the inclusion and exclusion criteria, using full texts if necessary, to identify all potentially relevant papers. At stage two, the full texts of all papers considered potentially relevant by either reviewer were independently examined to determine whether the inclusion criteria had been met. The reference lists of included studies were reviewed for any other eligible studies for completeness. The identified quantitative studies were subject to critical appraisal and methodological quality assessment using the following criteria recommended by van Tulder et al. (1997) further developed by Steultjens et al. (2002). Randomised Controlled Trials (RCTs) and Controlled Clinical Trials (CCTs) were assessed against eleven internal validity criteria, six descriptive criteria and two statistical criteria. For studies to be considered 'high' quality, at least six internal validity criteria, three descriptive and one statistical criterion must have scored positively. Other Designs (ODs), a term used by Steultjens et al. (2002) to refer to all studies that were not RCTs or CCTs, were assessed against seven internal validity criteria, four descriptive criteria and two statistical criteria. For studies to be considered 'sufficient' quality, at least four internal validity criteria, two descriptive criteria and one statistical criterion must have achieved a positive score. The qualitative study was appraised using the CASP Tool for Qualitative Research (Critical Appraisal Skills Programme, 2018).

A standardised pre-piloted data extraction form was used. The data extracted included: inclusion criteria, study setting and population, methodology, intervention and control intervention, intensity, frequency and duration of the intervention and outcomes. Due to studies not being sufficiently homogenous and differences in data reporting, the results could not be combined through meta-analysis (Blundell, 2014). The original aim was to extract the mean (standard deviation) at baseline and the standardised mean difference (95 percent confidence interval) post intervention, as recommended by Steultjens et al. (2002). However, only one paper (Hees et al., 2013) provided this. The corresponding authors for the other RCTs were contacted twice to request the missing data but no response was received. However, even if it had been possible, meta-analysis would still have been restricted by heterogeneity of outcomes. Due to the wide range of outcomes measured, only one outcome (depression) could feasibly have been combined across three RCTs. Moreover, these studies evaluated a range of occupational therapy interventions meaning that meta-analysis could not have been conducted for specific intervention types.

A best evidence synthesis was therefore utilised as an alternative to meta-analysis (Slavin, 1995), providing a rating for each type of occupational therapy intervention and the level of evidence of

effectiveness. The evidence was rated as strong, moderate, limited, indicative or none, replicating the method used by Steultjens et al. (2002), as described in Table 1.

Table 1: Best evidence synthesis (adapted from Steultjens et al., 2002, with permission)

Strong evidence	Consistent, statistically significant findings in outcome measures in at least two high quality RCTs*
Moderate evidence	Consistent, statistically significant findings in outcome measures in at least one high quality RCT and at least one low quality RCT or high quality CCT*
Limited evidence	Statistically significant findings in outcome measures in at least one high quality RCT*, or consistent, statistically significant findings in at least two high quality CCTs* (in the absence of high quality RCTs)
Indicative findings	Statistically significant findings in outcome measures in at least one high quality CCT*, or one low quality RCT* (in the absence of high quality RCTs) or consistent, statistically significant findings in at least two ODs with sufficient quality (in the absence of high quality RCTs and CCTs)
No evidence	In cases of results of eligible studies that do not meet the criteria for one of the above-stated levels of evidence, or in case of conflicting results among RCTs and CCTs, or in case of no eligible studies

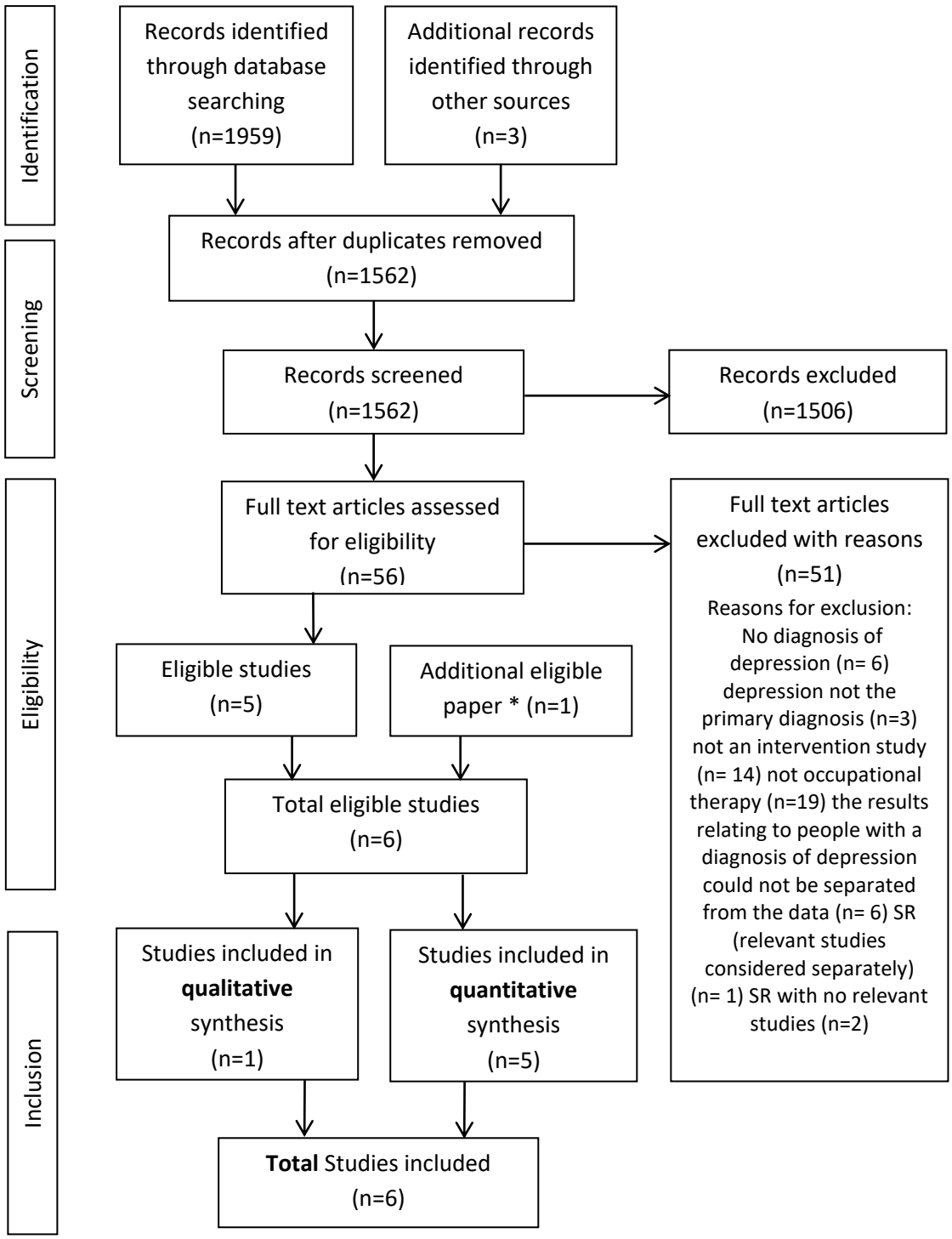
RCTs = randomised controlled trials; CCTs = controlled clinical trials; ODs = other designs.
* If the proportion of studies that show evidence is <50% of the total number of studies within the same category of methodological quality and study design (RCTs, CCTs or ODs), we state no evidence

Results

Retrieval of studies

An initial search retrieved 1962 articles. After removal of duplicates, 1562 articles were screened and 63 full-text articles were retrieved. 58 studies were excluded at stage two. Five full-text articles were identified as appropriate for inclusion. One further article was found when searches were re-run in February 2019 (Figure 1). Of the six studies identified; four were RCTs (Schene et al., 2007; Hees et al., 2013; Chen et al., 2015 and Edel et al., 2017) one a qualitative study (Cooper 2013) and one a mixed methods study (Wisenthal et al., 2018).

Fig 1: Flow Diagram



***** One additional paper was found when the searches were re-run in February 2019.

Characteristics of Studies

Studies were carried out in Canada, Germany, the Netherlands, Taiwan and the United Kingdom and represented a total of 374 participants. All included studies evaluated specific occupational therapy interventions, rather than the individualised client-centred occupational therapy most commonly provided in everyday practice. The mode of delivery of all included interventions was primarily group-based as opposed to individual intervention, although four studies (Schene et al., 2007; Hees et al., 2013; Chen et al., 2015 and Wisenthal et al., 2018) included some individualised components. Characteristics of the included studies and the intervention types are shown in Table 2.

Methodological Quality

Overall the quality of the included studies was good (Table 3); acknowledging that successful blinding towards the intervention may be very challenging or not feasible at all Three studies; all RCTs, were identified to be of high quality (Schene at al. 2007; Hees et al., 2013 and Chen et al., 2015). One RCT (Edel et al. (2017) was found to be of low methodological quality and the most recent OD (Wisenthal et al., 2018) was found to be of 'sufficient' quality. The RCT that was rated as low was noted to have problems with internal validity, only meeting five criteria out of the minimum of six. The remaining four studies all scored sufficiently with regard to internal validity, descriptive criteria and statistical criteria.

Appraisal of the qualitative study (Cooper et al., 2013) found that whilst some detail was given around selection criteria, there was no discussion around how recruitment and selection was undertaken. There was also a lack of detail around co-interventions and compliance, however data collection was considered appropriate for the aims and methodology. There is evidence that the researcher, who also delivered the intervention to the participants, had critically considered her role, influence and the risk of bias. There is also evidence of rigorous data analysis. A lack of detail in intervention and comparison descriptions was noted in one quantitative (Hees et al., 2013) and one qualitative study (Cooper, 2013). Additionally, missing data and incomplete recording was noted (Table 3).

Table 2: Characteristics of included studies

Reference	No. of participants	Research methods	Inclusion criteria and setting	Interventions		Outcome measures	Time Period
				Control Group	Intervention Group		
Schene et al. (2007)	62	RCT	Age 18+ with work - place associated Major Depression without psychosis or drug/ alcohol dependence. BDI score greater than 15. Setting: Psychiatric Medical Centre.	TAU: Clinical management inc. assessment, psycho-education, support, CBT + medication if indicated.	**RTW intervention:** 12 month programme inc. role-play, video observation, work integration preparation, employer, liaison exploration of work problems, review of progress in work + TAU.	• Interview for Diagnosis of DSM-IV Mood Disorders • BDI II • Work resumption (time worked) • Questionnaire Organisational Stress • Healthcare costs.	Baseline plus 6, 12 and 42 months
Hees et al. (2013)	117	RCT	Age 18-65, with MDD, associated with work place, without psychosis or drug and alcohol dependency. Setting: Psychiatric services.	TAU: Outpatient treatment according to APA guidelines, psycho-education, support, CBT & medication if indicated.	**RTW Intervention:** 9 x Individual + 8 x group sessions + meeting with employer. Am to simulate work tasks/skills. Graded to increase competence & confidence + TAU.	• Absenteeism/time to RTW • Hamilton Depression Scale • Inventory of Depression Symptoms • WLQ • SF-36 • Utrecht Coping List	Baseline plus: T1: 6 months T2: 12 months T3: 18 months
Chen et al. (2015)	68	RCT	Age 18+ with Major Depression or dysthymia. Out-patient. Literate with MMSE score of 24+. Setting: Psychiatric clinic in Taiwan.	Standardised telephone contact including enquiry of daily routines, general mental well-being and social/activity participation.	**Lifestyle Intervention:** 'Life Adaptation Skills Training' (LAST) to improve performance/ lifestyle, interpersonal skills, illness/stress management. 24 sessions 1.5 hours (over 12 weeks)	• WHO-QOL • Occupational Self-assessment • BDI (II) • Beck Anxiety Inventory • Beck Scale Suicide Ideation	T1: Baseline T2: 3 Months (post interven-tion). T3: 6 months

Abbreviations: BDI = Beck Depression Inventory, TAU = Treatment As Usual, OD = Other design PObs = Participant observation CBT = Cognitive Behavioural Therapy, RTW = Return to work , APA = American Psychiatric Association, WLQ = Work Limitations Questionnaire, SF-36 = Medical Outcomes Study Short Form, MMSE = Mini Mental State Examination, WHO-QOL = World Health Organisation Quality of Life Scale

Table 2: Characteristics of included studies (continued)

Reference	No. of participants	Research methods	Inclusion criteria and setting	Interventions		Outcome measures	Time period
				Control group	Intervention group		
Edel et al. (2017)	82	RCT	Diagnosis of moderate or severe Major Depression without psychosis. Setting: German psychiatric inpatient units.	Participation in a board game group	**Handicraft Intervention:** Basic craft activities such as woodwork or art.	• Hamilton Depression Scale • BDI II • Hamilton Anxiety Scale • Personal & Social Performance Scale	Baseline plus 3-9 weeks after baseline
Wisenthal et al. (2018)	21	OD	Age 18+, basic reading and writing skills, off work due to diagnosis of depression, with no co-existing drug/alcohol disorder. Employed in office work rather than manual work. Setting: community mental health.	N/A	**RTW Intervention:** 'Cognitive Work Hardening' an intervention designed to support return to work which uses role play, simulation etc. (31 hours of intervention over 4 weeks)	• Work Ability Index • Multidimensional Assessment of Fatigue • BDI II (Plus qualitative interviews at T2 (4 weeks) and at 3-month follow-up	T1: Baseline T2: Post-test (4 weeks) T3: 3 month follow-up
Cooper (2013)	24	OD	Inclusion criteria and recruitment process not clear. Participants had a diagnosis of depression as all or part of their diagnosis. Setting: mental health unit: drop in sessions.	Creative Writing Course (creative art therapy not delivered by an occupational therapist)	**Writing Intervention:** Using Writing as Therapy Course (a structured brief writing therapy)	• Questionnaires and interviews	PObs and interviews over a 12 month period.

Abbreviations: BDI = Beck Depression Inventory, TAU = Treatment As Usual, OD = Other design PObs = Participant observation CBT = Cognitive Behavioural Therapy, RTW = Return to work , APA = American Psychiatric Association, WLQ = Work Limitations Questionnaire, SF-36 = Medical Outcomes Study Short Form, MMSE = Mini Mental State Examination, WHO-QOL = World Health Organisation Quality of Life Scale

Table 3: Summary of quality characteristics of randomised controlled trials and studies using other designs

First Author (Date)	Selection				Interventions					Outcome Measurement								Statistics			Methodological Quality
Criterion code	a	b(i)	b(ii)	c	d	e	f	g	h	i	j	k	l	m (i)	m(ii)	n	o	p	q		
		Allocation												Follow-up timing							
Criterion name	Eligibility criteria specified	randomisation	concealment	Baseline similarity	Interventions explicitly described	Therapist blinding	Co-interventions avoided or comparable	Compliance acceptable	Participant blinding	Assessor blinding (or not involved in treatment for OD's)	Relevant outcome measures	Adverse effects described	Described & acceptable withdrawal/drop-out	Short-term	Long-term	Timing comparable between groups (or patients for OD's)	Sample sizes described	Intention to treat analysis	Point estimates/ measures of variability		
RCTs																					
Schene (2007)	✓	✓	✓	✓	✓	x	✓	x	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓		**High**
Hees (2013)	✓	✓	✓	✓	x	x	✓	✓	x	✓	✓	x	✓	✓	✓	✓	✓	✓	✓		**High**
Chen (2015)	✓	✓	✓	x	✓	x	✓	x	x	✓	✓	x	x	✓	x	✓	✓	✓	✓		**High**
Edel (2017)	✓	✓	✓	x	✓	x	✓	x	x	x	✓	x	x	✓	x	✓	✓	x	✓		**Low**
OD																					
Wisenthal (2018)	✓	N/A	N/A	N/A	✓	N/A	x	x	N/A	✓	✓	x	✓	✓	x	✓	✓	x	✓		**Sufficient**

Abbreviations: RCT= Randomised Controlled Trial OD = Other Design

Assessment of Quality: RCTs: Assessed against eleven internal validity criteria, six descriptive criteria and two statistical criteria. For studies to be considered 'high' quality, at least six internal validity criteria, three descriptive and one statistical criterion must be positively scored (Steultjens et al., 2002).
OD's: Assessed against seven internal validity criteria, four descriptive criteria and 2 statistical criteria. For studies to be considered 'sufficient' quality, at least four internal validity criteria, two descriptive criteria and one statistical criterion must be positively scored (Steultjens et al., 2002). N.B. **(**✓ = yes x = no or can't tell)

Internal Validity Criteria = b, e, f, g, h, i, j, l, n, p
Descriptive Criteria = a, c, d, k, m
Statistical Criteria = o, q

Outcome of Interventions

The reported effects of the occupational therapy interventions on both primary and secondary outcomes from the quantitative and qualitative data are reported in Table 4 and Table 5 respectively.

Best Evidence Synthesis

A best evidence synthesis for each of the intervention types was conducted using the outcomes reported in Table 4 and the guidelines shown in Table 1.

Occupational therapy return-to-work interventions.

Three studies on the effectiveness of occupational therapy return-to-work (RTW) interventions were included in the evidence synthesis. All three measured occupational performance, function and/or participation. Two studies reported statistically significant findings in these measures (Schene et al., 2007 and Wisenthal et al., 2018). Schene et al. (2007), a high quality RCT, measured work participation through work resumption data (days and hours worked per week). Time from baseline to any work participation highlighted a statistically significant difference in favour of the occupational therapy intervention group. Additionally, total hours worked highlighted that the intervention group worked significantly more during the initial 18-month period. The second RTW study (Hees et al., 2013), also a high quality RCT, measured at-work functioning. They found no significant difference between the intervention and control groups with both demonstrating significantly reduced absenteeism and role limitation. The self-report data collected was not reported in their paper. Wisenthal et al. (2018), an OD of sufficient quality, measured work function by assessing 'work readiness' also with statistically significant post-test scores.

In terms of depression symptomology, all three RTW studies reported statistically significant findings. Schene et al. (2007), and Wisenthal et al. (2018), utilised the Beck's Depression Inventory (BDI). Schene et al. (2007) reported statistically significant differences between intervention and control groups, during the long-term follow up phase of their RCT, and Wisenthal et al. (2018) reported significant improvement in post-intervention depression symptomology in their single-group study. The positive findings from the BDI in Schene et al. (2007) were contradicted by their secondary measure of depression (participants' DSM-IV[1]) which did not replicate the significant BDI findings (the TAU group showed greater improvement). However, diagnostic reliability using the DSM-IV has been questioned (Chmielewski et al., 2015) whereas the BDI is a standardised measure,

[1] DSM-IV Scores: classification found in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition

widely used in research, with excellent psychometric properties (Dozois and Covin, 2004), and could potentially be given greater emphasis.

Hees et al. (2013) reported statistically significant improvement in depressive symptomology and symptom remission in the occupational therapy group. In addition, sustainable remission (6 months or more) was higher in the occupational therapy group. Whilst their secondary measure of depression also showed greater improvements in favour of the occupational therapy intervention group, this did not achieve statistical significance.

Only one other outcome considered across the RTW studies achieved statistical significance; Wisenthal et al. (2018) reported significantly lower fatigue scores in post-test measurements following occupational therapy. Schene et al. (2007) and Hees et al. (2013) measured stress levels and coping respectively, with no significant findings. Therefore, based on statistically significant findings in two high quality RCTs and an OD of sufficient quality, there is strong evidence for the effectiveness of occupational therapy RTW interventions for improving depression symptomology. Based on statistically significant findings in one high quality RCT there is limited evidence for the effectiveness of occupational therapy RTW interventions for improving occupational functioning, performance and/or participation. Based on statistically significant findings in only one OD, there is no evidence for the effectiveness of occupational therapy RTW interventions in improving work readiness and overall health and well-being, as per the definition of best evidence in Table 1.

Occupational therapy lifestyle interventions

Only one RCT explored the effectiveness of occupational therapy lifestyle interventions for people with a diagnosis of depression (Chen et al., 2015). There was no significant difference between the groups relating to occupational competence, sense of mastery or depression symptomology. However, there were statistically significant findings relating to a reduction in suicidal ideation and anxiety. These are encouraging findings due to suicidal ideation being a key symptom of major depressive disorder (World Health Organisation, 2017) and the high incidence of anxiety associated with depression (Hirschfeld, 2001). Chen et al. (2015) was judged to be high quality however the description of the 'standardised phone contact' (the control) suggests that some occupational therapy may have been delivered because these included 'enquiry' about daily routines and social activity. It is not possible to determine whether occupational therapy was delivered, due to the lack of detail reported. However, based on one high quality RCT, there is limited evidence for the effectiveness of occupational therapy lifestyle interventions for reducing anxiety and suicidal ideation in people with a diagnosis of depression and no evidence for the effectiveness of

occupational therapy lifestyle interventions in improving occupational performance, functioning, participation or depressive symptomology.

Occupational therapy handicraft interventions

One RCT (Edel et al., 2017) explored the effectiveness of occupational therapy handicraft interventions for people with a diagnosis of depression reporting significant findings in favour of the occupational therapy group regarding basic work skills at 6 weeks. The study authors also reported statistically significant findings in relation to anxiety in their male sample at three weeks but found no significant difference between the groups regarding depressive symptomology.

In this study however, both the intervention and control groups were facilitated by occupational therapists and the control group intervention involved participation in an occupation (i.e. playing a board game). The information that Edel et al. (2017) provided suggests that this was selected as a control due to its 'resemblance' to occupational therapy, because German in-patients consider this an essential part of treatment. However, the control participants may potentially have received the intervention being evaluated. Therefore, based on only one low quality RCT, there is only indicative evidence for the effectiveness of occupational therapy handicraft interventions having a positive effect on occupational performance and anxiety symptoms in people with a diagnosis of depression and no evidence of a positive effect on depressive symptomology.

Other Findings: Occupational therapy and cost-effectiveness

One study (Schene et al., 2007) included an economic evaluation. They considered psychotropic medication use, and occupational therapy costs, reporting that the intervention group (TAU with the addition of occupational therapy) had a 75.5% probability of being more cost-effective compared with TAU (with no occupational therapy).

Service User perspectives

Two studies contributed qualitative data (Cooper et al., 2013 and Wisenthal et al., 2018) but had different research topics (an occupational therapy writing intervention and a RTW intervention respectively). Cooper (2013) identified themes across four key areas (clients as writers, therapist role, stigma and how writing helps). Key outcomes reported were that both interventions have potential benefits for people with a diagnosis of depression. The benefits of 'Using Writing as Therapy' in particular were identified as supporting cognitive changes, such as increasing self-awareness, and the participants distancing themselves from their stories through writing and restructuring memories and experiences. In addition, the author highlights the potential usefulness

of the intervention as part of the occupational therapy process; in supporting assessment and engagement. The potential benefits of the creative writing (non-therapeutic) group were identified as helping people step away from unhappy memories and feelings. Whilst the reported findings are positive, the quality appraisal process identified some potential concerns regarding the methodology. Wisenthal et al. (2018) reported qualitative data relating to the elements of intervention participants considered important in supporting return-to-work, as well as overall gains. Important intervention element themes included structure, simulation, coaching, feedback, pacing and role play. The overall gains were reported as developing a routine, improving self-confidence, improving stamina and cognitive function, as well as coping and pacing skills and how the therapist may enable these through providing feedback. Collectively these studies provide indication of the benefits, drawbacks, and how and why treatments may be effective and some insight into service users' experience of occupational therapy.

Discussion

This is the first time that occupational therapy for people with a diagnosis of depression has been subjected to a systematic review. The review found strong evidence for the effectiveness of occupational therapy return to work (RTW) interventions in improving depression symptomology and limited evidence for the effectiveness of occupational therapy RTW interventions in improving work participation. These are useful findings in terms of occupational therapy playing an important part in providing interventions for people with a diagnosis of depression. The review also found some evidence for the effectiveness of occupational therapy lifestyle interventions for reducing anxiety and suicidal ideation associated with depression, but this evidence was limited due to only one study having researched this area. It is therefore important that this potential benefit of occupational therapy is explored further, given the difficulties people with a diagnosis of depression can experience engaging in everyday activities and the high incidence of these secondary symptoms. There was an indication that occupational therapy handicraft interventions may have a positive effect on occupational performance and anxiety symptoms associated with depression. Additionally, there is also evidence to suggest occupational therapy may be a cost-effective return-to-work intervention for people with a diagnosis of depression. This is important to note since social and health care costs relating to mental ill health totalled £34.9 billion in 2017 in the UK (Parsonage and Saini, 2017) and globally the cost to the economy is estimated to be 1 trillion US Dollars per year in lost productivity (World Health Organisation, 2019).

Table 4: Summary of reported effects from the quantitative data for primary and secondary outcomes*

*as defined in the systematic review protocol

First author and year of publication	Type	Quality	Effects of occupational therapy				
			Occupational Performance, Functioning and Participation	**Depression Symptoms**	**Quality of Life**	**Health and well-being**	**Other mental health symptoms**
Occupational Therapy Return-to-Work interventions							
Schene et al. (2007)	RCT	High	**Work resumption:** Time baseline to any work participation I = mean 207 days C = mean 299 days (*p* = 0.01) **(days/h worked):** Months 1-6: (*p* = 0.022) I = 20.45 C = 0.00 Months 7-12: (*p* = 0.042) I = 261 h C= 0.85 h Months 13-18: (*p* = 0.035) I = 456.25 h C = 156.42 h	**DSM-IV Criteria:** No significant difference between groups **BDI II:** BDI Scores: 0 months: I = 27.1 C= 23.6 42 months: I = 12.3 C = 14.0 Statistically significant differences reported during the long-term follow up phase of the study in favour of the OT group: *(p* = 0.032)	Not measured	Not measured	**Questionnaire Organisational Stress:** no significant difference between groups

Table 4: Summary of reported effects from the quantitative data for primary and secondary outcomes (continued)

First author and year of publication	Type	Quality	Effects of occupational therapy				
			Occupational Performance, Functioning and Participation	**Depression Symptoms**	**Quality of Life**	**Health and well-being**	**Other mental health symptoms**
Occupational Therapy Return-to-Work interventions (continued)							
Hees et al. (2013)	RCT	High	**Absenteeism/time taken to RTW:** no significant difference between groups **Work Limitation Questionnaire:** no significant difference between groups **SF-36:** no significant difference between groups **10-point Likert scale:** The data were not reported.	**Hamilton Depression Rating Scale** Symptomology: M (SD) at 6, 12, 18 months: I = 11.2 (6.6), 7.1 (6.7), 4.7 (5.4) C = 12.4 (8.1), 9.6 (7.8), 8.8 (8.2) Both I and C reduced but I reduced significantly more (group x time statistically significant $p = 0.03$) **Symptom remission:** Percentage at 6, 12, 18 months: I = 32%, 57%, 77% C= 31%, 47%, 52% Statistically significant ($p = 0.05$) **Sustainable remission**: (6 months or more) also higher in I group ($p = 0.04$). **Inventory of Depressive Symptoms:** no significant difference between groups	Not measured	Not measured	**Utrecht Coping List:** no significant difference between groups

Table 4: Summary of reported effects from the quantitative data for primary and secondary outcomes (continued)

First author and year of publication	Type	Quality	Effects of occupational therapy				
			Occupational Performance, Functioning and Participation	**Depression Symptoms**	**Quality of Life**	**Health and well-being**	**Other mental health symptoms**
Occupational Therapy Return-to-Work interventions (continued)							
Wisenthal et al. (2018)	OD - MIXED METHODS	Sufficient	**Work Ability Index** M (SD) Pretest – Posttest 22.71 (6.51) – 28.02 (8.11) Difference mean (SD) = 5.31 (5.20) Significant *(p* <0.01) Effect size (*d* = 1.02)	**BDI-II** M (SD) Pretest – posttest 25.67(12.05) – 14.67 (10.46) Difference mean (SD) = 11.0 (10.07) Significant (*p* < 0.01) Effect size (*d* = 1.09)	Not measured	**Multi-dimensional assessment Fatigue** M (SD) Pretest – posttest 34.06 (6.89)–30.68 (8.38) Difference mean (SD) = 3.39 (6.34) Significant (*p* < 0.5) Effect size (*d* = 0.53)	Not measured
Occupational therapy lifestyle intervention							
Chen et al. (2015)	RCT	High	**Occupational self-assessment:** no significant difference between groups **Mastery scale:** no significant difference between groups	**BDI II:** no significant difference between groups	**WHOQOL:** no significant difference between groups	Not measured	**Beck Anxiety Inventory:** Significant findings *(p* < 0.05) in favour of the I group **Beck Scale Suicide Ideation:** Significant findings in favour the I group (*p* < 0.01)

Table 4: Summary of reported effects from the quantitative data for primary and secondary outcomes (continued)

First author and year of publication	Type	Quality	Effects of occupational therapy				
			Occupational Performance, Functioning and Participation	**Depression Symptoms**	**Quality of Life**	**Health and well-being**	**Other mental health symptoms**
Occupational therapy handicraft intervention							
Edel et al., (2017)	RCT	Low	**Personal & social performance scale (PSP):** no significant difference between groups. **PSP total scores not provided*** **Ergo-assess (basic work skills)*:** M (SD) pretest - M (SD) posttest I = 13.90 (3.51) – 10.96 (3.59) C = 12.72 (5.12) – 11.90 (5.03) Time x group interaction (p = 0.017) at 6 weeks	**Hamilton Depression Rating Scale (HAM-D):** no significant difference between groups reported by study authors. **HAM-D total scores not provided*** **BDI II:** no significant difference between groups reported by study authors. **BDI total scores not provided ***	Not measured	Not measured	**Hamilton Anxiety Rating Scale (HAM-A)** M (SD) pretest - M (SD) posttest (Male sample) I = 19.38 (7.56) – 10.94 (5.07) C = 19.11 (5.61) – 16.35 (5.78) Time x group interaction at three weeks (p = 0.031) **N.B. HAM-A total scores not provided for all time points***

Abbreviations: RCT = randomised controlled trial, OD = other design, I = intervention group, C = control group, OT = occupational therapy, M = mean, SD = standard deviation, BDI = Beck Depression Inventory, RTW = Return to work , SF-36 = Medical Outcomes Study Short Form, WHO-QOL = World Health Organisation Quality of Life Scale

*** The study authors only reported subscale data with significant interaction effects and did not report the full data for all outcome measures**

Table 5: Summary of Reported Effects from Qualitative Data in the Included Studies

First author and year of publication	Type	Quality	Interventions	Time period and Data Collection	Findings
Cooper (2013)	QUAL	Low	'Using Writing as Therapy' a structured brief writing therapy to support identity and self-esteem, was compared with 'Creative Writing' a non-therapeutic group.	Participant observation and interviews over a 12-month period.	Cognitive changes such as increased self-awareness and through exploring/reframing memories, as reported by participants.
Wisenthal et al. (2018)	OTHER DESIGN (MIXED METHODS)	Sufficient	'Cognitive Work Hardening' an intervention designed to support return to work which uses role play, simulation etc. (31 h of intervention over 4 weeks)	Interviews at T2 (4 weeks) and at 3-month follow-up	**Intervention elements considered important for RTW preparation**: Structure, simulation, environment, video use, coaching, feedback, pacing and role-play. **Overall gains from the intervention:** Routine, self-confidence, stamina, increased cognitions, coping skills, pacing skills, self-efficacy.

This review found no evidence for the effectiveness of occupational therapy RTW interventions in improving work readiness or overall health and well-being, and no evidence for the effectiveness of occupational therapy lifestyle interventions in improving occupational performance, function or participation. A lack of evidence of effectiveness is not the same as an intervention being found to be ineffective and may simply mean that sufficient high-quality research has not yet taken place. The current limited evidence in some areas poses challenges for the occupational therapy profession, as practitioners continue to provide theory-based interventions within an evidence-based healthcare system where limited resources are allocated to achieve the best outcomes for service users. Notably, missing from the evidence base are any studies that focus on depression that examine whether individualised client-centred occupational therapy tailored to individual need is an effective intervention.

Previous systematic reviews that have explored whether occupational therapy is effective with generic mental health populations defined as 'serious mental illness' have reported similar findings. For example, strong evidence for return-to-work interventions was reported by both Arbesman and Logsdon (2011) and Noyes, Sokolow and Arbesman (2018) which included the study relating to depression by Hees et al. (2013). Limited evidence for routine development was reported in the systematic review by Gibson, D'Amico, Jaffe and Arbesman (2011) and strong evidence for occupation-based interventions was reported by D'Amico, Jaffe and Gardner (2018), which included the study relating to depression by Chen et al. (2015) included in this review. The included studies in the systematic reviews with generic mental health populations are varied and not all included studies relate to occupational therapy interventions, which makes it difficult for the overall results to be compared. For example, Gibson et al. (2011) and D'Amico et al. (2018) include non-occupational therapy studies, and Noyes et al. (2018) report that their review contains studies that occupational therapy practitioners can provide, which may mean that some of the included interventions are not occupational therapy as defined for this review. Additionally, the included studies in the reviews with generic mental health study populations also include studies of the effectiveness of individualised client-centred occupational therapy tailored to individual need, a notable gap in the evidence base for depression. Finally, with the exception of Noyes et al. (2018), previous systematic reviews on generic mental health populations do not give details about how the reported level of evidence was determined.

Strengths and limitations of the included studies

The studies evaluated a range of occupational therapy interventions, RTW, Lifestyle, handicraft and writing. Overall, the quality of the included studies was good with three out of the four RCTs being judged as either high or sufficient quality. The population studied in this review was adults with a primary diagnosis of depression.

Occupational therapy should be offered if an individual has a need or difficulty associated with activity limitation or restriction in participation (Creek, 2014). In clinical settings it is usual for service users to be screened for appropriateness for therapy (Creek, 2014; Christie et al., 2014). If studies into the effectiveness of occupational therapy include individuals who have not undergone such screening (individuals who may not need occupational therapy), the measurement of effectiveness may be diluted. None of the included studies specified that a participant must have an identified occupational, functional or vocational need or difficulty. Similarly, a systematic review of occupational therapy with people with a diagnosis of psychosis found that occupational need was stipulated in the inclusion criteria for less than a quarter of studies (Inman, 2017). Thus, for both depression and psychosis, this is a significant failing in study design.

Although the study by Hees et al. (2013) met the necessary internal validity, descriptive and statistical criteria necessary to be judged as high quality (Table 3), it lacked some detail regarding frequency, duration and intensity of the intervention. Explicit intervention description is essential to ensure clear conclusions can be drawn and ensure studies can be replicated (Hoffmann et al., 2014). Importantly, it is these descriptions that also enable research to be transferred to practice settings. Occupational therapy intervention schedules or specifications can support this process by detailing the necessary components and delivery details of the intervention which support fidelity (Cook and Birrell, 2007; Inman, 2017). This review also noted little reference to measurement of treatment fidelity or adherence, with only one study (Schene et al., 2007) describing how adherence to treatment was measured. It is important that the amount of the intended intervention actually received is recorded and assessed to increase the reliability and validity of the findings (Breckenridge and Jones, 2015).

All four RCTs in this review had control groups described as non-occupational therapy treatment as usual (TAU). However, critical appraisal highlighted that in two studies (Hees et al. 2013 and Edel et al., 2017) the comparison intervention may not have been a 'true' control and participants may have inadvertently received occupational therapy. Given that there needs to be a clear distinction

between intervention and control in order to measure the effect size (Schäfer and Schwarz, 2019), these comparisons may not have been well-considered. However, as there are few circumstances when it is ethical to deny a routinely offered intervention to participants; studies with true control groups may only be possible in limited situations where such interventions are not routinely offered, such as private clinics.

In order to avoid these ethical challenges many researchers adopt single group pretest-posttest designs (Belli, 2009), such as Wisenthal et al. (2018). This design brings significant drawbacks, including risk to internal validity, such as maturation effects, history and testing effects (Thyer, 2012). Additionally, with no control group causal inferences cannot be made as it is possible that participants may have recovered or improved their level of function and participation naturally or through some other means (Belli, 2009). Therefore, a further potential bias in this review relates to 'regression to the mean', the phenomenon where extreme outcomes tend to be followed by more moderate ones due to chance. Hence, a person who qualifies for a study into depression because of a high score on a depression scale is likely to have a more moderate depression score on a subsequent test, regardless of treatment. The non-RCT OD (Wisenthal et al., 2018), whilst being judged to be of sufficient quality, did not give detail about how this phenomenon was considered. There is a risk that improvements were attributed to the intervention, when they were in fact due to chance (random fluctuations) (Morton and Torgerson, 2003).

A further potential method for circumventing the ethical challenges associated with undertaking RCTs, and to improve upon the single-group design, is to use occupational therapy as both the intervention and the control by comparing newly developed interventions with occupational therapy TAU. However, the choice of control determines whether there is the potential for absolute or comparative treatment efficacy to be produced (Karlsson and Bergmark, 2015). As an approach, comparison with an occupational therapy TAU would be beneficial if occupational therapy TAU was known to be effective. However, since there is little evidence that this is the case for occupational therapy for those with a diagnosis of depression, the research priority is to demonstrate the benefit of occupational therapy compared to no occupational therapy.

Strengths and limitations of this review

This systematic review found only six papers meeting the inclusion criteria. Included studies evaluated a wide range of occupational therapy intervention types. The best evidence synthesis drew outcomes from only three high quality RCTs, one low quality RCT and one OD. Whilst the number of included studies was limited, the rigorous methodology increased the validity of the

review findings. The addition of qualitative data into this review has incorporated service user perspectives.

The aim of occupational therapy is to increase occupational performance, function and participation in activities. All studies in this review included a measure of one or more of these elements; however a total of nine different measures were used. No outcome measure was used more than once in the RCTs across any of the intervention types for any primary or secondary outcome. This prevented meta-analysis which would have further enhanced the findings through statistically combining and integrating the results of the included studies (Moher et al., 2009). It has been recommended that there should be standardised core outcome sets and measurement instruments for any given field to facilitate comparison between interventions and support meta-analysis in future research (Steultjens et al., 2002; Bullock and Bannigan, 2011; Williamson et al., 2017). However, there is currently a lack of consensus on which outcome measurement tools are suitable for occupational therapy intervention studies (Steultjens, et al., 2002) and multiple measures can be necessary because interventions impact across many aspects of a patient's presentation (Bagiella, 2009). Nevertheless, occupational therapy researchers need to carefully consider their choice of outcome measure to ensure meta-analysis is possible in future reviews.

There were no studies evaluating occupational therapy as routinely provided in practice (as individualised client-centred programmes tailored to individuals). This is a serious gap in the evidence base. However, it is particularly challenging evaluating occupational therapy through RCTs in many health settings due to the ethical implications highlighted above, which may account for the lack of research into individualised client-centred occupational therapy. An alternative may be to utilise people on a waiting list for occupational therapy as a control group, which is considered suitable when it is not ethical to deny an intervention (Kielhofner, 2006). This allows those people at the top of a waiting list to form an intervention group and those lower down the waiting list to form a control group, receiving the intervention later, having waited no longer than usual to receive the intervention. At the same time, this allows the researcher to introduce randomisation into the study design, thus getting around the problems presented by pre-test/post-test designs.

It is relatively common for occupational therapy research in mental health to be conducted with generic study populations such as 'severe mental illness' rather than specific mental health diagnoses, such as depression or schizophrenia. Whilst using generic populations may allow easier recruitment of study populations within mental health settings, this does not allow outcomes for specific diagnoses to be considered. This practice contributes to the dearth of condition-specific evidence for the effectiveness of occupational therapy in mental health. Many potentially useful

published papers were excluded from this review for this reason. There are currently limited references to occupational therapy within clinical guidelines for many mental health conditions in the UK. The National Institute of Clinical Excellence (NICE) develop intervention guidelines by considering the key principles of what works, and they base their recommendations on the best available evidence (National Institute for Health and Clinical Excellence, 2014a). Such guidance supports policymakers to make decisions about how to use limited health resources and provides best practice guidance for clinicians. This can result in wide variations in practice and sometimes interventions with minimal impact being delivered to patients (Fisher et al., 2003). Practitioners are therefore required to draw on the literature from the wider range of psychosocial interventions and consider the relevance of this to their practice (Lloyd, et al., 2004). Therefore, researchers should opt for a condition specific study population where possible, with the aim of improving the evidence base for use within clinical guidelines and furthering the evidence base for the effectiveness of occupational therapy.

Due to wide differences between the types of occupational therapy interventions, the best evidence synthesis considered outcomes for each type separately (RTW, lifestyle and handicraft interventions) rather than across outcome type. The studies could have been synthesised and presented by outcome type and interested readers can use Table 4 to evaluate this. For example, despite some lack of consistency in findings between depression scales, three out of the five quantitative studies (Schene et al, 2007; Edel et al., 2017 and Wisenthal et al., 2018) reported statistically significant findings in relation to improvement in symptoms of depression following occupational therapy. Analysing the data by outcome type rather than intervention type would have increased the potential for meta-analysis. However, missing data would still have prevented this. In relation to the data analysis by intervention type, meta-analysis was not possible due to the wide range of outcome measures used.

The included studies in this systematic review originated from five countries, with differing healthcare, sickness benefit and return-to-work provision, all of which may impact upon applicability of the evidence to different settings (Bryman, 2012). The studies investigated very specific occupational therapy interventions which may mean that the findings are not completely transferable to all occupational therapy interventions and settings. Other limitations of this review were the dearth of studies meeting the inclusion criteria and English language restrictions due to the lack of funding for translation which may have excluded some potentially relevant research studies. Additionally, this systematic review did not include grey literature; therefore, it is possible that some potentially useful evidence was missed.

Suggestions for future research

There is limited evidence on the effectiveness of occupational therapy interventions in mental health generally, and concern about this is widely reported (Cook et al., 2009; Gutman, 2009; Bullock & Bannigan, 2011; Gutman, 2011). The Royal College of Occupational Therapists has highlighted a need to further develop the evidence base (Royal College of Occupational Therapists, 2017). Policy makers have a responsibility to ensure limited healthcare resources are used efficiently and effectively. The limited evidence base continues to put occupational therapists and service users at risk from cost-savings due to austerity, since occupational therapy is regarded as optional in some settings. Whilst the indication of effect provided by this systematic review is helpful, gaps in the evidence base need to be urgently filled by further research.

There is an urgent need for true RCTs comparing occupational therapy interventions with no occupational therapy to fill the gap in the evidence base. Researchers should first consider the RCT as the most robust method for effectiveness research (Medical Research Council, 2008) using well-designed and appropriate control groups so causal inferences can be made. Additionally, researchers should, wherever possible, conduct occupational therapy research with diagnosis-specific study populations, to support the synthesis of occupational therapy intervention effectiveness research into clinical guidelines.

Given the lack of evidence relating to the effectiveness of occupational therapy individualised, client-centred interventions as routinely provided in clinical practice, this should be prioritised as a research area. Finally, core sets of outcome measurement instruments for occupational therapy mental health research need to be agreed to support comparison between studies and future meta-analysis.

Conclusion

The overall effectiveness evidence base for occupational therapy interventions for people with a diagnosis of depression is limited. However, this review found strong evidence for the effectiveness of occupational therapy RTW interventions for improving depression symptomology. Limited evidence was found for the effectiveness of occupational therapy RTW interventions for improving work participation. There is currently no evidence for the effectiveness of occupational therapy RTW interventions in improving work readiness or overall health and well-being. In terms of lifestyle interventions, there was limited evidence for the effectiveness of occupational therapy for reducing

anxiety and suicidal ideation in people with a diagnosis of depression and no evidence for the effectiveness of occupational therapy for improving occupational performance, function or participation. These results were in line with the findings of previous systematic reviews of occupational therapy with patients who have severe mental illness. The qualitative components in this review presented additional information to help explain the findings by providing detail in relation to participants perceived gains from occupational therapy interventions and how therapists may enable change. All six studies in this review evaluated a specifically designed occupational therapy intervention, as opposed to individualised client-centred intervention, highlighting a clear gap in the research.

There is an urgent need for large-scale diagnosis-specific research into the effectiveness of occupational therapy interventions for people with a diagnosis of depression. Individualised occupational therapy, as is routinely provided in clinical care, is provided because it is theoretically effective even though there is no good quality research (RCT level) to confirm its effectiveness. As such, occupational therapy does not appear in clinical guidelines. If the occupational therapy profession does not urgently address this gap in research, there is a risk of services being further cut as commissioners continue to make difficult decisions on the best way to spend limited health funding.

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Declarations of interest

None

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