

Abstract

Background: Mindfulness practices provide numerous benefits for individuals with a variety of health issues. Recent research has also highlighted the benefits of mindfulness for health professionals although the potential benefits among physical and occupational therapists have not yet been established.

Objectives: To systematically review the effects of personal mindfulness practices among physical and occupational therapists and students of those disciplines.

Methods: Eligible published articles in English were identified through a literature search of MEDLINE, PsycINFO, Cochrane Library, AMED, and Google Scholar from the inception of databases to November 2015. Titles, abstracts, and full-text articles were screened for the selection of included papers. Articles identified as editorials, correspondences, commentaries, case reports, abstracts alone, and review papers were excluded. All included studies were appraised by relevant quality assessment tools.

Results: Six studies (two qualitative studies, one quantitative study, one mixed-method study, and two experimental studies) met the inclusion criteria. These studies highlighted the potential benefits of mindfulness for physical and occupational therapists; however they should be interpreted with caution due to the small number of relevant studies and methodological limitations.

Conclusions: There is a paucity of studies on the effects of mindfulness among physical and occupational therapists and students of those disciplines; however, the findings of the current studies suggest that mindfulness might be beneficial.

Keywords: Physiotherapists; Occupational Therapists; Mindfulness; Stress; Systematic review

Introduction

Similarly to other healthcare professionals, physical (PTs) and occupational therapists (OTs) commonly suffer from high workload,^{1,2} high burnout rates and occupational stress that negatively impact on their personal health and job satisfaction.^{3,4} Stress has been shown to cause depression, difficulties in concentration and professional effectiveness, and deterioration in service provision among healthcare professionals.⁵⁻⁷

Mindfulness is a self-regulation of people's consciousness of their lived experience and it involves consciously being in-the-moment, without judgment.⁸ Mindfulness practices have their roots in Eastern contemplative traditions and can include many approaches such as yoga or taichi;⁹ mindfulness meditation is the most commonly used and well-documented technique to improve mindfulness.¹⁰ Generally, positive effects of mindfulness meditation have been reported for patients with a variety of pathologies frequently treated by OTs or PTs.^{11,12} For example, mindfulness approaches have been shown to be efficacious in treating anxiety or depression,^{13,14} stress in patients with chronic diseases such as cancer, vascular disease, and multiple sclerosis,¹⁵⁻¹⁷ as well as chronic pain in the general population.^{16,18} Medical and allied healthcare professionals also consider mindfulness as a powerful technique to improve the effectiveness of their own clinical practice.^{19,20} Stress reduction obtained through mindfulness is one of the most popular and well-investigated fields in the context of mindfulness practices, and studies have suggested that positive self-compassion and emotion generated through its practice may account for the observed clinical effectiveness.²⁰⁻²²

OTs and PTs have been increasingly acknowledging the value of a mindfulness approach not only as a means (a component of intervention) to treat symptoms or improve quality of life for patients, but also as a self-care strategy for maintaining their own health and well-being, and increasing work efficiency.^{23,24} In fact, mindfulness can be of particular benefit to PT/OT practice²⁴ as it can assist the experience of awareness of self/sense, and facilitate feelings of self-ease, patience, and self-compassion, as well as an increase in therapeutic presence.²⁵

From an OT and PT student perspective, many encounter challenging situations and suffer from operating in a highly - pressured academic and clinical environment.^{24,26} Some studies have examined the effects of teaching mindfulness practices to students and, have shown a positive impact, particularly in regard to improving concentration and decision making.²⁷⁻³⁰

In general, mindfulness is commonly listed as an elective course in undergraduate curricula in Western countries,³¹ although there is currently no published review of studies that have examined the use of mindfulness by PT's and OT's. Our aim is therefore to perform a systematic review on the personal and academic use and effects of mindfulness specifically among OT and PT professionals.

Review Methods

Four electronic databases (MEDLINE, PsycINFO, Cochrane Library, and Allied and Complementary Medicine Database) were searched for relevant published literature from the inception of databases to November 2015. The keywords used in the search were “mindfulness” OR “meditation”, in combination with a variety of terms to describe OT/PT, such as physical therapy OR physiotherapy OR physiotherapist OR occupational therapy OR occupational therapist OR allied health. In addition a manual search of references found in articles and Google Scholar using the same keywords noted above was conducted to supplement the electronic search. Only full text papers published in English were considered.

The electronic search results were considered for inclusion in our review if they focused on the effects/use of any mindfulness approach to OT/PT or to the relevant OT/PT professional education, regardless of design and method (e.g. empirical qualitative study, quantitative study, mixed method study, or clinical trials including randomized controlled trials). Articles identified as editorials, correspondences, commentaries, case reports, abstracts alone, and review papers were excluded. Of note, when we found dissertations met the inclusion criteria, we additionally checked if there were additional relevant papers in the reference list. Search results were reviewed to remove duplicates. Titles, abstracts, and full-text articles were screened by two reviewers independently, and those papers at each stage (title, abstract and full text) that did not meet the inclusion criteria were excluded. Reviewers reached consensus through discussion. A flow chart demonstrating the study selection process is depicted in Fig. 1.³²

Information on the publication details, study method, participant characteristics, outcome measures, main results, and study limitations of each study included was extracted and organized into a review table (Table 1). Identified studies were appraised using quality assessment tools for research with varied types of methods: *Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies* (Table 2),³³ and *Quality Assessment Tool*

for Before-After (Pre-Post) Studies with No Control Group (Table 3),³⁴ and the *Critical Appraisal Skills Program (CASP) Qualitative Research* checklist (Table 4).³⁵ Both data extraction and study appraisal were completed by one reviewer and confirmed by a second reviewer independently, with a third reviewer utilized to resolve any disagreements deemed necessary. There was no prior protocol or registration published regarding this systematic review.

Results

Search results and general characteristics of included studies

The initial electronic searches retrieved a total of 426 articles, with a further nine articles retrieved via manual searching. After removing duplicates, 346 articles were screened by titles, abstracts, and full-texts. Only six articles from six studies met the criteria,³⁶⁻⁴¹ with four of these six studies published after 2011,^{37,39-41} and five undertaken in North America (USA and Canada).^{36-38,40,41} Various designs were used; a quantitative survey,³⁸ qualitative interviews,^{40,41} mixed-methods (quantitative survey and qualitative interview),³⁹ and Pre-post comparisons.^{36,37} Four of six studies focused on teaching mindfulness for OT/PT students,^{36,37,39,40} while the remaining two centred on the use of mindfulness in professional OT or PT practices.^{38,41} Only two studies investigated insights into PTs' personal experience of mindfulness practice.^{38,40}

Quality assessment

The qualitative studies (see Table 4) generally demonstrated a clear research aim and rich findings. Both observational studies (cross-sectional studies) (see Table 2) and experimental studies (Pre-Post comparison) (see Table 3) were of a more varied methodological rigor, with the presence of small sample sizes, no longitudinal change observed (or multiple times of measures after the baseline intervention), and lack of consideration of confounders such as demographic variables (e.g. age and sex) and symptoms. Observational studies examined a variety of mindfulness approaches, such as meditation, yoga, prayer, three -minute breathing space, and informal mindfulness. Interventions ranged from an eight-week online course to a fifteen-week onsite training program.

Key findings

Overall, reviewed studies reported positive effects on OTs'/PTs' personal use of mindfulness, and for mindfulness education programs with OT/PT students. Mindfulness was helpful for

OT students with regard to better understanding of themselves, more appropriate response to their demanding personal and professional situation as well as enhancement of self-care.^{37,39,40} In addition, mindfulness training was found to improve PT students' performance of clinical practice, as several aspects of mindfulness are suitable for incorporation into PT practice such as focusing on one's breath (to separate from the emotions) and facilitating solving problems objectively as well as connecting with patients' psychosocial needs.⁴⁰

Whilst undertaking a fifteen-week course of occupational therapy with community health, health promotion, and wellness content, only 11% of students chose to restore a healthier balance of activities through yoga/meditation. Importantly however, students who used meditation were leaders in community service health promotion and were successful in meeting their own personal wellness goals.³⁶ Both UK and Canadian studies reported that mindfulness techniques were most popular among OT students; with mainly informal mindfulness practice utilized due to the limited time available during daily study activities.^{37,39} The majority of OT students were likely to continue learning about and using mindfulness in their daily lives.^{37,40} In addition, Canadian OT students achieved improvements in mindfulness knowledge and self-care after an eight-week online mindfulness course, highlighting that this mode of delivery was effective for learning mindfulness practices.³⁷

Apart from the use and effects of mindfulness from the perspective of OT students, practicing OTs suggested that they understood and appreciated the importance of both self-care by mindfulness which can protect their well-being, and the provision of effective treatments to patients via management of focused thoughts and feelings, active listening, being non-judgmental, and being attentive to the patient's needs.⁴¹ Two studies further demonstrated that mindfulness was beneficial for management of stress for both student and practicing OTs.^{39,41} Mindfulness practiced in the middle of a stressful situation was suggested to be most effective.³⁹

Two studies focused on practicing OTs/PTs and their personal use of mindfulness.^{38,41} Among healthcare professionals, OTs have a more positive attitude towards mindfulness meditation, followed by PTs and physicians.³⁸ Older OT professionals had a more positive attitudes towards meditation than younger professionals and PTs.^{38,41} Moreover, being a mindfulness meditator was the strongest predictor for using the practice clinically.³⁸

Discussion

This is the first systematic review that has evaluated studies regarding the personal use and effects of mindfulness among OTs/PTs as well as the teaching of mindfulness in OT/PT educational programs. The findings suggest that mindfulness can help OTs/PTs manage their stress, improve self-care, and further maintain their sense of well-being. Not surprisingly, OTs/PTs are supportive of the use of mindfulness with personal use and increasing age being predictors of using mindfulness in practice. The mindfulness training programs and personal use of mindfulness demonstrate positive experience in OT/PT students.

Only six studies have been published on the personal use and effects of mindfulness in OTs/PTs and on the teaching of mindfulness training for OT/PT students to date. Four methodologies were employed in these six studies. The range of mindfulness approaches used across the studies made it difficult to synthesize findings to draw any conclusions on which practice was the most effective. Other methodological limitations noted were small sample sizes, lack of control groups, and no follow-up data, which limit the utility of findings from this review. It is important to note that the included studies focused on OTs and PTs, primarily in North America and outside a specific clinical setting. These review findings therefore need to be viewed with some caution, as they may be not suitable to generalize to OTs/PTs in other countries, or working in different clinical settings (i.e. out-patient clinics or sports settings). Accordingly, well-designed studies with large representative samples of OTs/PTs currently practicing in different countries are recommended.

Despite the limitations of the included studies, numerous implications concerning clinical practice, future research, and educational training are indicated in this systematic review. First, the included studies indicate a disparity of the exploration of OTs and PTs' personal use of mindfulness. The consistently positive responses of OT/PT professionals to mindfulness practice provide some evidence that studying the personal use and effects of OTs/PTs and OT/PT students is a valuable field, and more research is warranted regarding this topic. Some examples of important areas required to be explored in future studies include utilization of mindfulness among OT/PT professionals, translation from the positive outcomes of personal mindfulness practice into more effective OT/PT patient care, the perceptions and motivations of OTs/PTs and OT/PT students with regard to the application of personal use of mindfulness

to the clinical practice, and the potential negative effects of mindfulness for OT/PT professionals.

Second, although a number of mindfulness approaches were identified in this review, few details in regards to the demographics of participants, utilization, effectiveness, and users' decision-making of these specific approaches were reported in the context of OT/PT professions. More exploration of the differences in outcomes between OT/PT professionals who practice different mindfulness approaches and/or no mindfulness practices is recommended.¹²

Third, the positive impact of mindfulness on OT/PT professionals highlighted in this review as well as established evidence regarding the effectiveness of mindfulness for therapists' stress, leads to a significant topic for future research – exploration of self-care practices for the healthcare workforce.⁴² The effectiveness of the treatments provided to patients by OT/PT professionals partly depends on a healthcare practitioner's own physical and mental health.⁴³ Mindfulness practice has been shown to increase self-care in healthcare workers by enhancing awareness and as a strategy for coping with workplace demands. Healthcare professionals are then more able to provide more positively for their clients.^{20,44} Self-care provided by mindfulness practice for OTs/PTs and OT/PT students is therefore a promising field to conduct clinical trials and health services research,²⁴ given the current lack of research on the self-care via mindfulness in OT/PT professionals.

Last, given a range of benefits in clinical practice and personal wellbeing to OT/PT students from mindfulness training programs, a useful area for future studies would be the investigation of the mindfulness training in OT/PT education. In addition to the need to study specific mindfulness approaches for OT/PT professionals, more studies are necessary to explore if mindfulness approaches are prioritized for inclusion in OT/PT undergraduate/postgraduate/pre-registration degrees courses. Furthermore, due to the findings reported in the included studies that OT/PT students have limited time to practice mindfulness, the timing of mindfulness approaches within curricula is another aspect for consideration when organizing a mindfulness course for the OT and PT professions.

Conclusion

While there is a dearth of research on the effects and personal use of mindfulness on OTs/PTs as well as the educational programs for these professions; the current literature base is supportive of the beneficial effects of mindfulness for PTs/OTs from both personal and professional perspectives.

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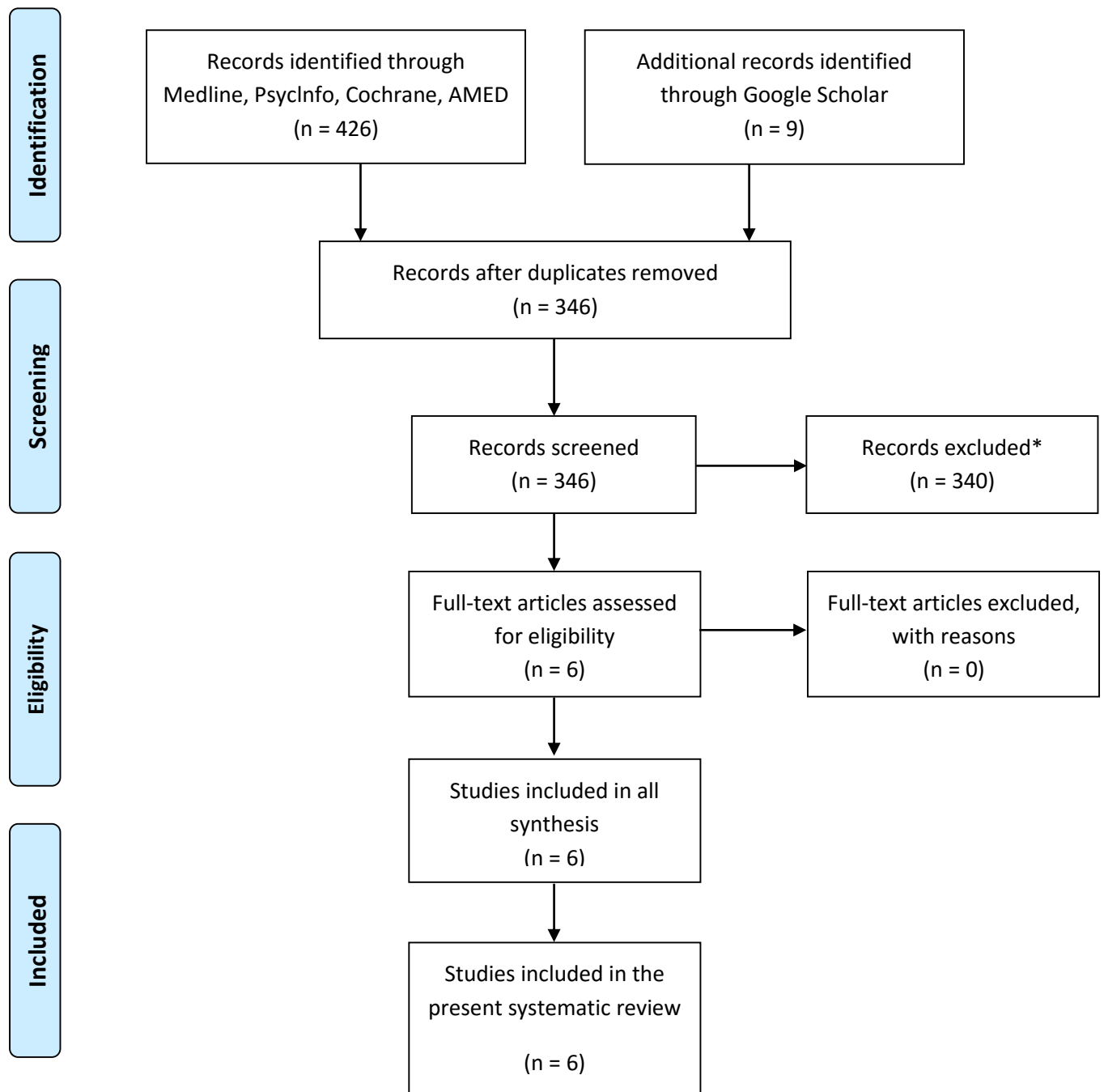
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Fig 1. PRISMA Flow Diagram



*excluded as review papers, case reports, editorials, correspondences, commentaries, abstracts alone, and unpublished literature

Table 1 Characteristics of included studies

Author/Year	Country	Methods	Participant characteristics	Types of mindfulness	Main results	Study limitations
Scott AH 1999	USA	The pre- and post-training (a 15-week course) comparison via quantitative surveys	OT students (n: N/A)	Yoga and relaxation	11% of OT students choose to restore a health balance of activities via yoga/meditation; mindfulness is effective in improving physical health	N/A
Schoenberger NE et al 2002	USA	National mail survey	PT (n = 354); 71% female, mean age 39, mean years in practice 14; OT (n=305) 92% female, mean age 38, mean years in practice 12	Meditation, prayer, hypnosis, yoga, and Tai Chi	OT's held more positive attitude toward meditation than PT's and physicians; being a meditator is the strongest predictor of using mindfulness clinically; Significant association exists between age and positive attitude to meditation	Lack of information on the prayer approach to the patients; low response rate 17%
Stew G 2011	UK	Semi-structured interviews, evaluation questionnaires, and group emails	Current pre-registration students in OT (n=20), PT (n=3) and podiatry (n=3)	Body scan, sitting meditation, 3-minute breathing space, and informal mindfulness	Limited time available to mindfulness; OTs prefer informal approach than formal meditation; benefits include self-awareness, insight into habitual thought patterns, stress relief	Small sample of participants
Reid DT 2013	Canada	An 8-week online mindfulness curriculum and the pre- and post-training comparison via quantitative	First-year master's-level OT graduate students in at an urban and research- intensive university (n: 15). All female, cultural backgrounds include Canadian (n = 9), Asian (n = 3), European (n =	Formal meditation; informal practice (mindful communication, compassion); readings on conceptualizations	Limited time available to mindfulness; OTs prefer informal approach and formal meditation than readings; Mindfulness can be taught to OT students online; may help	Small sample size; influence of social desirability in answering survey; no evaluation of commitment to

		surveys	2), and Hispanic (n = 1)	of mindfulness	OT students manage self-care	change practice
Willgens AM 2013	USA	Qualitative study	Employed PT (n=8) who failed one clinical course in their final year of study, remediated, and graduated from a PT program within the last five years. Age range 24 - 30 years, five males and three females (two Asian and six Caucasians)	N/A	Mindfulness can improve PT students' clinical practice; helps connect with their patients' psychosocial needs; and helps solve problems objectively via focusing on their breath	No introduction to the terminology of mindfulness; the possibility of using reflection before mindfulness approach in some participants
Reid DT et al 2013	Canada	Quantitative surveys and qualitative questions	OT (n=16) working full-time in clinical mental-health positions in facilities, mean age 39 years; 88% female, 75% Caucasian, mean years in practice 12	N/A	Mindfulness enable OTs to work effectively; help manage OTs' thoughts and feelings, relieve stress, keep focused, non-judgmental, and care for the patients' needs; can protect OTs' own health	Small sample size; no specific measurement tools employed to represent clinician mindfulness and well-being

Table 2 Quality assessment for observational studies

Criteria	Scott AH/1999	Schoenberger NE et al /2002	Reid D et al/2013
1. Was the research question or objective in this paper clearly stated?	No	Yes	Yes
2. Was the study population clearly specified and defined?	No	Yes	Yes
3. Was the participation rate of eligible persons at least 50%?	N/A	No	Yes
4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?	N/A	Yes	Yes
5. Was a sample size justification, power description, or variance and effect estimates provided?	No	No	No
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?	Yes	Yes	Yes
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?	No	Yes	Yes
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?	Yes	Yes	Yes
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	Yes	Yes	Yes
10. Was the exposure(s) assessed more than once over time?	No	No	No
11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?	No	Yes	Yes
12. Were the outcome assessors blinded to the exposure status of participants?	Not reported	Not reported	Not reported
13. Was loss to follow-up after baseline 20% or less?	N/A	N/A	N/A
14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?	No	Yes	No

Table 3 Quality assessment for Pre-Post studies with no control group

Criteria	Scott AH/1999	Reid DT/2013
1. Was the study question or objective clearly stated?	No	Yes
2. Were eligibility/selection criteria for the study population pre-specified and clearly described?	Not reported	Yes
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?	Not reported	No
4. Were all eligible participants that met the pre-specified entry criteria enrolled?	Not reported	Yes
5. Was the sample size sufficiently large to provide confidence in the findings?	Not reported	No
6. Was the test/service/intervention clearly described and delivered consistently across the study population?	Yes	Yes
7. Were the outcome measures pre-specified, clearly defined, valid, reliable, and assessed consistently across all study participants?	Yes	Yes
8. Were the people assessing the outcomes blinded to the participants' exposures/interventions?	Not reported	Not reported
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis?	Not reported	Not reported
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided p values for the pre-to-post changes?	Yes	Yes
11. Were outcome measures of interest taken multiple times before the intervention and multiple times after the intervention (i.e., did they use an interrupted time-series design)?	No	Yes
12. If the intervention was conducted at a group level (e.g., a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?	No	No

Table 4 Quality assessment for qualitative studies (CASP)

Criteria	Stew G/2011	Willgens AM/2013	Reid DT et al/2013
Was there a clear statement of the research aim?	Yes	Yes	Yes
Is a qualitative methodology appropriate for the research?	Yes	Yes	Yes
Was the research design appropriate to address the aims of the research?	Yes	Yes	Yes
Was the recruitment strategy appropriate to the aims of the research?	Yes	Yes	Yes
Was the data collected in a way that addressed the research issue?	Yes	Yes	Yes
Has the relationship between the researcher and participants been adequately considered?	Yes	No	No
Have ethical issues been taken in to consideration?	Yes	Yes	Yes
Was the data analysis sufficiently rigorous?	Yes	Yes	Yes
Is there a clear statement of findings?	Yes	Yes	Yes
How valuable is the research?	Very	Moderately	Very