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Yoga for depression: the research evidence

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Yoga for depression: the research evidence

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Abstract

Background

Yoga-based interventions may prove to be an attractive option for the treatment of depression. The aim of this study is to systematically review the research evidence on the effectiveness of yoga for this indication

Methods

Searches of the major biomedical databases including MEDLINE, EMBASE, CINAHL, PsycINFO and the Cochrane Library were conducted. Specialist complementary and alternative medicine (CAM) and the IndMED databases were also searched and efforts made to identify unpublished and ongoing research. Searches were conducted between January and June 2004. Relevant research was categorised by study type and appraised. Clinical commentaries were obtained for studies reporting clinical outcomes.

Results

Five randomised controlled trials were located, each of which utilised different forms of yoga interventions and in which the severity of the condition ranged from mild to severe. All trials reported positive findings but methodological details such as method of randomisation, compliance and attrition rates were missing. No adverse effects were reported with the exception of fatigue and breathlessness in participants in one study.

Limitations

No language restrictions were imposed on the searches conducted but no searches of databases in languages other than English were included.

Conclusions

Overall, the initial indications are of potentially beneficial effects of yoga interventions on depressive disorders. Variation in interventions, severity and

reporting of trial methodology suggests that the findings must be interpreted with caution. Several of the interventions may not be feasible in those with reduced or impaired mobility. Nevertheless, further investigation of yoga as a therapeutic intervention is warranted.

Keywords: yoga, depression, depressive disorder, systematic review

Introduction

Mental health problems such as depression, anxiety and insomnia are amongst the most common reasons for individuals to seek treatment with complementary therapies. Consequently, several surveys have been conducted which focus on this area.

Davidson and colleagues carried out a study to determine the frequency of psychiatric disorders in patients receiving complementary medical care in the UK and the USA (Davidson et al., 1998). The authors found that psychiatric disorders were relatively frequent. Based on rates of lifetime psychiatric diagnoses, a total of 74% of the British patients and 60.6% of the American patients had a diagnosis. Major depression (52% of UK and 33.3% of USA) and any anxiety disorders (50% of UK and 33.3% of USA) were the commonest lifetime diagnoses. Rates of current psychiatric disorder were 46% of the UK patients and 30.3% of the USA patients. Six per cent of the total suffered from major depression and 25.3% of the total met the criteria for at least one anxiety disorder.

Unutzer et al. (2000) used data from a national household telephone survey conducted in 1997-98 in the USA to examine the relationship between mental disorders and the use of complementary therapies. The sample of 14,985 included those reporting psychological distress or mental health service use in addition to non-distressed nonusers. Analysis of the 9,585 completed interviews indicated a high rate of use of complementary therapies in adults who met criteria for common psychiatric disorders. 22.4% of respondents who met the criteria for major depression had used complementary and alternative medicine during the past 12 months. A similar survey of a nationally representative sample of 2055 respondents revealed that 7.2% reported suffering from "severe depression" (Kessler et al., 2001). A total of 53.6% of those with severe depression reported using complementary and alternative medicine for treatment in the past 12 months.

A trend towards increasing use of complementary therapies among people with major depression was demonstrated by a study conducted in Canada (Wang et al., 2001). Analysis of data from the National Population Health Surveys indicated that the prevalence of use in those with major depression was 7.8% (19.4% including chiropractic) in 1994-95 and 12.9% (23.8% including chiropractic) in 1996-97. Finally, the findings of a recent Australian postal survey of 6618 randomly selected adults suggested that self-help strategies including complementary therapies were very commonly used to cope with depression, particularly in mild-moderate psychological distress (Jorm et al., 2004).

A range of therapeutic approaches are available for the management of depressive disorders but patients may turn to complementary therapies due to adverse effects of medication, lack of response or simply preference for the complementary approach.

Yoga

Yoga has its origins in Indian culture and in its original form consisted of a complex system of spiritual, moral and physical practices aimed at attaining 'self-awareness'. Hatha yoga, the system on which much of Western yoga is based has 3 basic components, asanas (postures), pranayama (breathing exercises) and dhyana (meditation). The postures involve standing, bending, twisting and balancing the body and consequently improve flexibility and strength. The controlled breathing helps to focus the mind and achieve relaxation while meditation aims to calm the mind (Riley, 2004). Although yoga has its origins in Indian religion, it can be practised secularly and has been used clinically as a therapeutic intervention. Several explanations based on Western physiology have been proposed to account for potential effects of yoga in the treatment of various conditions. These can be summarised as modulation of autonomic nervous tone and consequent reduction in sympathetic tone, activation of antagonistic neuromuscular systems, which may increase the relaxation

response in the neuromuscular system, and stimulation of the limbic system primarily by meditation (Riley, 2004).

A national survey conducted in the US demonstrated that 7.5% of respondents had used yoga at least once in their lifetime and 3.8% had used it in the previous year. Users were more likely to be female, college educated and urban dwellers and use was for both wellness and specific health conditions (Saper et al., 2004). The authors point out that despite greater prevalence of use than other CAM therapies such as acupuncture and homeopathy, yoga receives less coverage in the Western biomedical literature. Additionally, many of the trials of yoga are small and the results difficult to generalise.

However, a recent bibliometric analysis has demonstrated an increase in publication frequency of research on the clinical application of yoga and growing use of randomised controlled trials (Khalsa, 2004). Clinical trials were located on the use of yoga for depression, anxiety, cardiovascular conditions (e.g. hypertension, heart disease), respiratory problems (e.g. asthma), diabetes and a variety of others. Systematic reviews of these trials have not yet been conducted although a systematic review of trials of yoga in epilepsy (Ramaratnam and Sridharan, 2000) concluded that insufficient robust evidence was available. No systematic reviews of yoga in depression have been published.

Aim and objectives

The aim of this study was to evaluate the evidence on the effectiveness of yoga for the treatment of depression

Methods

Summary of the search strategy

A comprehensive search for clinical research was carried out. Systematic searches were conducted on a range of databases, citations were sought from relevant reviews and several websites were also included in the search, including those of MIND and the Mental Health Foundation.

Databases searched

General databases:

CINAHL, Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects, EMBASE, IndMED (Indian Medlars Centre), MEDLINE (and PubMed), PsycINFO.

Specialist CAM and condition based databases:

AMED, CISCOP, Cochrane Depression, Anxiety and Neurosis (CCDAN) Review Group register.

Yoga websites:

International Association of Yoga Therapists (<http://iayt.org/>)

Yoga Biomedical Trust (<http://www.yogatherapy.org/>)

Yoga Research and Education Center (<http://www.yrec.org/>)

All searches, except that of the CCDAN register and IndMED, were conducted between January to June 2004 and covered databases from their inception. The CCDAN register was searched in December 2004 and IndMED was searched in July 2005.

Search terms

The basic search terms for yoga were Yoga/ or Yoga.mp or Yogic.mp or Pranayama.mp or Dhyana.mp or Asanas.mp Terms for depression were Exp depression or Exp depressive disorder(s) or Exp dysthymia or Exp dysthymic disorder(s) or Depress* or Dysthym* or Exp affective disorder(s)
Additional terms used as required included Yog*, Affective, Depressi*, Mood

Search strategies were adapted for each of the databases searched. Efforts were made to identify unpublished and ongoing research using relevant databases such as the National Research Register (UK) and Clinicaltrials.gov (US).

Filtering

Relevant research was categorised by study type according to a flow-chart system developed for this project. Animal research and basic lab-based research were not included in the categorisation process.

Selection criteria

Types of studies

All clinical studies, whether controlled trials, uncontrolled studies or observational studies, were identified. Only randomised controlled studies were selected for inclusion in this review. Abstracts were excluded. Attempts were also made to locate relevant qualitative studies.

No language restrictions were imposed at the search and filtering stage and translations would have been obtained for any potentially relevant studies in languages other than English.

Types of participants

Participants with depression or a depressive disorder.

Types of intervention

Yoga and yoga-based exercises. Studies that involved interventions based solely on meditation and those involving complex or multiple interventions (e.g. MBSR – mindfulness based stress reduction programmes) were excluded.

Types of outcome measures

Depression rating scales

Data collection and analysis

Data was extracted systematically using a specially designed data extraction form. Data extracted included details of selection criteria and procedure, the participants, the intervention and any comparison or control intervention, aspects of the methodology and outcome measures and results.

Clinical trials were appraised using a standardised appraisal framework specifically developed for this project and based on criteria recommended in the Centre for Reviews and Dissemination Report *Undertaking Systematic Reviews of Research on Effectiveness* (2001). Criteria included method of randomisation, allocation concealment and level of blinding (if relevant), baseline comparison of characteristics, method of dealing with missing values, loss to follow-up/withdrawals, measures of compliance and outcomes measures reported. For each study, data extraction and appraisal were conducted independently by two researchers and any disagreements or discrepancies were resolved by discussion. Where consensus could not be obtained, a third reviewer was available for consultation.

Clinical commentaries

Clinicians with relevant training and experience were asked to comment on each study focusing on clinical relevance and practical issues. Commentary frameworks were specifically developed for this project and these incorporate a

number of closed and open questions with space for further comments.

Summaries of these commentaries are provided in the table of studies (Table 1).

Main results

Searches of the databases resulted in a total of 342 citations for initial screening (numbers do not include searches of the yoga websites). Screening resulted in the identification of 35 potential clinical trials, which were retrieved for closer examination. Of these, 30 did not meet the inclusion criteria and these are listed below together with the reasons for exclusion.

A total of 5 randomised controlled trials are included in this review (Broota and Dhir, 1990, Janakiramaiah et al., 2000, Khumar et al., 1993, Rohini et al., 2000, Woolery et al., 2004), each of which utilised different forms of yoga interventions. These trials are presented in Table 1 together with an appraisal of the reported methodology and comments on clinical relevance. No studies in languages other than English were located.

Excluded studies:

Study	Reason for exclusion
Girodo, 1974, Janakiramaiah et al., 1998, Kaye 1985, Kessell, 1994, Naga Venkatesha Murthy et al., 1997 and 1998	No control group
Berger and Owen, 1988; Berger and Owen, 1992; Blumenthal et al., 1989; Blumenthal et al., 1991; Harvey, 1983; Khasky and Smith, 1999; Netz and Lidor, 2003; Ray et al., 2001; Schell et al., 1994	Healthy volunteers
Kawano, 1999	Abstract only but measures

	general mood, no specific measure of depression
Sridevi and Krishna Rao, 1996	Menstrual distress, no specific measure of depression
Bedard et al., 2003 (brain injuries); Galantino et al., 2004 (back pain); Manocha et al., 2002 (asthma); Massion et al., 1997 (cancer); Oken et al., 2004 (multiple sclerosis); Robinson et al., 2003 (HIV)	Primary focus on treatment of medical/physical condition and levels of depression measured as one of range of outcomes
Cohen et al., 2004 (cancer)	Focus on psychological outcomes but low depression scores at baseline
Shapiro et al., 2003 (cancer)	Primary outcome measure sleep disturbance not depression
Platania-Solazzo et al., 1992	Complex intervention – yoga, massage and progressive muscular relaxation
Shapiro et al., 1998	MBSR not yoga (and in healthy volunteers)
Teasdale et al., 2000	Mindfulness-based cognitive therapy not yoga
Monti unpublished (cancer)	Mindfulness-based art therapy not yoga
Specia et al., 2000 (cancer)	Focus on psychological outcomes but MBSR not yoga

Summary of the studies

Broota and Dhir (1990) reported the results of a randomised controlled trial of two relaxation techniques, one of which is adapted from yoga, in 30 outpatients diagnosed with mainly neurotic or reactive depression and selected by a psychiatrist. Broota relaxation (yoga-based) and Jacobson's progressive relaxation technique were compared against the control intervention, which was to narrate present complaints and state of mind. The interventions were given for short periods over 3 consecutive days. Limited methodological details are reported: the method of randomisation is unknown and a baseline comparison of groups was not reported. Positive results were obtained for both treatment groups compared with the control intervention. The Broota technique was reported to be more effective. However, outcomes were based on percentage symptom reduction measured using a symptom checklist developed for the trial, completed by the patient before and after each session. As blinding was not feasible and the outcomes self-reported, some bias is likely to have been introduced. The attrition rate was low (1 patient per group) but this would be expected with a short intervention such as this. No difficulties with these programmes or with associated adverse effects with the exception of fatigue were reported. However, as the participants were all under 50 years of age, there are some limitations with generalising the results to the wider population.

The effectiveness of Shavasana, which consists of rhythmic breathing and relaxation, has been studied in cases of severe depression (Khumar et al., 1993). A total of 50 female university students were randomised to either a group that practised Shavasana for 30 minutes daily for 30 days or to a group that received no intervention. The Amritsar Depression Inventory and Zung Depression Self Rating Scale were used for the initial diagnosis and the latter scale was also used as one of the outcome measures. There was a significant reduction in depression score mid and post treatment for the yoga group but not for the control group. A between group comparison was non-significant at pre-treatment but had reached significance at mid and post treatment. There were no adverse

effects. However, as with the previous study, basic details of the methodology were not reported including loss to follow up and withdrawals.

Janakiramaiah et al. (2000) conducted a triple arm RCT involving 45 patients with a DSM-IV diagnosis of melancholic depression (score of 17+ on Hamilton Rating Scale for Depression) recruited consecutively. The three interventions were Sudarshan Kriya Yoga (SKY), ECT (electroconvulsive therapy) and drug therapy (imipramine) for 4 weeks. SKY consists of 3 sequential components based on specified rhythms of breathing. Significant reductions in Beck Depression Inventory (BDI) and Hamilton Rating Scale for Depression (HRSD) for all 3 groups were achieved and although the response to SKY did not match that achieved with ECT, it was comparable to that achieved with drug therapy. Respective remission rates were SKY 67%, ECT 93% and drug therapy 73%. Again various methodological details, such as method of randomisation, are unknown. No adverse effects were reported.

SKY was also the subject of a study by Rohini et al. (2000). The inclusion criteria and size of the study were similar to those of the study by Janakiramaiah et al. (2000). Thirty participants, each with major depressive disorder (DSM-IV, score of 18+ on HRSD), were enrolled in the study. The overall aim was to compare full SKY against partial SKY (full SKY without cyclical breathing). Concealment of allocation and blinding of assessors on this occasion were adequate and positive results were still obtained with a non-significant reduction in total scores for both groups. However, more full SKY than partial SKY responded based on 50% or greater reduction in BDI total scores.

In the most recent study, Woolery et al. (2004) tested a short-term course of Iyengar yoga in patients with mild depression as measured using BDI (scores of 10-15) but without a psychiatric diagnosis. Iyengar yoga is based on the teachings of B.K.S. Iyengar who considered specific asanas and sequences of asanas to be particularly effective for alleviating depression. The asanas

recommended are those that involve opening and lifting of the chest, inversions and vigorous standing poses. The 28 adult volunteers, all aged less than 30 years were randomly assigned to two 1-hour yoga classes each week for 5 weeks or to a waiting list control group. Methods of randomisation, allocation concealment and blinding of assessors were not reported. A total of 5 patients withdrew (3 out of 13 in the yoga group, 2 out of 15 in the control group), a significant proportion in a small trial such as this and the reasons were not given. However, a significant reduction in BDI and State Trait Anxiety Inventory (STAI) was observed in the yoga but not in the control group who had received no intervention. The effects emerged by the middle of the course and were maintained at the end.

From the findings of these studies it appears that yoga-based interventions may have potentially beneficial effects on depressive disorders. However, several aspects require consideration. Firstly, the interventions varied incorporating a variety of asanas and/or breathing exercises. Therefore, it is not possible to assess which of these interventions or which aspect of each intervention is most effective. The yoga methods used were well-described with the exception of the two studies of SKY. For a full description of SKY, the authors of these papers direct the reader to either previous reports or a demonstration video (Janakiramiah et al., 2000; Rohini et al., 2000). Rhythmic breathing did, however, form an important component of the intervention in 4 of the trials (Broota and Dhir, 1990; Janakiramiah et al., 2000; Khumar et al., 1993; Rohini et al., 2000). Secondly, the levels of depression being treated ranged from mild to severe with different measures being used to diagnose and/or assess severity. Finally, basic details of trial methodology were not reported. Thus, methods of randomisation are unknown and while it is not possible to blind participants or care givers to the intervention, blinding of assessors takes on a greater significance and was either not ensured or not reported except in one study (Rohini et al, 2000). Consequently, the findings must be interpreted with caution and for this reason, a meta-analysis was not considered appropriate.

Other considerations include the feasibility of some of the interventions in the older patient or those with reduced or impaired mobility. Adverse effects were not reported with the exception of breathlessness and fatigue in those who had not previously exercised in one study (Broota and Dhir, 1990) but the participants in two of the studies were less than 30 years of age (Khumar et al., 1993 and Woollery et al., 2004) and none of the participants in the yoga interventions in any study were over 50 years of age. With regard to other potential safety issues, a brief survey of published literature reveals that a small number of cases of adverse psychological effects have been reported (Hansen, 1980; Yorston, 2001) although these appear to be related specifically to meditation. Other reports of single cases have suggested that serious adverse events are possible (e.g. Hanus et al. 1977, Vogel et al., 1991 Mattio et al., 1992, Margo et al., 1992, Fong et al., 1993, Cohen et al., 1995 Biswas et al., 2002, Johnson et al., 2004). However, these problems are likely to be rare based on the limited number of case reports in the literature. Nevertheless, in the absence of systematic evaluations of the risks and while practice of yoga is often without the knowledge of the health care professional, any adverse events are likely to be underreported and any risks difficult to assess. The recommendation that any exercise programme should only be undertaken on the advice of a health professional appears reasonable.

The final consideration is related to compliance and motivation of those with depression to participate in programmes such as those reported in these trials. Low levels of attrition were reported in 2 studies (Broota and Dhir, 1990; Woolery et al., 2004) but attrition rate was not reported in the remaining studies, therefore it is difficult to comment on this aspect. An exploratory study by Grover and colleagues (1989) of 186 'neurotic' patients compared those who completed a 4-6 week yoga programme with those who dropped out before completion. The only difference between dropouts and nondropouts was in the severity of illness at intake, with those with more severe symptoms being more likely to continue

with the programme. Initial attitude to yoga was not a contributory factor. This study was conducted some time ago and in view of the lack of qualitative studies in this field, a further exploration of this aspect particularly related to those participating in programmes in a range of contexts would probably prove valuable. However, even with conventional management such as drug therapy, discontinuation of treatment for depression is a considerable problem; Linden et al. (2000) reported rates of termination of antidepressant treatment of between 31-48% in the first 10 weeks while Lawrenson et al. (2000) reported that over 50% of patients had ceased treatment in the first 6 weeks.

Conclusions

Overall, the initial indications are of potentially beneficial effects of yoga interventions on depressive disorders. However, variation in the interventions utilised and in the severity of the depression reported was encountered in the studies located together with a lack of details of trial methodology. Consequently, the findings must be interpreted with caution. A further consideration is that of the feasibility of some of the interventions in those with reduced or impaired mobility as the majority of participants in the studies were young and relatively fit. Nevertheless, yoga-based interventions may prove to be an attractive option for the treatment of depressive disorders. As highlighted previously, yoga is non-pharmacological, appears to have minimal adverse effects if practised as recommended and enjoys international acceptance (Ramaratnam and Sridharan, 2000). Thus further investigation of yoga as a therapeutic intervention in depressive disorders is warranted.

The aim of future studies should be to identify which of the potential yoga-based interventions is most effective and what levels of severity of depression are likely to respond to this approach. Systematic reviews on the effect of exercise in general on depression have reported differing conclusions: Craft and Perna, 2004 and North et al., 1990 concluding that exercise results in overall benefit while Lawlor and Hopker (2001) concluded that the evidence was insufficient.

This topic is currently being revisited as a Cochrane review is in preparation (Lawlor and Campbell, 2000). The recent NICE guidance on the management of depression provides support for “structured and supervised exercise” particularly in those with mild to moderate depression (NICE, 2004). Consequently, an assessment of the comparative effectiveness of anaerobic exercise (such as yoga) and aerobic exercise in depressive disorders, both in the short and long term would also prove valuable.

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