

Review of the Effects of Yoga on People with Schizophrenia

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Abstract

Background: Schizophrenia is a major type of psychotic disorders which affects around 24 million people worldwide. There is a pressing need to explore potentially effective treatment modalities to alleviate stress and stress-related factors in people with schizophrenia. Among various possibilities, yoga is likely to be a promising approach.

Aim: This study reviewed four RCTs on the effects of yoga as a stress management modality for schizophrenic clientele.

Results: The results showed that yoga had positive impacts on reducing stress, anxiety and symptoms as well as enhancing social and occupational functioning and quality of life.

Conclusion: As for evidence-based practice, clinicians should consider prescribing or recommending yoga to individuals with schizophrenia when the resources such as availability of qualified yoga coaches and places for yoga practice are feasible.

Keywords: Effects; Yoga; Schizophrenia; Review

Introduction

Psychoses are the disorders of mental function and behavior. They are serious in nature and lead to great disruptions to the functioning capacity of the sufferers which necessitate active and long-term medical and psychosocial interventions [1]. Schizophrenia is a major type of psychotic disorders which affects around 24 million people worldwide. About seven per thousand of the adult population suffer from this chronic mental illness. While schizophrenia is treatable especially in its initial stages, around 90% of patients in developing countries are left untreated. It in turn contributes to the chronicity [2].

Although pharmacological treatment is predominately adopted for schizophrenia, some limitations do exist. Many patients have relapsing and remitting episodes even with medication [3]. Presence of disgusting side-effects is a main factor leading to poor drug compliance [4].

Besides, pharmacological treatment primarily aims at symptom control. It however focuses less on addressing the multiple psychosocial causes of schizophrenia. These causes can be grouped into predisposing factors, precipitating factors and perpetuating factors [5]. Predisposing factors are the elements which determine the vulnerability to develop the illness. Precipitating factors are events which appear to have triggered the illness. Perpetuating factors are those prolonging the illness after its onset. Stress is associated with all of these 3 groups of factors. A stress-diathesis model can be adopted for explanation [6]. In this model, a constitutional or physiological predisposition (diathesis) interacts with the environment and life events (stressors) to trigger psychological disorders. The greater the underlying susceptibility to different kinds of psychopathology (vulnerability), the less stress is required to trigger the illness. People with schizophrenia have had an underlying vulnerability to psychosis, negative symptoms, and poor outcome. Such vulnerability is aggravated by various types of internal and external risk factors such as anxiety. Stress is well regarded as external or environmental factors which may induce anxiety in an individual. Hence, stress is likely to trigger an episode of the illness. While stress itself (such as family stress, and social stress regarding the struggle for community re-integration) is a significant risk factor of relapses, patients with greater vulnerability to psychosis may also lead

to new acute episodes [7]. In this connection, reduction of stress is an important key to the recovery of the illness.

Hence, there is a pressing need to explore potentially effective treatment modalities to alleviate stress and stress-related factors in people with schizophrenia. Among various possibilities, yoga is likely to be a promising approach. Yoga has a long history. People have been practicing yoga for thousands of years in India [8]. Yoga is based on the philosophy that the mind and body are united as one. It is the belief of the practitioners that yoga can improve one's health by adjusting how one views the world. By tuning the perspectives towards the world and meanings of lives, one can be calmed and stress can be reduced. Hence, while there are various types of yoga, the main goal is the same [9]. In addition to the improvement of physical and psychological health, a higher status – the unity of oneself with the universe can be achieved. As for the components, meditation and exercises are the main ones across various kinds of yoga [10]. For instance, Hatha yoga is a type of yoga which consists of two basic components which are proper breathing and exercises (mainly relating to the postures which stretch the body). The practitioner performs the postures while standing, lying down, sitting in a chair, or in a headstand position. During practicing each of the postures, breathing exercises would be accompanied to promote relaxation of muscles, maintenance of the posture as well as focus of mind. The benefits of yoga on various kinds of health conditions have been shown. For example, a majority of people who regularly practice yoga for meditation find it better for their body flexibility. As for mental health, a number of studies have demonstrated a promising role of yoga in the promotion of psychological health, characterized by reduction of

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psycho-physiological signs of stress such as rapid, irregular respiration. Sympathetic arousal was well down-regulated after guided relaxation based on yoga [11].

There is a significant shift of care of people with schizophrenia from hospitals to communities [12]. Community-based care services are widely available nowadays. Yoga has been being provided as one of the rehabilitation services for people with chronic schizophrenia living in community. Hence, community-based services (including programs offered in mental health centers and community health centers etc) are regarded as the excellent meeting areas for yoga classes for people with schizophrenia and the rehabilitants [13].

In addition to the therapeutic values of yoga on regulating stress for people with schizophrenia, it is also a highly feasible and suitable treatment modality to be provided in the community. In response to the contemporary trend of evidence-based practice, it is worth reviewing the evidence of the effectiveness of yoga for stress management in this clientele. It would then underpin the decision to implement yoga as one of the community-based interventions. To date, there is no review to make a conclusive remark on the effectiveness of yoga for stress management in the schizophrenic population. This current review would shed light on the clinical application of yoga as a stress management modality for schizophrenic clientele.

Method

Literature search

Studies used in this review were extracted from Medline, PsycINFO, PsycARTICLES and Cumulative Index of Nursing and Allied Health Literature (CINAHL) using the keywords “yoga”, “schizophrenia” and “schizophrenic”. In order to ensure the up datedness, only articles published after the year 2000 were searched and selected. Publications in English language were primarily included. Nevertheless, in view of the potential application of the findings of the studies to the huge Chinese populations, publications from mainland China and Taiwan should not be neglected. As the studies in those regions are mainly written in Chinese language, the publications in Chinese language were also included in this review. Potential titles were extracted by the author who then reviewed the available abstracts. The author has no connections at all with the authors, affiliations or journals of the articles.

Only randomized controlled trials (RCTs) were targeted. By having the highest level of evidence of such kind of original studies (primary sources of evidence), the comparison of the effectiveness of the interventions would be the most robust. Yoga was used as an intervention to improve the conditions of schizophrenia as judged by objective and/or subjective outcome measures. Subjects in yoga group were compared with those in control group (other type of intervention or no intervention at all). Such treatment allocation must be random (each participant should have had equal chance to be selected, that was, by chance only, without any bias). Studies without any type of comparison group had not been included. There was no sample size limit for this review given the fact that the related research studies were scarce in quantity. However, subjects with mixed and correlated diagnosis of psychiatric disorders were excluded.

Quality assessment

Studies extracted based on the above components and criteria were evaluated for methodological vigor. Consolidated Standards of Reporting Trials (CONSORT) guidelines should be complied. The

CONSORT statement aims at enhancing the reporting of a RCT and hence facilitating readers to understand the design, implementation, analysis and interpretation of a trial, and in turn to assess the internal validity of its results [14].

Data synthesis

Quantitative analysis on the effect size was not conducted given the fact that the studies included were heterogeneous in the subject characteristics (age, gender, ethnicity, disease stages, disease conditions etc), interventions (such as types, intensiveness, duration and teaching quality of yoga) and outcome measures (various parameters or different instruments for the same parameter etc). Instead, qualitative analysis was adopted to categorize interventions as yielding positive, negative or no effect as indicated by significant differences in any of the outcomes of schizophrenia between the study groups.

Results

Five studies were screened to be eligible for inclusion. One study [15] was excluded because it was not a RCT but only a trial. In other words, four studies were finally included in this review. Table 1 summarises the impacts of yoga shown in the four studies.

The first study [16] investigated the effect of yoga on facial emotion recognition deficits (FERD), symptoms and functioning in people with schizophrenia. Subjects were randomized to receive yoga ($n = 27$), exercise ($n = 17$) or waitlist group ($n = 22$). The subjects practised yoga (the type developed by Swami Vivekananda Yoga Anusandhana Samsthana) and exercise (including brisk walking, jogging, and exercises in standing and sitting postures and relaxation) in the yoga group and exercise group respectively. They were guided by the trained instructors and trained care-givers for the first month and the subsequent two months respectively. Baseline, 2nd month follow-up, and 4th month follow-up by raters blinded to group status were conducted. The outcome measures included Positive and Negative Syndrome Scale (PANSS), Socio-Occupational Functioning Scale (SOFS), and Tool for Recognition of Emotions in Neuropsychiatric DisorderS (TRENDS). A positive correlation between baseline FERD and socio-occupational functioning ($r = 0.3$, $p = 0.01$) was noted. Significant improvement was shown in positive and negative symptoms, socio-occupational functioning as well as performance on TRENDS ($p < 0.05$) in the yoga group. Such improvements were not demonstrated in neither of the other two groups. Greatest improvement was noted in the end of the 2nd month follow-up. Improvements in positive and negative symptoms were persistently observed at the end of 4th month follow-up.

The second study [17] consisted of 40 subjects with schizophrenia who performed yoga session, aerobic session, no-exercise session

Authors	Year	Results
Behere et al.	2011	Significant improvement in positive and negative symptoms, socio-occupational functioning and emotion recognition
Vancampfort et al.	2010	Significant reduction of state anxiety and psychological stress; Significant increase in subjective well-being
Duraiswamy et al.	2007	Significant reduction in psychopathology; Significant improvement in social and occupational functioning, and quality of life
Xie et al.	2006	Significant better performance in body function, psychological function and social function

Table 1: The impacts of yoga shown in the four studies.

at a random order. The results showed that there was a significant reduction of state anxiety measured by State Anxiety Inventory (SAI) ($p < 0.0001$) and psychological stress measured by Subjective Exercise Experiences Scale (SEES) ($p < 0.0001$) and a significant increase in subjective well-being measured by SEES ($p < 0.0001$) after practising a session of yoga lasting about 30 minutes compared to the control group with no exercise at all. This yoga session was based on the principles of hatha yoga. Its steps included cardiovascular warm-up exercises (five minutes), abdominal breathing exercises (five minutes), asanas (15 minutes) and relaxation technique (five minutes) respectively. Also, when compared to the control group, significant differences in state anxiety, psychological stress and subject well-being were also noted in the subjects after practising a single session of aerobic exercise on a bicycle ergometer with self-selected intensity for 20 minutes. However, the magnitude of the said differences did not significantly differ between the yoga group and aerobic exercise group.

The third study [4] investigated the effects of yoga on four dimensions for people with schizophrenia, including a) symptoms by PANSS, b) social and occupational functioning by SOFS, c) side-effects by Simpson Angus Scale for extra-pyramidal symptoms, and Abnormal Involuntary Movement Scale (AIMS) and d) quality of life by WHO Quality of Life BREF Version (WHOQOL-BREF). Subjects were randomized to receive yoga ($n = 31$), and physical exercise ($n = 30$) for four months. The subjects practised yoga (the type developed by Swami Vivekananda Yoga Anusandhana Samsthana) and physical exercise (including brisk walking, jogging, and exercises in standing and sitting postures and relaxation) in the yoga group and physical exercise group respectively. They received the respective training for 15 days (one hour per day; five days a week for three weeks) and then continued to practise it for the next three months with the same intensity. Baseline and 4th month follow-up were conducted by raters blinded to group status. The results showed that subjects practicing yoga had significantly less psychopathology than those practicing physical exercise at the end of 4 months ($p < 0.05$). The yoga group also demonstrated significantly better social and occupational functioning as well as quality of life. As for side-effects, no severe adverse events such as delirium and confusion were reported in either group.

The final study [18] investigated the impacts of yoga on quality of life of inpatients with schizophrenia measured by The General Quality of Life Inventory – 74 (GQOLI-74). Thirty-eight patients in yoga group practiced yoga exercise (trained by two qualified coaches) for eight weeks (one hour per session; four to five sessions a week) in addition to antipsychotic drugs and 42 patients in the control group received the antipsychotic drugs only. The yoga group showed significantly better performance in the dimensions in body function, psychological function and social function after practicing yoga for eight weeks ($p < 0.01$) and when compared with the control group after eight weeks ($p < 0.01$).

Discussion

The results of Vancampfort D et al. [17], study indicate that while yoga can help to reduce the stress and anxiety in people with schizophrenia, the magnitude of the effects has no difference with the general aerobic exercise like cycling. Hence, some may argue that yoga has no better effects than those of some daily simple aerobic exercise. In this connection, the unique effectiveness of yoga could not be demonstrated. It is not surprising that some may just regard yoga as a general type of exercise. Furthermore, the long-term effects on reducing stress and anxiety are unknown as there was no follow-up in that study.

As a result, the needs for people to invest time and efforts in mastering the complicated yoga steps and postures are not well justified. However, the results of the other two studies in this review suggest that yoga is more superior to physical exercise. Duraiswamy G et al. [4], study demonstrates that both yoga and physical exercise have positive effects on symptoms, social and occupational functioning, quality of life as well as extra-pyramidal side-effects. Comparatively, yoga has a significantly greater magnitude than physical exercise in all of the domains. Behere RV et al. [16], also shows that yoga but not exercise or no add-on intervention could alleviate facial emotion recognition deficits (FERD) and symptoms as well as improve functioning. Hence, yoga probably possesses its unique features capable of yielding specific effects on the abovementioned conditions. Moreover, the long-term effects of yoga are also demonstrated in both studies. Hence, the investment of time and efforts in practising yoga as an add-on treatment for individuals with schizophrenia are well underpinned.

As for quality of life, the findings of Duraiswamy G et al [4], are not only akin to another study [18] in this review but also support the long-term impacts which were not investigated in the latter.

Another important point to note is the positive impacts of either yoga or physical exercise on alleviation of extra-pyramidal side-effects [4]. Management of extra-pyramidal side-effects is a great concern for healthcare professionals, patients and their care-givers [19]. Investigation of the biological plausibility (mainly on exploring the possible mechanisms) is likely to be a potential area to be further worked on.

Evidence-based medicine model can be adopted as a framework for discussion. It is a model which guides the process of evidence-based practice of healthcare disciplines. There is a 5-A cycle in this model [20]. The 5 “As” are assess, ask, acquire, appraise and apply respectively. Assess means to investigate the clinical situations and identify the problems. Ask is to decide a research question in a “PICO” format. PICO stands for Patients, Interventions, Comparison and Outcomes respectively. It is in line with a controlled trial. For instance, patients are the people with schizophrenia who have high level of stress. Interventions can be yoga, physical exercise, counseling or social skills training etc. Comparison is to compare the effectiveness of the interventions between the two groups according to the outcomes concerned (such as relapse rate, quality of life, sense of calmness, sympathetic arousal level etc). As for the subsequent three “As”, acquire is to search the related sources of information about the intervention effectiveness mainly from research evidence. They include but not limited to primary sources of evidence and secondary sources of evidence. Experimental studies (randomized controlled studies), quasi-experimental studies, cohort studies, case-control studies are the main types of primary sources of evidence. Meta-analyses or systematic reviews of randomized controlled studies, and systematic reviews of other types of studies are the examples of secondary sources of evidence. After acquiring the relevant information, evaluation on the quality of the information should be done (appraisal). The research study design would affect the trustworthiness of the findings. For instance, the subjects are not blinded to the treatment allocation in a non-blinded study. Once they know which group (intervention group or control group) they have been assigned to, results may then be biased. Those in the intervention group may over-report the treatment effectiveness due to a placebo effect. The reverse is true for the control group. In addition to the study design, the structure of the main body of the research is also crucial. There are a number

of components in various types of study. For example, RCTs should comply with the CONSORT guidelines. Those with better adherence to the guidelines are more likely to give rise to a higher internal validity. Nevertheless, a good internal validity does not guarantee a good external validity. External validity is the degree of generalizability of the findings to the people other than the subjects of the study concerned. The characteristics of the subjects may not be similar to those of other individuals. Age, ethnicity and culture are some common differences. Hence, the findings are unlikely to be directly applicable to other people concerned (the patients, for instance). This calls for the last “A”, Apply, in the 5 “As” cycle. Clinicians should carefully exercise their judgment to determine whether they would apply the findings by taking corresponding actions such as prescribing or recommending the patients with the new treatment modality deemed beneficial to them. On the top of the degree of match of the characteristics between the research subjects and the patients, other non-research factors including resources (such as staff expertise, stakeholders’ acceptance, availability of equipment), costs and patients’ choices etc are all necessary issues to be considered. In other words, even the patients are very similar to the subjects of a high internal validity study with promising therapeutic value of an intervention, the clinicians should not just prescribe the intervention without considering the non-research factors such as the patients’ preference.

In view of the results of the four studies in this review, yoga has impacts on reducing stress, anxiety and symptoms as well as enhancing social and occupational functioning and quality of life. Among these parameters, stress was investigated by three of the four studies. Yoga can be regarded as an effective way to reduce stress. As for the last “A”, Apply of the 5 “As” cycle of the evidence-based medicine model, clinicians should consider prescribing or recommending yoga to individuals with schizophrenia when there are sufficient resources such as qualified yoga coaches and places for yoga practice.

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