A pilot study of a yoga intervention for the treatment of anxiety in young people with early psychosis.

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Abstract

**Background:**
Anxiety is common in young people with early psychosis and treatment options for this co-morbidity remain limited. Yoga is a promising adjunct intervention that has been shown to reduce anxiety for adults with schizophrenia, therefore this pilot study evaluated the acceptability and potential effectiveness of yoga for anxiety in early psychosis.

**Methods:**
A prospective single arm pilot study of a yoga intervention was conducted within an Early Intervention for Psychosis service. Rates of attendance, as well as symptoms of anxiety pre and post yoga session were measured.

**Results:**
A total of 14 young people participated in the study and over 70% attended half or more of the yoga sessions offered. Significant transient reduction in state anxiety after a single session of yoga was observed (p<0.01).

**Conclusions:**
Yoga was found to be an acceptable and potentially effective adjunctive treatment for anxiety in early psychosis and the results warrant further clinical trials.
Introduction

Background
Young people experiencing a first episode of psychosis (FEP) frequently present with other co-morbid mental health disorders. One of the most common is anxiety, with up to 60% of individuals with psychosis reporting ongoing symptoms (1, 2). While psychosis is typically treated pharmacologically with second generation antipsychotics (SGAs), these appear to be ineffective in the treatment of co-morbid anxiety symptoms (3). This is clinically challenging, as higher anxiety levels are associated with more severe psychotic symptoms, poorer functioning and overall well-being (2). Another challenge associated with the typical use of SGAs as treatment of psychosis is their association with weight gain, diabetes and lipid dysregulation all major risk factors for cardiometabolic disease (4). These physical health problems are further exacerbated by the high rates of unhealthy lifestyle behaviours such as physical inactivity, poor diet, smoking and excessive alcohol consumption that can be more prevalent in young people affected by psychotic disorders (5). Therefore there is now an emphasis on addressing the physical health of young people affected by psychotic disorders and providing life-style interventions (6, 7). Yoga is one such potential intervention that could have benefits for both physical and mental well-being.

Originating from ancient India, yoga is a mindfulness-based exercise involving physical postures and breathing exercises to improve strength, flexibility and concentration (8). Within the general population yoga has been shown to reduce stress and improve mood and anxiety (9). These benefits have led to research into its role as an adjunctive therapy for the management of mental health disorders such as schizophrenia. A narrative review of four randomised controlled trials found yoga significantly reduced state anxiety after one session in individuals with enduring schizophrenia (10). However, there has been limited research on the effectiveness and acceptability of a yoga intervention within an early psychosis intervention service. There has been one randomised controlled trial that showed that both aerobic exercise and yoga led to an improvement in symptoms and working memory (11). Despite the effectiveness of yoga in enduring schizophrenia, there is a relative lack of research in early psychosis, where it is possible that the effects of yoga may be more pronounced within the critical period of early psychosis.

Objectives
This article describes a pilot study of a yoga intervention in early psychosis within a specialist early intervention for psychosis service and will examine the feasibility of the intervention from attendance rates and potential effectiveness with pre and post measures of anxiety.

Methodology

Study Design
This study was a prospective single arm interventional study that involved an assessment of anxiety in individuals experiencing early psychosis pre and post each yoga session across multiple sessions.

Study Setting & Participants:
Orygen is a youth mental health service for young people aged between 15-24 years and it contains a specialist early intervention service for people with the at-risk mental state or ultra-high risk for psychosis, specifically the PACE clinic (12) and a specialist clinic for those with
a first episode of psychosis, EPPIC (13). Any clients attending these two clinics were eligible to participate in the pilot study.

**Intervention:**
All yoga classes were delivered by qualified yoga teachers with a minimum of 350 hours training and at least 2 years’ teaching experience. Teachers had also completed a two-day Yoga outreach Training focused on working with the wider community in diverse settings. Slow Vinyasa yoga which incorporated basic pranayama/breathing techniques, asana/postures and relaxation was covered in each session. Sessions were all conducted in-person, on-site at the mental health facility. The sessions were 50 minutes in duration with approximately 30 minutes of low-moderate level physical activity and 20 minutes of pranayama and relaxation. With respect to pranayama, students were taught to focus on the breath, to link the breath with movement and were provided with instruction about the importance of breathing. Asana involved a combination of seated, standing, balancing and supportive or restorative postures. Students were encouraged to become more aware of their own bodily sensations, and find a balance between “effort” and “ease” in relation to their own body, so that they were able to adequately challenge themselves, in a supportive and sustainable manner. Relaxation was offered as a choice, where students were given the option of lying in “Savasana”, staying seated in a comfortable position, and/or participating in guided muscle relaxation techniques. The invitation to opt out of certain parts of the practice were always offered and students were provided with simpler or more complex modifications depending on their individual capacity and mental/physical state during each particular session. Students were encouraged to practice basic pranayama, asana and relaxation at home, however no quantitative data was collected with respect to this aspect of the practice. The yoga intervention was conducted in six week blocks.

**Measurement**
Demographic data were collected from clinical notes and included age, gender, diagnosis, living and relationship status. The State-Trait Anxiety Inventory-6 (STAI-6) is a 6-item, short version of a commonly used measure of trait and state anxiety. It was developed by Marteau and Bekker and it has a particular advantage for when the full measures cannot be used (14). The STAI-6 form was self-completed by participants immediately before and after each completed yoga session.

**Study size**
This was a pilot study and initially aimed to recruit a total of twenty participants.

**Statistical Methods**
Descriptive statistics were used to describe the attendance and completion rate of the yoga intervention. Paired t-tests were used to determine whether there was a difference in the pre and post intervention measure for each individual item of the STAI-6. Assessments that had missing data were excluded from the analysis. Statistics were conducted in SPSS v (15).

**Ethics:**
Approval for the collection and reporting of these data as part of a quality assurance project by Melbourne Health ethics committee (QA2019037).

**Results**

**Participants**
A total of 14 young people with early psychosis (12 FEP and 2 UHR) participated in the pilot study and the majority were female (78.6%), born in Australia (85.7%) and living with their parents (64.3%). The mean age of the cohort was 19.9 (s.d. ± 3.11) years, with 28.6% having a diagnosis of schizophrenia, 24.4% had psychotic disorder not otherwise specified (psychosis NOS), 21.4% had bipolar affective disorder (BPAD) with psychosis and 14.3% were identified as being at ultra-high risk for psychosis (table 1).

Feasibility of Intervention Delivery:
A total of ten of the fourteen participants (71.3%) completed three or more sessions. However, only one participant completed all six sessions, while four completed just one. The mean number of yoga sessions completed by participants was three (±1.57).

Outcome - Anxiety:
The STAI-6 questionnaire assesses six domains of anxiety and between the fourteen participants, it was completed for a total of 29 yoga sessions. Reductions in five of these domains were found immediately after the yoga intervention was delivered. Overall, participants reported that following yoga they were: calmer (2.66 vs 3.28; t-score: 2.768; p=0.01); more relaxed (2.61 vs 3.46; t-score: 5.645; p<0.001); more content (2.50 vs 3.07; t-score 3.286; p=0.003); less tense (2.21 vs 1.59; t-score: 4.312; p<0.001) and less upset (1.76 vs 1.34; t-score: 2.703; p=0.012). Participants also reported feeling less worried after the yoga intervention, but this difference was not significant (1.82 vs 1.54; t-score: 1.867; p=0.073). The full results are presented in Table 2.

Discussion

Key results
This is the first study to evaluate the effectiveness and feasibility of a yoga group as an adjunctive treatment for state anxiety in people experiencing early psychosis. This study demonstrates a transient reduction in state anxiety after a single session of yoga within this clinical sample. Delivery of the intervention was feasible with over two thirds of participants attending three or more of the six session provided and provides support for evaluation in a large clinical trial.

Limitations:
The results of this study should be considered alongside several limitations. First, this was a pilot study and contained no comparison group or randomisation. It also had a small sample size and consisted of those who elected to undertake the yoga intervention and hence it represented a convenience sample. Additionally, the long-term effects of yoga on state anxiety were not assessed and therefore it could not be determined how long the transient reduction in state anxiety may last. Furthermore, as the intervention was available to all of the young people attending the early psychosis clinical service, which can be approximately 500 young people at any one time, it was not possible to identify all of the young people who may have been offered the intervention but declined and as a result, we were not able to present data on acceptability.

Interpretation - comparison to previous research:
The reduction in state anxiety following a single session of yoga is consistent with previous findings for individuals with enduring schizophrenia (16) and it is also in keeping with the findings that yoga can reduce anxiety in other clinical populations, such as those with a primary anxiety disorder (17) or medical conditions, such as breast cancer (18). Attendance rates in the
current study were higher compared to the one other study that examined the effects of yoga in FEP by Lin et al which had a 47% attendance rate (11), although it does need to be considered that the study by Lin et al was an RCT with three arms and there attrition would be expected to be higher. The attendance rate in this pilot study was also higher than those in other studies conducted with clinical populations of people with an enduring diagnosis of schizophrenia (19-22). However, in the clinical populations of people with enduring schizophrenia, poorer attendance could be attributable to negative symptoms, such as avolition, making it hard for participants to initiate the activity themselves. Social deficits and positive symptoms leading to anxiety and avoidance around social and peer involved activities may also contribute to difficulties attending (23). Nonetheless the current intervention appears to be better attended than other physical health interventions in the population such as one-to-one sessions with an exercise physiologist (24).

Clinical Implications:
The results of this study suggest that a yoga group could be implemented as an effective and acceptable non-pharmacological adjunct intervention for anxiety symptoms in people with early psychosis. Increasing the availability of interventions to address anxiety in this population may have secondary benefits, particularly as alcohol and other drugs are reportedly frequently used to relieve anxiety (25). Yoga may also be helpful in improving social and occupational functioning (26). Young people diagnosed with early psychosis could implement their yoga practice before certain social situations where they anticipate anxiety and utilise the transient reduction in state anxiety to overcome this and more comfortably engage in the situation. Additionally, yoga could be encouraged to occur around other interventions that can be potentially distressing, such as psychotherapy.

Future Research:
This pilot study provides preliminary evidence for the effectiveness and tolerability of yoga for the treatment of anxiety symptoms within individuals experiencing early psychosis and warrants a rigorous randomised controlled trial in clinical settings to further establish yoga’s benefits. Future research should ensure appropriate inclusion and exclusion criteria to ensure generalisability to the early psychosis population for example, including patients with co-morbid substance use disorders or other psychiatric conditions (25). While the attendance rate was satisfactory in this pilot study, engagement and continued motivation continues to be an issue in physical health interventions in mental health care settings. Therefore, in a larger trial or implementation of such an intervention, strategies to overcome these barriers need to be explored, such as the provision of a training partner, as was utilised in the iBeep study for individuals with FEP (26) or ensuring that the intervention is delivered by a tertiary educated exercise professional. Another strategy could be facilitating flexibility and individual preferences for the content of yoga sessions, as opposed to prescribing a predetermined yoga routine and also having the flexibility for the sessions to be provided on an individual and group basis (27).

In conclusion, this is the first study to demonstrate a significant reduction in state anxiety after a single yoga session in individuals experiencing early psychosis, noteworthy as this may have the potential to translate into improved behavioural outcomes such as reduced substance misuse and improved social and occupational functioning. Future studies should be mindful of assessing the benefits against general aerobic exercise to discern unique benefits and implementing comprehensive acceptability measurements given the general poor attendance rates of studies assessing yoga in psychotic disorders.
Data Availability Statement

The data used in this article are not publicly available, as ethical approval was not granted for this purpose.

Funding

This study did not receive any specific funding.
References:


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Footnote: BPAD – Bipolar Affective Disorder, NOS – Not Otherwise Specified, UHR – Ultra High Risk
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