Effect of Yoga on anxiety, depression and self-esteem in orphanage residents: A pilot study

Ravishankar Tejvani, Kashinath G. Metri, Jyotsna Agrawal, H.R. Nagendra
Division of Yoga and Life Sciences, Swami Vivekananda Yoga Anusandhana Samsthana, Bengaluru, Department of Clinical Psychology, National Institute of Mental Health and Neurosciences, Bengaluru, Karnataka, India

Abstract

Introduction: There has been an increase in a number of orphanages and children living in orphanages in last few years. The children living in orphanages often have psychological problems among which anxiety, depression, and low self-esteem are considered to be most prominent. Yoga is a noninvasive, cost-effective, and safe intervention among complementary and alternative medicine which is known to have a positive impact on psychological problems. Aims: The present pilot study intended to assess the effect of a two week Yoga intervention on anxiety, depression, and self-esteem of adolescents and young adults living in an orphanage. Materials and Methods: Adolescent and young adults participants who were the permanent residents of an orphanage (n = 34; males = 27, females = 7) between age ranges of 12–20 years underwent 2 week of Yoga intervention. Yoga intervention comprised Asana (Yogic postures), Pranayama (Yogic breathing practices), and Dharana-Dhyana (Yogic relaxation techniques) for 1 h daily over 15 days. Hospital anxiety and depression and Rosenberg self-esteem scale were administered at baseline and after the intervention to assess anxiety, depression, and self-esteem, respectively. Results: There was a significant reduction (P = 0.001) in anxiety, depression, and significant improvement in self-esteem (P = 0.001) at the end of 2 weeks Yoga intervention. Conclusions: This pilot study suggests that 2 weeks of Yoga practice potentially reduced anxiety and depression and improved self-esteem of orphanage adolescents and young adults. These findings need confirmation from studies with a larger sample size and randomized controlled design, which are implicated in the future.

Keywords: Adolescents, anxiety, depression, orphanage, self-esteem, Yoga

Introduction

It takes a parent, family, and community to bring up a healthy child through love, nurturance, and gentle guidance. When children are neglected and abandoned or even abused, it may lead to a severe effect on them lasting till lifetime. Several studies have shown such effects of child abuse and neglect although the outcome may vary as a function of the interaction between specific genes and environmental conditions.[1] Children living in orphanages not only have to face challenges such as malnutrition, crowded living spaces, and lack of parental care which have been shown having a deleterious effect on development.[2] but they may also have psychological difficulties such as loneliness, sense of abandonment, and difficulties in identity formation. One study from South Asia found behavioral problems in around 33% orphanage children.[3] In another comparative study between 52 adolescents living in an orphanage and 55 nonorphanage residents, it was reported that participants living in the orphanage had significantly higher anxiety, depression, negative self-concept, hostility, and Global Severity Index points than the control group.[4] Further, children living in orphanages often have low self-esteem.[5]

Yoga is one of the alternatives and complementary medicine interventions, which is noninvasive, safe, as well as cost-effective. It has found to be effective in many clinical health conditions such as hypertension, diabetes, asthma, Parkinson’s disease,[6] as well as psychological problems such as anxiety[7] and depression.[8] In a study with school children, it was found that 10 days of residential Yoga program improved
short-term and working memory.\textsuperscript{[9]} In another study, 8 weeks of mindful awareness practice 30 min/session, 3 sessions/week showed a significant improvement in cognitive functions.\textsuperscript{[10]}

However, none of the earlier studies have looked into the effects of a short term yoga intervention on anxiety, depression, and self-esteem in orphanage adolescents and young adults. Hence, this pilot study was conducted to explore this area.

**Materials and methods**

Thirty-four adolescents and young adults’ residents of an orphanage Manav Mandir Gurukul, New Delhi, were enrolled in this study. The participants were from both the genders (boys = 27 and girls = 7) and in the age ranges of 12–20 years. Informed consent was obtained from both the participants and head of the orphanage home before the commencement of the study. Those participants not willing to participate in the study and those who had previous exposure to any form of Yoga were also excluded from the study. The study was approved by the Institutional Board of Directorate of distance education, Swami Vivekananda Yoga Anusandhana Samsthana University (no. 407/12-54; Dt. 16 February, 2015).

**Exclusion criteria**

Participants with a history of any acute or chronic disease, recent surgery, or under any long-term antipsychotic medications were excluded from the study. Demographic details of the participants are mentioned in Table 1.

**Yoga module: Intervention**

- **Asanas:** Ardhakati Chakrasana (half waist pose), Pada Hastasana (hand feet pose), Vakrasana (diamond pose), Bhujangasana (cobra pose), Shalabhasana (locus pose), Vajrasana (diamond pose), etc.
- **Pranayama:** Nadishudhi Pranayama (alternate nostril breathing), Bhramari Pranayama (humming sound while exhalation), sectional breathing, etc., breathing practices – hands in and out breathing and ankle stretch breathing
- **Suryanamaskara** (twelve steps sun postures): Five rounds (increased day by day) – up to 12 rounds
- **QRT** – Quick Relaxation Technique and A-U-M and OM chanting
- **Deep relaxation technique OM meditation.**

**Criteria for assessment**

Both anxiety and depression were assessed at baseline and after 2 weeks of yoga intervention using Hospital Anxiety and Depression Scale (HADS). While self-esteem was assessed using Rosenberg self-esteem scale.

**Anxiety and depression**

HADS\textsuperscript{[11]} is a self-assessment scale, it is designed to assess the dimensions of anxiety and depression in non-psychiatric participants in both hospital and community settings.\textsuperscript{[12]} It is a validated and reliable tool to diagnose anxiety and depression in adolescents\textsuperscript{[13]} and has been used for research in many surveys with the adolescent population.\textsuperscript{[14]} It has got 14 items, which are divided into two subscales of seven items each, to measure the levels of anxiety and depression. Each item is rated on a scale from 0 (not at all) to 3 (very much). This is a popular and reliable scale, with Cronbach’s alpha of 0.89.\textsuperscript{[15]}

**Self-esteem**

The Rosenberg self-esteem scale is a widely used self-report scale for evaluating individual self-esteem\textsuperscript{[16]} on a global basis.\textsuperscript{[17]} It has been used in many studies to assess self-esteem in the adolescent population.\textsuperscript{[18]} It is a 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self. All items are answered using a 4-point Likert scale.

**Intervention**

All the participants underwent 2 weeks of Yoga intervention 1 h daily for 6 days/week. Yoga was taught by an expert Yoga instructor.

**Data analysis**

Data were analyzed using the SPSS version 10 (IBM SPSS data analytics, headquartered in Armonk, New York, United States). Data of all variables, except anxiety, were found to be not normally distributed by Kolmogorov–Smirnov test. Wilcoxon signed rank test was applied to see pre–post changes and paired sample t-test was applied to find pre–post difference in the anxiety level.

**Observations and results**

At the baseline, we observed that a total number of the participants having HADS anxiety and depression score above 11, suggestive of clinical anxiety and depression were 15 (42.82%) and 03 (8.5%), respectively. After 2 weeks of yoga intervention, these numbers fell down to 1 and 1, respectively. A significant reduction in a number of the participants having clinical anxiety ($P < 0.001$, −93.33%) and depression ($P < 0.001$, −66.66%) was observed at the end of the intervention [Table 2].

A significant reduction in depression ($P < 0.001$; $−32.98\%$) and anxiety ($P < 0.001$; $−32.95\%$) along with significant improvement in self-esteem ($P < 0.001$; $+19.24\%$) was also observed at the end of 2 weeks [Table 3].

**Discussion**

This study aimed to test the effect of short-term (2 weeks) Yoga intervention on anxiety, depression, and self-esteem in
adolescent and young adult participants living in an orphanage. On post intervention, it is observed that a significant reduction in anxiety and depression along with a significant increase in self-esteem. Also a significant decrease in the number of the participants having clinical anxiety and depression after 2 weeks of Yoga intervention was observed. During the intervention phase, most of the participants were enthusiastic and motivated. Participants enjoyed the Yoga sessions, and no adverse effects of Yoga practice were reported.

In one of the earlier comparative studies between Yoga intervention and a control dance group with orphanage children having trauma-related distress, the participants showed significant improvements in symptoms after participation in an 8-week Yoga program as compared to controls. Apart from this, Yoga is widely used in the adolescent population (nonorphanage) in many health-related conditions and one study with irritable bowel syndrome found 4 weeks of Yoga practice reduces anxiety, depression, pain, and functional disability.

One possible mechanism behind these findings could be that Yoga improves autonomic functions through influencing neurohormonal mechanisms that suppress sympathetic activity through downregulation of the hypothalamic–pituitary–adrenal axis. Reduced sympathetic activity leads to enhanced physical and mental relaxation. This may help in reducing anxiety, depression, and improve self-esteem. It has been reported that active participation in practice and increased physical activity may improve self-esteem by improving perceived physical competence. Structured group physical activity program for the management of depression is a part of the treatment guidelines.

It is relevant to mention that in our study, we found the prevalence of anxiety is more than the prevalence of depression in this orphanage. One possible reason behind high anxiety levels in this age group may be related to worries about their career and uncertainty about future.

Table 2: The number of participants with clinical anxiety and depression before and after Yoga intervention

| Variables       | Before | After | Percentage change | P    |
|-----------------|--------|-------|-------------------|------|
| Anxiety         | 15     | 1     | 93.33 ↓           | <0.001|
| Depression      | 3      | 1     | 66.66 ↓           | <0.001|

Table 3: Effect of Yoga intervention after 15 days (n=35)

| Variables       | Mean±SD  | Percentage change | P    |
|-----------------|----------|-------------------|------|
| Anxiety         | 10.53±2.711 | 32.95 ↓           | <0.001*|
| Depression      | 7.64±2.044  | 32.98 ↓           | <0.001b|
| Self-esteem     | 20.47±3.369 | 19.24 ↑           | <0.001b|

* Wilcoxon signed rank test, b Paired sample t-test, ↓- decrease, ↑-increase. SD: Standard deviation

To the best of our knowledge, there are very few studies which have focused on the adolescent population living in orphanages. Therefore, in future, another study may be planned with the inclusion of a randomly assigned control group which can be given an intervention package of only physical exercise and relaxation by a trainer. This will control factors such as increased activity, as well as the interpersonal interaction, influencing the outcome. The blind objective behavioral rating can also be included as an outcome measure in future. Long-term follow-up may also be done to assess whether these children are able to sustain motivation to engage in Yoga once the intervention is over.

In summary, study results support the earlier findings about the efficacy of Yoga-based intervention in at-risk children and adolescents to significantly reduce anxiety and depression, even with a short-term intervention. More studies are required to explore the feasibility of scaling up such interventions as a preventive public mental measure.

Future studies should be carried out with larger sample size, proper randomization, and inclusion of an active control group. Duration of intervention should be increased and long-term effect should be studied. The intervention should also include counseling sessions and other components of Yoga such as Yama and Niyama. Assessment tools may include other robust objective variables such as heart rate variability, muscle strength, cognitive functions, mindfulness, and emotional states.

Conclusions

Two weeks of Yoga intervention may help in reducing anxiety and depression and may improve self-esteem in orphanage adolescents and young adults. However, further randomized controlled studies are required to confirm these findings. The limitations of this study were a short period of intervention and lack of a control group. However, as a pilot study, this research has brought new insights into the potential positive role of Yoga on psychological states in adolescents and young adults living in orphanages.

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Conflicts of interest

There are no conflicts of interest.

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