NaturalResourcesfor
Human Health

eISSN: 2583-1194

Original Research

Received 20 July 2026
Revised 27 Aug 2026
Accepted 15 Sep 2026

Natural Resources for Human Health 2026, Vol. 6 (20s): 241–246

KEYWORDS:
Tai Chi; anxiety; adolescents; adolescent girls; school health; mind–body intervention.

Effect of Tai Chi Therapy on Anxiety Among Adolescent Girls in Selected Schools of Salem, Tamil Nadu

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ABSTRACT: Anxiety symptoms during adolescence may affect emotional well-being, concentration, sleep and participation in school and social activities. Tai Chi is a mind–body practice that combines slow, coordinated movements, controlled breathing and focused attention, and it may offer a supportive approach to stress management. This study aimed to assess changes in anxiety scores among adolescent girls following a supervised Tai Chi intervention in selected schools in Salem District, Tamil Nadu, India. A quantitative, One group pre-test–post-test design was used. The sample comprised 120 girls aged 12–17 years selected through purposive sampling. Anxiety was assessed using the Hamilton Anxiety Rating Scale (HAM-A), and the intervention was Yang-style Tai Chi. Frequencies, percentages, means, standard deviations and a paired-samples t-test were reported. This present study reported that the mean score decreased from 15.33 (SD 10.45) before the intervention to 10.26 (SD 6.69) afterwards, a mean reduction of 5.07 points. Mild anxiety was reported in 68 participants (56.7%) at pre-test and 101 (84.2%) at post-test; moderate anxiety was reported in 44 (36.7%) and 19 (15.8%), respectively, while eight participants (6.6%) were classified as having severe anxiety at pre-test and none at post-test and a paired t-value of 9.833 and $p = 0.001$; findings suggest improvement between assessments, so the study concluded that Tai Chi therapy had reduced the level of anxiety among Adolescents

1. INTRODUCTION

Adolescence is a period of rapid physical, cognitive and emotional development. Academic expectations, examinations, peer relationships, family pressures and uncertainty about the future can contribute to distress. Anxiety may involve persistent worry, restlessness, and difficulty concentrating, sleep disturbance and physical symptoms. When these symptoms are persistent or severe, they can interfere with learning, relationships and daily functioning. The World Health Organization identifies mental health as an important component of adolescent well-being and reports that mental health conditions affect a substantial proportion of people aged 10–19 years (World Health Organization, 2025).

Evidence from India also indicates that anxiety and other mental health concerns among adolescents warrant attention. A systematic review and meta-analysis by Pal et al. (2022) reported that estimates of anxiety disorders among Indian adolescents varied across studies, partly because of differences in populations, assessment tools and methods. Balamurugan et al. (2024)

similarly highlighted mental health concerns among school-aged children and adolescents in India. These findings reinforce the importance of recognising emotional difficulties and ensuring access to appropriate support in school settings.

Tai Chi is a traditional Chinese mind–body practice involving slow, coordinated movements, balance, controlled breathing and focused attention. It can be adapted for different levels of physical ability and may be delivered in supervised group sessions. Reviews have explored Tai Chi as a complementary approach to anxiety management, although differences in study design, intervention duration and sample size limit the certainty of conclusions (Sharma and Haider, 2015). A systematic review and meta-analysis by Liu et al. (2021) reported potential psychological benefits of Tai Chi and Qigong among adolescents but also noted limitations and heterogeneity in the evidence. Yin et al. (2023) examined Tai Chi in comparison with non-mindful exercise for anxiety, depression and general mental health.

Tai Chi should be considered a possible supportive activity rather than a replacement for psychological assessment, evidence-based treatment or referral when clinically indicated. Evidence from adults or other populations cannot automatically be generalised to school-going adolescent girls in India. Local evaluation is therefore useful, provided the intervention and outcomes are clearly defined and assessed.

The present study aimed to assess anxiety levels before and after a supervised Tai Chi programme among adolescent girls in selected schools in Salem District, Tamil Nadu.

2. MATERIALS AND METHODS

2.1 Study design and setting

Quantitative, one group pre-test–post-test study was conducted in selected schools in Salem District, Tamil Nadu, India.

2.2 Participants and sampling

The sample comprised 120 school-going girls aged 12–17 years, recruited through non-probability purposive sampling. The inclusion criteria indicated that participants were eligible if they met the age and anxiety-screening criteria, could understand the assessment language, were able to participate safely, and had parental or guardian consent and adolescent assent. The exclusion criteria described excluding those with medical or musculoskeletal conditions that prevented safe participation.

2.3 Outcome measure

Anxiety was assessed using the Hamilton Anxiety Rating Scale (HAM-A), a clinician-rated scale comprising 14 items that address psychic and somatic anxiety symptoms.

2.4 Tai Chi intervention

The intervention described supervised Yang-style Tai Chi, with a session comprising a five-minute warm-up, 20 minutes of Tai Chi movements and a 10-minute cool-down (35 minutes in total). Movements include Commencing Form, Parting the Horse's Mane, White Crane Spreads Its Wings, Brush Knee, Cloud Hands and Closing Form. The five sessions per week for 1 month was given.

2.5 Data collection

The ethical approval and school permissions were obtained before data collection. Eligible participants were assessed at baseline, their consent also was received. They received the supervised intervention and were assessed again using the same outcome measure.

2.6 Ethical considerations

The ethical approval was obtained from the Institutional Ethics Committee of MAHER and that permission was obtained from participating schools. Written parental or guardian consent and adolescent assent were obtained, participation was voluntary, confidentiality was protected and participants could withdraw without penalty.

2.7 Statistical analysis

Frequencies and percentages were used to summarise categorical variables, while means and standard deviations were used for anxiety scores. A paired-samples t-test was reported for pre-test and post-test scores.

3. RESULTS AND DISCUSSION

Table 1: Frequency and Percentage distribution of Participants' Demographic Variables (N=120)

Variable	Category	Frequency	Percentage
Age (years)	12–13	32	26.7
	14–15	51	42.5
	16–17	37	30.8
Class	VII–VIII	39	32.5
	IX–X	48	40.0
	XI–XII	33	27.5
Religion	Hindu	94	78.3
	Muslim	12	10.0
	Christian	11	9.2
	Other	3	2.5
Family type	Nuclear	76	63.3
	Joint	32	26.7
	Extended	12	10.0
Residence	Rural	67	55.8
	Urban	53	44.2
Previous Tai Chi/relaxation exposure	Yes	18	15.0
	No	102	85.0
Previous anxiety-management techniques	Yes	27	22.5
	No	93	77.5
Previous examination performance	Below 50%	9	7.5
	50–59%	20	16.7
	60–74%	46	38.3
	75% or above	45	37.5
Recent academic/personal stressor	Yes	72	60.0
	No	48	40.0
Family history of anxiety/mental-health problems	Yes	14	11.7
	No	106	88.3

Table 2: Level of Anxiety before and after the intervention (N=120)

Anxiety category	Pre-test n (%)	Post-test n (%)
Mild	68 (56.7)	101 (84.2)
Moderate	44 (36.7)	19 (15.8)
Severe	8 (6.6)	0 (0.0)
Total	120 (100.0)	120 (100.0)

Table 2 showed that the proportion classified as having mild anxiety increased from 56.7% at pre-test to 84.2% at post-test. The proportion classified as having moderate anxiety decreased from 36.7% to 15.8%, and eight participants were classified as having severe anxiety at pre-test compared with none at post-test.

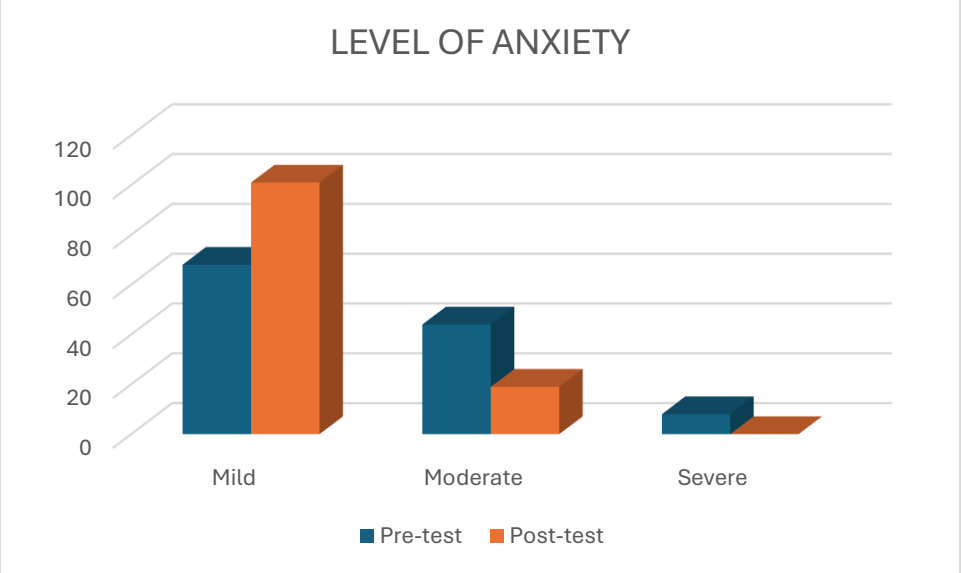


Figure 1: Level of Anxiety before and after tai-chi Intervention

Table 3: Comparison of pre-test and post-test scores (N=120)

Assessment	Mean	SD	Mean difference	Paired t value	P value
Pre-test	15.33	10.45	5.07	9.833	0.001
Post-test	10.26	6.69			

The results reported that there was decrease in the mean score from 15.33 (SD 10.45) to 10.26 (SD 6.69), with a mean reduction of 5.07 points and reported t = 9.833 and p = 0.001.

DISCUSSION

The present study evaluated the effectiveness of Tai Chi therapy in reducing anxiety among 120 adolescent girls in selected schools of Salem District, Tamil Nadu. The findings revealed a favorable change in anxiety levels following the intervention. Before the intervention, 56.7% of participants had mild anxiety, 36.7% had moderate anxiety, and 6.6% had severe anxiety. Following the intervention, the proportion with mild anxiety increased to 84.2%, while moderate anxiety decreased to 15.8%, and no participants were classified as having severe anxiety. These findings suggest an improvement in the overall distribution of anxiety levels after Tai Chi therapy.

The mean anxiety score decreased from 15.33 (SD = 10.45) before the intervention to 10.26 (SD = 6.69) after the intervention, representing a mean reduction of 5.07 points. The reported paired t value was 9.833, with $p < .001$, indicating a statistically

significant difference between pre-test and post-test scores. These results support the potential value of Tai Chi as a complementary approach to anxiety management among adolescents.

The findings are consistent with Liu et al. (2021), whose systematic review and meta-analysis reported beneficial effects of Tai Chi and Qigong on psychological outcomes, including anxiety, among adolescents. Similarly, Sharma and Haider (2015) found that Tai Chi showed promise in reducing anxiety symptoms across several studies, although they highlighted methodological limitations in the available evidence. Wang et al. (2010) also reported improvements in anxiety and psychological well-being associated with Tai Chi practice. Furthermore, Yin et al. (2023) found a small but significant advantage of Tai Chi over non-mindful exercise for anxiety outcomes, suggesting that its benefits may extend beyond physical activity alone.

The improvement observed in the present study may be associated with the slow, coordinated movements, controlled breathing, focused attention, and relaxation involved in Tai Chi. These components may help adolescents manage stress and regulate emotional responses. In this study, 60.0% of participants reported a recent academic or personal stressor, highlighting the relevance of accessible stress-management approaches in school settings. School health nurses and nursing educators may consider Tai Chi as part of broader adolescent health-promotion programmes.

4. LIMITATIONS

- The single-group pre-test–post-test design, with no reported control group, limits causal interpretation.
- Purposive sampling and recruitment from selected schools in one district limit generalizability.

5. RECOMMENDATIONS

- Further study can be conducted in controlled or randomized studies to compare Tai-Chi with usual school activities or another appropriate intervention.
- Follow-up assessments to determine whether changes persist.

6. CONCLUSION

The present study concluded that Tai Chi therapy was associated with a significant reduction in anxiety levels among adolescent girls. Following the intervention, the proportion of participants with mild anxiety increased, while moderate and severe anxiety levels decreased. The mean anxiety score also reduced from 15.33 to 10.26, showing a favourable change after the intervention. These findings suggest that Tai Chi may be a useful complementary approach to help adolescents manage anxiety and cope with academic and personal stress. School health nurses and teachers may consider incorporating Tai Chi into student wellness activities. However, further controlled studies with longer follow-up are needed to confirm its effectiveness and long-term benefits.

Funding statement

"This study received no specific external funding."

Conflict of interest

The authors have no competing interests.

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