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Impact of holistic stress management program on academic stress and well-being of Indian adolescent girls: A randomized controlled trial

Sreevani Rentala, Sunanda Govinder Thimmajja, Swanand Dattatraya Tilekar¹, Raghavendra Bheemappa Nayak², Rajashree Aladakatti³

Abstract:

CONTEXT: Academic stress among adolescents is a significant contributor to a variety of mental and behavioral disorders. Holistic stress management interventions equip adolescents with good mental health and improve academic performance.

AIM: The aim of the study is to evaluate the effectiveness of holistic group-based stress management program in reducing academic stress, depression, anxiety, and improving well-being among adolescent girls.

SETTINGS AND DESIGN: Randomized control trial was adopted and the study was conducted at selected colleges of Dharwad city, Karnataka, India.

MATERIALS AND METHODS: Two hundred and thirty adolescent girls were randomly selected and assigned to either experimental ($n = 115$) or control group ($n = 115$). Both group participants were initially assessed for academic stress, depression, anxiety, general stress, and well-being. The experimental group participants participated in eight sessions of holistic group-based stress management program over a period of 1 month. The intervention comprises of body–mind–spirit strategies focusing on techniques to handle stressful situations, accept responsibility for their own well-being, and take charge of self-health. Control group participants did not receive any intervention. Postintervention assessments were conducted for all the participants on monthly intervals for 6 months.

RESULTS: Over 6 months follow-up compared to control group, the experimental group participants showed statistically significant decrease in academic stress ($F = 131.60$, $P < 0.01$, $n^2_G = 0.14$), depression ($F = 156.70$, $P < 0.01$, $n^2_G = 0.13$), anxiety ($F = 190.50$, $P < 0.01$, $n^2_G = 0.16$), general stress ($F = 166.10$, $P < 0.01$, $n^2_G = 0.16$), and improvement in well-being ($F = 156.40$, $P < 0.01$, $n^2_G = 0.13$).

CONCLUSIONS: These findings indicate that holistic stress management program has a positive effect on reducing stress, anxiety, depression, and improving well-being.

Keywords:

Academic stress, anxiety, body–mind–spirit, depression, holistic group-based stress management program, holistic nurse, holistic stress management program, well-being

Introduction

Adolescence is a period marked by rapid physical, emotional, and social changes. It is a major transitional period

between childhood and adulthood.^[1] Adolescents (aged from 10 to 19) account for approximately 17% of the world's population.^[2] India accounts for 21% of the adolescent population worldwide.^[3] Stress is a common experience during this adolescent

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Departments of Nursing and ²Psychiatry, Dharwad Institute of Mental Health and Neurosciences, ³Department of Nursing, Shreya College of Nursing, Dharwad, Karnataka, ¹Department of Biostatistics, Indian Red Cross Society Bel-Air College of Nursing, Panchgani, Maharashtra, India

Address for correspondence:

Dr. Sreevani Rentala, Department of Nursing, Dharwad Institute of Mental Health and Neurosciences, Belgaum Road, Dharwad - 580 008, Karnataka, India.
E-mail: sreevani.phd@gmail.com

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period. In the various studies that have focused on stress, the adolescents have indicated several sources of stress including: school, friends, family, and lack of interest in education and the future.^[4,5] Among these sources, adolescents reported school work as the most frequent source of stress.^[6] They specifically reported about examination and grade worries, fear of success or failure, test or performance anxiety, acceptance by teachers, and looking toward the future.^[5]

Various studies conducted among adolescents in Asian countries identified a significant relationship between academic stress and mental health conditions such as depression, anxiety, and suicidal behavior.^[7,8] Chronic or unmanaged stress can cause difficulties in development^[9] and lead to long-term setbacks in physical and mental health.^[6,10] Distressed teens are at higher risk for anxiety disorders,^[6] depression,^[11] behavioral problems, and suicide.^[5] Adolescent stress levels have been associated with risky sexual behavior,^[5] smoking, substance abuse, self-harm,^[10,12] and poor eating habits.^[13] Anxiety and mood disorders are among the more common emotional disorders in youth. Although anxiety and depression affect boys and girls almost similarly, adolescent girls are much more vulnerable to stress when compared to adolescent boys^[14] due to inherent physiological changes, their social upbringing,^[15] and a feeling of greater pressure to achieve good academic grades at an early age.^[16] Furthermore, depression is more common among adolescent girls.^[17] Self-reported mental and subjective health complaints such as pain, sleeping problems, anxiety, and various stress-related problems seem to have increased over time among older adolescents, especially girls.^[18] There is a negative relationship between adolescent depressive symptoms and educational achievement. Improving school achievement and emotional well-being seem to play an essential role.^[19]

One of the ways to deal with stress is to conduct stress management programs. This can be done by training the adolescents to identify ways to tackle problems. The implementation of stress management strategies such as deep breathing, progressive muscular relaxation, and positive self-talk at this stage are not only relevant to manage stress at a very young age but also very significant in improving school achievement and emotional well-being among adolescents.^[19] Although school programs targeting stress management are effective in reducing stress among children,^[20] only a few caters specifically for adolescent girls.

As stress can affect health, emotional state, and academic performance, it is important that students develop effective strategies to manage stressful situations.^[21] The present-day adolescents need psychological treatment

that goes beyond teaching or talk therapy. There are strong calls from many national and international bodies to implement holistic and integrated approach to manage psychological and physical health needs. These holistic approaches are characterized by the treatment of the whole person taking into account physical, mental, social, and spiritual factors, rather than just focusing on symptoms of a disease. Holistic approaches can impact on mental and physical health and are cost-effective.

Evidence suggests that conventional stress management which focuses on stress symptoms is of very little benefit as the integrated approach is more ideal to treat the underlying causes of emotional distress.^[22] Several studies demonstrated that through holistic changes in daily routine, one can lessen multiple emotional sufferings and promote positive psychophysical attributes.^[23] Randomized controlled trials conducted in Asian countries like India, Hong Kong, and Taiwan reported that holistic interventions helped in reduction of depression, anxiety, and somatic complaints among various clients.^[24-28]

Although there is lot of literature on stress-related problems, academic stress, and need for guidance and counseling, management of stress for the students is not addressed sufficiently, especially in India.^[29] It is known that earlier the adolescents learn to manage their stress; the better it will be for them to deal with psychological and physical health as an adult.^[30] As depression, anxiety, drug or alcohol use, and suicidal rates are at concerning levels for adolescent girls, academic stress remains a critical issue.^[31] The identification of a successful, empirically-supported holistic stress management program to deal with academic stress for adolescent girls would provide a standard practice for counselors or primary care providers in a school setting.

The present study has been taken up with above background to evaluate the feasibility of implementation of holistic group-based stress management program to reduce adolescent girls' academic stress, anxiety, depression, and improve their well-being. This study used Chan's body-mind-spirit (BMS) model.^[32] It is a multidimensional holistic group intervention that takes into account individuals' physical, psychological, social, and spiritual needs on the one hand and incorporates traditional cultural values and philosophical concepts on the other. This model incorporates minilectures on general instructions to health and emotional management strategies and stress reduction training coupled with techniques of acupressure exercises, breathing techniques, and mindfulness meditation. Activities such as writing, drawing, and homework activities develop insight into problems and embrace positive lifestyle with healthy coping mechanisms.^[32]

Holistic stress management intervention empowers the academically stressed adolescents.^[33] The techniques used in BMS-based stress management program aid the individual in developing insight into their behavior and thought process, which in turn aid in handling potential triggers. Furthermore, this holistic approach helps the adolescent girls to accept responsibility for their own well-being and take charge of self-health. This holistic intervention is much better than single module complementary and alternative or conventional therapies.

The rationale is that teaching adolescents stress management skills during this important developmental period may reduce the frequency and severity of stress-related mental and physical health issues.^[33] In addition, adolescents may learn holistic techniques to handle stress which might increase their emotional and social abilities with potential benefit to academic outcomes.

Materials and Methods

Study aims

The primary aim of this study is to evaluate the effectiveness of an eight-session (4 weeks) holistic group-based stress management program delivered by a psychiatric nurse in reducing academic stress, depression, anxiety, general stress, and improving well-being among adolescent girls.

Participants and enrolment

Participants were adolescent girls' aged 16–19 years, pursuing pre university or university course. After obtaining formal permission from the appropriate institutional authority, recruitment of participants took place at selected colleges. All these colleges are coeducational institutions with an average of 45–60 students per class, 60% of them being girls. Data were collected between August 2017 and June 2018. A total of 600 students were approached of which 80 students expressed their unwillingness as the session timings were not convenient to them. Of the remaining 520 adolescent girls who were initially screened using a stress subscale of depression, anxiety, and stress scale, 326 adolescent girls met the criteria of cutoff score above 14. From this sample, 230 participants were randomly selected and assigned to experimental and control groups using computer-generated random table method with each group consisting of 115 participants [Figure 1]. Due to the nature of the intervention, group assignment could not be hidden from the participants.

The study was approved by the Institutional Ethics Committee. This trial is registered with Clinical Trials Registry, India. Ethical considerations were addressed

by explaining the ethical rights to both the participants and their parents, orally and in writing. The purpose, nature, and time duration of the study; the researcher contact information; confidentiality; and their right not to participate or withdraw at any stage were also conveyed. Subsequently, the participants and parents gave their written consent.

Eligibility requirements

The age inclusion criteria were 16–19 years and the study excluded participants who had undergone or were undergoing other forms of counseling or relaxation therapies (psychological counseling and or any other stress reduction programs) and also having a significant medical or psychiatric condition that could interfere with their participation in the proposed therapy.

Study design and data collection procedure

This study utilized experimental pre- and post control group design with 6-month follow-up. Participants were randomized into experimental or control group.

Initially, the data collector approached each participant and assessed them for baseline data using self-report methods such as sociodemographic data sheet; personality inventory; IQ assessment; Educational Stress Scale for Adolescents; Depression, Anxiety, Stress Scale-21 (DASS-21); and BMS Well-being Scale. Control group participants did not receive any intervention. Experimental group participants participated in holistic group-based stress management program.

Intervention

The intervention involved a total of eight sessions, with 2 weekly sessions for 4 weeks; each session lasting for 90–120 min. Intervention was given as a group approach by the first author who underwent BMS practitioner training at center on behavioral health, University of Hong Kong, Hong Kong. Each group consisted of 8 to 15 participants. A total of 13 groups completed the 4-week intervention. The holistic stress management program was based on BMS model originally developed by Chan *et al.*^[32] which emphasizes a holistic concept of health. This model focuses on establishing a dynamic balance of interrelationships among mind, body, and spirit through psychoeducation strategies on emotional management, stress reduction techniques such as acupressure exercises, breathing techniques and meditation, connecting to spiritual and self-healing resources like utilizing strengths, and appreciating abilities.

In the present study, holistic stress management program was implemented over eight sessions: (a) concept of holistic health; (b) understanding my own stress; (c) identifying stressors; (d) how do I respond to stress; (e) emotions and well-being, (f) loving myself;

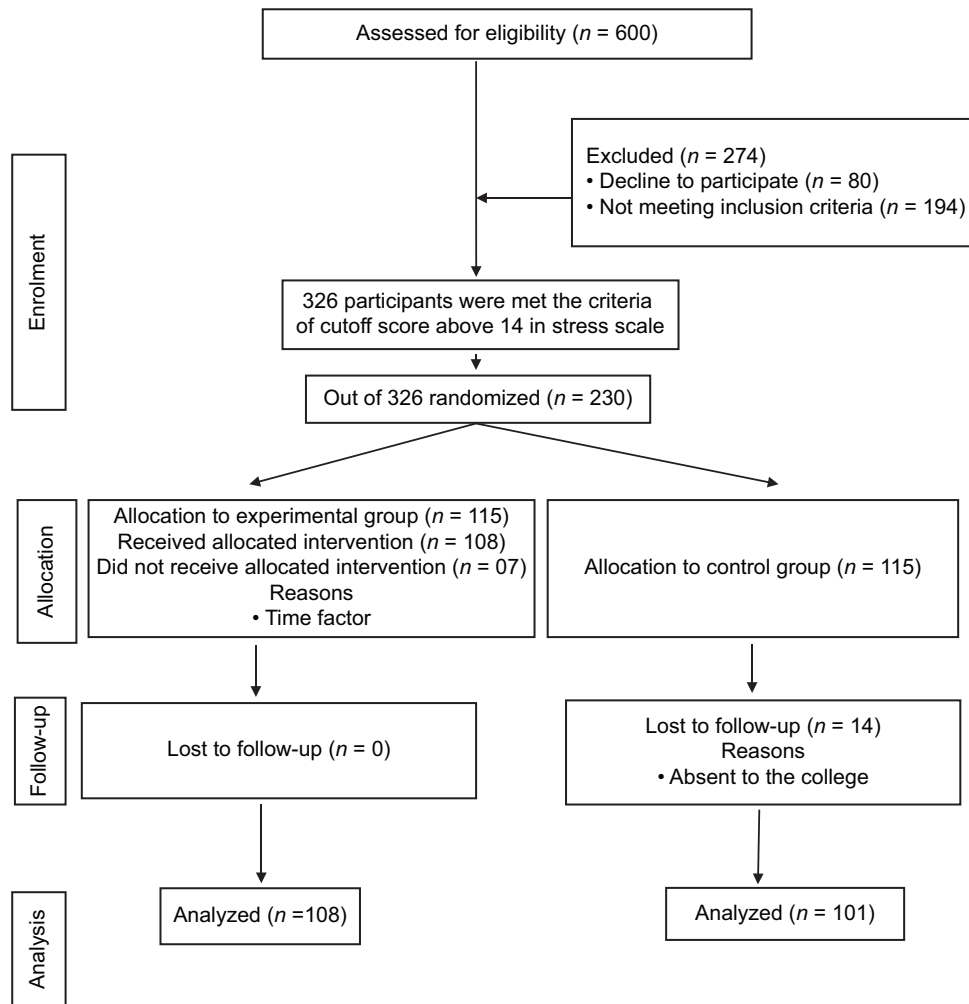


Figure 1: Flowchart showing distributions of participants in experimental and control group

(g) my growth and strength, support, and network; and (h) transformation of self. The details of these sessions are described in Table 1.

Postassessment

Postassessment was done using same measures at the end of 1st-, 2nd-, 3rd-, 4th-, 5th-, and 6th-month intervals. During each follow-up, the experimental group participants were encouraged and reinforced to practice holistic techniques along with routine follow-up assessments, whereas the control group participants had only follow-up assessments without any intervention [Figure 1].

Measures

The participants responded to the Educational Stress Scale for Adolescents, DASS-21, BMS Well-being Scale, and Eysenck’s personality inventory and IQ assessment. The outcome measures were assessed at baseline (T0) and at six follow-up assessments, namely 1st month (T1), 2nd month (T2), 3rd month (T3), 4th month (T4), 5th month (T5), and 6th month (T6).

1. DASS-21 was developed by Lovibond and Lovibond in 1995.^[34] It is a short version of the 42-item self-report instrument consisting of three seven-item subscales designed to measure the emotional states of depression, anxiety and stress. Each scale includes seven items, with a total of 21 items rated on four-point scale ranging from 0 to 3 (0 – denoting did not apply to me at all and 3 – denoting applied to me most of the time). The overall scores for the three subscales are calculated as the sum of scores for the relevant seven items multiplied by two. The Cronbach’s alpha for stress subscale is 0.77, depression 0.77, and anxiety 0.80 among adolescents^[35]
2. Education Stress Scale for Adolescents was developed by Sun *et al.* (2011). It is a self-report instrument containing 16 items designed to measure educational stress on five components: pressure from study (4 items), workload (3 items), worry about grades (3 items), self-expectation (3 items), and despondency (3 items) rated on five-point scale 1–5 (1 – strongly disagree to 5 – strongly agree) with higher score indicating greater educational stress.

Table 1: Details of holistic group health program

Session number and theme	Objectives	Activities involved
Session I: Concept of holistic health	Enable the participants to understand the concept of holistic health	Illustration of holistic group health promotion program and learning goals Abdominal breathing exercises Assessing strengths of the participants Encouraging to share their expectations of the program
Session II: Understanding my own stress	Enable the participants to understand their own stress Teach the participants stress -relief exercises	Mini-lecture on concept of eustress and distress; signs and symptoms of stress, maintaining stress dairy Singing activity Hand swinging exercises Stress test
Session III: Identifying stressors	Participants will identify their own stressors Demonstrate stress-relieving exercises	Breathing exercises Ten techniques of longevity exercises Answering the stress questionnaire Discussion on stress dairy Clay therapy Mini-lecture on effects of stress on academic performance
Session IV: How do I respond to stress	Explain concept of no pain no gain and explanation on gain versus loss help Develop positive thinking among participants	Mini-lectures on concept of no pain no gain and explanation on gain versus loss Meditation Acupressure exercises Craftwork Stress sorting exercise - focusing on stressful situation, their reaction, and ways of coping
Session V: Emotions and well-being	Teach participants ways to master their emotions and positive thinking	Meditation Therapeutic writing Drawing
Session VI: Loving myself	Develop a readiness to love self	Self-love techniques Mirror exercises Therapeutic writings Drawings Group-sharing activities
Session VII: My growth and strength, my support and network	Enable the participants to identify their strength and support network	Therapeutic writings on identifying personal strengths and support network Progressive muscle relaxation Storytelling
Session VIII: Transformation of self	Assist in transformation at the individual and interpersonal level	Preparation of daily time tables for forthcoming examination Group sharing activities on concepts learned in each session Meditation Mindful eating Therapeutic writing on my growth

Scores range from 16 to 80. The Cronbach's alpha for the total 16-item ESSA scale was 0.81, 0.74, 0.71, 0.66, and 0.75 for the five factors, respectively, indicating moderate-to-good internal consistency among East Asian adolescents^[36]

3. BMS Well-being Inventory (BMSWBI) (Ng *et al.* 2005) – It is a 56-item (of which 30 are negative), 11-point multidimensional inventory for assessing holistic health; negative items are scored in the reverse direction with higher scores indicating better health. It comprises of four subscales: physical distress – 14 items, daily functioning – 10 items, affect – 19 items, and spirituality – 13 items. The alpha coefficients of the BMSWBI ranged from 0.87 to 0.92.^[37]

Data analysis

Data were analyzed using R version 3.5.1 (R Foundation for statistical computing, Venna, Austria, 2018) statistical package, results were presented in a table form. Baseline characteristics of the experimental and control groups were compared using one-way ANOVA or independent *t*-tests or χ^2 test. The changes in the outcome variables from baseline to 6-month follow-up were compared using Univariate Type III Repeated-Measures ANOVA.

Results

Preintervention comparison

At preintervention level, both the groups were equal in sociodemographic and educational variables, except in

birth order, personality, and father education [Table 2]. Both the groups were similar in all the outcome variables except in general stress [Table 3].

Intervention effects

Univariate Type III Repeated-Measures ANOVA was conducted to identify the variation in the outcome variables from baseline to 6 months follow-up [Tables 4 and 5].

Compared to the control group, the experimental group showed statistically significant decrease in educational stress ($F_{(6,1188)} = 131.60, P < 0.01, n^2_G = 0.14$), depression ($F_{(6,1212)} = 156.70, P < 0.01, n^2_G = 0.13$), anxiety ($F_{(6,1230)} = 190.50, P < 0.01, n^2_G = 0.16$), general stress ($F_{(6,1236)} = 166.10, P < 0.01, n^2_G = 0.16$), and well-being ($F_{(6,1200)} = 156.40, P < 0.01, n^2_G = 0.13$). The calculated effect size was consistently large for all the outcome variables in experimental group participants compared to control group participants.

Discussion

The purpose of the present study was to evaluate the efficacy of holistic stress management program in promoting mental health outcomes among adolescent girls. The study was based on theoretically oriented and culturally sensitive holistic program, where in experimental group subjects participated in 4-week stress management program. Participants' scores on different outcomes of mental health before and after the intervention were analyzed using appropriate statistical techniques. The results suggest astounding effects of holistic stress management program favorably improving well-being, reduction in depression, anxiety, and academic stress. The results indicated that the effect continued and persisted even after 6 months. This suggests that a holistic stress management intervention approach can facilitate well-being among educationally stressed adolescent's girls.

Table 2: Baseline comparison of demographic variables between control and experimental participants

Sociodemographic characteristics	Group (total=209)		$\chi^2/ F t$	P
	Control (n=101)	Experimental (n=108)		
Residence				
Rural	82	85	0.20	0.65
Urban	19	23		
Religion				
Hindu	33	53	5.84	0.06
Muslim	53	42		
Christian	15	13		
Type of family				
Joint/extended	48	55	1.12	0.57
Nuclear	53	53		
Birth order				
1 st child	53	64	7.26	0.03*
Middle child	32	39		
Last child	16	5		
Combination of subjects				
Science	61	68	2.29	0.32
Commerce	31	25		
Arts	9	15		
Personality				
Extrovert and neuroticism	9	3	22.3	<0.01**
Introvert and neuroticism	28	15		
Ambivert and neuroticism	52	58		
Extrovert and emotionally well being	8	7		
Rejected data	4	25		
Father's education				
Illiterate	39	23	8.90	0.01*
Up to 10 th and PUC	53	66		
Graduate and Above	9	19		
Age, mean±SD	17.97±0.57	17.65±0.65	14.50	<0.01**
Monthly family income, mean±SD	11,238.00±5263.00	10,713.00±4453.00	0.61	0.44
IQ percentile	44.00 (4.45)	50.36 (6.81)	29.3	<0.001**
Percentage of marks in previous class, mean±SD	62.72±9.52	64.92±8.69	3.03	0.08
Number of homework hours, mean±SD	2.59±1.22	2.56±1.33	0.03	0.87

SD=Standard deviation, IQ=Intelligence quotient. *P<0.05, **P<0.01

Table 3: Preintervention comparison on outcome variables between control and experimental group participants

Sociodemographic characteristics	Range	Group, mean±SD		Levene's significant	t	P
		Control group (n=101)	Experimental group (n=108)			
Education stress	27-73	52.26 (9.49)	53.67 (9.43)	0.82	-1.10	0.30
Depression	4-30	16.22 (4.33)	16.49 (4.35)	0.72	-0.45	0.70
Anxiety	6-26	15.90 (4.24)	16.73 (4.32)	0.99	-1.40	0.20
General stress	8-30	16.85 (4.21)	18.33 (3.96)	0.63**	-2.6	<0.01**
Well-being	6-358	232.84 (53.84)	225.80 (67.13)	0.09	0.83	0.40

SD=Standard deviation. **P<0.01

Table 4: Group comparison of educational stress and well-being across the time points between experimental and control group subjects

Time of assessment	Mean±SD		Group × time F	P	n ² _G
	Experimental group (n=108)	Control group (n=101)			
Educational stress					
Baseline (T0)	53.63±9.49	52.05±9.66	$F_{(6, 1188)}=131.60$	<0.01	0.14
1 month (T1)	41.27±8.53	50.07±10.57			
2 months (T2)	32.16±9.48	49.37±12.48			
3 months (T3)	27.95±10.36	48.96±14.16			
4 months (T4)	24.91±10.35	47.93±14.44			
5 months (T5)	22.88±11.29	47.73±15.33			
6 months (T6)	21.64±11.50	47.41±15.48			
Well being					
Baseline (T0)	233.90±56.55	232.01±53.45	$F_{(6, 1200)}=156.40$	<0.01	0.13
1 month (T1)	255.88±49.38	222.86±55.15			
2 months (T2)	282.03±47.43	219.55±16.83			
3 months (T3)	311.01±47.75	224.38±69.12			
4 months (T4)	338.07±52.76	227.41±77.85			
5 months (T5)	360.10±59.08	227.74±85.49			
6 months (T6)	372.32±64.12	224.49±95.32			

SD=Standard deviation

In this study, educational stress decreased considerably among experimental group participants than in control group participants at 6 months follow-up ($F_{(6,1188)} = 131.60$, $P < 0.01$, $n^2_G = 0.14$). Reported efficacy of holistic stress management for promoting mental health in adolescents is in line with the findings of previous studies.^[38-40] Kang *et al.* 2009 conducted a stress coping program based on mindfulness meditation on the stress, anxiety, and depression among nursing students. Results showed that mindful-based stress management programs were effective in reduction of stress, anxiety, and depression.^[39] Yogic lifestyle education program has promising potential to reduce health problems and enhance positive aspects of health among adolescents.^[41]

The present study findings showed that there was a statistically significant decrease in depression and anxiety scores of experimental group participants compared to control group participants. This reduction continued for 6 months demonstrating holistic stress management can improve positive emotions among adolescent girls. The present study findings are consistent with previous literature^[38,42-46] where school-based stress management programs involving mindful meditation and spirituality

concepts reported lower depressive and anxiety scores and stress.

In the present study, participants performed holistic group exercises regularly and achieved a sense of control. They acquired comprehensive knowledge about stress management, which reduced their stress, depression, anxiety, and improved well-being. Therapy provided a context for the participants to realize that life challenges are ceaseless enabling them to appreciate problems and difficulties. The holistic group stress management activities helped participants to not only deal with the problems at hand but also nurture the self and enhance their self stress management.

The present study was carried out with a small sample; there is a need to substantiate the research results with an adequate sample size. Self-reporting measures were used to assess outcome variables. Including objective measures in future studies will strengthen the study validity. Notwithstanding these limitations, it is a maiden study to demonstrate the effectiveness of holistic stress management program in improving mental health outcomes among Indian adolescent girls who are educationally stressed.

Table 5: Group comparison of depression, anxiety, and stress across the time points between experimental and control group participants

Time of assessment	Mean±SD		Group × time F	P	Partial - eta squared (η^2_g)
	Experimental group (n=108)	Control group (n=101)			
Depression					
Baseline (T0)	16.39±4.36	16.22±4.36	$F_{(6, 1212)}=156.70$	<0.01	0.13
1 month (T1)	13.77±4.19	15.88±4.53			
2 months (T2)	10.59±3.64	15.71±4.53			
3 months (T3)	9.11±3.65	15.70±4.84			
4 months (T4)	7.75±3.69	15.50±4.89			
5 months (T5)	6.61±3.56	15.48±5.11			
6 months (T6)	6.04±3.76	15.44±5.01			
Anxiety					
Baseline (T0)	16.65±4.35	15.90±4.24	$F_{(6, 1230)}=190.5$	<0.01	0.16
1 month (T1)	13.24±3.98	15.64±4.36			
2 months (T2)	10.72±3.60	15.50±4.39			
3 months (T3)	9.16±3.83	15.72±4.49			
4 months (T4)	7.42±3.61	15.48±4.73			
5 months (T5)	6.18±3.47	15.45±4.40			
6 months (T6)	5.48±3.49	15.39±4.50			
General stress					
Baseline (T0)	18.26±3.91	16.85±4.21	$F_{(6, 1236)}=166.10$	<0.01	0.16
1 month (T1)	14.93±3.68	16.40±4.00			
2 months (T2)	11.85±3.66	16.22±4.50			
3 months (T3)	10.35±3.46	16.20±1.38			
4 months (T4)	8.97±3.63	16.00±4.36			
5 months (T5)	7.61±3.84	15.87±4.44			
6 months (T6)	6.86±3.83	15.94±4.52			

SD=Standard deviation

Conclusions

Adolescent well-being is an important indicator of future health and lifestyle habits. Participating in holistic stress management program enhance the well-being and academic performance among adolescent girls and helps in overall personality development and balanced lifestyle. This research assists in developing cost-effective, easy to practice holistic stress management program to reduce academic stress. Curriculum can incorporate this kind of holistic programs to enhance the well-being of adolescents.

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Conflicts of interest

There are no conflicts of interest.

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