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Evaluation of School-Based Stress Management Programs on Adolescent Well-Being in Selected Higher Secondary School, Coimbatore.

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INTRODUCTION

Adolescence is a transitional stage marked by emotional volatility, identity formation, and increasing social and academic demands. The World Health Organization (WHO, 2021) estimates that one in seven adolescents worldwide experiences a mental health condition, with stress being one of the leading contributors to anxiety, depression, and behavioural issues. (1) Schools are an ideal setting for implementing preventive mental health interventions as they provide structured environments and reach large populations during formative years (Kieling et al., 2019). School-based stress management programs—comprising relaxation techniques, mindfulness, and life skills training—aim to enhance coping capacity, emotional regulation, and resilience (2). Tamil Nadu state has recently expanded several mental-health initiatives and school-focused programs. Media and government reports highlight initiatives such as school-level digital-safety and well-being modules (e.g., “Agal Vilakku” for girl students) and district/PHC-level mental-health services expansion (suicide prevention and targeted programmes such as “Magizhchi” in some districts including Coimbatore). These policy moves create an enabling environment for scaling school mental-health programs but also emphasize the need to evaluate implementation and equity across districts. This study evaluates the effectiveness of a structured stress management program conducted among adolescents to determine its impact on stress reduction and improved well-being.

Need for the Study

Stress in Adolescence

Several studies highlight that academic performance pressure, peer influence, and parental expectations contribute significantly to stress among adolescents. Chronic stress can lead to emotional exhaustion, somatic complaints, and risk-taking behaviours (3).

School-Based Stress Management Interventions

A meta-analysis by Zenner et al. (2014) demonstrated that school-based mindfulness and relaxation programs significantly reduce stress and improve emotion regulation. Similarly, Mendelson et al. (2019) found that relaxation and breathing exercises improved focus and self-esteem among high school students. (4)

Role of Mindfulness and Relaxation: Mindfulness-based interventions encourage adolescents to focus on the present moment, improving self-awareness and emotional stability. Relaxation techniques such as deep breathing, guided imagery, and progressive muscle relaxation reduce physiological arousal and enhance coping mechanisms (5).

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Importance of Well-Being in Adolescents

Well-being is not merely the absence of mental illness but the presence of positive emotions, self-acceptance, and purposeful functioning. Schools that integrate well-being programs demonstrate improved academic performance and reduced absenteeism (6).

REVIEW OF LITERATURE

Adolescence is a high-risk period for the emergence of mental-health problems: global reviews and large meta-analyses estimate that clinically elevated depression and anxiety symptoms affect roughly 20–25% of young people, and the prevalence of self-reported psychological distress increased during the COVID-19 pandemic. These trends, together with large numbers of adolescents worldwide (tens to hundreds of millions), make prevention and early intervention in school settings a public-health priority. National public health agencies (e.g., CDC, NIMH) and international bodies (WHO/UNICEF) similarly emphasise schools as key platforms for prevention and early support. (7) Cognitive-behavioural approaches adapted for schools -teaching stress appraisal, problem-solving, cognitive restructuring, and behavioural coping skills have a robust evidence base for reducing internalising symptoms and building coping skills. Systematic reviews and meta-analyses show that school-based CBT and stress-management programs produce small-to-moderate effects on emotional symptoms and can be effective as universal or indicated programs. Trials of structured, manualised CB-based programs often report reliable reductions in perceived stress and anxiety among adolescents when delivered with adequate training and programme fidelity. (8) Studies commonly use validated self-report instruments such as the Perceived Stress Scale (PSS), WEMWBS, Strengths and Difficulties Questionnaire (SDQ), anxiety/depression scales (e.g., RCADS, Beck inventories), and resilience/well-being scales. Systematic reviews highlight heterogeneity in outcome selection and timing (post-test only vs follow-up), which complicates meta-analytic synthesis. High-quality trials usually pre-register outcomes, use control/comparison groups, and include follow-up (3–12 months) to assess sustainability. (9) Multiple school- and community-based studies from Tamil Nadu report elevated levels of stress, anxiety, depression, and other mental-health problems among adolescents. For example, a state-level study reported high rates of stress, anxiety and depression (39%, 64% and 56% respectively) in a sample from Tamil Nadu (pre-COVID era). Another cross-sectional investigation of high-school students in Tamil Nadu found that at least half of students had some form of mental-health difficulty (varying severity), and other studies report point estimates of adolescent mental-health problem prevalence ranging from about **25%** to **50%**, with urban samples often showing higher rates than rural samples. These findings align with national summaries showing that child/adolescent mental-health problems are frequent and often under-detected. (10) Coimbatore has been the site of several pilot evaluations and quasi-experimental studies of school mental-health programs. Notable local work includes quasi-experimental evaluations and pilot mental-health programmes conducted in Coimbatore schools (e.g., PSG schools and other higher-secondary schools) which aimed to promote mental-health characteristics (resilience, coping, stress reduction) and reported improvements in measured outcomes following structured interventions. Recent quasi-experimental evaluations in Coimbatore report feasibility and positive pre–post changes in mental-health indicators among adolescents exposed to school programmes. These local pilots provide direct support for feasibility and short-term effectiveness of school-based interventions in Coimbatore contexts. (11)

Statement of the problem

Evaluation of School-Based Stress Management Programs on Adolescent Well-Being in Selected Higher secondary School, Coimbatore.

Objectives:

1. To assess the pre- and post-intervention levels of stress and well-being among adolescents.
2. To evaluate the effectiveness of a school-based stress management program on improving adolescent well-being.

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METHODOLOGY

The study adopted a **quasi-experimental pre-test and post-test design** to evaluate the effectiveness of a stress management program among adolescents. The research was conducted in **two higher secondary schools in Coimbatore, Tamil Nadu**, with a total sample of **120 adolescents aged 13–17 years**, selected through **stratified random sampling**, comprising **60 participants in the intervention group and 60 in the control group**. The inclusion criteria included students aged between 13 and 17 years, able to understand Tamil or English, and willing to participate in the study. Data were collected using two standardized tools: the **Perceived Stress Scale (PSS)** developed by Cohen et al. (1983), a 10-item instrument used to measure perceived stress levels, and the **Warwick–Edinburgh Mental Well-being Scale (WEMWBS)**, a 14-item tool designed to assess positive mental health and well-being. The **intervention**, a structured stress management program, was implemented over a period of **four weeks**, with **three sessions per week**, each lasting **45 minutes**. The sessions included **deep breathing exercises, guided imagery, mindfulness meditation, and group sharing and reflection activities**, aiming to help adolescents manage stress effectively and enhance their mental well-being.

The permission to use the tools was sought from the experts and the consent was obtained from college administration and the adolescent's students. The Participants completed the questionnaires during a scheduled session and the responses were collected anonymously to encourage honest self-reporting. In the majority of occasions, the original English versions of the scales and questionnaires were utilized.

Ethical consideration

Ethical approval was obtained from the Institutional Ethics Review Board and formal approval was obtained from the Dean cum Principal of Ganga College of Nursing, Coimbatore to conduct the study in the higher secondary school and also from the class teachers of the respective class. The researcher has followed fundamental ethical principles like the right to freedom from harm and discomfort, respect for human dignity. The researcher gave full freedom to the participant to decide voluntarily whether to participate in the study or to withdraw from the study and the right to ask questions at any time during the course of the study. One visit was made to meet the students and distribute the consent and assent forms, later on two visits were made for data collection, hence minimum of three visits were made in each class. Class hours were not disturbed for the students as the study conducted after the chief hours. The investigator has maintained the study participants' privacy throughout study. The investigator has administered the same questionnaire for all the adolescents' students of boys and girls.

Statistical Analysis

Data were analyzed using SPSS version 25. Descriptive statistics (mean, SD, frequency) were used, and inferential analysis included paired *t*-test and Pearson correlation. A p-value < 0.05 was considered statistically significant.

RESULTS

Demographic Data of the Participants

A total of 120 adolescents participated in the study 60 in the intervention group and 60 in the control group. The demographic characteristics analyzed included age, gender, class level, type of family, and parental occupation.

Demographic Variable	Category	Intervention Group (n=60)	Control Group (n=60)	Total (n=120)	Percentage (%)
Age (in years)	13–14	20	18	38	31.6%
	15–16	25	27	52	43.4%

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	17	15	15	30	25.0%
Gender	Male	28	30	58	48.3%
	Female	32	30	62	51.7%
Class Level	XI Standard	35	33	68	56.7%
	XII Standard	25	27	52	43.3%
Type of Family	Nuclear	45	47	92	76.7%
	Joint	15	13	28	23.3%
Father's Occupation	Skilled	30	32	62	51.7%
	Unskilled	20	18	38	31.6%
	Professional	10	10	20	16.7%
Mother's Occupation	Homemaker	35	38	73	60.8%
	Working	25	22	47	39.2%

Interpretation: Most of the participants were aged 15–16 years (43.4%), slightly more were female (51.7%), and the majority belonged to nuclear families (76.7%). This demographic distribution indicates a balanced representation across gender and age suitable for comparative analysis.

Description of Tools Used

Perceived Stress Scale (PSS)

The Perceived Stress Scale (PSS) developed by Cohen, Kamarck, and Mermelstein (1983) is a widely used psychological instrument for measuring the perception of stress.

- The tool consists of 10 items that assess how unpredictable, uncontrollable, and overloaded respondents find their lives.
- Each item is rated on a 5-point Likert scale ranging from 0 (Never) to 4 (Very Often).
- Four positively stated items (Items 4, 5, 7, and 8) are reverse scored.
- The total score ranges from 0 to 40.
- Interpretation of Scores:
    1. 0–13: Low stress
    2. 14–26: Moderate stress
    3. 27–40: High stress
- The tool has a Cronbach's alpha reliability coefficient of 0.78, indicating good internal consistency.

Warwick–Edinburgh Mental Well-being Scale (WEMWBS)

The WEMWBS, developed by Tennant et al. (2007), is a validated instrument designed to measure mental well-being focusing on positive aspects of mental health.

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- It consists of 14 positively worded items such as "I've been feeling optimistic about the future" and "I've been feeling close to other people."
- Each item is scored on a 5-point Likert scale ranging from 1 (None of the time) to 5 (All of the time).
- The total score ranges from 14 to 70, with higher scores indicating greater mental well-being.
- The scale has excellent internal consistency (Cronbach's alpha = 0.89).
- Interpretation of Scores:
    - 14–32: Low well-being
    - 33–51: Moderate well-being
    - 52–70: High well-being

Comparison of Pre-test and Post-test Scores on Perceived Stress Scale (PSS)

Group	Mean Pre-test Score (±SD)	Mean Post-test Score (±SD)	Mean Difference	t-value	p-value
Intervention	25.6 ± 4.3	16.8 ± 3.7	8.8	9.72	$p < 0.001$
Control	24.9 ± 4.1	24.1 ± 4.0	0.8	1.02	$p > 0.05$

Interpretation: The mean PSS score in the intervention group decreased significantly from 25.6 (moderate stress) to 16.8 (low stress) after the 4-week stress management program. The paired t-test revealed a statistically significant reduction ($p < 0.001$), indicating that the intervention effectively reduced perceived stress among adolescents. The control group showed no significant change, confirming that the improvement was due to the intervention.

Comparison of Pre-test and Post-test Scores on Warwick–Edinburgh Mental Well-being Scale (WEMWBS)

Group	Mean Pre-test Score (±SD)	Mean Post-test Score (±SD)	Mean Difference	t-value	p-value
Intervention	42.3 ± 5.2	54.6 ± 4.8	12.3	10.45	$p < 0.001$
Control	43.1 ± 5.0	43.8 ± 5.3	0.7	1.14	$p > 0.05$

Interpretation: The WEMWBS scores in the intervention group increased from 42.3 (moderate well-being) to 54.6 (high well-being) following the stress management sessions, indicating a marked improvement in mental well-being. Statistical analysis showed a highly significant difference ($p < 0.001$). In contrast, the control group showed negligible change, highlighting the program's positive effect on adolescent well-being.

Correlation Between Stress and Well-being

A Pearson correlation analysis between post-test scores of the PSS and WEMWBS among the intervention group showed a negative correlation ($r = -0.68$, $p < 0.001$).This indicates that as perceived stress decreased, mental well-being increased significantly — demonstrating the inverse relationship between stress and well-being.

SUMMARY OF FINDINGS

- Most participants were adolescents aged 15–16 years from nuclear families.

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- The stress management program significantly reduced stress levels and improved mental well-being among adolescents.
- The control group showed no significant changes in either measure.
- There was a strong negative correlation between stress and well-being, indicating that lower stress levels corresponded with higher mental wellness.
- The findings confirm that structured stress management techniques such as deep breathing, guided imagery, mindfulness meditation, and group reflection are effective strategies to promote emotional health in school adolescents.

DISCUSSION

The findings revealed a significant reduction in stress levels and an improvement in well-being after the implementation of the stress management program. This is consistent with **Zenner et al. (2014)**, who reported that school-based mindfulness programs reduce psychological distress. Similarly, **Kuyken et al. (2017)** observed enhanced emotional regulation among adolescents participating in mindfulness interventions.

The study supports the concept of integrating non-pharmacological approaches such as relaxation and mindfulness into regular school schedules. Consistent with **Patel et al. (2018)**, promoting mental well-being leads to improved academic performance and resilience.

CONCLUSION

The structured school-based stress management program effectively reduced stress and enhanced well-being among adolescents. The results suggest the need for integrating stress management and mindfulness activities into the school health curriculum to foster mental resilience and academic success.

Recommendations

- Incorporate relaxation and mindfulness sessions into school timetables.
- Conduct periodic stress screening for adolescents.
- Train school nurses and teachers in mental health promotion techniques.
- Encourage parental involvement for sustaining coping skills at home.

Limitations

- Conducted in selected schools; results cannot be generalized.
- Self-reported scales may introduce response bias.
- Long-term effects were not assessed.

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Contributors

SR: Conceptualization of the study, collection, analysis of the data, writing the manuscript. **SS: Finalized** the manuscript and will act as the guarantor of the paper; **AR:** Edited and critically evaluated the manuscript.

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