

Professional Nursing Experiences Addressing Adolescent Stress Management and Emotional Stability Through Evidence-Based Pediatric Healthcare Interventions Today

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Abstract

Adolescents are a vulnerable age group and are prone to stress and emotional disorders, which can have a negative impact on their academic performance, social interactions and wellbeing. The aim of the study was to measure the effectiveness of a structured nursing approach in adolescents' stress management and emotional stability. A quasi-experimental pre-test-post-test control group design was used, comprised of 120 adolescents aged 13–18, consisting of 60 adolescents in a study group and 60 adolescents in a control group. The intervention group was engaged in an eight-week evidence-based nursing (EBN) program based on stress management, emotional regulation and coping skills. Standardized tools were used to evaluate stress and emotional stability pre and post interventions. The study showed that there was a significant decrease in the level of stress in the adolescents who received the intervention in comparison with the adolescents in the control group ($p < 0.05$), and that there was a noticeable improvement in emotional stability in the adolescents who received the intervention compared to those in the control group ($p < 0.05$). The findings demonstrate the efficacy of the nursing care given to children and adolescents, and their role in supporting adolescent mental health and emotional well-being.

Keywords: Adolescents, Stress Management, Emotional Stability, Pediatric Nursing, Mental Health, Evidence-Based Intervention.

1. Introduction

Adolescence is a time of rapid physical, mental, emotional and social development which affects health and wellbeing. Adolescents do have a lot of stress during this period – whether because of the school pressure, peer pressure, family pressure or the greater influx of digital technology – and it can have a destabilizing effect on their emotional life. Without proper stress management, stress may negatively impact academic achievement, psychological well-being, social interactions and behavior, and contribute to anxiety, depression, social isolation, and other mental health issues.

Stress related mental health conditions in the adolescent population are severe public health problems worldwide. There is a reported increase in emotional and psychological issues among young people which should be addressed in a timely and effective manner. Stress management problems may affect concentration, school performance and emotional coping and self-esteem. Moreover, emotional instability can have a detrimental effect on social functioning and unhealthy coping patterns may ensue.

Pediatric nurses are key partners in the promotion of adolescents' mental health through health education, counselling, emotional support, and putting evidence-based interventions into practice. Pupil psychological well-being in relation to structured nursing programmes which target psychological stress management, emotional regulation, coping abilities and positive behavioural growth have shown potential to enhance psychological well-

being in adolescents. Although the significance of mental health promotion is growing, there is a need for more evidence on the effectiveness of pediatric nursing interventions in improving the stress management and emotional stability.

To fill this gap, the effect of a structured nursing intervention with adolescents on their stress and emotional health was explored in this study. This research is designed to investigate if there are any significant differences in the level of stress and emotional stability of adolescents following an intervention using evidence based nursing strategies. The hypothesis is that adolescents in the intervention program will have greater emotional stability and better stress management than adolescents in routine care.

2. Literature Review

Adolescent stress has become a problem in terms of global psychological health and emotional functions, along with developmental consequences [2, [12]]. Adolescent stress occurs when a person feels that demands on them require more coping resources than are available. Theoretical framings of stress and coping are frequently based on the Transactional Model of Stress and Coping [6] and Developmental Theory of Adolescence [7] that focus on the transaction between individuals and the environment and on the special biological, cognitive, and psychosocial changes during adolescence. All of these theories argue that stress is especially threatening to adolescents as a result of the continuous developmental processes and social shifts in their lives [1, 7, 12].

Emotional stability is an important aspect of adolescent mental health and the capacity to manage emotions properly and keep a psychological balance when encountering difficulties [6, 14]. There are many factors to consider which can affect adolescent stress and emotional well-being, such as the pressure in their schoolwork, stressors in their families, peer relationships, and progressive use of digital technology and social media [3, 4, 13]. Focusing on academic demands could elevate levels of anxiety and performance-related stress, and family concerns and poor social support could reduce emotional coping [5, 11]. Furthermore, overuse of digital technologies is linked to increases in stress [13] and in emotional instability [14] and a drop in psychological well-being.

Pediatric nursing is a vital role in the promotion of adolescent mental health through the delivery of preventive, educational, and therapeutic services, activities, and programs. [8-9] Many stress-reduction and emotional stability-building strategies have been shown to be effective for nurses, including psychoeducation, cognitive-behavioral approaches, relaxation, mindfulness, and nurse-led counseling programs [3, 8, 9, 10]. Previous studies reported positive results after structured nursing interventions such as increasing coping skills and decreasing anxiety and emotional well-being among adolescents [5, 8, 10, 11]. But, the literature about the synergistic impact of in-depth intervention in the pediatric domain, focusing on stress management and emotional stability, is limited. This gap points to the need for continued research of structured EBIs. In this sense, the present study was guided by the conceptual framework that connects interventions developed by the pediatric nurse to the ability of these adolescents to cope with better, lower levels of stress and emotional stability.

3. Methodology

3.1 Research Design and Study Framework

The study design was the quasi-experimental pretest–posttest control group design to assess the effectiveness of the structured pediatric nursing intervention for stress management and emotional stability in the adolescents. There were two groups: a study group who were given the evidence-based nursing intervention and a control group who were given routine care. Baseline, post and follow-up evaluations were conducted to measure changes in stress and emotional stability.

This study was carried out in selected secondary schools and paediatric health care facilities offering adolescent health services. The data collection took 6 months, and the intervention was carried out for 8 weeks. The sample under study was young people between the ages of 13 to 18 years, who fulfilled the inclusion criteria and agreed to take part in the project.

The study paradigm was rooted in the concept that academic stress, stressors associated with the family, peer factors, exposure to digital technology, and environmental issues has an impact on adolescent psychological health, emotional stability, and wellbeing. It suggests that through evidence-based pediatric nursing interventions such as psychoeducation about the child's condition, cognitive-behavioural methods, relaxation and mindfulness, emotional regulation training and counselling by nurses, coping skills and emotional functioning can be improved. These interventions are anticipated to induce a decrease in stress, emotional stability, enhancement of social relations and psychological wellbeing. Moderating factors like age, gender, socioeconomic status, family support, and prior experiences could have an impact on intervention effects.

Figure 1 shows the conceptual framework that outlines the relationships between the stressors faced by adolescents, nursing interventions, moderating factors, and expected outcomes in the area of stress management and emotional stability.

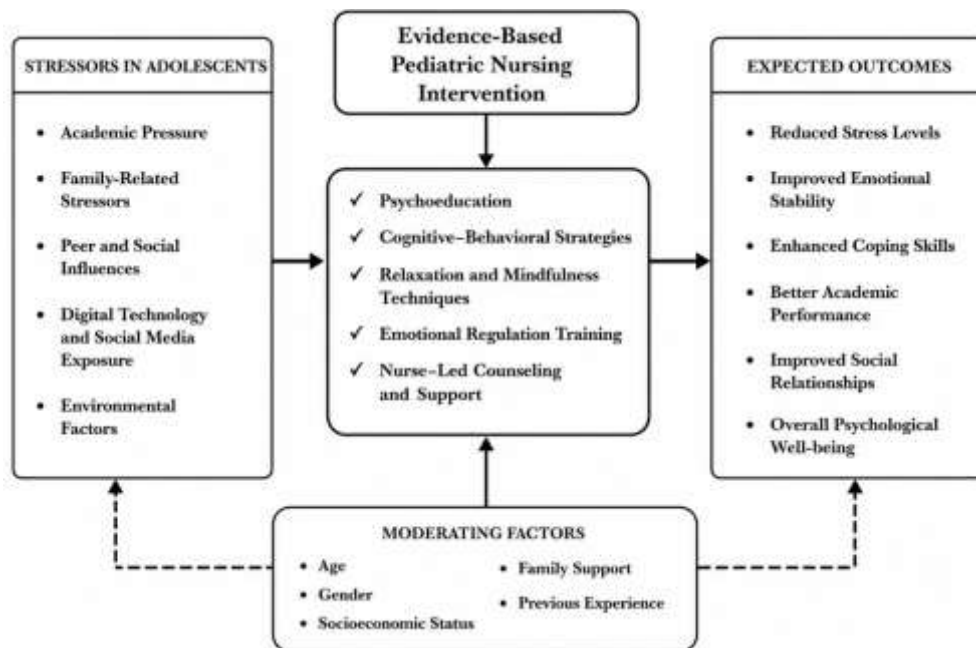


Figure 1. Pediatric Nursing Intervention Framework

3.2 Participant Selection and Sample Determination

Adolescent school learners between the ages of 13–18 and children in pediatric healthcare facilities were recruited as participants. The method used in the sampling process was purposive sampling with only eligible participants who fulfil the predetermined inclusion criteria were selected. Those aged between 13 and 17 years, who could grasp the instructions of the study and gave informed consent (with parents if necessary), were included. To avoid possible confounding effects on the study outcomes, the participants with severe psychiatric disorders or cognitive impairments or who were receiving intensive psychiatric psychologic treatment were excluded.

Sample size was calculated based on the sample size estimation formula derived by Cochran to provide enough sample size and representativeness of the population being studied. In this study the sample size equation used is expressed as follows (Equation (1)).

$$n = \frac{Z^2 P(1-P)}{d^2}, \text{-----} (1)$$

where n is the sample size needed, Z is the standard normal deviate for the desired confidence level (e.g., 1.96 when the level is 95% confidence), p is the prevalence of adolescent stress-related problems from previous

literature, and d is the margin of error acceptable to the researcher. With these parameters, plus expected drop-out of participants, the final sample size of 120 adolescents was determined.

After recruiting, participants were split into two groups. The study group ($n = 60$) was treated with the structured evidence-based pediatric nursing intervention program that was conducted for eight weeks: cognitive-behavioral strategies, emotional regulation training, relaxation techniques, psychoeducation, and nurse-led counseling. Regarding the non-intervention group, they ($n = 60$) were given a health education session and treatment which were the standard practices for visa control and not the program developed. With this allocation, stress management and emotional stability were compared across time between the Intervention group and the Non-intervention group.

3.3 Research Variables and Data Collection Instruments

The study assessed the efficacy of an evidence-based and structured pediatric nursing intervention to enhance the management of stress and emotional stability of adolescents. The pediatric nursing intervention program was the independent variable and the stress level scores, emotional stability scores were the dependent variables.

Standardized instruments were used to collect data. Demographic data was collected using a Demographic Information Questionnaire that included age, gender, level of education, place of residence, family structure and exposure to previous mental health support, potentially affecting one's experience of stress, coping and emotional functioning.

The Perceived Stress Scale (PSS-10) was used to assess stress levels, with scores on the ten-item scale ranging from 0 to 40, with higher scores representing higher perceived stress. Emotional stability was evaluated with the standardised Emotional Stability Assessment Scale, which includes emotional control, emotional resilience and psychological balance; higher scores reflect greater emotional stability.

The validity of instruments was carried out by validating the instruments using experts who are specialists in pediatric nursing, adolescent health and mental health research. The Cronbach's alpha was found to be 0.87 based on which reliability testing was conducted, and which reflected good internal consistency. A pilot study was performed with adolescents who did not make up the final sample to evaluate instruments and intervention procedures, and to determine instrument clarity and feasibility. Comments provided by the pilot study helped to make minor modifications that increased reliability and usefulness of the research process.

3.4 Intervention Procedure and Data Collection Process

The intervention and data collection process was carried out in five stages in sequence so that structured nursing in children intervention program can be implemented and evaluated systematically. Phase I (Participant Recruitment) entailed the identification of eligible adolescents from the selected study settings and screening of eligible adolescents using the inclusion and the exclusion criteria. The participants were briefed on the study purpose and procedure and informed consent was obtained from eligible participants and their parents/carers.

In Phase II (Baseline Assessment) subjects filled in the Perceived Stress Scale (PSS-10), Emotional Stability Assessment Scale and the demographic paper before the intervention started. Baseline measurements were taken to establish the initial level of stress and emotional stability in the participants in each of the study and control groups.

In phase III (Nursing Intervention Program), adolescent in the study group received an 8-weeks structured evidence-based pediatric nursing intervention. The program was made up of 8 sessions focusing on stress management and emotional well-being. In the first session, the participants were introduced to the concept about adolescent stress and the impact of stress. During Session 2 participants explored common stress triggers and in Session 3 they focused on the emotional reactions to stress. Session 4 was the introduction of relaxation/deep breathing techniques and Session 5 was the introduction of positive cognitive restructuring

strategies. Session 6 was dedicated to communication and social support skills and Session 7 was devoted to emotional regulation and self-control skills. The last session (Session 8) was a review of sessions prior and a discussion of ongoing coping techniques.

Phase IV (Immediate Post-Test Assessment) was carried out at the end of the intervention to assess the immediate effects on stress and emotional stability with the use of the same assessment instruments. A follow-up assessment (Phase V: Follow-Up Assessment) was conducted 4 weeks later to assess intervention effects over time.

Flow of participants throughout the study, ranging from recruitment to enrollment, eligibility screening, group allocation, intervention delivery, post-test assessment, follow-up assessment, and final data analysis is shown in Figure 2.

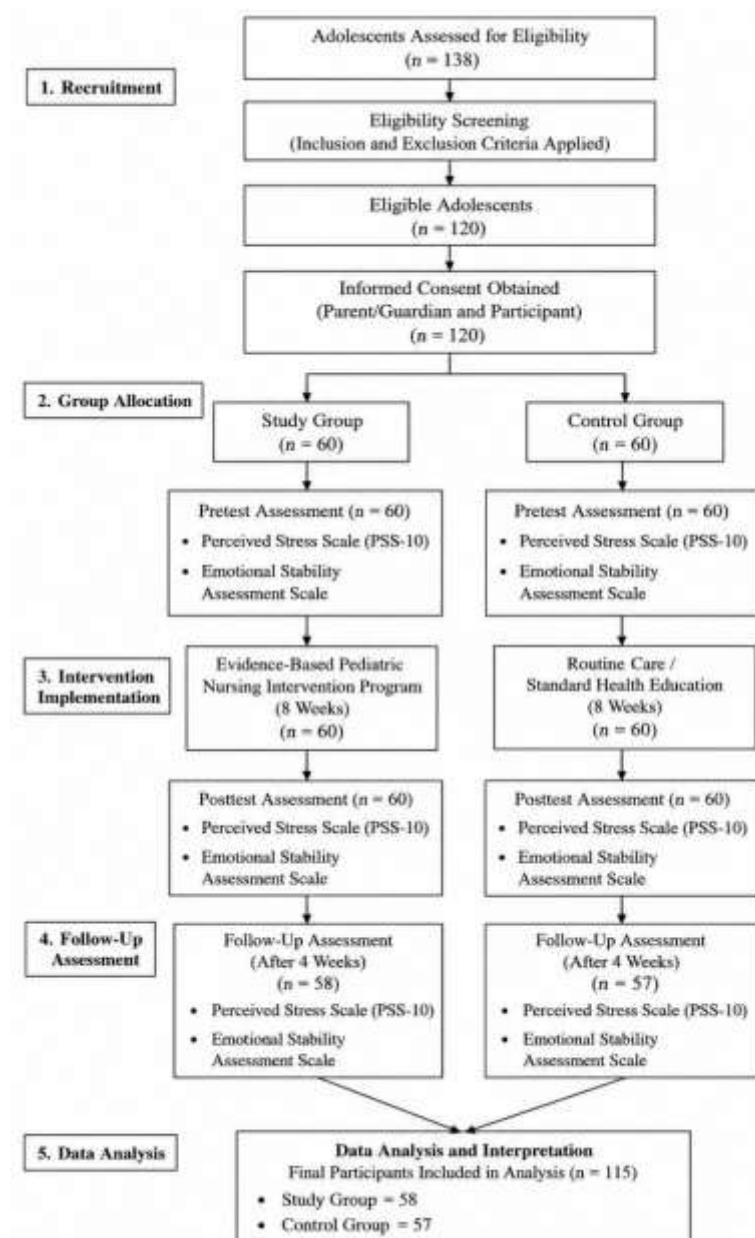


Figure 2. Study Flow Diagram

3.5 Ethical Considerations and Statistical Analysis

All ethical principles were adhered to to the protection of participants' rights, safety, and wellbeing. Prior to data collection, ethical approval was obtained from the appropriate Institutional Ethics Committee. Additionally, the consent of the participating schools and healthcare facilities was obtained. Eligible adolescent and parents/legal guardians were provided with comprehensive information about the study aims, methods, benefits and risks. All parents/guardians and adolescent participants signed/informed consented and assent, respectively. Participants had their personal identifiers (ID) assigned to ensure confidentiality and anonymity and all data gathered were only accessed by authorized research staff. The study was done on a voluntary basis and participants were told they could withdraw from the study at any time without penalty or negative consequences.

Data analysis was done using Statistical Package for the Social Sciences (SPSS) software version 25. The descriptive statistics were summarized as means and percentages to describe the characteristics of the participants and the study variables. Categorical data were expressed as frequencies and percentages and continuous data were expressed as means and standard deviations. Differences between groups were evaluated using inferential statistical analysis and the effectiveness of the intervention was examined. To investigate the relationship between two categorical variables Chi-square test was conducted. Independent t tests were used to compare the mean scores of the study and control groups, whereas paired t tests were used to compare the pre-test and post-test scores within each group. Repeated Measures Analysis of Variance (ANOVA) was used to assess stress and emotional stability scores at various assessment times. A value of $p < 0.05$ was considered to be statistically significant. The intervention's effectiveness in reducing the perceived stress was also expressed as a Stress Reduction Percentage, as shown in Equation (2):

$$SR\% = \frac{\text{Pretest Score} - \text{Posttest Score}}{\text{Pretest Score}} \times 100, \quad (2)$$

where SR (%) is stress reduction percentage after the implementation of the nursing intervention, Pretest Score is the stress score before implementing the nursing intervention, and Posttest Score is the stress score after implementing the nursing intervention program. The relative magnitude of the participants' stress reduction was calculated using this equation.

4. Results

4.1 Demographic Characteristics of Participants

A total of 120 adolescents were involved with 60 providing data for the study group and 60 providing data for the control group. Demographic factors such as age, gender, educational attainment, prior mental health supports, place of residence and family structure were tested to be comparable between the two groups prior to the start of the study. It was observed that the demographic distribution was relatively equal between the two groups, thus indicating that there was homogeneity in the characteristics of the participants before the intervention is implemented. The ages of the participants were mostly from 16 to 18 years old (61.7%) while the number of female participants was slightly higher (53.3%) than males (46.7%). The majority of the participants lived in urban areas (60.0%) and were in nuclear family households. Demographic details of study and control groups are summarized in Table 1.

Table 1. Demographic Characteristics of Study and Control Groups

Variable	Category	Study Group (n=60)	Control Group (n=60)	Total (n=120)
Age (Years)	13–15	22 (36.7%)	24 (40.0%)	46 (38.3%)
	16–18	38 (63.3%)	36 (60.0%)	74 (61.7%)
Gender	Male	27 (45.0%)	29 (48.3%)	56 (46.7%)
	Female	33 (55.0%)	31 (51.7%)	64 (53.3%)

Educational Level	Middle School	24 (40.0%)	26 (43.3%)	50 (41.7%)
	High School	36 (60.0%)	34 (56.7%)	70 (58.3%)
Residence	Urban	37 (61.7%)	35 (58.3%)	72 (60.0%)
	Rural	23 (38.3%)	25 (41.7%)	48 (40.0%)
Family Structure	Nuclear Family	41 (68.3%)	39 (65.0%)	80 (66.7%)
	Joint/Extended Family	19 (31.7%)	21 (35.0%)	40 (33.3%)
Previous Mental Health Support Exposure	Yes	18 (30.0%)	16 (26.7%)	34 (28.3%)
	No	42 (70.0%)	44 (73.3%)	86 (71.7%)

Demographic analysis showed that there were no significant differences between the baseline characteristics of the two groups, in order to justify considering the two groups as comparable prior to the implementation of the evidence-based pediatric nursing intervention. This comparability increases the validity of subsequent analyses of the effects of the intervention on stress management and emotional stability.

4.2 Baseline Comparison of Study Variables

Pre-intervention assessments were carried out to establish the starting point for baseline assessment of the perceived stress and emotional stability of the participants in both groups. The results showed that there were no significant differences between the study group and the control group in the pre-intervention mean scores of stress and emotional stability. The mean stress score of the study group was 29.4 ± 4.8 , whereas, the mean stress score of the control group was 28.9 ± 5.0 . Like this, the emotional stability scores was mean $\pm$ Standard Deviation (SD) 51.3 ± 8.2 for study group and 52.1 ± 7.9 for control group. In order to demonstrate the homogeneity of the groups before the intervention, the baseline level was compared between the groups using an independent t-test analysis, which showed no statistically significant differences ($p > 0.05$). The baseline comparison of stress and emotional stability measures is shown in Table 2.

Table 2. Baseline Stress and Emotional Stability Scores Between Groups

Variable	Study Group (n=60) Mean $\pm$ SD	Control Group (n=60) Mean $\pm$ SD	t-value	p-value
Stress Score (PSS-10)	29.4 ± 4.8	28.9 ± 5.0	0.56	0.576
Emotional Stability Score	51.3 ± 8.2	52.1 ± 7.9	-0.54	0.592

According to the results shown in Table 2, there was no difference in stress or emotional stability pre-nursing intervention program for both groups. There were no statistically significant baseline differences, which helps to ensure that the study and control groups were similar and also allows for the results of the intervention to be compared to the results of initial testing at the other time points.

4.3 Effect of Evidence-Based Nursing Intervention on Stress Levels

Stress score comparisons pre-test, post-test I and follow up assessment was used to assess the effectiveness of the evidence-based pediatric nursing intervention on adolescent stress management. The study group had a baseline score of 29.4 ± 4.8 , which dropped significantly to 18.2 ± 4.1 right after the intervention and to 17.1 ± 3.9 at follow-up evaluation. A control group had minimal changes in stress scores from pre-test through post-test I and follow-up (28.9 ± 5.0 , 28.1 ± 4.7 and 27.8 ± 4.9 , respectively). Repeated measures analysis revealed a significant decrease in stress level for the participants who were given the nursing intervention ($p < 0.001$), while those in the control group did not significantly improve. Table 3 summarizes the mean score for stress for the three assessment periods.

Table 3. Comparison of Stress Scores at Pre-Test, Post-Test I, and Follow-Up Assessment

Assessment Period	Study Group (n=60) Mean $\pm$ SD	Control Group (n=60) Mean $\pm$ SD	p-value
Pre-Test	29.4 $\pm$ 4.8	28.9 $\pm$ 5.0	0.576
Post-Test I	18.2 $\pm$ 4.1	28.1 $\pm$ 4.7	<0.001*
Follow-Up Assessment	17.1 $\pm$ 3.9	27.8 $\pm$ 4.9	<0.001*

Table 3 shows that the adolescents who received the structured pediatric nursing intervention had a significant and ongoing decrease in perceived stress level. Having lower stress scores at follow up assessment suggests that the intervention had immediate effects as well as facilitated the maintenance of effective stress management skills over time. A comparison of the two groups indicated that the stress scores were relatively stable in the control group, which further demonstrates the effectiveness of the intervention program.

4.4 Effect of Evidence-Based Nursing Intervention on Emotional Stability

Emotional stability was verified after the pediatric nursing intervention was implemented, in the pre-test, post-test I and follow-up periods. The emotional stability scores at baseline were 51.3 $\pm$ 8.2, which rose significantly to 74.6 $\pm$ 7.5 at the end of the intervention and to 77.8 $\pm$ 6.9 by follow up assessment. However, the control group showed only minor change in emotional stability scores with an increase from 52.1 $\pm$ 7.9 (pre-test) to 53.2 $\pm$ 7.4 (post-test I) to 53.8 $\pm$ 7.2 (follow-up). The statistical analysis showed that the adolescents who received the structured nursing intervention had significant improvements in emotional stability than the adolescents who received routine nursing intervention ($p < 0.001$). The results of these findings show that the intervention succeeded in improving emotional regulation, resilience and psychological well-being. The results of emotional stability scores between the three assessment time points are shown in Table 4.

Table 4. Comparison of Emotional Stability Scores at Pre-Test, Post-Test I, and Follow-Up Assessment

Assessment Period	Study Group (n=60) Mean $\pm$ SD	Control Group (n=60) Mean $\pm$ SD	p-value
Pre-Test	51.3 $\pm$ 8.2	52.1 $\pm$ 7.9	0.592
Post-Test I	74.6 $\pm$ 7.5	53.2 $\pm$ 7.4	<0.001*
Follow-Up Assessment	77.8 $\pm$ 6.9	53.8 $\pm$ 7.2	<0.001*

As displayed in Table 4, the findings indicate that there was significant improvements in the emotional stability for the adolescents receiving the evidence-based pediatric nursing intervention. The scores for emotional stability increased over time, indicating the participants became more emotionally stable in their coping strategies and emotional regulation over time. The control group showed only slight gains during the study period, however. The results confirm that structured pediatric nursing interventions can contribute to adolescents' emotional stability and positive mental health.

4.5 Overall Intervention Effectiveness

Overall effectiveness of the evidence-based pediatric nursing intervention was assessed using Repeated Measures Analysis of Variance (ANOVA) and Effect Size Analysis and Hypothesis Testing procedures. Stress changes and emotional stability were assessed at the three evaluation periods (pre, post I, and follow-up assessment), and the study group's results were compared to the control group's results. The results showed that there was a significant improvement with the adolescents in the intervention program. This meant that over time, there was significant time, group, and time-by-group interaction effects, suggesting that the intervention had meaningful time effects on perceived stress and emotional stability, respectively. The ANOVA results are displayed in detail in Table 5.

Table 5. Repeated Measures ANOVA and Effect Size Analysis

Effect	F-value	p-value	Partial η^2
Time Effect	118.42	<0.001*	0.668
Group Effect	12.85	0.001*	0.098
Time $\times$ Group Interaction	156.73	<0.001*	0.726

The results presented in Table 5 revealed a highly significant difference among the assessment periods ($F = 118.42$, $p < 0.001$) and the significant difference between the intervention and control ($F = 12.85$, $p = 0.001$) groups, indicating that change in stress and emotional stability assessment outcomes were significant across assessment periods and differed between the intervention and control groups. The high time by group interaction ($F = 156.73$; $p < 0.001$) also demonstrates that the gains that occurred over time were mainly due to the nursing intervention. The large partial eta-squared values ($\eta^2 = 0.668-0.726$) suggest that they are practically significant and highly effective interventions.

In addition, both study hypotheses were confirmed by hypothesis testing. The structured nursing intervention in the pediatric field was accepted as the first hypothesis: that the intervention would considerably decrease the level of stress among adolescents. Likewise, the second hypothesis—that the program would have a significant effect on emotional stability in adolescents was also found to be correct. The results of this study demonstrate that evidence-based pediatric nursing strategies are effective in improving psychological well-being in adolescents.

These trends relating to the reduction of stress and the enhancement of emotional stability are graphically depicted in Figure 3. The figure shows that the study group had significantly reduced stress scores over the follow-up testing (29.4 to 17.1, respectively), as well as increased emotional stability scores (from 51.3 before the study to 77.8 after the study). The changes in the control group were minimal across assessment periods in contrast to the changes in the experimental group. The results presented graphically in Figure 3 further complement the statistical results presented in Tables 3, 4 and 5 which showed the positive and ongoing effects of the evidence-based pediatric nursing intervention regarding stress management and emotional stability for adolescents.

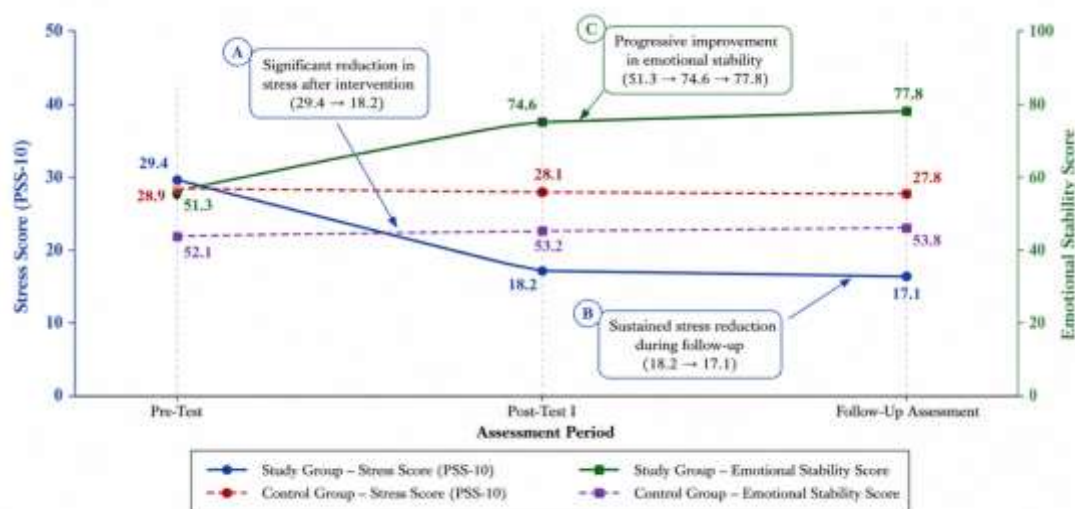


Figure 3. Changes in Stress and Emotional Stability Scores Across Assessment Periods.

5. Discussion

The present study adopted a structured program of evidence-based pediatric nursing intervention to examine its effectiveness in enhancing stress management and emotional stability of adolescent students. Pre-intervention data compared to both groups revealed similar stress and emotional stability levels, which were comparable prior to intervention. The eight-week study group significantly decreased their level of stress and significantly increased their emotional stability compared with the control group. The results indicate that evidence-based nursing strategies are found to be effective in improving coping and psychological well-being, such as psychoeducation, cognitive-behavioral methods, relaxation training and emotional regulation exercises.

These findings are similar to past studies that have found that nurse delivered mental health interventions can have a positive effect on the adolescent outcomes. Effect sizes were very good in the intervention group, and the substantial gains over the assessment periods demonstrate clinically important clinical gains. The results are illustrative of the value of introducing structured pediatric nursing education to the school and health care settings to advance and enhance adolescent mental health. This study has many strengths, including its controlled design, standardized assessment materials, and its sample size. However, generalizability may be limited due to a few factors such as purposive sampling, geographic limitations, and a relatively short follow-up period.

6. Conclusion

The aim of this study was to assess the effectiveness of an evidence-based, structured nursing intervention for adolescents regarding their emotional stability and stress management. The findings showed that the eight-week intervention group saw substantial decreases in adolescents' perception of stress levels and marked increases in emotional stability when compared to the routine care group. The results of the present study support the research questions and hypotheses and suggest that evidence-informed nursing actions have a positive impact on the mental health outcomes of adolescents.

The intervention consisted of psychoeducation, cognitive-behavioral therapy, relaxation training, emotional regulation training and nurse-counselling, which led to increased coping skills and psychological health. There were significant improvements for all assessment periods, which underscore the clinical impact of structured pediatric nursing interventions as a valuable means of helping to foster resilience and avoiding mental health issues in response to stressors in the lives of children and adolescents.

In a public health context, school-based nurse-led mental health interventions can help in early detection of emotional and psychological challenges, lead to improved psychological wellbeing, and potentially have a positive effect on subsequent developmental outcomes. The effectiveness and sustainability of evidence-based pediatric nursing interventions for promoting mental health of adolescents should be further validated in the future with more large and diverse populations, longer follow-up periods and multicenter investigations.

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