Effect of Mindfulness-Based Intervention on Anger and Self-Concept among Preparatory School Students

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Abstract:

Background: School students experience problems related to anger and low self- concept that negatively influence their academic and social development and have lasting effects on their well-being. Schools can play a pivotal role in promoting students' mental health and their social, emotional, and behavioural development. **Aim:** To evaluate the effectiveness of a mindfulness-based intervention on anger and self-concept among preparatory school students. **Design:** A quasi-experimental design using non-equivalent group designs and pre- and post-tests were used. **Setting:** The study was carried out in Salah Salem Preparatory Joint School in Assiut. **Sample:** A stratified random sample consists of 60 preparatory students. The sample was partitioned into two groups, a study group and a control group (n = 20 students from each grade). **Data collection tools:** The student's personal data questionnaire, the Adolescent Anger Rating Scale (AARS), and the Beck Youth Self-Concept Inventory scale (BSCI-Y) were implemented. **Results:** The mean score of the anger scale obtained by the study group was significantly lower than that obtained by the control group in the post-test. Moreover, the mean score of the self-concept scale obtained by the study group was significantly higher than that obtained by the control group in the post-test. **Conclusion:** The study adds to the growing body of evidence pointing to the contribution of Mindfulness-based intervention efficacy in reducing anger and improve self -concept among preparatory school students. **Recommendations:** Replication of the study is essential to strengthens confidence in the intervention's effectiveness and ensure generalizability. Empowering the school health nurse to take the lead in implementing the mindfulness program to enhance students' mental well-being is strongly recommended.

Keywords: Anger, Mindfulness-Based Intervention, Self-Concept & School Students.

Introduction:

School-age students are the most vital resource and future hope of society. Child and adolescent mental health problems are major contributors to the global burden of disease in both low- and middle-income countries **(Ramaiya et al. 2022).** Mental health problems are characterized by early onset, prevalent, and can affect children, families, and communities **(Moen & Jacobsen, 2022).**

Numerous school age children struggle with issues like anger, anxiety, and low self-concept (Phan et al. 2022). Students may fight with managing their anger due to a lack of understanding about their emotions and how to regulate them, which can result in disruptive behaviour like bullying and outbursts. These behaviours arise from confusion and an inability to express anger in a productive way **(Costa et al., 2023).**

While unwanted behaviour is prevalent in classrooms, early intervention programs that teach skills such as communication, conflict resolution, emotion management, and anger control have been found to effectively reduce student violence and hostility **(Akan, 2021).** According to **Herrera, Al-Lal, & Mohamed (2020)** building a positive self-concept among students throughout their educational journey is vital for fostering successful academic settings and promoting positive social-emotional development.

The school nurse was in a unique position for establishing a relationship with the students based on her concern for their health and well-being **(Henry et al., 2022).** School nurses play an important role in offering initial mental health assistance to students **(Persson et al., 2022).** Consequently, School health nurses must equip young people with the necessary skills for leading healthy and prosperous lives **(Vejzovic et al., 2022).** The emphasis should be on nurturing not just intelligence, but also wisdom, empathy, and wellness, by promoting a balance of the mind, body, and heart in a holistic manner **(Portele & Jansen, 2023).**

School health nurses can take charge of training programs in schools, which can enhance the mental health skills of teenagers. There are multiple teaching methods that can be employed to educate students about mental health, its issues, and the steps to address them **(Costa et al., 2023).** So, it is crucial for the school nurse to enhance the accessibility and quality of training to assess and

provide support for students' mental health (**Markkanen et al, 2021**).

Recently, mindfulness-based interventions have grown in popularity and numerous recent studies reported that, mindfulness-based interventions could improve the student's academic achievement, interpersonal interactions, students' vitality and resilience while reducing stress, anger, and depressive symptoms (**D'Alessandro et al. 2022; Holt & Atkinson. 2022; Kato, Matsumoto, & Hirano 2022; Magalhães et al. 2022; Phan et al. 2022; Akan. 2021; Johnson & Wade 2021**).

Moreover, mindfulness in education can help students cope with daily challenges by allowing them to experience events more attentively and mindfully and acquire new knowledge in a calmer and tranquil approach (Amundsen et al., 2020). Consequently, learning is enhanced, the danger of information overload is decreased, and certain social and personal advancement features and well-being improvements in schools are made accessible to supplement academic learning techniques (**Alampay et al., 2020**).

School health nurses are in an exceptional position to lead and facilitate a mindfulness program in schools (**Persson et al., 2022**). In a study aimed to investigate the feasibility of a school nurse–led mindfulness program in a public school, **Henry et al. (2022)** concluded that, with appropriate planning, school health nurses can successfully implement the mindfulness curriculum in urban public school.

Significance of the study:

Egypt's young population is increasing rapidly. About 17 million teenagers comprise about 19% of the total population (**UNICEF, 2021**). Children and adolescents are vulnerable to mental health problems (**Nawaz et al. 2021**); approximately, one in every 10 children suffers from anger behaviours or is harassed by peers (**Abu Al Rub, 2018**). In a cross-sectional study in four Egyptian governorates, **Abdelrehim et al. (2022)** found that, 43.4% of studied children and adolescents were at risk of having emotional problems and behavioural problems. Emotional symptoms were the most common problems found in 39.1%.

Therefore, school health nurses must address this problem and use techniques such as mindfulness intervention to assist school age students in controlling their anger, building social skills, and managing psychological distress (**Henry et al. 2022**). Several studies have recommended more research regarding the influence of mindfulness-based interventions on improving the bio-psychosocial health of school students (**Magalhães et al. 2022; Phan et al. 2022; Portele and Jansen 2023; Sciutto et al. 2021**).

Despite these recommendations, there are few interventions in nursing research designed to specifically address emotion dysregulation in children and early adolescence (**Ebrahem et al., 2022; Ali, 2018**) especially during early and mid-adolescence (11-15 years) (**Ebrahem et al. 2019**). Additionally, up to the researchers' knowledge studies of the effect of school-based mindfulness intervention on anger and self-concept among school students is not available in Egypt.

Studying the effectiveness of mindfulness-based interventions among Egyptian school children lies in the potential to bridge the gap between mindfulness research and the local Egyptian context and can generate valuable insights and recommendations for the school health nurse that are specifically relevant to the cultural, social, and educational landscape of the country. Accordingly, the present research aim is to evaluate the effectiveness of mindfulness-based interventions on anger and self-concept among preparatory school students in the Assiut governorate.

Methods:

Aim of the study:

This study aimed to evaluate the effectiveness of mindfulness-based interventions on anger and self-concept among preparatory school students.

Research hypotheses:

To achieve the study's objective, the following assumptions were developed:

H_1: The post-test mean anger rating scale scores of preparatory students exposed to mindfulness-based interventions will be lower than the pre-test means practice scores.

H_2: The post-test mean self-concept scale score of preparatory school students exposed to mindfulness-based interventions will be higher than the pre-test means scores.

Research design:

This research used a quasi-experimental design with non-equivalent groups and pre-and post-tests.

Setting:

Amongst eleven educational departments in the governorate of Assiut, a preparatory government school was chosen randomly for conducting the research. The chosen school was Salah Salem Preparatory Joint School in Assiut. Besides, this school represented Assiut educational departments. The school serves first to third-year preparatory classes. It comprises four buildings, twelve classrooms, and computer labs with data projectors and whiteboards.

Sample:

A stratified random sample technique was used to select the sample of the study. One school was chosen randomly from the Assiut-affiliated educational department in the southern region of Assiut. After selecting the preparatory governmental school, six classes were randomly selected from the list of 1st to 3rd grade classes. Preparatory school children were selected in particular as adolescence was an appropriate age for

the implementation of mindfulness-based intervention to avoid anger and its related psychosocial problems which become more prevalent during adolescence.

Sample size:
The population size was 450, and the sample size was computed using the Cochran method for sample size with 8% error margin (Pourhoseingholi et al., 2013) equal 60 school children.

$$n = \frac{z2*p*(1-p)/e21}{z2*p*(1-p)e2*N} \cong 60$$

where, n: The minimum required sample size, z: The z-value represents the desired level of confidence or significance level. N= The population size, e: The margin of error.

Two steps of the selection process were used to ensure randomization. First, a random selection of the sample was done using computer generated random number. Next, random sampling is conducted within each Grade; This involves randomly selecting a predetermined number of students from each grade (n = 20 students from each grade) to ensure representation from all relevant subgroups. The control group and study group formed from the selected sample. .The study group received a mindfulness-based intervention for eight weeks, while the control group did not receive any intervention for the same period.

Tools for data collection:
Three assessment tools were used to gather data: the student's personal data questionnaire, the Adolescent Anger Rating Scale (AARS), and The Beck Youth Self-Concept Inventory scale (BSCI-Y).

The first tool: student's personal data questionnaire:
It was established by the researchers and included personal data of school children and their parents. It consisted of 7 questions, such as age, grade, sex, and parent's educational level & occupation.

The second tool: The Adolescent Anger Rating Scale (AARS):
It was a standardized tool developed by Hamza (2012). It was used as pre-/post-tests. It is designed to measure anger forms: reactive and instrumental, intensity and psychometric signs of anger, and intrinsic and extrinsic anger. It consists of 73 items. The scale is divided into six subscales: anger exaggerated factors (19 items), emotional feeling of anger (13 items), psychometric signs of anger (14 items), intrinsic anger (9 items), extrinsic anger (9 items), and intensity of anger (9 items).

Scoring System:
Each item was responded to utilizing a 3-point Likert scale format from 3 to one range (never =1, sometimes = 2, yes = 3). The total AARS score can be measured, which varies from 73-219. A score of 164 or more (≥75%) suggests a greater anger level, the moderate level ranges from 109 to less than 164 (50% to <75%), and a lower level of anger is considered if the score is less than 109 (<50%). The rating scale is achieved in 20 to 25 minutes. Cronbach's Alpha was used to determine the internal consistency of the standardized tool which was (0.94) Hamza (2012).

The third tool: The Beck Youth Self-Concept Inventory scale (BSCI-Y):
It was a standardized tool developed by (Beck, Beck, & Jolly, 2001). It was used as pre-post-tests. It is designed to evaluate how confident a child is. It is the sum of one's self-directed perceptions, cognitive, and affective behaviours toward oneself, including one's perception of one's social role (e.g., "people want to be around me"), one's personal qualities (e.g., "I am good at cracking jokes"), and one's level of self-acceptance (e.g., "I like myself"). Competence, potency, and a sense of positive self-worth are examples of BSCI-Y items that measure self-perceptions.

The Beck Self-Concept Inventory has 20 statements about thoughts, feelings, or behaviours involving social and emotional insufficiency in teenagers and children. The inventories are prepared at a second grade reading level to be used with kids and adolescents aged 7 to 18. The questionnaire can take between 8 and 10 minutes to complete, based on the age and reading ability of the children.

The scoring system:
On a 4-point Likert scale, participants indicated how often every statement corresponded to their daily thoughts, behaviours, and feelings (0, "never," to 3, "always"). The Beck Self-Concept Inventory scale can be measured from 20-60. A score of 45 or more (≥75%) suggests a greater self-concept level, the moderate level ranges from 30 to less than 45 (50% to <75%), and a lower level of self-concept is considered if the score is less than 30 (<50%). Cronbach's Alpha was used to determine the internal consistency of the standardized tool which was (0.86). **(Beck, et al., 2001).**

Tools validity: The study tools were tested for validity by a panel of five experts in the fields of Psychiatric and Mental Health Nursing and Community Health Nursing. The modifications were finished as needed.

Tools reliability: Cronbach's Alpha was used to assess the reliability of the tools; it was (0.94) for The Adolescent Anger Rating Scale (AARS) & (0.86) for The Beck Youth Self-Concept Inventory scale (BSCI-Y).

Ethical consideration:
Before starting the study, ethical approval was obtained from the scientific research ethical committee of the faculty of Nursing, Assiut University (3650032). Additionally, official approvals from the educational directorate, the educational zones, and the headmaster in Salah Salem Preparatory Joint School were obtained. Involvement in the research was dependent on parental and child approval and was voluntary.

Informed consent was acquired from each parent. Further, the privacy and confidentiality of students' data were protected. The children's participation in the research was approved by verbal permission. The researchers developed and preserved unique coding to maintain the pupils' anonymity. Moreover, students were informed of the goal of the research to elicit their participation and enable data collecting. The collection of data continued for two months.

Pilot study: Pilot research was conducted on 10% of the total sample (6 students) to assess the clarity and applicability of the tools. No changes were made to the tools. So, they were added to the total sample.

Procedure: The actual fieldwork was carried out for two months from the beginning of April until the beginning of May 2022; was conducted in four main phases:

The preparatory phase:

- The researchers reviewed past and currently available literature relevant to the study topic to acquire in-depth knowledge of theoretical of the different aspects of the program. Then the study tools were designed after an extensive review of the literature. An official letter of approval was obtained from the Dean of the Faculty of Nursing, to the educational directorate, the educational zones, and the headmaster in Salah Salem Preparatory Joint School. This letter includes permission to conduct the study and explained the aim and nature of the study.
- After that the personal data was assessed and the researcher asked them to fill out the Adolescent Anger Rating Scale (AARS) and the Beck Youth Self-Concept Inventory scale. The time spent filling out the questionnaire ranged from 15-25 minutes.

Planning phase:

The researcher designed a mindfulness-based intervention plan following the findings from the assessment and study of relevant literature. The mindfulness program was conducted in 8 sessions, once a week, for 45- 60 minutes, over 2 months. There was a designated facilitator for each practical and theoretical session. The school administration determined the session's location and timing. Throughout this phase, teaching approaches and media were designed as well as the total number of sessions.

Implementation phase:

Mindfulness-based intervention was conducted during this phase for the study group only. The designed program was presented in simple Arabic language. Moreover, each session was conducted as a teaching class with pre-created educational materials. Every session started by going over the goals of the new topics and the previous sessions.

Furthermore, pamphlets, flyers, and a compact disc with a short documentary video on mindfulness techniques were used during the educational intervention. A demonstration of the proper mindfulness techniques was performed. Handouts of contents and activities were given to the students. After each session, feedback was provided. Lectures, talks, and demonstrations were employed as teaching techniques during the program's implementation. Besides, data shows and whiteboards were employed as instructive tools during the event. Supporting materials for every session, like pictures and PowerPoint slides, were utilized. The mindfulness-based intervention program included 8 sessions: -

- **First session:** familiarization and preparation: Achieving an atmosphere of familiarity and trust between researchers and students.
- **Second session:** Introduce the meaning of the concept of anger, its causes, and ways of expressing it.
- **Third session:** Help students identify the stages of anger and **its** effects
- **Fourth session:** Help students to recognize basic concepts of **mental** alertness in daily life to control anger and the principles of mindfulness.
- **Fifth session:** Help students to learn about Mindful breathing by acquiring deep breathing skill training and strengthening the mind-body connection.
- **Sixth session:** Help students to learn about self-physical scanning skills.
- **Seventh session:** Help students to learn about problem-solving skills
- **Eighth session:** Help students to learn how to deal with emotions in healthy ways through positive thinking and effective communication.

Evaluation phase:

In this phase, an evaluation of the effectiveness of mindfulness intervention strategies on students' anger and self-concept was conducted. The Adolescent Anger Rating Scale (AARS) and the Beck Youth Self-Concept Inventory scale were used for the control and study groups two months after implementing the program to evaluate if the intervention's aims were met.

Statistical analysis:

When appropriate, frequencies mean ± standard deviations, and percentages were used to depict the data statistically. Since the research classes are sufficient, the numerical variables were compared utilizing the student t-test for categorical data between the study classes. When the predicted frequency is less than 5, an exact test was utilized instead. Two-sided *p*-values below 0.05 were considered significant. The software IBM SPSS (Statistical Package for the Social Sciences; IBM Corp., Armonk, NY, USA) release 22 for Microsoft Windows was utilized for all statistical calculations.

Results:

Table (1): Frequency distribution of personal data of the study and control groups for preparatory school students (control group n = 30 and study group n = 30):

Variables	Categories	Control group N (%)		Study group N (%)	
Age	**12 to < 13**	2	(6.7)	1	(3.3)
	13 to < 14	10	(33.3)	6	(20)
	14 to < 15	15	(50)	21	(70)
	≥ 15	3	(10)	2	(6.7)
Sex	**Male**	13	(43.3)	10	(33.3)
	Female	17	(56.6)	20	(66.6)
School level	**First preparatory**	10	(50)	10	(50)
	Second preparatory	10	(50)	10	(50)
	Third preparatory	10	(50)	10	(50)
Father's education	**Illiterate**	5	(16.7)	1	(3.3)
	Read and write	5	(16.7)	5	(16.7)
	Basic education	8	(26.7)	8	(26.7)
	University education	12	(40)	16	(53.3)
Father's occupation	**Employee**	11	(36.7)	19	(63.3)
	Dead	4	(13.3)	2	(6.7)
	Private workers	15	(50)	9	(30)
Mother's education	**Illiterate**	13	(43.3)	6	(20)
	Read and write	11	(36.7)	19	(63.3)
	Basic education	3	(10)	2	(6.7)
	University education	3	(10)	3	(10)
Mother's occupation	**Employee**	4	(13.3)	8	(26.7)
	Housewife	20	(66.7)	11	(36.7)
	Dead	6	(20)	8	(26.7)
	Private workers	0	(0)	3	(10)

Table (2): Comparison of mean scores about anger domains and self-concept pre-and post-program among preparatory school students (n = 60):

| Anger scale	Study group			Control group		
	Pre-intervention (n = 30) Mean ± SD	Post-intervention (n = 30) Mean ± SD	P-value	Pre-test (n = 30) Mean ± SD	Post-test (n =30) Mean ± SD	P-value
Anger exaggerated factors	47.97±5.67	23.87±4.16	.00	48.32±6.76	44.33 ±6.33	.00
Feelings of anger	32.29±4.79	19.21±2.05	.00	30.71±3.21	30.08±6.54	.00
Psychometric signs of anger	35.23±8.08	18.65±5.63	.00	37.14±7.09	33.13±8.68	.00
Intrinsic anger	22.08±5.11	11.45±1.28	.00	21.18±2.1	23.63±4.44	.00
Extrinsic anger	19.7±4.64	13.27±1.9	.00	18.51±3.28	17.07±4.64	.00
Intensity of anger	18.97±4.78	11.73±3.72	.00	19.52±3.99	17.87±4.73	.00
The total score						
Anger	176.24±24.42	98.18±12.34	.00	175.38±26.43	166.11±27.74	.00
Self - concept	29.34±7.62	48.79±10.05	.00	27.9±3.62	29.34±5.32	.00
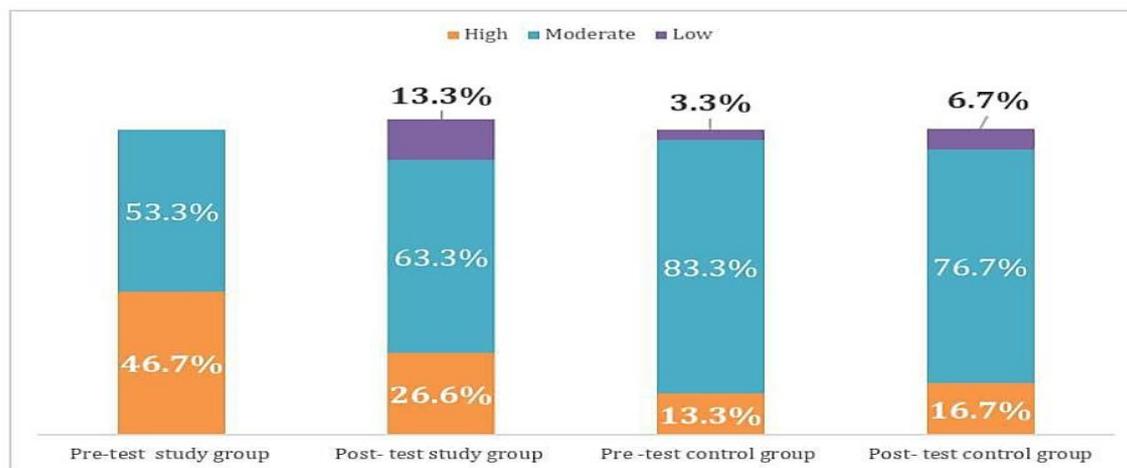
Figure (1): Anger levels on pre- and post-program for the study and control group among preparatory school students (n = 60)
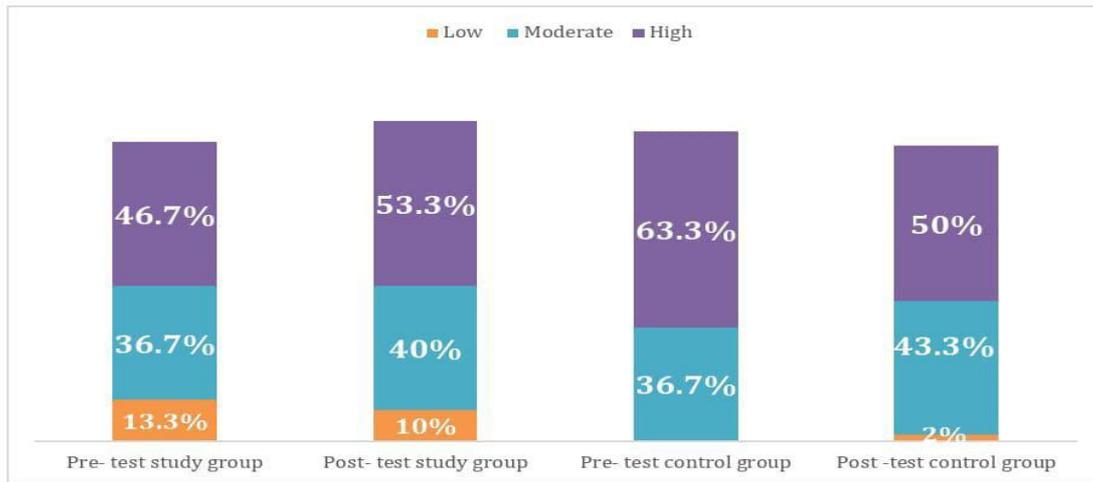
Figure (2): Self-concept levels on pre- and post-program for the study and control group among preparatory school students (n = 60)

Table (3): Correlation between demographic characteristics of the school children to the total anger scores and total self-concept scores (n = 60)

Personal data	Anger score	ANOVA test	p-value	Self-concept score	ANOVA test	p-value
Age						
12 years	135.00			39.00		
13 years	140.54	2.7	0.049*	45.66	0.61	0.6
14 years	154.26			43.86		
15 years	148.00			48.00		
Gender						
Male	156.00	1.17	0.28	52.33	3.8	0.049*
Female	145.13			44.25		
Father education						
Illiterate	145.60			50.20		
Read and write	130.82	1.99	0.1	39.36	2.59	0.04*
Basic education	145.84			42.33		
University	150.10			45.72		
Mother education						
Illiterate	152.37			45.27		
Read and write	137.73	2.34	0.07	43.57	0.29	0.83
Basic education	145.55			45.86		
University	142.78			44.56		
Father's occupation						
Employee	152.37			45.27		
Dead	143.13	2.0	0.11	46.13	0.15	0.92
Private workers	140.92			44.24		
Mother's occupation						
Employee	154.94			50.13		
Daily worker	144.31	4.0	0.009*	42.88	2.23	0.09
Dead	137.45			45.15		
Private workers	161.99			44.61		

The correlation is significant at the 0.01 level (2-tailed).

Table (1): Displays the participants' personal data. It shows that 50% of the study group students were between 14 and ≤15 years old, and 70% of the control group were between 14 and ≤15 years old. 56.6% of the study group were female, while 66.6% of the control group were female. Both study and control groups are divided equally between the first to third levels.

Table (2): Showed that there were remarkable variances between the control and study groups concerning the total mean scores for the anger and self-concept variables with a p-value = 0.00, Concerning the total mean scores for anger, there is a notable variation between the pre-intervention and post-intervention students in the anger total mean scores with p-value = 0.00. Regarding the total mean scores for self-concept, there was a significant increase in total mean scores for self-concept between the pre-test (29.34 ± 7.62) and post-test (48.79 ± 10.05) in the study group, while a

slight increase was detected in the control group between the pre-test (27.9 ± 3.62) and the post-test (29.34 ± 5.32).

Figure (1): Revealed that, the majority of the study and control groups in the pre-test (53.3% and 83.3%) and post-test (63.3% and 76.7%) had moderate levels of anger, respectively. In the study group, there was a decrease in the high level of anger from 46.7% in the pre-test to 26.6% in the post-test.

Figure (2): Regarding the level of self-concept in the study group, the percentage of a high level of self-concept increased from 46.7% in the pre-test to 53.3% in the post-test, while in the control group, it decreased from 63.3% in the pre-test to 50% in the post-test.

Table (3): The study results indicated a statistically significant association between the total anger scores of the study group and their age (p-value = 0.049), mother's education (p-value = 0.07*), and mother's occupation (p-value = 0.009). In addition, a statistically significant correlation was detected between the total self-concept scores and student gender (p-value = 0.049), father's education (p-value = 0.04), and mother's occupation (p-value = 0.09).

Discussion:

Given their involvement in planning and executing health care in the school context, school nurses are vital to the provision of continuing mental health treatment (**Margaretha et al., 2023**). This research evaluated the effectiveness of mindfulness-based interventions on anger and self-concept among preparatory school students.

Results of the present study revealed that, more than half of the study group and more than two-thirds of the control group exhibited moderate levels of anger in pre-programmed intervention. Regarding post-programmed intervention, less than one-third of the study group had severe levels of anger, whereas more than two-thirds of the control group had moderate levels of anger.

These findings are congruent with the study of **Suarez-Garcia, et al. (2020),** which demonstrated that more than half of the study and control groups had moderate levels of anger before the program's interventions. Regarding post-programmed interventions, less than one-third of the study group had severe levels of anger, while more than two-thirds of the control group had moderate levels of anger.

In contrast, **Akan (2021)** found that half of the study and control groups had moderate levels of anger before the program's interventions compared to less than half of the study group had moderate levels of anger, while less than half of the control group had severe levels of anger.

The present study demonstrated that less than half of the study groups had high levels of self-concept, while two-thirds of the control group had high levels of self-concept before the program interventions. As regards post-program intervention, more than half of the study group and half of the control group had high levels of self-concept.

This could be explained by the fact that the study groups received a mindfulness-based intervention program to deal with unpleasant feelings constructively and improve self-concept through positive thinking and effective communication, while the control group did not.

This outcome is similar to that of **Kamal, Abd El-Aziz, & Sabry (2021),** who showed that less than half of the studied students' self-concept was high in the pre-program and increased to more than half in the post-program. However, this finding contradicts **Mohamed et al. (2022)** who showed that less than half of the studied students' self-concept was moderate in the pre-program and increased to two-thirds post-program.

Accordingly, there are statistically significant differences between the study and control groups concerning total mean scores for anger. This might be attributed to the mean score for anger having decreased after the mindfulness-based intervention on anger in the study group's students, who are now abler to cope with their anger after the intervention. Anger behaviour of at-risk students can be decreased in the short-term by dint of anger management training. Students in the study group, trained in anger management, displayed a decrease in aggressive behaviours compared to the control group.

This finding agrees with that of **Ongaro (2019),** who revealed a significant decrease in the total mean anger score from the pre-test to the post-test in the study group, while only a slight decrease was detected in the control group between the pre-test and the post-test, respectively. Consequently, there are statistically significant differences between the study and control groups regarding the total mean anger scores. This finding contrasts with that of Mkpd, **Gunathunga, & Yobas, (2019**), who found statistically significant differences in the study group, but no statistically significant differences in the control group concerning total mean scores for anger. Similarly, **Akan (2021)** found no statistically significant differences between the study and control groups concerning total mean scores for anger.

The current study displayed a significant increase in the total mean score for self-concept from the pre-test to the post-test in the study group. At the same time, there is only a slight increase in the control group between the pre-test and post-test. Therefore, there are statistically significant differences between the study and control groups concerning total mean scores for self-concept. The mean score could explain this finding for self-concept increasing and significant improvements occurring

in the conditions of the study group who received a mindfulness-based intervention program and practical techniques.

These results are congruent with **Esmaeil-Nezhad et al. (2019)**, who revealed a significant increase in the total mean score of self-concepts from the pre-test to the post-test in the study group. On the other hand, a slight increase was detected in the control group between the pre-test and the post-test. Thus, there are statistically significant differences between the study and the control groups concerning total mean scores for self-concept. The results of the present study are incongruent with **Laundy et al. (2021),** who revealed no statistically significant differences between the study and control groups concerning total mean scores for self-concept.

The current study revealed that no statistically significant differences in the experience or expression of anger between boys and girls but found a slight increase in anger in males. This might be attributed to gender being an important variable affecting anger. Findings regarding gender differences in the experience and expression of anger are inconsistent. Consequently, males and females may have equal intensity and frequency of anger for similar reasons. However, males can express their anger through aggressive responses, while females use various methods to cope with their anger.

This finding agrees with **Siyez (2018),** who demonstrated no statistically significant differences in the experience or expression of anger between boys and girls but found a slight increase in anger in males. This finding is contrary to that of **Akan (2021),** who found statistically significant differences in the experience or expression of anger between boys and girls but found only a slight increase in anger among males.

The present study demonstrates no statistically significant differences between the sample's anger scores and school levels. The similarity in age and educational level between them could explain this.

This finding agrees with **Akan (2021),** who demonstrated no statistically significant differences between the experience and expression of anger and educational grade in the sample he studied. The current study revealed statistically significant differences between anger scores and mothers' occupations in the sample studied. This might be attributed to working mothers having many obligations in their work, which distracts them from raising their children. As a result, they will be less concerned with their children, leading children to be more nervous and angrier more quickly because of a lack of care.

In the same context, Mustafa, El-Sayed, and **Risk (2018)** demonstrated a statistically significant differences between anger scores and mothers' occupations. This work reflected statistically

significant differences in self-concept between boys and girls but found a slight increase in self-concept in males.

This might be related to cross-cultural studies, which express that those differences in self-esteem depending on gender are maintained in different countries. However, their magnitude differs as per the cultural differences in the socioeconomic, socio-demographic, gender equality, and cultural value indicators.

This finding is consistent with **Herrera, Al-Lal, & Mohamed (2020)** who demonstrated statistically significant differences in self-concept between boys and girls but found only a slight increase in self-concept in males. This finding is incongruent with **Damle & Vangani (2021),** who showed statistically significant differences in self-concept between boys and girls but found a slight increase in self-concept among females.

The present study showed statistically significant differences between self-concept and father's education among participants. This might be related to the fact that the higher the father's education, the more it will help the child to understand himself more and make him more self-reliant and help him raise his morale, not frustrating him when facing difficult situations. All of this reinforces self-concept in the child. Consequently, fathers' increasing education level relates to increased levels of self-concept in students. This finding is congruent with **Li et al, (2020)** who demonstrated statistically significant differences between self-concept and father's education among their study's participants.

Conclusion:
The study results concluded that implementing the mindfulness-based intervention program for preparatory school students reduces anger and improves their self-concept. The promising role of mindfulness as an early and preventive approach that targets both cognitive and affective aspects of self- regulation highlights considerable possible benefits for school children.

Recommendations:
1. Implementation of the mindfulness program on a larger scale sample of Egyptian school age students to further validate the effectiveness of the intervention and to ensure the generalizability of results.
2. Conduct follow-up assessments to examine the long-term effects of the intervention. This will help determine if the positive changes observed in the study group are sustained over time or if any additional support or intervention is needed to maintain the desired outcomes.
3. Implementing a mindfulness programs led by the school health nurse is strongly recommended as an effective strategy to

enhance students' mental health within the school community.

4. To ensure that a program is effective on a larger scale, it is crucial to give appropriate training and assistance to the school nurse and school staff. This will guarantee that the program is executed consistently and accurately, resulting in its maximum potential impact.

5. Further research can be done to explore the possible farther reasons behind the change in levels of anger and self-concept. This could include qualitative studies and interviews.

6. Investigation of cost-effectiveness of school-based mindfulness programs to inform decision-makers and stakeholders about the practicality and sustainability of implementing the intervention on a larger scale.

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