Original Article

Effect of Mental Health Promotion Program to Nursing Students on Their Self-esteem and Stress Management

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Abstract:

Background: Background: Maintaining good mental health goes beyond avoiding mental illnesses—it involves achieving a state of resilience and harmony that enables individuals to flourish in various areas of life. Aim: Evaluate the effects of a mental health promotion program on nursing students' self-esteem and stress management. Design: Randomized educational interventional trial design was adopted to carry out this study. Setting: The study was carried out in the faculty of nursing at Damanhour University. Subjects: Students enrolled in first academic year 2022-2023 at the Faculty of Nursing, Damanhour University. Tools: Four tools were used: Tool I: Rosenberg's Self-Esteem Self-Report Scale (RSES), Tool II: Perceived Stress Scale (PSS), Tool III: Mental Well-being Self-Assessment Questionnaire, and Tool IV Students personal profile Results: At pre-program, all students had low self-esteem and moderate stress. By follow-up, (87.1%) of the study group achieved normal self-esteem. Regarding stress, (35.3%) of the study group showed low stress levels. Conclusion: the mental health promotion program demonstrated significant positive outcomes for nursing students. The post-program stress scores showed a substantial decline compared to pre-program levels among the study group participants and there was a marked improvement in self-esteem scores. Recommendations: Introduce regular mental health screening for nursing students during admissions and throughout their academic journey .

Keywords: Mental health, health promotion, self-esteem, stress, Mental- well being

Introduction:

Mental health is essential for an individual to live a fulfilling life. It encompasses the ability to build and sustain relationships, engage in education, work, or leisure activities, and make everyday decisions regarding education, employment, housing, and other life choices. Disruptions to mental well-being can significantly impair these abilities, resulting in reduced individual functioning and broader negative impacts on household and societal welfare. (1- 3)

The mental health of nurses is very important because it directly influences the quality of patient care. Nursing students, as the future of the healthcare workforce, play an important role in healthcare systems, particularly in resource-constrained settings where the shortage of nurses exacerbates the increasing healthcare demands. (2- 4)

Stress is a common experience in daily life, and attending college can be particularly stressful. It marks a significant developmental milestone where adolescents transition into adulthood and face expectations to act and perform as adults. For nursing students, this stress is further compounded by various challenges, including academic pressures, an uncertain future, difficulty adapting to the system, unrealistic ambitions, intense competition, limited

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opportunities, information overload, and cultural adjustment issues. These factors often lead to feelings of tension, anxiety, and fear. (3,4)

Self-esteem reflects an individual's cognitive beliefs and emotional perceptions about their abilities, value, and self-worth. Stress can negatively impact self-esteem, and personality traits may also influence this dynamic. Numerous interconnected factors can influence or be associated with nursing students' self-esteem. During undergraduate nursing education, instructor feedback—whether positive or negative—plays a pivotal role in shaping self-confidence. (5-7)

Clinical training periods also have a profound effect, as self-esteem is shaped by the processes of professionalization and socialization. This often leads to fragmented self-esteem, where students may feel both empowered as medical professionals with authority and dis-empowered as members of an undervalued profession. As a result, students may struggle to envision themselves as the nurses they aspire to be, leaving them feeling unwelcome, anxious, depressed, and disheartened. (8, 9)

This study is significant because it guides the importance of development of effective health promotion programs that address the unique needs of nursing students. By exploring the factors impacting mental health, self-esteem, and stress management, programs that enhance awareness, knowledge, skills, and abilities, can be created equipping students to address health-related factors effectively and adopt healthier lifestyle changes. These programs are very important for nursing students' personal and professional well-being, helping them to cope with the demands of their profession and contribute to a healthier and more resilient nursing workforce. (10, 11)

Significance of the study:

Health promotion programs are important for nursing students individually and professionally as they increase the awareness, knowledge, skills, and abilities that empower nursing students to manage contributing factors to health and to change lifestyles

Aim of the study

Evaluate the effects of a mental health promotion program on nursing students' self-esteem and stress management.

Research hypothesis

The students who receive a mental health program will exhibit higher self-esteem levels than those who do not.
The students who receive a mental health program will exhibit no change in their self- esteem levels.
The students who receive a mental health program will exhibit lower stress levels than those who do not.
The students who receive a mental health program will exhibit no change in their stress levels.

II. Materials and Methods

Research Design:

Randomized educational interventional trial design was used to carry out this study.

Setting:

The study was carried out in the faculty of nursing at Damanhour University.

Subjects:

Sixty one students enrolled in the Faculty of Nursing Damanhour University.

Sampling technique::

The following steps were adopted to select the study sample:

Purposive sample was used where all students enrolled in first academic year 2022-2023 at the faculty of nursing Damanhour University were included in the study. They accounted for 591 students.

Lists of the studied first academic nursing students' names, telephone numbers and cademic mails were obtained.

Students were initially assessed by using tools I and II before implementing the program. The tools were completed via an online form through the Microsoft Team program during the students' clinical rotations.

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The results of the initial assessment determined the number of the studied students who were recruited into the study, and they accounted for 61 students and fit the study inclusion criteria, which include all of the following

- Those students had moderate stress with low self-esteem after initial assessment.
- Free from chronic diseases
- Not receiving any treatment
- Willing to participate in the study

The study sample were divided into two comparative groups randomly in which each odd number belonged to control group (30) students and each even number belonged to study group (31) students who received the mental health promotion program.

Study Tools:

Four tools were used to carry out this study:

The study used the following tools for data collection:

Tools of study

In order to collect the required data from the study subjects the following tools were used:

Tool I: Rosenberg's Self-Esteem Self-Report Scale (RSES) (11)

The RSES was developed in 1965 by Morris Rosenberg. The Rosenberg Self-Esteem Scale (RSES), a widely used self-report instrument is considered a reliable and valid quantitative tool for self-esteem assessment. The scale is extensively used in cross-cultural studies in up to 53 different nations. The Arabic version will be applied.

A 10-items scale that measures global self-worth by appraising both positive and negative feelings about the self. Five of the items have positively worded statements and five have negatively worded ones. All items will be answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree.

Scoring System:

Scores are calculated as follows: For items 1, 2, 4, 6, and 7, strongly agree = 3, agree = 2, disagree = 1, and strongly disagree = 0, but for items 3, 5, 8, 9 and 10 are reversed in valence which means strongly agree = 0, agree = 1, disagree = 2, strongly disagree = 3.

The scale scores range from 0–30 where a score less than 15 may indicate a problematic low self-esteem and the scores ranges from 15 to less than 25 are within normal range and 25-30 indicates high self-esteem.

Tool II: Perceived Stress Scale (PSS):(12)

Perceived stress scale (PSS) is a classic stress assessment instrument which was originally developed by Cohen et al. 1983. The tool was used for helping individuals understand how different situations affect their feelings and perceived stress. It contains 10 statements.

Scoring System:

Respondents are asked how often they felt a certain way on a five-point scale from 'never' to 'very often'. Answers are then scored as follows: Never = 0, almost never = 1, Sometimes = 2, fairly often = 3, and very often = 4.

Reverse the scores for questions 4, 5, 7, and 8. On these 4 questions, change the scores like this: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.

• Summing up the scores for each item to get a total.

• Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.

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Scores ranging from 0 to less than 14 would be considered low stress.

Scores ranging from 14 to less than 27 would be considered moderate stress.

Scores ranging from 27- 40 would be considered high perceived stress.

Tool III: Mental Wellbeing Self-Assessment Questionnaire (13)

Mental wellbeing self-assessment questionnaire was developed by Ruth Fishwick, Louise Hiller (Warwick University) and Stephen Platt (Edinburgh University) 2007 which will be used to enable the measurement of mental well-being. It contains 14 statements related to student feelings and thoughts. The 5 Likert scale 1-5 ranging from (never to all the time). Answers are then scored as follows: Never = 1, rarely = 2, Some of the time = 3, often = 4.and all the time =5. The total score ranged from (14-70).

Scoring system:

- Low Wellbeing state = 14- less than 32 points
- Below average Wellbeing state = 32- less than 40
- Average Wellbeing state = 40-less than 59
- Above average Wellbeing state = 59-70

Tool IV: This tool includes students' personal profile.

- Personal Profile: age, sex, birth order, number of siblings, residence

Pilot study

Pilot study was carried out on 10% (6) of the sample who was chosen randomly out of the second year and weren't involved in the study to assure the clarity, applicability, and comprehension of the study tools, to estimate the average time needed to collect the required data; and to identify obstacles that may be encountered during data collection.

Ethical considerations:

Permission to conduct the study was obtained from the ethical committee in Faculty of Nursing Damanhour University.

Written informed consent was obtained from every student accept to participate in the study after explanation of the study aims and participants were assured that collected data was used only for the study purpose.

Confidentiality and privacy of students responses were guaranteed .

Anonymity was maintained by using code numbers instead of names.

The control group received the mental health promotion program handouts after completion of the program.

Statistical Analysis:

After data collection, the collected data was coded and transferred into a specially designed format to be suitable for computer feeding.Data were fed to the computer and analyzed using IBM SPSS software package version 23.0. Qualitative data were described using number and percent. Quantitative data were described using mean, standard deviation. Significance of the obtained results was judged at the 0.05% level. After data entry, data was checked and revised through frequency analysis, cross tabulation, and manual revision to discover any error during data entry. The used tests as follow:Chi-square test for categorical variables, to compare between different categories Fisher's Exact or Monte Carlo correction. Correction for chi-square when more than 20% of the cells have expected count less than 5.Student t-test for normally distributed quantitative variables, to compare between two studied groups ANOVA with repeated measures for normally distributed quantitative variables, to compare between more than two periods or stages, and Post Hoc test (Bonferroni adjusted) for pairwise comparisons Graphs were done for data visualization by using Microsoft Excel program as bar graph.

PISSN: 2974-3281
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Results:

Table (1) reveals the distribution of students according to correlation between their perceived stress level and Rosenberg self-esteem level. This cross-tabulation reveals a relationship between self-esteem and perceived stress levels, showing more than one tenth (10.3%) of students had low self-esteem with moderate stress.

Table (1): Distribution of the studied students according to their perceived stress level in relation to Rosenberg self-esteem Level (N=591)

Studied students.		Stress Levels					
		Low stress n=155)(		Moderate stress)n= 318(		High Stress n= 118)(	
		No.	%	No.	%	No.	%
Self-esteem Levels	Low self-esteem (n= 103)	2	0.3	61	10.3	40	6.8
	Normal self-esteem (n= 451)	132	22.3	243	41.1	76	12.9
	High self-esteem (n- 37)	21	3.6	14	2.4	2	0.3

Studied students' personal profile:

Figure (1) illustrates the distribution of the studied students (study and control groups) according to their age. The figure shows the age of the studied students ranged from 19 - 21 years old with more than half (53.3%) of control group compared to less than one third of the study aged 19 years, while less than two thirds (64.5%) of the study group and 40.0% of the control group were 20 years old.

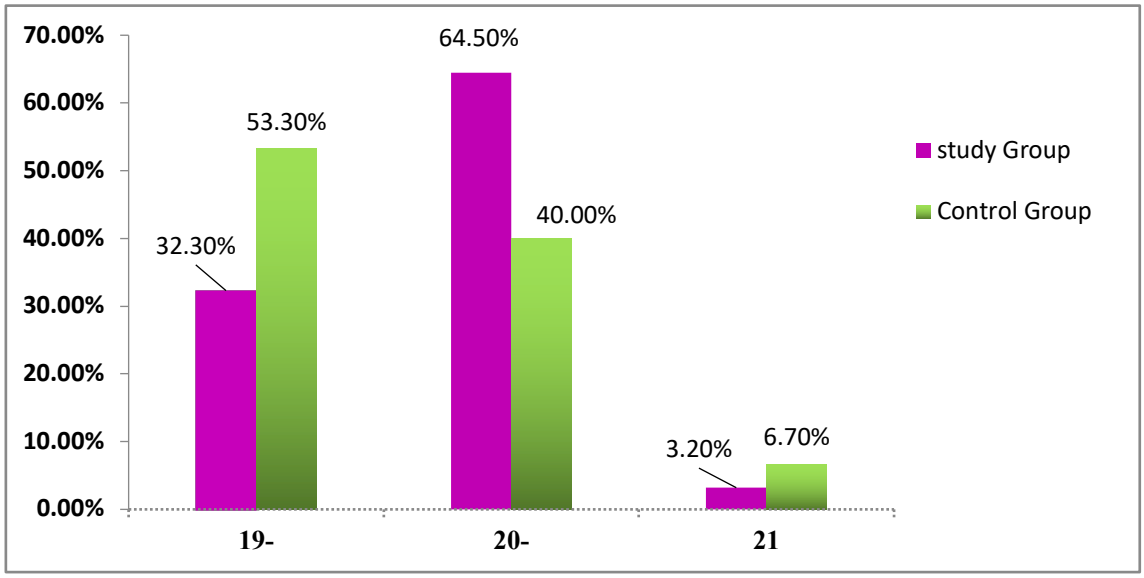

Figure (1): The studied students' age (study and control groups)

Figure (2) demonstrates the distribution of the studied students (study and control groups) according to their sex. It shows that more than half (54.8%) of the study group and less than two thirds (63.3%) of the control group were females.

PISSN: 2974-3281
EISSN: 2974-329x

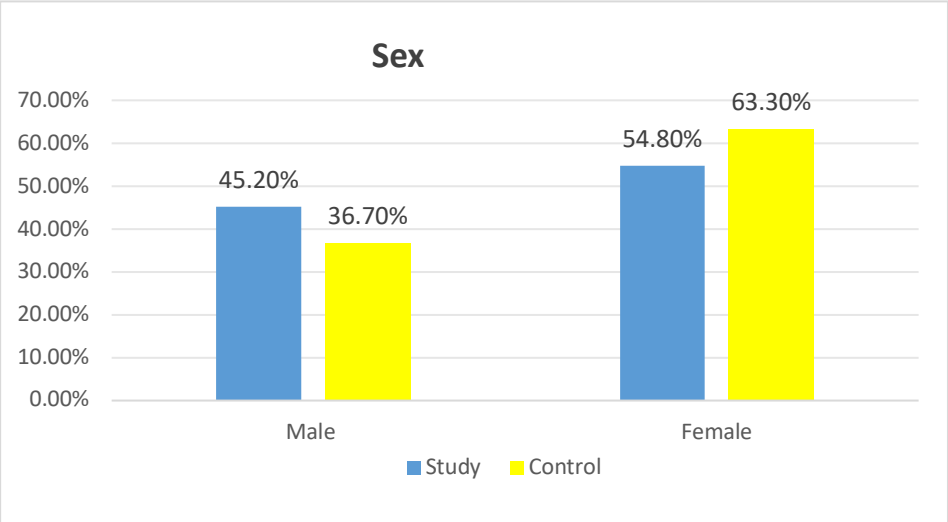

Figure (2): The studied students' sex (study and control groups)

Table (2) portrays the distribution of the studied students (control and study) groups according to Rosenberg's Self-Esteem scale (RSES) through different phases of the program. The table below shows that both control and study groups had similar scores as low self-esteem at pre-program evaluation (100%) compared to 66.7% and 29.0% of control and study groups respectively at immediate phase.

It was astonishing that a change happens in students' self-esteem levels at follow up phase as one third (33.3%) of the control group and majority (87.1%) of the study group had normal self-esteem level. The difference between the control and the study groups was significant ($\chi 2$ =18.466, p=<0.001) at the follow up phase. For ensuring a fair baseline of comparison, the control group having a mean score of 12.70±1.39 and the study group having a mean score of 12.0±1.8 at pre-program compared to 13.50±1.94 and 17.32±3.08 of control and study groups respectively at follow up phase, with a statistically significant relation between both groups (t=5.774, p=<0.001).

Additionally, the significant values of P1 < 0.001 and P2 < 0.001 for the study group indicate a highly significant improvement in self-esteem scores between the pre- program and immediate phases.

PISSN: 2974-3281
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Results

Table (2): Distribution of the studied students according to Rosenberg's Self-Esteem Scale (RSES) through different phases of program (N=61)

Self-Esteem levels	Studied students												Test of significance		
	Control group (n= 30)						Study group (n= 31)						Study vs Control		
	Pre		Immediate		Follow up		Pre		Immediate		Follow up		χ2= (p)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Pre	Immediate	Follow up
Low self-esteem	30	100%	20	66.7%	20	66.7%	31	100%	9	29.0%	4	12.9%	-	8.658* (0.003*)	18.466* (<0.001*)
Normal self-esteem	0	0.0%	10	33.3%	10	33.3%	0	0.0%	22	71.0%	27	87.1%			
High self-esteem.	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%			
Total score													t (p)		
Min. – Max.	10.0-14.0		9.0-20.0		10.0-17.0		7.0-14.0		7.0-24.0		10.0-24.0		1.638 (0.107)	4.921* (<0.001*)	5.774* (<0.001*)
Mean ± SD	12.70±1.39		13.27±3.03		13.50±1.94		12.0±1.8		17.68±3.90		17.32±3.08				
F (p)	0.957 (0.390)						32.351*(<0.001*)								
Sig. bet. Time	P1= 1.000		P2= 0.244		P3= 1.000		P1<0.001*		P2 <0.001*		P3= 1.000				

χ2: Chi square test between control and study group in each of pre, immediate post program and follow up

t: Student t-test between control and study group in each of pre, immediate post program and follow up
F: ANONA with repeated measures between the three periods in each group

p1: p value for Adjustment Bonferroni for comparing pre and immediate post program.

p2: p value for Adjustment Bonferroni for comparing pre and follow up

p3: p value for Adjustment Bonferroni for comparing immediate post program and follow up

* Statistically significant p-value at ≤0.05

Table (3) reveals the distribution of the studied students according to their perception of stress levels. It was cleared that both groups of students had similar perceived stress scores before the program as (100%) of both groups scored moderate stress level, with control group having a mean score of 22.2±2.1 and the study group having 22.6±2.1. No statistically significant difference between both groups was observed as (t=0.748, p=0.457).

In relation to the control group immediately after the program, the percent of students who scored moderate stress at pre-program phase showed slight decrease to become (80.0%) and (16.7%) of them scored

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high stress. The table also shows 70% of students scored moderate stress while 30% of them scored high stress three months after the program. With a mean score of 22.07±4.42 and 23.57±4.54 for their stress levels at immediate and follow up phases respectively.

Concerning the study group, the table shows a significant reduction in total stress scores immediately after the program as more than half (58.1%) of them showed low stress level immediately after the program, and more than one third (35.5%) of them showed low stress level three months after the program in addition to that, no high stress reported at any time point. While more than one third compared to nearly two thirds of them showed moderate stress level immediately and three months after the program respectively. The study group exhibited a significant reduction in stress levels over time (F=39.876, p<0.001).

Table (3): Distribution of the studied students according to perceived stress levels through different phases of program (N=61)

Perceived Stress Levels	Studied students												Test of significance		
	Control group (n= 30)						Study group (n= 31)						Study vs Control		
	Pre		Immediate		Follow up		Pre		Immediate		Follow up		χ2= (p)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Pre	Immediate	Follow up
Low stress level	0	0.0%	1	3.3%	0	0.0%	0	0.0%	18	58.1%	11	35.5%	-	23.471* (<0.001*)	20.013* (<0.001*)
Moderate stress	30	100%	24	80.0%	21	70.0%	31	100%	13	41.9%	20	64.5%			
High stress	0	0.0%	5	16.7%	9	30.0%	0	0.0%	0	0.0%	0	0.0%			
Total mean score													t(p)		
Min. – Max.	17.0-26.0		13.00-31.00		15.00-32.00		17.0-26.0		3.00-26.00		6.00-23.00		0.748 (0.457)	6.819* (<0.001*)	7.837* (<0.001*)
Mean ± SD	22.2±2.1		22.07±4.42		23.57±4.54		22.6±2.1		12.90±5.99		14.84±4.16				
F (p)	1.640 (0.203)						39.876*(<0.001*)								
Sig. bet. time	P1=1.000		P2=0.450		P3=0.388		P1<0.001*		P2<0.001*		P3=0.513				

χ2: Chi square test between control and study group in each of pre, immediate and follow up t: Student t-test between control and study group in each of pre, immediate and follow up .F: ANONA with repeated measures between the three periods in each group p1: p value for Adjustment Bonferroni for comparing pre and immediate post program p2: p value for Adjustment Bonferroni for comparing pre and follow up p3: p value for Adjustment Bonferroni for comparing immediate post program and follow up .* Statistically significant p-value at ≤0.05

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Table (4) reveals the distribution of the studied students according to their levels of mental wellbeing. It is obvious from this table that at pre-program phase, two thirds (67.7%) of the study group described themselves as below average level of mental well-being state compared to 60.0% of students at the control group with a mean score of 38.42±5.98 and 37.23±9.72 respectively.

Clearly, the immediate post program results revealed a decrease in students at the control group with below average level of mental well-being state to become 33.3%, meanwhile, the study group experienced a considerable improvement, with nearly half (48.4%, 51.6%) of the control and study groups classified as average and above average levels of mental well-being state respectively.

In relation to the follow up phase, the control group revealed a slight decrease to 26.7% in the low level of mental well-being state immediately after the program, those at the below average level increased from immediate post program level to 43.3%. The study group maintained their gains, with no students falling into the low or below average levels additionally, the majority (87.1%) were in the average level of well-being and 12.9% at above average level.

Moreover, a statistically significant relation was found for the study group between pre-program phase and immediate evaluation phase ($P1<0.001$). Also, between them at pre-program phase and three months post-program evaluation ($P2<.001$) and between them at immediate and three months post-program evaluation ($P3<0.005$).

PISSN: 2974-3281
EISSN: 2974-329x

Table (4): Distribution of the studied students according to their levels of mental well-being state (N=61)

Mental Wellbeing levels	Studied students												Test of significance		
	Control group (n= 30)						Study group (n= 31)						Study vs Control		
	Pre		Immediate		Follow up		Pre		Immediate		Follow up		χ2 = (p)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Pre	Immediate	Follow up
- Low level of mental well-being state	5	16.7%	11	36.7%	8	26.7%	2	6.5%	0	0.0%	0	0.0%	1.527 (0.515)	38.494* (<0.001*)	33.993* (<0.001*)
- Below average level of mental well-being state	18	60.0%	10	33.3%	13	43.3%	21	67.7%	0	0.0%	0	0.0%			
- Average level of mental well-being state	7	23.3%	9	30.0%	9	30.0%	8	25.8%	15	48.4%	27	87.1%			
- Above average level of mental well-being state	0	0.0%	0	0.0%	0	0.0%	0	0.0%	16	51.6%	4	12.9%			
Total mean score													t(p)		
Min. – Max.	25.0 – 53.0		23.00-54.00		27.00-48.00		25.00-53.00		44.00-68.00		43.00-66.00		0.572 (0.570)	11.520* (<0.001*)	11.765* (<0.001*)
Mean ± SD	37.23±9.72		35.37±+7.80		35.53±5.63		38.42±5.98		57.71±7.35		52.48±5.62				
F (p)	0.554 (0.577)						95.211*(<0.001*)								
Sig. bet. time	P1=1.000		P2=1.000		P3=1.000		P1<0.001*		P2<0.001*		P3=0.005*				

χ2: Chi square test between control and study group in each of pre, immediate and follow up t: Student t-test between control and study group in each of pre, immediate and follow up

F: ANONA with repeated measures between the three periods in each group

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p1: p value for Adjustment Bonferroni for comparing pre and immediate post program

p2: p value for Adjustment Bonferroni for comparing pre and follow up

p3: p value for Adjustment Bonferroni for comparing immediate and follow up

* Statistically significant p-value at ≤0.05

Table (5) explains the relation between students' personal profile and the mental well-being levels across three time periods for study group. The distribution of mental well-being levels varied across the phases of the program. In the pre-program stage, students exhibited low, below average, and average mental well-being levels, highlighting a generally limited state of mental well-being at the baseline. In the immediate post-program stage, mental well-being improved, with participants achieving levels categorized as average and above average, indicating the programs' positive effect. During the follow-up stage, mental well-being levels were also confined to average and above average, demonstrating sustained improvements compared to the initial stage, although some participants may have experienced slight changes over time.

Table (5): Relation between Students' Personal Profile and their Mental Well-being levels in study group through the program phases (n = 31)

Students' Personal Profile	Mental Wellbeing levels																	
	Pre								Immediate						Follow up					
	Low (n = 2)		Below average (n = 21)		Average (n = 8)				Average (n = 15)		Above average (n = 16)				Average (n = 27)		Above average (n = 4)			
	No.	%	No.	%	No.	%	χ2	p/MCp	No.	%	No.	%	χ2	p/MCp	No.	%	No.	%	χ2	p/MCp
Age 19 -		5 0.0%		1 9.0%		6 2.5%				1 3.3%		5 0.0%	.373	.068		3 3.3%		2 5.0%	.301	.860
20 -		5 0.0%	6	7 6.2%		3 7.5%	.490	.241	2	8 0.0%		5 0.0%			7	6 3.0%		7 5.0%		
21 -		0 .0%		4 .8%		0. 0%				6 .7%		0 .0%				3 .7%		0 .0%		
Sex Male		0 .0%	2	5 7.1%		2 5.0%	.17	.124		5 3.3%	0	3 7.5%	.784	.376	2 5	4 4.4% 5 5.6%		5 0.0% 5 0.0%	.043	.835
Female		1 00.0%		4 2.9%		7 5.0%	7	0		4 6.7%		6 2.5%								
Lone child		0 .0%		9 .5%		1 2.5%				6 .7%		1 2.5%				1 1.1%		0 .0%		
Birth order First		0 .0%	2	5 7.1%		5 0.0%	.917	.329		6 0.0%		4 3.8%	.644	.650	3 0	4 8.1%		7 5.0%	.222	.748
Second		1 00.0%		3 3.3%		2 5.0%	6	0		3 3.3%		3 7.5%	1	0		3 7.0%		2 5.0%	1	0
Third		0 .0%		0 .0%		1 2.5%				0 .0%		6 .3%				3 .7%		0 .0%		

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Students' Personal Profile	Mental Wellbeing levels																			
	Pre								Immediate						Follow up					
	Low (n = 2)		Below average (n = 21)		Average (n = 8)				Average (n = 15)		Above average (n = 16)		χ^2	p /MCp	Average (n = 27)		Above average (n = 4)		χ^2	p /MCp
	No.	%	No.	%	No.	%	χ^2	p /MCp	No.	%	No.	%			No.	%	No.	%		
Number of Sibling																				
1		50.0%		4.8%		12.5%				13.3%		6.3%				11.1%		0.0%		
2		50.0%	3	61.9%		62.5%	.052	5 0.537		53.3%	1	68.8%	.777	1 0.620	6	59.3%		75.0%	.105	1 0.776
>3		0.0%		23.8%		12.5%				26.7%		12.5%				18.5%		25.0%		
Sibling gender																				
Male		100.0%		9.0%		37.5%				33.3%		25.0%				29.6%		25.0%		
Female	1	0.0%		52.4%		12.5%	.212	9 0.162		46.7%		31.3%	.33	2 0.566		33.3%		75.0%	.070	3 0.381
Both male and female		0.0%		19.0%		37.5%				13.3%		31.3%				25.9%		0.0%		
Residence																				
Urban		0.0%		9.5%		37.5%	.763	3 0.152		13.3%		18.8%	.168	0 0.682		18.5%		0.0%	.883	0 0.347
Rural	9	100.0%	9	90.5%		62.5%			3	86.7%	3	81.3%			2	81.5%		100.0%		

Discussion:

Stress-reduction and self-esteem enhancement programs are vital for student well-being and success. They incorporate techniques like mindfulness, relaxation, and goal setting to help manage pressures and build confidence. (14)

With respect to self-esteem levels, initially, all students in both groups had low self-esteem, however, immediate post-program, the study group demonstrated a significant shift, with less than three quarters of students showing normal self-esteem compared to one third in the control group. By follow-up, the majority of students in the study group achieved normal self-esteem, compared to only one third in the control group, showing a highly significant improvement. These findings are consistent with Qian et al., (2022) (15) which reported a significant rise in normal self-esteem levels after targeted interventions, emphasizing the role of guided programs.

Regarding stress levels, initially, all students in both groups exhibited moderate stress levels, with no significant differences at baseline. Conversely, immediate post-program, a significant improvement was observed in the study group, with more than half achieving low stress levels compared to minimal percentage in the control group. By follow-up, more than one third of the study group maintained low stress levels, whereas no students in the control group reported low stress, highlighting a sustained effect of the intervention. These results align with Kim et al., (2023) (16) which reported a decrease in moderate stress levels from 100% to 40% following structured interventions. In contrast Guo et al., (2021) (17) found no significant reduction in stress levels over time, with 95% of participants retaining moderate stress.

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In relation to mental well-being initially, nearly two thirds of students in both groups exhibited below-average mental well-being, with no significant difference. By follow-up, the majority of students in the study group attained an average mental well-being state and more than one tenth of them reached the above average level, while only less than one third in the control group reached the average level, reflecting the significant impact of the intervention. This improvement can be attributed to the program, which likely addressed specific factors contributing to poor mental well-being. For example, the program may have included strategies such as stress management, and mental health education, equipping students with skills to cope better with stress and enhance their self-esteem. These tailored approaches may have empowered the participants to make positive changes, reflecting the program's success.

The study's results are consistent with San Pío MJ et al., (2023) (18) which found that half of participants in the study group achieved above-average mental well-being post-program compared to minimal percentage in the control group.

Understanding the student's personal profiles provides insights into the diverse challenges they face and the strengths they possess in managing stress and maintaining emotional balance. By considering these aspects, a comprehensive understanding of students' mental well-being can be developed. (19)

This study revealed that older students demonstrated better mental well-being outcomes compared to younger students. This could be attributed to greater maturity and more developed coping mechanisms, which help them manage stress more effectively. Supporting this, Vestad L et al., (2021) (20) who explained that older students benefit more from stress management programs due to their advanced problem-solving skills. In contrast, Klementyeva M et al., (2023) (21) who observed that younger students experienced greater improvement, possibly due to their adaptability and openness to learning new coping strategies.

Pertaining to sex, female students generally showed more improvement in mental well-being compared to male students. This could be due to their tendency to seek emotional support and engage more actively in well-being programs. Hsu N et al., (2022) (22) emphasized that females often benefit from emotionally centered strategies. Conversely, Christensen I et al., (2021) (23) who illustrated that male students achieved better outcomes, potentially due to a preference for structured and task-oriented activities included in such programs.

Pertaining to birth order, first-born students showed better mental well-being outcomes than their siblings. This might be linked to the greater responsibility and leadership roles often associated with being the eldest, fostering resilience and problem-solving skills. Fukuya Y et al., (2021) (24) who found that first-borns developed stronger coping mechanisms due to higher familial expectations. In contrast, Lynam A et al., (2020) (25) highlighted those younger siblings demonstrated better outcomes, likely because they face less pressure and may receive more guidance.

Additionally, students from larger families exhibited better mental well-being, likely due to strong support networks and collective problem-solving dynamics. Mendes-Sousa MM et al., (2023) (26) observed that larger families often foster emotional resilience and interpersonal skills. However, Nygård C et al., (2023) (27) found that students with fewer siblings reported better outcomes, attributed to greater parental attention, and individualized support.

Furthermore, students with both male and female siblings demonstrated notable improvements in mental well-being. This may be due to the balance and diverse perspectives that mixed-gender sibling dynamics provide. Jensen AC al., (2023) (28) reported similar findings, emphasizing the benefits of balanced emotional dynamics in mixed-gender sibling groups. In contrast, Rosen NE et al., (2021) (29) emphasized better outcomes in same-gender sibling groups, as these siblings often share similar experiences and challenges, leading to closer emotional bonds.

Moreover, rural students demonstrated slightly better mental well-being outcomes than urban students. This could be due to strong community ties and familial support in rural areas, which act as a buffer against stress. Batterham P et al., (2023) (30) observed similar results, highlighting the role of rural environments in promoting emotional health. Conversely, Wenzler S et al., (2022) (31) reported that urban students benefited more, likely due to better access to mental health services.

Conclusion:

The mental health promotion program demonstrated significant positive outcomes for nursing students. The post-program stress scores showed a substantial decline compared to pre-program levels among the study group participants and there was a marked improvement in self-esteem scores. This indicates the programs' effectiveness in equipping students with practical stress management techniques and in fostering a sense of self-worth and confidence.

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Recommendations:

Introduce mental health screenings for students during admissions and throughout their academic journey to identify students in need of support early.

Integrate mental health support into clinical practice, ensuring that students have access to counseling and peer support during clinical placements.

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