Original Research Article

Effectiveness of mindfulness based stress reduction program (MBSR) on stress among nursing students- a mixed method study

Anamika Gautam[1]*, Srinivasan Palanivelu[2], Gurvinder Kaur[3]

[1]Department of Mental Health Nursing, Shree Guru Gobind Singh Tricentenary University, Gurugram, Haryana, India
[2]Department of Mental Health Nursing, College of Nursing, AIIMS Patna, Bihar, India
[3]Department of Mental Health Nursing, Maharishi Markandeshwar (Deemed to be) University, Mullana. Haryana India

*Correspondence:
Dr. Anamika Gautam,
E-mail: gautamanamika0494@gmail.com

ABSTRACT

Background: Stress is not always avoidable but learning techniques to manage stress can develop overall wellbeing by decreasing the physical, psychological, spiritual, and social effects of stress. Learning to manage stress through holistic self-care with MBSR techniques could help to decrease the negative effects of stress.
Methods: Mixed method research approach and concurrent dominant (QUAN+qual) design was selected. Total 120 nursing students was included in the study with identical sampling approach. Data was collected by using sample characteristics proforma, DASS-42 (14 items of stress) and structured open-ended questionnaire. Total 7 sessions of MBSR was administrated in the experimental group for 40 minutes.
Results: Finding of the study showed that the mean score in the experimental group was lower than the comparison group (12.02 versus 21.82: t=10.12, p=0.001). The major themes emerged were stress and quality of life, body and mind.
Conclusions: The study concluded quantitatively that MBSR was effective in reducing stress among nursing students and improved their daily living as well as mental health. Qualitatively the study revealed that stress influence their academic performance and personal life negatively and some student able to fight in stressful situation where as some prefer to flight by using negative defence mechanism.

Keywords: MBSR, Nursing students, Stress

INTRODUCTION

Stress is a part and parcel of human lifestyle. It can also act as a motivating force in terms of obtaining results and achieving goals in life, but on the other hand, non-stop stress can act like a killer in terms of performance.[1]

The National Institute of Mental Health calculates approximately that one-third of nursing students were experiencing stress that interfered with their daily activities. Nursing students are also prone to stress due to the transitional nature of college life. They need effective coping strategies to successfully manage the stressors of their nursing education. The reality is that we all deal with stress on a daily basis, whether we're old or young, large or small, lofty thinkers or practical or doers. Stress is not always avoidable but learning techniques to manage stress can develop overall wellbeing by decreasing the physical, psychological, spiritual, and social effects of stress. Some are able to manage it effectively weather some struggling to overcome for it.[2,3]

Knowledge of the stressors and their severity among nursing students in the nursing training colleges can be

helpful in effective management and counselling of the students on how to cope and adapt to stressors. Every institute has the responsibility to provide an optimal learning environment for students and take important steps toward the identification of stressor and decrease the level of stress.[4]

The big problem with healthy coping strategies is that they often don't make one feel better immediately; they only really work after one makes a commitment to practicing them repeatedly over time.[5]

Mindfulness based intervention is recommended by the NHS and National Institute for Health Care Excellence for the prevention and management of stress. It is a form of training, which shifts a person's attention focus to every day, present-moment experience and significant changes in health and wellbeing.[6]

METHODS

Study design and setting

Mixed method research approach was adopted and the design selected was concurrent dominant (QUAN+qual) design. Identical sampling approach was used for mixed method design (for quantitative part disproportionate stratified random sampling) By including those who fulfilled inclusion criteria i.e. Pursing B.Sc. Nursing and studying in selected nursing institutes and Willing to participate in the study and excluded who were not available at the time of data collection, undergoing similar kind of psychological or mindfulness intervention and having no stress (scored 0-14 in DASS). We performed the study between October 2018 and February 2019. After obtaining formal administrative approval from Principal of Maharishi Markandeshwar collage of Nursing and Maharishi Markandeshwar Institute of Nursing, Ambala, Haryana to conducted the study in their college.

Sample size

For quantitative part power analysis was done to calculate the sample size by using Cohen's d. The calculated effect size was 0.57 at the power of 0.80 the recommended sample for each group is 54. Hence 60 for each group were decided. For qualitative data identical sampling method was followed for the mixed method study, hence all the subjects those who have participated in quantitative part were explored for stressors through structured open-ended questionnaire

Total three hundred sixty-four nursing students were screened by DASS 42 among them 169 students had stress. One hundred twenty students were selected by using disproportionate stratified random sampling and identical sampling was considered for mixed method design. Total 120 subjects were taken, 60 in each group after drop out of 4 subjects the final sample size was 116

(i.e. experimental group 56 and comparison group 60). Stratified randomization was done by www.randomization.com to divide the students in experimental and comparison group. The participants were informed regarding the objective of the study and written assent/consent was obtained.

Data collection

Both quantitative (sample characteristics and DASS-42) and qualitatively (exploration of stressors with structured open-ended questionnaire) tools were applied at baseline. The content validity of tool was determined by 11 experts in the various fields. Reliability of quantitative tool was estimated with Cronbach Alpha (internal consistency) and of qualitative tool by using Lincoln and Guba model (1985) on four aspects of enhanced trustworthiness of a study including credibility, transferability, conformability and dependability.

Description of tool

Sample characteristics proforma: These are selected Sample characteristics such as age, gender, year of course (B.Sc. nursing), marital status, religion, order of birth, type of family, parents education, place of stay, parents occupation, family income per month, percentage of last year marks, hobbies, choice of course, attended any previous stress management / guidance training sessions, socioeconomic status, percentage of attendance in the current year (paper and pencil and record review).

QUAN+qual (14 items for stress) scale to assess the stress: A standardized tool was used to assess the stress among nursing students. It consists of 42 items with a 4-point rating scale in which only 14 items were used to check the stress. Which were collected from participants with self-report technique (paper and pencil). This tool is incorporated in the study after getting prior permission from the tool developers.

Structured open-ended questionnaire: Based on previous research and literature with expert opinion, the structured open-ended questionnaire for stressors was developed the open-ended questionnaire consisted of 10 open-ended items which explore stressors among nursing students.

Intervention

Before developing the intervention, the researcher undergone competency training program on Mindfulness Based stress reduction program under the guidance of expert psychologist. After the training based on the research evidence and experience gained under the competency program along with the opinion of trainer the intervention guidelines were prepared. The intervention guidelines were also validated by 11 experts after getting prior validation from the trainer.

Mindfulness based stress reduction program was given for 9 days to experimental group, include 7 sessions for 40 minutes which is divided into one session of deliberation and two set of mindfulness sessions (each set was having 3 sessions with two gaps in between two set of mindfulness sessions). Post-test was taken on 13th day of both the groups. Comparison group was completed first before proceeding with experimental group.

First session: Deliberation on stress and MBSR.

1st set of mindfulness- Second session: attention and concentration; third session: body scan; fourth session: mindful stretching.

2nd set of mindfulness- Fifth session: mindfulness meditation with awareness of thought; sixth session- breathing exercise; seventh session- modified Jacobson's progressive muscle relaxation exercise.

Post-test was done by administration tool. Furthers, semantic differential scale was used to check the satisfaction regarding MBSR only in the experimental group.

RESULTS

Quantitative result

Analysis was done with SPSS version 20. The data is analysed and interpreted by using descriptive and inferential statistics according to the objectives of the study. The significance level set for the present study was $p<0.05$. Normality of data checked by Kolmogorov-Smirnov test after that parametric test was applied. Homogeneity between the experimental and comparison group was checked by χ^2 test in terms of selected sample characteristics at 0.05 level of significance which infer that both the groups were homogenous.

Figure 1 shows frequency, percentage distribution in terms of level of stress before administration of MBSR in experimental and comparison group. More than half in both experimental group (60.7%) and comparison group (53.3%) having mild stress before administration of

mindfulness based stress reduction program. Nearly one third in experimental group (30.4%) and comparison group (31.7%) were having moderate stress and least in experimental group (8.9%) and comparison group (11.7%) were having severe stress. In comparison group least (3.3%) were having extremely severe stress.
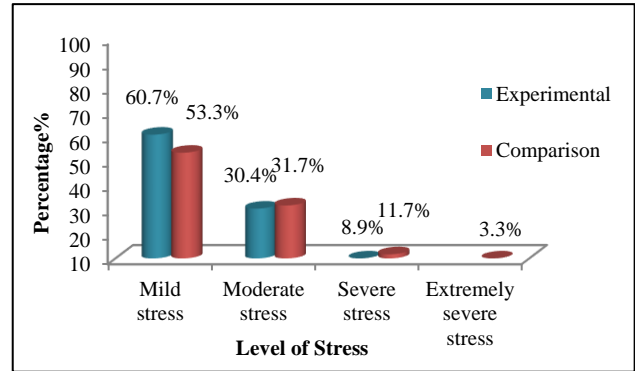

Figure 1: Cylindrical bar diagram showing level of Stress among nursing students before administration of MBSR.
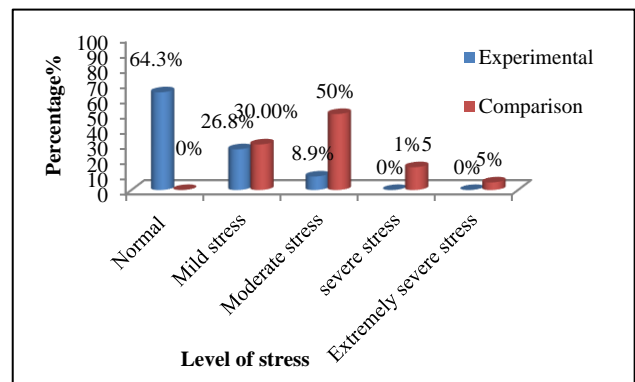

Figure 2: Cylindrical bar diagram showing level Stress among nursing students after administration of MBSR.

In Figure 2 the data shows that nearly two third of the nursing students (64.3%) in experimental group were having no stress after administration of Mindfulness Based Stress Reduction Program whereas in comparison group half of the nursing students (50.0%) were still having moderate stress.

Table 1: Stress among nursing students before and after administration of MBSR between experimental and comparison group (n=116).

Observation	Group	Mean± SD.	M_D	SE_{MD}	't' value	P value
Pre-test	Experimental (n=56)	18.77±4.01	1.48	0.92	1.60	0.08[NS]
	Comparison (n=60)	20.25±5.74				
Post-test	Experimental (n=56)	12.02±4.82	9.79	0.71	10.12	0.001**
	Comparison (n=60)	21.82±5.54				

NS -Not significant (p>0.05); *- Significant (p<0.05); **- Significant (p<0.01)

In Table 1 the data shows before administration of MBSR there was no significant difference found between

experimental and comparison group and after administration of MBSR there was a significant

difference in mean score as in experimental group it was 12.02± 4.82 and where as in comparison group mean score was 21.82±5.54. As score decreases stress

decreases vice-versa. Hence, it concluded that mindfulness based stress reduction program was effective intervention to reduce stress.

Table 2: Stress among nursing students before and after administration of MBSR within experimental and comparison group (n=116).

Group	Mean		M_D	SE_{MD}	't' value	df	P value
	Pre-test	Post- test					
Experimental (n=56)	18.77	12.02	6.75	0.83	8.04	55	0.001**
Comparison (n=60)	20.25	21.82	1.56	0.88	1.78	59	0.80NS

NS - Not significant (p>0.05); *- Significant (p<0.05); **- Significant (p<0.01)

In Table 2 the data shows that after administration of MBSR within experimental and comparison. The calculated 't' value of stress (8.04) was higher than table value i.e. 2.004 at df (55) that was statistically significant at the 0.01 level of significance which indicated that there was a significant difference in the mean pretest and post test score of stress within the experimental group Whereas in comparison group the calculated 't' value (1.78) of stress score was lower than table value i.e. 2.004 at df (55) that was statistically non-significant at the 0.05 level of significance which indicated that there was no significant difference in the mean pretest and post-test stress score.

Further ANOVA and 't' test applied to find the association of pre-test stress score with selected sample characteristics among nursing students. The finding revealed that computed 'F/t' value between stress and age (t=0.47, p=0.63) , gender (t=0.29, p=0.76), year of course (f=8.10, p=0.82), religion (F=0.77, p=0.54), type of family (t=1.33, p=0.13), place of stay (F=0.18, p=0.83), order of birth (F=0.11, p=0.95), attendance (F=1.16, p=0.33), father's education (F=0.32, p=0.92), mother's education (F=1.38, p=0.22), father's occupation (F=0.76, p=0.66), mother's occupation (F=0.94, p=0.47), family income (F=1.65, p=0.53), percentage (F=2.97, p=0.35), hobbies (F=1.02, p=0.41), choice of course (t=0.90, p= 0.36), attended any stress management sessions (t=1.29, p=0.19), socio economic status (F=1.14, p=0.33) which was found to be statistically non-significant at 0.05 level of significance. It infers that pre- test stress score was not associated with selected sample characteristics.

Table 3: Frequency and percentage distribution of nursing students in terms of level of satisfaction regarding mindfulness based stress reduction program in experimental group (n=56).

Level of satisfaction regarding mindfulness based stress reduction program	Experimental group n=56; f (%)
Low satisfaction (9-26)	-
Moderate satisfaction (27-35)	04 (7.15)
High satisfaction (36-45)	52 (92.85)

Table 3 shows frequency and percentage distribution of nursing students in terms of level of satisfaction regarding mindfulness based stress reduction program in experimental group. Majority of the nursing students (92.85%) had high satisfaction from intervention and least nursing students (7.15%) had moderate satisfaction.

Qualitative result

The qualitative data obtained in the study was analysed using qualitative content analysis. In the present study method of conventional content analysis was used. Major themes and sub-themes emerged are:

Stress and quality of life

Stress is an important psychosocial factor in the educational process that may hinder academic and student's wellbeing. Nursing students also face many types of the stressor. Quality of life is the standard of health, comfort, and happiness experienced by an individual. Two subthemes are derived under this theme

Feeling proud cum conflict

Nursing students feel proud to be a part of a nursing profession which is founded on human values, such as caring for others, merged with scientific knowledge and technical skills whereas conflict an active disagreement between people with opposing opinions or principles. The nursing students was had mixed feeling regarding the profession. Most of the participant verbalized that they feel proud and great to be a part of nursing profession where they can help peoples and give service to mankind, on the other hand they are also not satisfied with their life as a nursing student because of lots of workload in this profession.

"I am feeling good and proud to be a part of this profession… I learned a lot of things in this field but on the other side due to more number of assignments, rules and regulations it affect my personal life negatively and sometimes I felt stressed because of it……" p- 29, 105, 116

Burdened self

The burden is something that is emotionally difficult to bear, a source of great worry or stress. Perfection is the state or quality of being perfect which is learned by nursing students throughout their nursing profession. Most of the participant verbalized that they are facing stress in clinical and academic area related to assignment, tests and re-demonstration. Handling both the things together increases their workload.

However, learning in clinical environment has several benefits, but it can be challenging, unpredictable, stressful, and constantly changing.

"In clinical the main burdened is dealing with uncooperative patient……. And negative behavior of some people around us….and in academic also completion of requirement is the main stressor I felt"
p -6, 7, 16

Body and mind

What we do with our physical body (what we eat, how much we exercise, even our posture) can impact our mental state. This means that our thoughts, feelings, beliefs, and attitudes can positively or negatively affect our biological functioning and formed a complex interrelationship between each other. Two subthemes derived under this theme were

Think positive and enact

Different students think differently and enact according to that. A positive mind brings happiness, health and a happy ending in any situation. Enact means putting nursing students in practical as they do according to the thought they have in their mind and act accordingly to overcome stress and adapt to the situation.

Most of the participant verbalized that over all they are having good psychological health and they feel sad and depressed only because of their surrounding mostly. According to them stress and negative thought effects the psychological well-being of nursing students.

"My psychological health is good, but sometime I feel to give up in some situation at that time I motivate myself that… No, I can do it and encourage myself to do that work."
p- 1, 14, 24, 88

"I feel good mostly, as I am not giving attention on those people who were trying to demotivate or irritates me… In today's life, there are some stresses in the mind of everyone… because of hostel or stunned life… But I am trying to be stress free…. sometimes I feel physically aligned then I listen music and start doing exercise to keep myself busy"'
p- 35, 11

Fight or flight

Fight and flight response refer to a physiological reaction that occurs in the presence of something that is terrifying, either mentally or physically. It represents the choice of an individual whether they fight or flight with the situation. Most of the Participants verbalized that negative thoughts, feelings and emotion disturbed their academic performance and daily activities. Most of them are doing different activities, spending time with parents and do things which divert their mind to fight with the situation or either to flight from it.

Not too often but I can say from five to six times a month… depends upon various other factors and experience of handling negative thoughts and emotions…… If negative thoughts are coming in my mind, I feel irritated and I am not able to overcome this type of situation…….."
p- 9, 42, 58, 97

"Sometime some work makes us feel downhearted but I know very well that how I have to face. A lot of problem came to my way but I never give up. So, I think these negative thoughts are helping me and making me stronger"
p-56, 86

Narrative interpretation of integration

The finding of the present study in term of stressors by both quantitative and qualitative approach were merged at interpretation to bring about the integrated result.

In present study, stress was assessed quantitatively with DASS42 and qualitatively structured open-ended questionnaire. By using identical sampling, in pretest it was found that out of 116 participants, 66 participants were having mild stress, 36 were having moderate stress, 12 were having severe stress and 2 were having severe stress. Out of 116 students 66 students who were having mild stress and 36 students who were having moderate stress were knew some coping strategies and certain relaxation technique to overcome from stress like watching motivational video, listening to music, playing games, going for walk, and doing work to divert their mind and they got sufficient support from their families and friends. These integrated findings concluded that the quantitative findings in terms of stress assessed with DASS42 and qualitative findings in terms of stressors explored with open ended questionnaire were consistent to each other.

DISCUSSION

In the present study, half of the nursing students in the experimental group were female (78.6%). and belongs to the age of 15-22 years. These findings were consistent with the study conducted among Nursing students where they found that most of the nursing students belong to 15-

20 years of age and most of the participants were female (59.6%).[7]

There was a significant difference in pretest and post-test of stress score, as pretest mean stress score (18.77) was higher than post-test stress score (12.02, p=0.001) among Nursing students after administration of MBSR in the experimental group which infers that MBSR was effective in decreasing stress among nursing students. These findings were similar with the finding of study conducted by Song et al where it was found that pretest stress score (34.5) was higher than post test scores (8.9, p=0.00) among nursing students after administration MBSR.[2]

Most of the participants verbalized that, in academic the sources of stress are like examinations, long hours of study, assignments, lack of free time whereas in Clinical area sources of stress are like taking care of sick patients, insecurity about clinical competence, timely submission of clinical requirements and standing for long hours. One study showing the same response Academic sources of stress are like examinations, study, assignments, management, special elements of the academic program. Clinical sources of stress are like taking care of ill patients, interpersonal conflict with peer group, insecurity about personal clinical competence, fear to complete their clinical requirements.[8]

Many complementary and alternative therapies were already included in nursing curriculum but the focus can be extended and mindfulness session should be included in nursing curriculum as it is easy to practice and can be done anywhere.

The study was limited to private Nursing institutes only hence it is difficult to make broad generalization of the finding.

CONCLUSION

Quantitative conclusion, there was a significant difference in the mean stress score between experimental and comparison group after administration of MBSR that indicates the experimental group had lower stress than the comparison group as the score decreases the stress decrease or vice-versa. Hence MBSR is effective in reducing stress among the nursing student.

Qualitative conclusion, nursing students are proud to be a part of nursing profession. Some students know how to deal with the stressful situation whereas some don't know how to handle it. Stress effect their personal and academic life negatively so, it's important to learn effective technique to deal with stress.

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