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## RESEARCH ARTICLE

### MEDITATION ON AFFECTIVE AND COGNITIVE FUNCTIONS OF NURSING STUDENTS: A QUASI EXPERIMENTAL STUDY

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#### ABSTRACT

**Background of the study:** Student nurses have different types of stressors e.g. financial stress, academic pressure from teachers and parents, time and health-related issues. This stress leads to affective, cognitive, social and physical changes. Sometimes mild stress is beneficial for academic tasks and performance while progressive high stress leads to affective and cognitive impairment. Changes in affective and cognitive functions is one of the common mental health related issue among nursing students studying in nursing colleges and Raj yoga Meditation may help in improving their quality of life in terms of improving affective and cognitive functions and it is a safe, non-pharmacological, non-invasive, cost effective method and easy to practice. **Objectives of the study:** The aim of the study is to assess the effectiveness of meditation on affective and cognitive functions of nursing students in selected nursing colleges of Punjab. **Material and Methods:** A quantitative research approach and a quasi-experimental research design was used. Non-probability convenient sampling technique was used to select 60 nursing students. Questionnaire method was used to collect data by using Subjective Happiness Scale and Modified Rey osterrieth complex figure test. Raj yoga Meditation was given to experimental group for 20 minutes once a day for 21 consecutive days. **Results:** The findings of the study revealed in the experimental group, the pre-interventional mean±S.D is 4.958±0.8229 and post-interventional mean±S.D is 6.113±0.7357, t=6.0511, in affective function. In experimental group, the pre-interventional mean±S.D is 31.7±2.046 and post-interventional mean±S.D is 34.2±1.750, in copy trial. In the experimental group, the pre-interventional mean±S.D is 21.30±3.72 and post-interventional mean±S.D is 27.3±3.08, t=7.9145, in memory trial. In control group, pre-interventional mean±S.D is 4.708±1.0988 and post-interventional mean±S.D is 4.996±0.5549 in affective function. In control group, pre-interventional mean±S.D is 31.0±1.896 and post-interventional mean±S.D is 30.7±0.8632 in copy trial. In control group, pre-interventional mean±S.D is 19.57±3.65 and post-interventional mean±S.D is 21.30±4.24 in memory trial. **Conclusion:** This study concluded that Raj yoga meditation was effective in improving the affective and cognitive functions of nursing students.

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#### INTRODUCTION

*"Meditation can help us embrace our worries, our fear, our anger; And that is very HEALING. We let our own natural capacity of healing do the work"*

- Thich Nhat Hanh

Affect refers to the feelings we experience as part of our everyday lives. As our day progresses, we may find ourselves with certain specific feelings happy or sad, jealous or grateful,

proud or embarrassed. Although affect can be harmful if it is unregulated or unchecked, our affective experiences normally help us to function efficiently and in a way that increases our chances of survival.<sup>1</sup> Affective domain plays an undeniable role in education. The Maslowian hierarchy of needs puts self-actualization (creativity, problem-solving, ethical reasoning, etc) right on top of the peak, and rightfully so. Cognition is the broad range of mental abilities that enable us to know about the world around us. These abilities include our memory, language, attention, perception, and reasoning. Cognition is the ability of our brain to think, to process and store information,

to solve problems. Cognitive function encompasses the life-long process of learning, ranging from quantitative reasoning to memory formation both long- and short-term processes. Cognitive functions are related to the mental performance that enables the processing of information, applying knowledge, and changing preferences.<sup>2,3,4</sup> As of fall 2018, around 36% of college students rated their health as very good, while only 17% stated their health was fair or poor. Medical science experts expressed the feeling of meditation by saying as "top spiritual feeling, pleasure, and transcendent that the person can't explain rather it has to be experienced only, this is what the taste of meditation can be".<sup>5,6,7</sup> The word Raj means the king, ruler or the supreme. Rajyoga is the supreme or the highest yoga that empowers the self to rule the mind, sense-organs and the body. Rajyoga also implies that even a person who is a king and who is very full of activity can practice it. The practice of Raj Yoga results in alertness and awareness of the mind and illusions of material consciousness, frees one from fear of the unknown, gives clarity and certainty about what lies beyond the immediate perceivable world. Rajyoga meditation enhances the emotional intelligence level of students. It promotes positive emotions like self-confidence, patience, and satisfaction in students. Their capacity to remain quiet and stable in difficult situations increases through developing the power of acceptance. It has also been observed that the Rajyoga Meditation helps the students to control the negative emotions and increase the positive attitude, increase patience and increase their level of self-confidence.<sup>8,9</sup> After reviewing related literatures the researcher came to know the Rajyoga meditation has good effect on affective and cognitive functions. The researcher realized that there is an immense need of alleviating the Academic stress, affective and cognitive dysfunctions of the nursing students in order to maintain good physical and mental health. Hence the investigator felt that, it is necessary to assess the effectiveness of meditation technique to find out the improvement in affective and cognitive functions.

## MATERIALS AND METHODS

A quantitative research approach, experimental, quasi-experimental research design was used to explore the extent to which the Raj yoga Meditation intervention enhances the affective and cognitive functions of nursing students. The present study was conducted in State Institute of nursing and paramedical sciences, Badal, Sri Muktsar Sahib, Punjab and College of Nursing, Adesh college of Nursing, Bathinda Punjab. The nursing students were selected on the basis of convenience sampling technique. Sample consisted of 60 nursing students from selected nursing colleges those meeting the inclusion criteria were selected for this study. Following tools are used to measure variable under study.

### It consists of two sections

- **Section A:** Demographic data of the study participants which comprises of items seeking information pertaining to selected demographic variables such as age in years, Study year of B.Sc nursing students, Type of family, Family Income(monthly), Diet Pattern, Habitat, Religion, Physical Activity, Academic results (last year), Source of information about Raj yoga meditation.
- **Section B:** Subjective Happiness Scale and Rey osterrieth complex figure test to assess the affective and

cognitive functions in nursing students in nursing colleges.

Subjective Happiness scale comprises of 4 items each item comprises of 7 options and the minimum score for one item was 1 and the maximum was 7 according to the options. The minimum possible score was 4.5 and the maximum possible score was 7 on the Subjective Happiness Scale. Rey osterrieth complex figure test comprises of 18 units or compartments and the minimum score for each compartment was 1 point and the maximum was 2 according to the placement. Thus the minimum possible score was 15 and the maximum possible score was 31 on the Rey osterrieth complex figure test. The reliability was established for the present study through split half method ( $r=0.88$ ). Try out tool was done to ensure the reliability and understanding of the tool. Pilot study was conducted and the study was found to be feasible. Prior to administration of tool to participants all the questions and queries were discussed and sort out before actual data collection. An informed written consent form was signed by each subject before data collection. All the subjects were ensured that confidentiality and anonymity was maintained throughout the study. Permission was obtained from institutional ethical committee to carry out the study. Written Permission was taken from the Bhramakumari centre, Faridkot. The data was analyzed by statistical package for social sciences (SPSS) version 16. The p 0.05 level of significance was established as a criteria of statistical significance for all the statistical procedures performed. Appropriate descriptive and inferential statistics were used to analyse data as per purpose of the study.

## RESULTS

Table 1 and figure 1 depicts the comparison of pre and post interventional level of subjective happiness score depicting affective functions in experimental and control group. In experimental group pre interventional mean $\pm$ S.D was 4.958 $\pm$ 0.8229 and post interventional mean $\pm$ S.D is 6.113 $\pm$ 0.7357,  $t=6.0511$ ,  $df=29$ ,  $p < 0.0001$  showing significance at the level of 0.05. It is concluded after using paired t-test that there was a significant difference between pre interventional and post-interventional subjective happiness in the experimental group. In control group pre interventional mean $\pm$ S.D is 4.708 $\pm$ 1.0988 and post interventional mean $\pm$ S.D is 4.996 $\pm$ 0.5549,  $t=1.1754$ ,  $df=29$ ,  $p=0.2494$  showing no significance at the level of 0.05. It is concluded that there is significance difference between pre interventional and post interventional level of affective functions in experimental group after administration of Raj yoga Meditation technique. Table 2 depicts the comparison of pre and post interventional level of cognitive functions in copy trial score in experimental and control group. In experimental group pre interventional mean $\pm$ S.D was 31.7 $\pm$ 2.046 and post interventional mean $\pm$ S.D is 34.2 $\pm$ 1.750,  $t=7.9747$ ,  $df=29$ ,  $p < 0.0001$  showing significance at the level of 0.05. It is concluded after using paired t-test that there was a significant difference between pre interventional and post-interventional cognitive functioning in the experimental group. In control group pre interventional mean $\pm$ S.D is 31.0 $\pm$ 1.896 and post interventional mean $\pm$ S.D is 30.7 $\pm$ 0.8632,  $t=0.8632$ ,  $df=29$ ,  $p=0.3951$  showing no significance at the level of 0.05. It is concluded that there is significance difference between pre interventional and post interventional level of cognitive functions in experimental group after administration of Raj yoga Meditation technique.

**Table 1. Related to frequency and percentage distribution of nursing students (experimental and control group) according to demographic variables.**

Variables	Experimenta n = 30		Control n = 30	
	f	%	f	%
<b>Age in years</b>				
a) 17-18	16	53.3%	10	33.3%
b) 19-20	13	43.3%	16	23.3%
c) Above 20	1	3.3%	4	13.3%
<b>Study year of B.Sc nursing Students</b>				
a) B.Sc Nursing 1 <sup>st</sup> year	11	36.6%	10	33.3%
b) B.Sc Nursing 2 <sup>nd</sup> year	7	23.3%	9	30%
c) B.Sc Nursing 3 <sup>rd</sup> year	6	20%	8	26.6%
d) B.Sc Nursing 4 <sup>th</sup> year	6	20%	3	10%
<b>Type of Family</b>				
a) Nuclear	19	63.3%	19	63.3%
b) Joint	11	36.6%	11	36.6%
<b>Family Income</b>				
a) Below 10,000	2	6.6%	2	6.6%
b) 10001-20000	4	13.3%	19	63.3%
c) 20001-30000	8	26.6%	2	6.6%
d) Above 30000	16	53.3%	7	23.3%
<b>Diet Pattern</b>				
a) Vegetarian	18	60%	8	26.6%
b) Non-Vegetarian	8	26.6%	19	63.3%
c) Vegetarian with only egg consumption	4	13.3%	3	10%
<b>Habitat</b>				
a) Rural	18	60%	17	56.6%
b) Urban	12	40%	13	43.3%
<b>Religion</b>				
a) Hindu	11	36.6%	9	30%
b) Sikh	19	63.3%	13	43.3%
c) Muslim	0	0%	6	20%
d) Christian	0	0%	2	6.6%
<b>Physical Activity</b>				
a) Yes	16	53.3%	14	46.6%
b) No	14	46.6%	16	53.3%
<b>Academic result of Previous exam</b>				
a) Above 75%	10	33.3%	7	23.3%
b) 71-75%	11	36.6%	10	33.3%
c) 61-70%	9	30%	12	40%
d) Below 60%	1	3.3%	1	3.3%
<b>Source of information about rajyoga meditation</b>				
a) Conferences/workshops/				
b) Seminar/scientific papers	11	36.6%	2	6.6%
c) Media- T.V/Radio/Newspaper	6	20%	12	40%
d) Family and friends	4	13.3%	5	16.6%
e) Rajyoga centers	6	20%	5	16.6%
f) No Information	3	10%	6	20%

**Table 2. Related to Comparison between pre and post-interventional affective functions in experimental and control group**

Group	Affective function				Paired "t" test		
	Pre intervention		Post intervention		df	t	p
	Mean	S.D	Mean	S.D			
Experimental (n= 30)	4.958	0.8229	6.113	0.7357	29	6.0511	0.0001*
Control (n= 30)	4.708	1.0988	4.996	0.5549	29	1.1754	0.2494 <sup>NS</sup>
	df	58	df	58			
<b>Unpaired "t" test</b>	t	0.9975	t	6.637			
	p	0.322 <sup>NS</sup>	p	0.0001*			

Table 3 and Figure 3 depicts the comparison of pre and post interventional level of cognitive functions in memory trial score in experimental and control group. In experimental group pre interventional mean±S.D was 21.30±3.72 and post interventional mean±S.D is 27.3±3.08,  $t=7.9145$ ,  $df=29$ ,  $p= < 0.0001$  showing significance at the level of 0.05. It is concluded after using paired t-test that there was a significant difference between pre interventional and post-interventional cognitive functions in the experimental group. In control group pre interventional mean±S.D is 19.57±3.65 and post interventional mean±S.D is 21.30±4.24,  $t=1.8162$ ,  $df=29$ ,  $p=0.797$  showing no significance at the level of 0.05. It is concluded that there is significance difference between pre interventional and post interventional level of cognitive

functions in experimental group after administration of Raj yoga Meditation technique.

## DISCUSSION

The study aimed to explore the extent to which the Raj yoga Meditation technique enhances the affective and cognitive functions of nursing students. The findings represents that during the pre-interventional assessment the majority of students in the experimental and control group were in average category i.e. 56.6% and 26.6% in affective functions and below average i.e. 30% and 6.6% in cognitive functions. After 21 days, majority of subjects in the experimental group were in

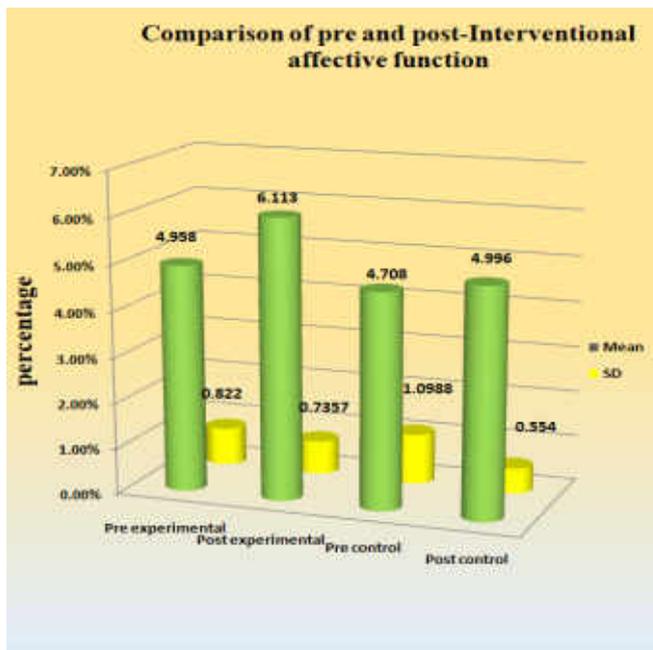


Figure 1. Bar Diagram showing a comparison of pre and post-interventional affective functions in the experimental and control group

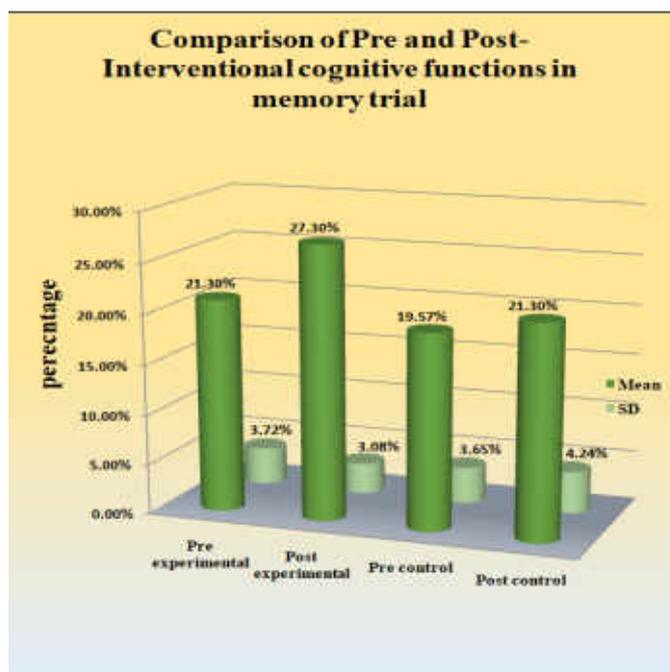


Figure 2. Bar Diagram showing a comparison between pre and post-interventional cognitive functions in memory trial in the experimental and control group

66.6% had high score in affective functions, while in the control group 33.3% subjects had average score. The comparison of pre and post interventional level of subjective happiness score depicting affective functions in experimental and control group. In experimental group pre interventional mean $\pm$ S.D was 4.958 $\pm$ 0.8229 and post-interventional mean $\pm$ S.D is 6.113 $\pm$ 0.7357,  $t=6.0511$ ,  $df=29$ ,  $p < 0.0001$ . The comparison of pre and post interventional level of cognitive functions in memory score in experimental and control group. In experimental group pre interventional mean $\pm$ S.D was 21.30 $\pm$ 3.72 and post-interventional mean  $\pm$ S.D is 27.3 $\pm$ 3.08,  $t=7.9145$ ,  $df=29$ ,  $p < 0.0001$  showing significance at the level of 0.05. In control group pre interventional mean $\pm$ S.D is

19.57 $\pm$ 3.65 and post-interventional mean $\pm$ S.D is 21.30 $\pm$ 4.24,  $t=1.8162$ ,  $df=29$ ,  $p=0.797$  showing no significance at the level of 0.05. Similar findings were found in a study conducted by Mishra Nishi *et al.* (2013). A comparative study was conducted to assess the effectiveness of Raj yoga meditation practice on affective and cognitive functions in terms of attention/concentration, memory, visual processing, neuroticism, hope and happiness at a Raj Yoga Centre in Delhi. 64 healthy volunteers practicing Raj yoga from 1 month to more than 10 years were segregated into two groups and their psychological and affective functions were assessed by using standard measures. Results suggested that the group practicing Raj Yoga for longer duration had significantly less neurotic symptoms, scored higher on hope and happiness and higher on cognitive functions. The findings reveal that there was no association of the pre-interventional assessment of affective and cognitive functions with selected demographic variables of the experimental group. These demographic variables were age in Years, study year of B.Sc nursing students, type of family, family income, Diet pattern Habitat, Religion, Physical Activity, Academic results of the Previous Exam, Source of information about Raj yoga Meditation. There was significant association according to the study year of basic B.Sc nursing programme, in the control group. But after 21 days there was significant association between diet pattern, age of nursing students and type of family in the experimental group after 21 days of intervention.

## Conclusion

The findings of the study conducted on 60 nursing students revealed that in the pre-test majority of students 17 (56.6%) in experimental group had Average affective function score and in the post-test majority of them 20 (66.6%) had high score in the experimental group whereas in the control group majority of them 14 (46.6%) and 22 (73.3%) had average score in the pre and post interventional assessment respectively. Majority of nursing students had 11 (36.6%) had an average score in pre interventional assessment and 15 (50%) had high score in post-interventional assessment in copy trial and majority of nursing students 10 (33.3%) in experimental group had low score in pre interventional assessment and 13 (43.3%) in experimental group had high score in memory trial in Experimental group.

**Implications and recommendation:** The findings of the study have several implications which were discussed under certain areas for the nursing profession i.e. nursing practice, nursing education, nursing administration, and nursing research. In all the areas nurses act as an educator, organizer, leader, counselor, and motivator. The nurse can counsel the patient as well as family members regarding prevention & management of physical, mental, emotional, social and spiritual problems with the help of Rajyoga meditation. The nurses are the part of the health care team in the hospital and community setting for assessing, planning and evaluating the outcome of any kind of treatment to patients.

**Limitations:** The study was limited only to nursing students from selected nursing colleges of Sri Muktsar Sahib of Punjab further restricts the generalization of the study to a particular setting.

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