



## **A quasi experimental study to assess the effectiveness of virtual reality therapy upon anxiety among B.Sc. (N) I year students in selected nursing colleges, Chennai**

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### **Abstract**

**Background:** A research was conducted to assess the effectiveness of virtual reality therapy on anxiety among B.Sc. (N) I year students in selected nursing colleges, Chennai, India. A quasi experimental pre-test post-test design was used in this study. Sixty nursing students were selected using purposive sampling technique. Data collection was performed using Beck anxiety scale, socio-demographic performa and rating scale on level of satisfaction on virtual reality therapy. The collected data was analysed using descriptive and inferential statistics such as frequency, percentage, mean, standard deviation, independent t test and chi square test.

**Aim:** To assess the effectiveness of virtual reality therapy on anxiety among B.Sc. (N) I year students in selected nursing colleges, Chennai, India.

**Research design:** Quasi experimental design (pre-test post-test design) was used in the study.

**Results:** The findings related to pre-test and post test revealed that the level of anxiety in control group was moderate (40%, 50%). On the other hand, most of the students (43.3%, 76.6%) in the experimental group had a moderate level of anxiety before therapy and mild level of anxiety after therapy. The mean anxiety score of control group of nursing students in the pre-test was (22.5 ± 9.12) and that of post-test was (22±11.48) in which, the difference is not significant ( $p>0.05$ ), whereas in experimental group the mean anxiety score is lesser in post-test than pre-test (22.1 ± 9.2), (11.26 ± 6.2) which is statistically significant ( $p<0.001$ ). It can be attributed to the effectiveness of virtual reality therapy on reducing anxiety. There was no significant association between the selected demographic variable and the level of anxiety in control group. Hence the null hypotheses (Ho<sub>2</sub>) was retained. The students from the rural background experienced more anxiety than those from urban background in the experimental group before virtual reality therapy. Hence the null hypotheses (Ho<sub>2</sub>) was rejected.

**Keywords:** effectiveness, virtual reality therapy, anxiety, nursing students

### **Introduction**

The life is a mixture of happiness and sadness same as the presence of head and tail on either side of a coin which cannot be omitted in any way. Not merely the black statistics of murder, suicide, alcoholism and divorce betray anxiety, but almost any act in our daily life has a connection with some sort of anxiety <sup>[1]</sup>. When the individual experiences anxiety, a conflict between id impulses and demands of the superego happens or a serious threat is perceived to biological integrity or self-concept, which is reflected in the behaviour <sup>[2]</sup>. Ego defence mechanisms such as denial, compensation, and displacement are utilized by the individual to resolve this conflict. Anxiety is common among college students especially the nursing students in their first year of education, who tend to be anxious as they are exposed to ample variety of health care subjects and clinical postings and the previous poor academic experiences of many of the senior group of students may

have an impact which may result in a state of impending doom <sup>[3]</sup>. Virtual reality therapy is a recent therapeutic modality within the last decade which helps an individual to become part of this virtual environment and perform a series of actions displayed on the screen thereby; the person feels relief from his problems by permanently registering the positive effects in the brain. Another study also shown systematic evidence related to the importance of virtual reality therapy in reducing anxiety. A study conducted by Freeman in 2003 to assess the effectiveness of virtual reality on persecutory ideation Twenty-four nonclinical participants entered a neutral virtual environment that contained computer-generated people. Individuals who had persecutory thoughts about the virtual characters had significantly higher levels of interpersonal sensitivity and anxiety. The findings indicated that feelings of interpersonal vulnerability and anxiety may directly contribute to the development of persecutory ideation in response to

essentially neutral contexts [4]. Virtual reality may prove to be a valuable methodology for developing an understanding of persecutory ideation. Even though virtual reality therapy is beneficial and useful in reducing the level of anxiety and improving the coping capability, there is a paucity of research in this field especially among the nursing students. Hence, this study was conducted with the objectives to investigate the level of anxiety, the effectiveness of virtual reality therapy on anxiety, the level of satisfaction among experimental group regarding virtual reality therapy and the association between selected demographic variables and level of anxiety in experimental and control group of B.Sc. (N) I year students before and after virtual reality therapy.

### Objectives of the study

1. To assess the level of anxiety among experimental and control group of B.Sc. (N) I year students before and after virtual reality therapy
2. To assess the effectiveness of virtual reality by comparing the level of anxiety in experimental and control group of B.Sc. (N) I year students before and after virtual reality therapy
3. To determine the level of satisfaction among experimental group of B.Sc. (N) I year students regarding virtual reality therapy
4. To find out association between selected demographic variables and level of anxiety in experimental and control group of B.Sc. (N) I year students before and after virtual reality therapy

### Hypothesis

**Ho1:** There is no significant difference in the level of anxiety in experimental and control group of B.Sc. (N) I year students before and after virtual reality therapy

**Ho2:** There is no significant association between selected demographic variables and level of anxiety in experimental and control group of B.Sc. (N) I year students before and after virtual reality therapy.

### Conceptual framework

A nursing model of interpersonal relations theory designed by Hildegard Peplau in 1990 was adopted for this study which represents the importance of psychological tasks in therapeutic relationship and continuous learning that occurs in the interpersonal relationship.

### Review of Literature

A literature review is a critical component of the research process. It provides an in-depth analysis of recently published research findings in specifically published research findings in specifically identified areas of interest [5]. The review of literature is presented under the following headings.

1. Review of literature related to anxiety
2. Review of literature related to anxiety among nursing students
3. Review of literature related to virtual reality therapy
4. Review of literature related to effectiveness of virtual reality therapy upon anxiety

### Methodology

**Research approach:** Quantitative approach was used in this

study.

**Research design:** Quasi experimental design was used by the researcher.

**Setting:** MMM College of Nursing, Mogappair, Chennai and Billroth College of Nursing, Maduravoyal, Chennai were the settings of the study.

**Sample:** Sixty nursing students were the participants of the study with 30 samples each in experimental and control group who were selected using purposive sampling technique.

**Inclusion criteria:** Nursing students with anxiety present at the time of data collection.

**Exclusion criteria:** Nursing students who did not want to participate in the study and those with physical disease.

**Tools for data collection:** The data was collected using Beck anxiety scale, socio demographic performa and rating scale on level of satisfaction of virtual reality therapy. Beck anxiety scale is a valid and reliable tool developed by Dr. Aaron T Beck with internal consistency of 0.75. The level of satisfaction about the intervention was assessed using a rating scale which was found to be reliable with Pearson's correlation coefficient of 0.84.

**Data collection:** The data collection was done for a period of 4 weeks from 13.5.2013 to 30.6.2013. The participants were explained regarding the study and written consent was obtained after providing assurance and confidence. The researcher established rapport with a brief introduction about the research purpose followed by obtaining informed consent and assurance regarding confidentiality before the procedure of data collection. Pretesting was performed using beck anxiety scale, socio demographic performa for experimental and control group. The techniques of the intervention were explained and demonstrated by the researcher to the study participants in the experimental group which were practiced by each of them for 5 minutes respectively for 2 weeks. After 2 weeks, the anxiety was assessed by beck anxiety scale in both groups and rating scale on level of satisfaction on virtual reality therapy was utilized among experimental group.

### Data analysis

The descriptive statistics such as mean, frequency and percentage and inferential statistics such as independent 't' test and chi-square were used.

### Results and Discussion

#### Section I: Frequency and percentage distribution of demographic variables in experimental and control group of B.Sc. (N) I year students

The frequency and percentage distribution of socio demographic variables shown that most of the nursing students in control and experimental group were in the age group of 18-20 years (90%, 96.66%) and had a monthly family income (56.6%, 53.33%) between Rs.5000-Rs.10,000. More than half of the students in both the group

(63.3%, 50%) belong to Hindu religion. The academic performance was 60-74% among majority of students (80%, 43.33%) in control group and experimental group. A great number of students (93.30%, 63.33%) in experimental and control group belong to nuclear family whereas less number of students (0, 13.33%) belong to extended family. The area of residence of most of the students (63.33%, 70%) in control group was rural where as that of experimental group was urban area and a minority of students (3.30%, 10%) among both the groups reside in semi-urban area. In the control group, the medium of instruction (66.66%, 40%) of

more than half of the students was Tamil and less than half of the students was English whereas in the experimental group, the medium of instruction (10%, 60%) of minority of students was Tamil and that of more than half of the students was English.

**Section II: Frequency and percentage distribution of level of anxiety before and after virtual reality therapy in experimental and control group of B.Sc. (N) I year students**

**Table 1:** Shows the group of before therapy and after therapy

Group	Before Therapy						After Therapy					
	Mild		Moderate		Severe		Mild		Moderate		Severe	
	n	P (%)	n	P (%)	n	P (%)	n	P (%)	n	P (%)	n	P (%)
Control group	10	33.3	12	40	8	26	8	26.6	15	50	7	23.3
Experimental group	11	36.6	13	43.3	6	20	23	76.6	7	23.3	0	0

Study findings in table 1 indicate that more around half of the total participants in control group had moderate level of anxiety (40%, 50%) before and after therapy. On the other hand, most of the students (43.3%, 76.6%) in experimental group had a moderate level of anxiety before therapy and mild level of anxiety after therapy. Major finding shown that the anxiety level of the students experimental group

reduced from severity to normal after the intervention.

**Section III: Comparison of mean and standard deviation of anxiety score before and after virtual reality therapy between control and experimental group of B.Sc. (N) I year students**

**Table 2:** Shows group of pre-test and post-test

Group	Pre-test			Post-test		
	Mean	SD	t value	Mean	SD	t value
Control group	22.5	9.12	0.58	22	11.48	4.418***
Experimental group	21.1	9.2		11.26	6.2	

\*\*\*p<0.001

The findings in table 2 reveal that the mean anxiety score of control group of nursing students in the pre-test was (22.5 ± 9.12) and that of post-test was (22±11.48) in which, the difference is not significant (p>0.05), whereas in experimental group the mean anxiety score is lesser in post-test than pre-test (22.1 ± 9.2), (11.26 ± 6.2) which is statistically significant (p<0.001). Hence, null hypothesis (Ho1) was rejected. It can be attributed to the effectiveness of virtual reality therapy in reducing anxiety. The findings of the study were consistent with that of a study conducted in 2007 by Alsina Jurnet. It was a validation study to explore the effectiveness of a set of virtual environments for producing emotionally significant responses in students with high levels of test anxiety. Out of twenty-one students, 11 with high test anxiety and 10 with low test anxiety. The results showed that the high-test-anxiety group presented higher levels of anxiety and depression than the low-test-anxiety group during exposure to the virtual environments. This study shows that virtual reality is able to provoke emotional responses in students with high test anxiety [6].

**Section IV: Frequency and percentage distribution of level of satisfaction among experimental group of B.Sc. (N) I year students regarding virtual reality therapy**

All the study participants (N=30) in experimental group were highly satisfied (100%) with the virtual reality therapy provided by the researcher.

**Section V: Association between the selected demographic variables and the level of anxiety before and after virtual reality therapy in the control and experimental group of B.Sc. (N) I year students**

There was no significant association between the selected demographic variable and the level of anxiety in control group. Hence the null hypothesis (Ho2) was retained. The findings revealed that students from the rural background experienced were more anxious than those from urban background in the experimental group before virtual reality therapy. Hence the null hypotheses (Ho2) was rejected.

**Conclusion**

The experience of anxiety among nursing students indicates the need for nursing students to practice therapeutic modalities specifically, virtual reality therapy which is an effective module that has a tremendous effect on the brain of the participants which leads them into a track of productive life and a better quality of life span. Administration of virtual reality therapy is effective in reducing the level of anxiety as all participants equally felt more energetic and enthusiastic while they participated in the procedure. So, a nurse trained in virtual reality therapy can be a technical expert in its administration without any legal or ethical dilemmas which may in turn grossly affect the study participants resulting in negative outcomes. The nursing education curriculum should be organized in a manner that helps the pupil. Moreover, the nursing students

should be taught other ways of reducing anxiety so as to adapt and advance in their future career.

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