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Original Research Article

Effect of Nature Based Sound's Intervention on Agitation and Anxiety of Patients Admitted in Intensive Care Units of MMIMS&R Hospital, Mullana, Ambala

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ABSTRACT

Introduction: Continue stay in ICU can lead to sleep disturbances and poor stress management that may result in client's inability to adjust with the situations and use of medical support. This experience may lead to increase agitation and anxiety of client, decrease comfort level and increase recovery time as well as hospital stay. There has been great emphasis on non-pharmacological methods that decrease anxiety and stress since they are very appropriate and affordable.
Aim: To assess the effect of Nature Based Sounds on Agitation and Anxiety of patients admitted in Intensive Care Units.
Methodology: A Randomized Controlled Trial with pretest posttest control group design was used. Sixty patients from Surgical Intensive care unit and were selected conveniently and randomly assigned into experimental and control group using lottery method. Data was collected by Agitation Behavior Assessment Scale and Beck Anxiety Inventory.
Results: Both groups were homogenous at baseline in terms of sample characteristics, Agitation and Anxiety. The findings indicate that the means posttest Agitation (17.33±01.29) and Anxiety (17.97±06.10) scores of patients admitted in SICU in experimental group were significantly lower ($p=\leq 0.05$) than the mean posttest Agitation (20.90±02.51) and Anxiety (30.77±04.75) scores of patients in control group. Significant positive relationship was found between mean posttest scores of agitation and anxiety (r=0.59).
Conclusion: Nature Based Sounds is an effective intervention to decrease the Agitation and Anxiety of patients admitted in surgical Intensive Care Units. It is recommended that Nature Based Sounds can be used as an effective non-pharmacological intervention for relieving Agitation and Anxiety.
Trial Registration: ClinicalTrials.gov Identifier: NCT03213782, Registered 11 July 2017.
Key words: Nature Based Sounds' Intervention, Agitation, Anxiety.

INTRODUCTION

Anxiety is an individual experience and it is a concept that is difficult to describe with words. No matter how major or minor an operation or other treatment regimen is, it tends to raise a certain level of anxiety and stress in every patient. Hospitalization for surgical procedure as well as other treatment can be experienced as a threat or stressor and may produce anxiety and stress in patients. [1]

ICU patients react to anxiety by various defense mechanisms like conservation, withdrawal, denial, regression and anger. Symptoms of anxiety can also be measures as feeling hot, wobbliness in legs, unable to relax, nervousness, hand trembling, sacred, indigestion or face flushing that may be felt by the patients admitted in ICU. Previous studies also showed that the ICU environment, because of its high noise levels, continual lighting

and other disturbing activities contribute to increasing level of agitation, anxiety and stress. [2]

One of the more frequent complications in the intensive care unit (ICU) is agitation. Agitation is associated with adverse clinical outcomes: longer ICU stay, longer duration of mechanical ventilation, a higher rate of self-extubation, unplanned catheter removal, excessive sedation, increased utilization of resources, and increased ICU costs. [3] 42-71% of critically ill patients experience agitation, 50.4% anxiety and 53.6% stress. [4,5] Recognizing the impact of agitation, The Society of Critical Care Medicine's (SCCM) recently updated sedation and analgesia guidelines now also include agitation, emphasizing the need for prompt identification. [6]

Nurses caring for patients in ICU should have several non- pharmacological adjuncts (supplements) that can be applied so that health workers can promote patient's health restoration. Even though music remedy has been proven to be a powerful non-pharmacological intervention in the care of sufferers require critical nursing care / having such medical conditions like high blood pressure. In this admire, sound remedy can act as a non- pharmacological nursing intervention to lessen the symptoms of Anxiety in sufferers requiring ICU stay. This remedy has been used to reduce distress and improve physiological functioning in medical patients and patients under mechanical ventilation support; but its effect on patients admitted/ shifted in surgical ICU need to be investigated. Therefore, this study was undertaken with the objectives

1. To assess and compare the Agitation and Anxiety score in experimental and control group before and after the administration of nature based sounds.
2. To determine the relationship between Agitation and Anxiety Score of patients in experimental and control group.
3. To determine the association of Agitation and Anxiety in experimental group with their selected demographical variables.

METHODOLOGY

The research design selected for this study was True Experimental i.e. - "Randomized Controlled Trial: Pretest posttest control group design." The study was conducted at MMIMS&R Hospital, Mullana Ambala, Haryana from August, 2015 to July, 2017. A total of 60 Patients admitted in Surgical Intensive Care Units were enrolled as study sample. Setting of the study was selected conveniently and 60 patients were randomly assigned in experimental and control group i.e. - 30 patients in each group. Data was collected by Agitation Behavior Assessment Scale and Beck Anxiety Inventory. It was found that it took approximately 15-20 minutes to fill the Agitation assessment and Beck Anxiety Inventory. The content validity of the tool & Intervention was determined by eleven experts in clinical and nursing field. The inter-rater reliability of Agitation assessment scale was determined by using coefficient of correlation and was found 0.942. Internal consistency of Beck Anxiety Inventory was computed by using cronbach's alpha and was found 0.945.

Procedure for Data Collection

Ethical approval to conduct the study was obtained from Institutional Ethical Committee of MM University, Mullana. Formal administrative approval was obtained from Medical Superintendent of MMIMS&R Hospital, Mullana (P. No.- 771) and the study is registered in clinical trials with NCT 03213782). The Convenience sampling technique was used to select Maharishi Markandeshwar institution of Medical Sciences and Research Hospital, Mullana, Ambala and Surgical Intensive Care Units. A total of 60 patients were selected and randomly assigned to experimental and control group using lottery method i.e. - 30 in experimental group and 30 in control group.

In order to develop rapport, self introduction and introduction of the topic

was given to the participants. To get a free and frank response, the purpose of the study was explained and the subjects were assured about the confidentiality of their responses. Informed consent was obtained from the respondents regarding their willingness to participate in the research project. Pretest was done, Sample Characteristics, agitation and anxiety score was assessed by continuously 30 minutes observation before application of nature based sounds in both experimental and control group. Intervention: In the present study, non pharmacological intervention was used i.e. - Nature Based Sounds which consist of soothing water fall sound, bird's songs and frog sounds which is provided via ear phone continuously for 20 min. It was delivered via the android application name relax melodies meditation of IPOs software. It consists of 102 sounds including Nature Based Sounds which is useful in decreasing agitation, anxiety and stress of patients admitted in ICU. Posttest was done by continuously 30 minute observation after administration of nature based sound to experimental group with the same tools. For ethical consideration intervention to the control group was given after accomplishment of Posttest of experimental and control group. CONSORT diagram has been shown in fig.1.

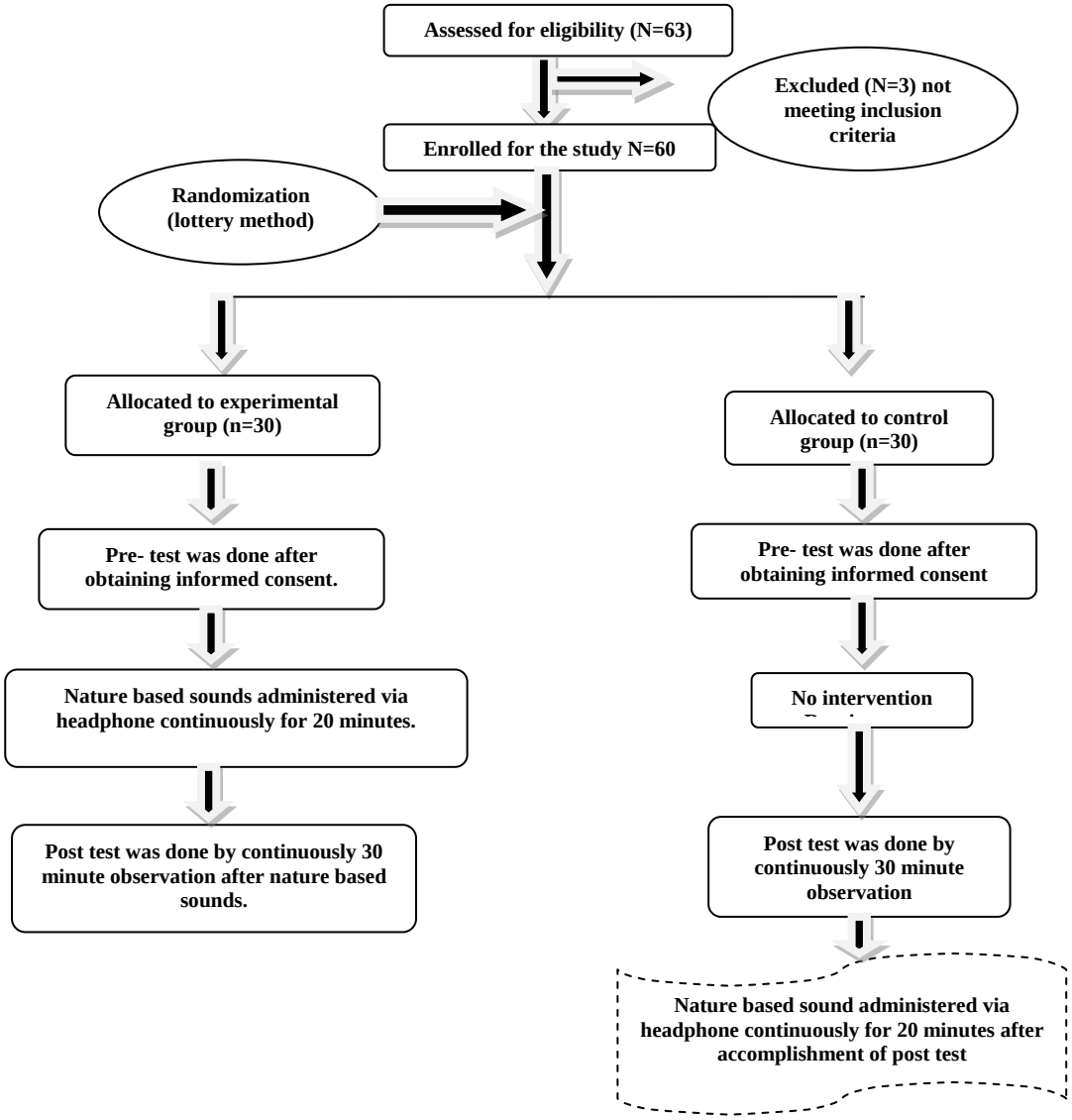

Fig.1 CONSORT diagram

RESULTS

SPSS version 16.0 was used to analyze the data.

- Both the groups were found homogeneous in terms of sample characteristics, has been shown in Table no.1
- Pretest Anxiety score of experimental and control group was not significantly different, means both the groups were homogeneous in terms of pretest Anxiety score (p>0.05).
- The results of the study showed that, there was significant difference between Posttest Agitation and Anxiety score of Experimental and Control Group, has been shown in Table no. 2
- The mean posttest Agitation and Anxiety score of experimental group was significantly lower than the mean posttest Agitation (p=0.001) and Anxiety (p=0.001) score of control group, has been shown in Table no.3
- The Mean difference of Agitation and Anxiety of experimental and Control Group during posttest has been shown in figure no. 2
- There was positive correlation between Agitation and Anxiety (r=0.59, p=0.001).
- Association of Agitation was found with history of smoking, and Anxiety with drugs prescribed, age and number of invasive lines (p≤0.05).

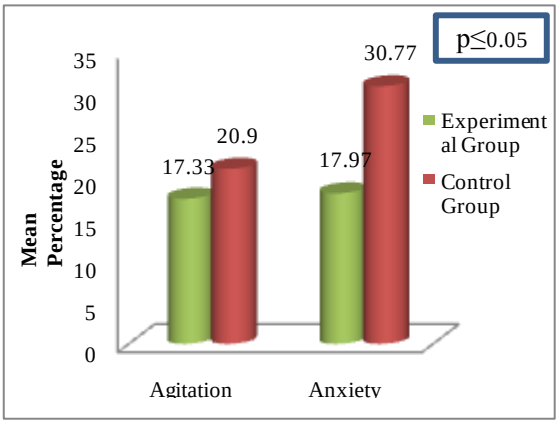

Fig. 2 Bar graph showing the Mean difference of Agitation and Anxiety of experimental and Control Group during posttest

TABLE 1: Chi square showing comparison of Experimental and Control Group terms of sample characteristics . N=60

Sample characteristics	Expt. Group (n=30) f(%)	Control Group (n=30) f(%)	Chi square (χ^2)	df	P value
1. Age in years					
1.1 18-33	11(36.7%)	07(23.3%)			
1.2 34-49	09(30.0%)	07(23.3%)	4.53	3	0.21 ^{NS}
1.3 50-65	10(33.3%)	13(43.3%)			
1.4 >65	00	03(10.0%)			
2. Gender					
2.1 Male	14(46.7%)	17(56.7%)	0.60	1	0.43 ^{NS}
2.2 Female	16(53.3%)	13(43.3%)			
3. Diagnosis/ type of pathology					
3.1 Genito- urinary disorder	05(16.7%)	06(20.0%)			
3.2 Digestive disorder	15(50.0%)	16(53.3%)	0.34	2	^{NS}
3.3 Orthopedics	10(33.3%)	08(26.7)			
4. Number of invasive lines					
4.1 1-2	08(26.7%)	08(26.7%)			
4.2 3-4	17(56.7%)	21(70.0%)	3.08	2	0.21 ^{NS}
4.3 >4	05(16.7%)	01(03.3%)			
5. No. of invasive procedures in last 24 hr.					
5.1 1-2	22(73.3%)	17(56.7%)			
5.2 3-4	08(26.7%)	13(43.3%)	1.83	1	0.17 ^{NS}
6. Days of stay in Intensive Care Unit					
6.1 1-2	21(73.3%)	24(80.0%)			
6.2 3-5	08(26.7%)	03(10.0%)	4.47	3	0.21 ^{NS}
6.3 5-7	01(03.3%)	01(03.3%)			
6.4 >7	0	02(06.7%)			
7. Attending any relaxation therapy.			1.07	1	0.30 ^{NS}
7.1 Yes	03(10%)	01(03.3%)			
7.2 No	27(90%)	29(96.7%)			
8. Drugs prescribed					
8.1 Broncho dilators					
Yes	11(36.7%)	08(26.7%)	0.69	1	0.40 ^{NS}
No	19(63.3%)	22(73.3%)			
8.2 Analgesics					
Yes	23(76.7%)	27(90%)	1.92	1	0.10 ^{NS}
No	07(23.3%)	03(10%)			

*Significant (p≤0.05) ^{NS}Not Significant (p>0.05) $\chi^2(1) = 3.84$, $\chi^2(2) = 5.99$, $\chi^2(3) = 7.82$ key NBS: - Nature Based Sounds

TABLE 2: Comparison of Agitation and Anxiety of Experimental and Control Group during posttest. N=60

Variables	Group	Mean	M_D	SE_{MD}	t value	p value
Agitation	Experimental Group	17.33	-3.56	0.51	-6.91	0.001***
	Control Group	20.90				
Anxiety	Experimental Group	17.97	-3.56	0.51	-6.91	0.001***
	Control Group	30.77				

***Very Highly Significant (p≤0.001) ^{NS}Not Significant (p>0.05) t (58) =1.67

TABLE 3: Comparison of Agitation and Anxiety of Experimental and Control Group during pretest and posttest. N=30

Variables		Mean	M_D	SE_{MD}	t value	p value
(Experimental Group)						
Agitation	Pretest	21.93	8.2	0.47	9.76	0.001***
	Posttest	17.33				
Anxiety	Pretest	30.83	12.86	1.05	12.15	0.001***
	Posttest	17.97				
(Control Group)						
Agitation	Pretest	20.47	-0.43	0.21	2.03	0.05
	Posttest	20.90				
Anxiety	Pretest	29.43	-1.33	0.36	3.61	0.001**
	Posttest	30.77				

t (29) = 2.045 *** (p≤0.001) ^{NS}Not Significant (p>0.05)

DISCUSSION

The present study shows that the mean age of patients admitted in Surgical ICU was 42.30±0.93 which is consistent with the findings of the study conducted by Vahid Saadatmand et al shows that the mean age of patients admitted in ICU was 43.91±16.14.**Error! Bookmark not defined.** And contrary with the findings of Bahman Aghaie et al study i.e. - the average age of the patients was 57.38±5.9 years. [7]

In the present study, more than half of the patients 31/60 (51.66%) were male which is consistent with Allan Garland et al study of epidemiology of critically ill patients in intensive care units which showed that the male gender percentage varied from 58.5-60.8% of the total ICU admission. [8] Vahid Saadatmand et al who reported that males represented 56.6% (34/60) patients admitted in ICU. **Error! Bookmark not defined.** The findings are also consistent with a study done by Bahman Aghaie et al 66/120(55%) of the samples were male. [7]

In the present study, majority of the patients i.e. 88.33% (53/60) were married. This finding is consistent with Vahid Saadatmand et al who reported 70% (40/60) patients admitted in Intensive care Unit was married. [2]

In the present study nearby half of the patients i.e. 48% (29/60) were having education up to primary level. The study done by Vahid Saadatmand et al revealed the similar findings i.e. 40% (24/60) patients educated up to primary level. [2]

In the present study, majority of the patients in experimental group 66.3% and control group 73.3% were non-smoker, which is controversial with the findings of a study conducted by Bahman Aghaie et al in which 81.4% patients in intervention group and 93.3% of the patients in the control group were non-smokers. [7]

The present study shows the mean posttest Agitation Score among patients in experimental group (17.33±1.29) was significantly lower than the mean posttest Agitation Score of control group (20.90±2.51) (p≤0.001) after the administration of Nature Based Sounds in patients admitted in ICU. This finding is consistent with Vahid Saadatmand et al who reported a significant difference between agitation score of the experimental and comparison group (p≤0.001) after the administration of Nature Based Sounds. [2]

The present study shows the mean posttest Anxiety Score among patients in experimental group (17.97±6.10) was significantly lower than mean posttest Anxiety Score of control group (30.77±4.75) (p≤0.001) after the administration of Nature Based sounds. Similar findings were revealed by Vahid

Saadatmand et al i.e. a significant difference between anxiety score after administration of Nature Based Sounds ($p \leq 0.001$). [2] The study done by Yi-Long Yang shows the similar results for non- pharmacological intervention to reduce the anxiety ($p \leq 0.001$). [9]

In experimental group, there was a significant positive relationship between posttest Agitation and Anxiety ($r=0.59$, $p=.001$).

In the present study, there was a significant association of posttest Agitation Score with history of smoking in experimental group ($t=2.29$, $p=0.02$) and in control group ($t=2.12$, $p=0.04$). The patients who were having history of smoking were having higher mean Agitation score (18.00 ± 1.48) as compared with the mean Agitation score of patients who were not having history of smoking.

Study conducted by Jeffery C. Woods et al. shows the agitation score was associated with ICU stay ($p=0.03$) and age ($p=0.001$). [10] One another study conducted by Samir Jaber et.al shows the association of agitation with no. of days in Intensive Care Unit ($p=0.001$). [11]

In the present study, there was a significant association of posttest Anxiety Score with Drugs Prescribed i.e. Bronchodilators ($t=2.48$, $p=0.01$) and Analgesics ($t=1.98$, $p=0.05$) in experimental group and a significant association of Posttest Anxiety Score with age ($F=4.01$, $p=0.01$) and no. of invasive lines ($F=4.07$, $p=0.02$) in control group.

Study conducted by Inês Gullich et al shows that the anxiety score was associated with age (0.04), gender ($p=0.001$). [12]

CONCLUSION

Nature Based Sounds is an effective strategy to decrease the Agitation and Anxiety of patients admitted in surgical Intensive Care Units which may decrease the length of stay in hospital.

Implications

- The nurses working in Intensive Care Units should follow the practice of relaxation technique to reduce Agitation and Anxiety during routine patient care.
- The nurse educators can teach the student nurses as well as staff nurses regarding assessment of agitation and anxiety.
- Nurse administrators have the responsibility to provide a staff development programme for the nursing personnel emphasizing use of non-pharmacological measures which includes relaxation technique such as Nature Based Sounds, music therapy in patients to prevent complications due to ICU environment and decrease the length of stay in ICU.

Limitations

The limitations of the study were:

- The findings of the study cannot be generalized due to a single setting involvement and small sample size.
- The researcher was not blinded about the experimental and control group which may result bias in assessment of Agitation and Anxiety.

Recommendations

- A study can be conducted to identify factors related to aggression and anxiety in hospitalized patients.
- A qualitative study can be conducted on experience of nurses while caring for agitated and anxious patients.
- A study can be conducted on effect of Agitation, anxiety and physiological stress on SpO_2, recovery and ICU stay.

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