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Introduction of music therapy for stuporous patient attached to a mechanical ventilator at Bethany hospital in Tacloban city, Philippines

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Abstract

Altered levels of consciousness (ALC) were among the most common problems in general medicine which intensive care unit is included. One of its deepest levels is stupor. Meanwhile, it has shown that the use of music therapy improved levels of consciousness in a patient that has altered levels of consciousness and is ventilated. This study was designed to evaluate the effect of music therapy after a series of listening classic CD songs attached to a built-in CD drive of the mechanical ventilator for stuporous patient using earphones in both ears. Quasi –experimental design was adopted utilizing the both primary data and secondary data. There were 24 stuporous patients invited to participate as respondents with an age range of 23-92 years old. Four parameters were evaluated: vital signs of patients when attached to a mechanical ventilator with music therapy; duration of the health status; health status as evidenced by a change in level of consciousness based on doctor's order and nurses notes. Data were analyzed by SPSS version 19.The researchers found out the use of music therapy (attached to the mechanical ventilator) was effective in improving the level of consciousness; this has been useful in implementation in the Intensive Care Unit.

Keywords*:* Altered Conscious State, Intensive Care Unit, Mechanical Ventilator, Music Therapy, Stuporous Patient.

1 Introduction

Altered levels of consciousness (ALC) were among the most common problems in general medicine which intensive care unit is included. In addition, it was estimated that over 5% of admissions to the emergency wards of large municipal hospitals were due to conditions that cause a disorder of consciousness, one of its deepest altered levels of consciousness (ALC) is stupor [5]. Stupor defines no response to verbal stimuli; intact response to noxious stimuli and little/no spontaneous activity with five (5) to four (4) GCS score [14]. It pointed out that if patient is not stimulated externally, the patient will be in a sleepy mode most of the time. This also affirms that said patient will be on sleepy mode to coma if not immediately treated.

Meanwhile, Bradt et al. found out that the use of music therapy improved physiological functioning in mechanically ventilated patients; listening to music have a beneficial effect on respiratory rate, heart rate, and anxiety in mechanically ventilated patients [3]. Furthermore, Lee et al. discovered that patients on mechanical ventilation that listened to a single 30-minute sessions of classical music resulted to have greater relaxation effect as evidenced by increased in comfortable resting behaviors and decrease in physiological indices [13].

In addition, Nayak et al. found out that music has been shown to affect portions of the brain. The ability of music has affect emotions and social interactions. Both experimental and descriptive study have documented the effects of music on the, involvement with the environment, expression of feelings, quality of life ,awareness and responsiveness, positive associations, and socialization [15].

Furthermore, based on Jaber et al. study, it has been figured out that single music therapy session discovered to be effective in decreasing anxiety and promoting relaxation, as manifested by decreased in heart rate, respiratory rate, and blood pressure, over the intervention period in intubated patients during weaning phase [6].

Another study from Gilbertson et al. which claims that musical improvisation, is recognized as a rehabilitative therapy for people who have experienced traumatic brain injury initially thought to be "unreachable" or "non-responsive". Music therapy can be attend to the holistically, rather than purely functional needs of people affected by severe head trauma [7].Moreover, music-induced states of altered consciousness promote physical and mental, and in spiritual and palliative care, it can also aid in rehabilitation of clients with traumatic brain injury that can alter our consciousness [3].

Almerud and Petersson revealed that music therapy had a measurable relaxing effect with patients that were temporarily on a respirator in the intensive care unit (ICU) and after completion of respirator treatment results showed a significant fall in systolic and diastolic blood pressure during the music therapy session and a corresponding rise after cessation of treatment. The changes were found to be statistically significant. The intensive care nursing staff beneficially applies music therapy as a non-pharmacological intervention [4]. Likewise, Music therapy is a non-pharmacologic nursing intervention that can be used as a complementary adjunct in the care of patients supported by mechanical ventilation [8].

However, despite several studies in music therapy for mechanically ventilated patients which have an altered levels of consciousness in the intensive care unit, researches regarding music therapy among stuporous patient particularly in Tacloban City, Philippines have not yet been conducted. Thus, it served as a heartwarming inspiration which encouraged the researchers to conduct this investigation.

2 Research objective

This study aimed to determine the effect of music therapy among stuporous patients attached to a mechanical ventilator.

3 Methodology

3.1 Design

This study employed the descriptive research design using comparative analysis which aimed to find out the use of music therapy attached to a mechanical ventilator for stuporous patients at Bethany Hospital, Tacloban City, Philippines. This research design is appropriate since the study focused in fact finding, classification and enumeration of collated data and hypothesis testing with the aid of SPSS version 19.

The researcher utilized percentages, mean, frequency counts, and standard deviation to describe the characteristics of the following variables: age, sex, temperature, heart rate, blood pressure, and duration of health status.

Moreover, comparative analysis utilizing t-test for related samples with 0.05 level of significance was used to test the significant difference between the patients' 1) heart rate before and after introducing music therapy; 2) systolic blood pressure before and after introducing music therapy; 3) diastolic blood pressure before and after introducing music therapy; and 4) health status before and after introducing music therapy.

A two-part questionnaire was used in gathering necessary data. Part I was intended to gather data on the demographic profile of the patients which included: age, sex, temperature, heart rate, blood pressure, and duration of health status while Part II contained four parameters namely: Glasgow Coma Scale, Vital signs, Doctors Order, and Nurses Notes.

3.2 Participants

All of the twenty four admitted stuporous patients from July to January 2012, in the intensive care unit (ICU) of Bethany Hospital were invited, through their significant others to participate. The inclusion criteria were set for study participation among stuporous patient as follows: (1) based on their Glasgow Coma Scale of 24 stuporous patients, and (2) Significant others of the stuporous patients who consented to use the music therapy and signed the informed consent based. In data gathering, the stuporous patients were cared by the trained ICU staff of music therapy. When the stuporous patients revive their consciousness, the use of music therapy was stopped, and monitored based on the four parameters namely: Glasgow Coma Scale, Vital Signs, Doctors Order, and Nurses Notes. After their vital signs and Glasgow coma scale where vitally stabled, continuous monitoring and prescription drugs also been given by the respective doctors. After which, the patients were now ready to be transferred to hospital wards also for continuous monitoring but without mechanical ventilator attached to them.

3.3 Ethical consideration

The investigators sought the approval of the Ethics Committee and the Chief Nurse of Bethany Hospital before conducting the investigation. After which a letter of approval came out. Precautionary measures were established to safeguard the study respondents' legal rights. Prior to the study, consent forms were given to the significant others for them read and signed it. The Confidentiality of information and anonymity of the respondents were maintained by using earphones both of their ears for 45 minutes morning shift and afternoon shift with classical music attached in the built – in CD drive of the mechanical ventilator so that others would not hear who participated.

3.4 Instrumentation

The researcher utilized two- part questionnaire in gathering necessary data. Part I composed of demographic profiles of patients. Part II is using four parameters namely: Glasgow coma scale to check the patient's level of consciousness, vital signs – to measures of various physiological statistics specifically temperature, heart rate and blood pressure, doctor's order, and nurses notes.

4 Main results

Table 1.1 Baseline Characteristics

Table 1 reflects the patient's age range is from 23 years old-92 years old with the mean of 65. 87 years old and standard deviation of 19.9 years old.

Table 1.1 Baseline Characteristics

Age range	Male	Female
91-94		2
87-90	2	2
83-86	1	1
79-82		1
75-78		2
71-74	1	1
67-70		
63-66	1	1
59-62	2	
55-58		
51-54	1	
47-50		1
43-46	1	
39-42	1	
35-38	1	1
31-34		
27-30		
23-26	1	
Total	12	12
Mean	65.87	
STD	19.9	

Table 1.2 Diagnosis of Patients

As shown in table 1.2, out of 24 stuporous patients, fourteen of which are diagnosed with Cerebro-vascular Accident (CVA) and only one patient was diagnosed with Non-Hodgkin disease, Ischemic Heart Attack, Asthma and Renal Disease.

Table 1.2 Diagnoses of Patients

Diagnosis of Patients	N	Percentage
Cerebro Vascular Accident *(CVA)*	14	58.3
Non –Hodgkin disease	1	4.2
Heart Attack (*Myocardial Infarction*)	4	16.2
Ischemic Heart Disease	1	4.2
COPD	2	8.3
Asthma	1	4.2
Renal Disease	1	4.2

Table 2.1 Pre –Post Changes on All Measured Variables

As shown in table 2.1, the temperature of patients before the music therapy was introduced, has a mean of 37.10 C which is slightly higher compared 36.83 C temperature among patients after the music therapy. The patient's heart rates of stuporous patients have a mean of 59. 88 cycles per minute which was lower compared after the music therapy was introduced to patients. Meanwhile, systolic blood pressure of stuporous patients has a mean of 140.83 mmHg which was higher compared to 109.17 mmHg after the music therapy was introduced to the patients. The diastolic blood pressure of stuporous patient have a mean of 80.83 mmHg which is higher compared to 62.08 mmHg after the music therapy was introduced. Mean, obtained in the systolic blood pressure and diastolic blood pressure before and after music therapy both reaches the normal blood pressure range. The diastolic blood pressure using music therapy decreases, but still within the normal range.

Table 2.1 Pre –Post Changes on All Measured Variables

Temperature	Mean	Std. Deviation	T value	P-value	Alpha level
Before	37.10	.456	2.575	0.17	0.05
After	36.83	.78556			
Heart rate					
Before	59.88	38.58510	1.32	.01	0.05
After	70.79	19.35027			
Systolic Blood Pressure					
Before	140.83	24.48	5.167	.000	0.05
After	109.17	37.98			
Diastolic Blood Pressure					
Before	80.83	15.30	3.638	.001	0.05
After	62.08	32.97			

Table 2. 2. Number of Days in Stuporous Patients to Conscious State

Table 2.2 presents the number of days the patients were able to recover after the music therapy has been attached to the mechanical ventilator. Out of 24 patients, only 11 recovered in one to four days. This is the shorter number days the patients recovered compared with other patients. On the other hand, only one patient recovered in 21 to 24 days which is the longer days to recover. This means that music therapy may help to recover the consciousness of stuporous patients.

Table 2. 2. Number of Days in Stuporous Patients to Conscious State

Days	Participants	Percentage
1-4	11	57.89
5-8	6	31.58
9-12	0	0
13-16	1	5.2
17-20	0	0
21-24	1	5.2
Total	19	100
Mean	3.17	
Standard Deviation	4.45	

Table 2.3. Change in Level of Consciousness using the Music Therapy Attached to Mechanical Ventilator

As presented on table 2.3, out of 24 stuporous patients undergone music therapy 19 patients become conscious after the music therapy has been attached to the mechanical ventilator.

Table 2. 3. Number of Days in Stuporous Patients to Conscious State

Responses	**Frequency**		**Percentage**	
	Before The therapy	**After The therapy**	**Before The therapy**	**After The therapy**
Conscious	0	19	0	79.2
Stuporous	24	0	100	0
Death	0	5	0	20.8
Total	24	24	24	24
Mean	8	8		
Standard Deviation	13.86	9.85		

5 Discussions

This investigation determined the effectiveness of music therapy among stuporous patients in Bethany Hospital. In the age range of patient's was from 23 years old to 92 years old with the mean of 65. 87 years old. There were also large numbers of cases with cerebro-vascular accident of stuporous patients compared with other diseases. Meanwhile, in relation to the temperature of patients after music therapy, it shows that it improved better than before music therapy was undergone by patients. Likewise, the patient's heart rates both before and after music therapy did not have the same result. This said finding was in contrary to the previous study that listening to music showed no negative changes in heart rate to the conditions of mechanically ventilated patients [11].

On the case of central findings in the patients' systolic blood pressure after music therapy, it reached the normal blood pressure compared with the higher blood pressure before the music therapy, as well as the diastolic blood pressure. This result is worth noting since previous study conducted discovered that the mean systolic and diastolic blood pressure, respiratory rate, pulse rate, and oxygen saturation in blood measured by pulse oxymetry of patients become normal after they received 60 minutes of classical music songs [12].Another studies affirms that listening to music consistently reduced heart rate and respiratory rate, suggesting a relaxation response in mechanically ventilated patients, however it contradicts to the previous study that listening music improved oxygen saturation level [7].

An improvement has shown in relation to the number of days the patients are able to recover after the music therapy has been attached to the mechanical ventilator. This means that music therapy shows significant improvement to recover the consciousness of stuporous patients. This affirms that music therapy is a non-pharmacologic nursing intervention that can be used as a complementary adjunct in the care of patients supported by mechanical ventilation especially in the intensive care unit [9].

In this study, together with the four parameters showed significant changes in the level of consciousness. This is supported by the study of which music therapy stimulate a person in coma [1].

6 Conclusion

Findings of this investigation revealed that the use of music therapy attached to mechanical ventilator improved their level of consciousness following such parameters: vital signs of patients, duration of health status of the patient, and change in level of consciousness based on the Glasgow coma scale, doctors order and nurses notes. All changes were found to be statistically significant. The results reinforced the need that it can be applied in the intensive care unit as a non-pharmacological intervention. Finally, it provides opportunities of using music-induced states of altered consciousness to promote physical, mental healing, spiritual and palliative care [2].

This data however, needs to be interpreted with caution considering to the small sample size sample and so that it can be strengthen to claim the effectives of music therapy. Furthermore, studies identifying other factors which may be related in the improvement like medications and other treatments may be investigated.

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Competing Interest

The authors have no personal relationships, intellectual passion, religious, and institutional, political, hospital affiliations which may have influenced in writing this article.

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