

Effective of Music Therapy and Planned Nurses Interaction on the Hemodynamic Parameters during the Intra Angiography Procedure

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Abstract

A quasi-experimental study on 60 subjects was conducted to assess the effectiveness of music therapy and planned nurse's interaction on haemodynamic parameters among the patient undergoing angiography procedure in IMS & SUM Hospital. For the study quantitative experimental research approach & non-randomized control group design was adopted; the data was analysed by unpaired 't' test, there was statistically significant relation on haemodynamic parameters of control group and music therapy group and heart rate, systolic pressure, diastolic pressure and oxygen saturation rate unpaired t value 2 (p=0.04), 2.2 (p=0.03), 3.36 (p=0.001), 2.19 (p=0.03) respectively which represent the effectiveness of music therapy during intra angiography procedure. There was also evidence of statistically significant relation between haemodynamic parameters of control group and experimental planned nurses interaction group, but systolic pressure showing no significant relationship with nurses interaction and heart rate, systolic pressure, diastolic pressure and oxygen saturation rate unpaired t value 3.39 (p=0.001), 0.04 (p=0.96), 2.03 (p=0.04), 2.92(p=0.005) respectively which implies the effectiveness of nurses interaction. Similarly there was no significant relationship between two experimental groups.

Music therapy has an effective role in dealing with any emotional or psychological problem. Schneider et al (2001) stated that music therapy is beneficial as an adjunct to pharmacological application to decrease anxiety, normalise haemodynamic parameters, and improve overall subjective surgical outcomes.

Listening to music induces relaxation, limiting sympathetic mediated responses associated with anxiety. Changes in one's environment or daily routine can elicit both physical and emotional aspects of anxiety. Anxiety promotes excitation of the sympathetic nervous system and associated noradrenergic responses, characterised by fluctuations in respiratory rate, heart rate and blood pressure.

According to Mosby's Medical Dictionary (2009) a therapeutic relationship between a nurse and a client is built on a series of interactions and develops over time. The relationship differs from a social relationship in that it is designed to meet the needs only of the client. It is time and goal-oriented and has three phases. In the first phase, the nurse establishes the structure, purpose, timing and context of the relation-

ship and expresses an interest in discussing this initial structure with the client. In the middle phase (developmental phase), the nurse and the client know each other better and test the structure of the relationship to be able to trust one another; the nurse is careful to assess correctly the degree of dependency necessary for the particular client. In the last or termination phase is complete when the goals of relation have been accomplished and both the client and the nurse feel a sense of resolution and satisfaction.

Review of Literature

Wiman et al (2007) noted that in a highly qualitative interaction between a patient and a nurse in an acute care setting, meaning is based on the nurse being flexible in changing between physical and psychosocial care. In pre-operative or pre-procedure phase patients are most vulnerable in their needs both physiological and psychological, making them more vulnerable to emotional imbalance. At that time nurse has a vital role to guide the patient and prepare him for the procedure. New trends suggest that music therapy is a useful complementary treatment also and have shown positive outcome.

Chan (2007) undertook a study in China to assess the effect of music on the physiologic and psychological parameters in patients undergoing application of a C-clamp after percutaneous coronary interventions

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(PCI). A repeated-measure randomised controlled trial was used in 66 patients undergoing application of a C-clamp after PCI were recruited. The result showed that music is a simple, safe, and effective method of statistically significant reductions in heart rate, respiratory rate, oxygen saturation and a lower pain score.

Objectives

1. To assess the haemodynamic parameters during the intra angiography procedure of both the experimental group and control group.
2. To determine the effectiveness of use of music therapy and Planned nurses interaction on the haemodynamic parameters during the intra angiography procedure.
3. To compare the music therapy and planned nurses interaction on haemodynamic parameters during intra angiography procedure.

Material & Methods

Design: The study used quantitative experimental research approach and quasi experimental non-randomised control group design. We collected data from selected sample after explaining purpose and procedure. In pre-procedure music therapy and nurse-patient interaction given for 15-20 minutes and in intra procedure haemodynamic parameters were recorded.

Sample: The sample size was 60, who had undergone angiography procedure at IMS and SUM hospital and fulfilled the inclusion criteria. Out of 60 samples, 20 were in control group and 40 samples in experimental group. The experimental group also included 20 samples in experimental group - I (music therapy) and 20 samples in experimental group- II (planned nurses' interaction).

Measure: After establishing the validity of the tool, the final tool was made and then the reliability of the tool was done. In this study, reliability computed by split half method, was calculated by using Crobach's alpha formula. The reliability value for questionnaire related to haemodynamic parameters of patient undergoing angiography procedure regarding the use of instrumental music therapy and planned nurses interaction was $\alpha = 0.77$ & $\alpha = 0.72$ respectively. Reliability of the tool was established and the tool was found to be statistically

reliable. To measure the haemodynamic parameters we used a self-designed assessment sheet having 4 features like heart rate, systolic blood pressure, diastolic blood pressure and oxygen saturation rate. Table 1 shows that normal and abnormal value of this above features where each one can be scored with maximum score-2 (normal) and minimum score-1 (abnormal). Total maximum score-8 and total minimum score was 4.

On the period of data collection we approached the participants directly and explain the purpose and method of using instrumental music therapy before angiography procedure for 15 minute duration and also provided planned nurses interaction about (a) Pre-angiography procedure like-anatomy and physiology, preparation, environment of cath-lab, indication, contraindication, benefits, problem arise if the patient not doing the angiography and complication, (b) Intra angiography procedure like time duration, (c) Post-angiography procedure like pressure over puncture site, restricted movement and adequate fluid intake.

Statistical analysis: The primary aim of the study was to assess the effectiveness of music therapy and planned nurse's interaction on the haemodynamic parameters during the intra angiography procedure. For this we used unpaired 't' test to achieve the objectives. Finally we performed a chi square to find the association of hemodynamic parameters with selected demographic variables.

Ethical Consideration: Research problem & objectives were approved by research committee of SOA. Written permission was obtained from the concerned authorities and patients. There was no interference on the treatment of the subjects while collecting data. Confidentiality was ensured.

Results

Sample Description: Demographic data of control group represents that 15 percent of people were of age group 51-60 years, 21.7 percent were male, 21.7 percent were Hindu, 18.3 percent were staying in urban, 18.3 percent were nuclear family, 10 percent of people were graduate and primary level, 11.7 percent were housewife, 15 percent of sample were Rs.10,000 - 20,000 income, 28.3 percent of sample were non-vegetarian, 13.3 percent of sample were of smoking habit (Table 2).

The demographic data of experimental group music therapy group represents that 13.3 percent of people were of age group 51-60 years, 20 percent were male, 23.3 percent Hindu, 23.3 percent stay-

Table 1: Distribution of normal & abnormal value of heart rate, systolic pressure, diastolic pressure & oxygen saturation

Heart rate (Beats/ min)		Systolic pressure (mm of Hg)		Diastolic pressure (mm of Hg)		Oxygen saturation rate (%)	
Normal	Abnormal	Normal	Abnormal	Normal	Abnormal	Normal	Abnormal
70-90	<70 or >90	110-130	<110 or >130	70-90	<70 or >90	>95	<95

Table 2: Distribution of sample characteristics according to age, gender, religion, area of residence, type of family, educational qualification, occupation, monthly income, dietary history and personal habits (N=20+20+20)

Criteria	Category	Respondents (N=20)					
		Control Group		Experimental Music Therapy Group		Experimental Planned Nurses Interaction Group	
		f	%	f	%	f	%
Age	30-40 yrs	4	6.7	1	1.7	1	1.7
	41-50 yrs	3	5	5	8.3	5	8.3
	51-60 yrs	9	15	8	13.3	9	15
	>61 yrs	4	6.67	6	10	5	8.3
Gender	Male	13	21.7	12	20	16	26.7
	Female	7	11.7	8	13.3	4	6.7
Religion	Hindu	13	21.7	14	23.3	19	31.7
	Muslim	7	11.7	5	8.3	1	1.7
	Christian	0	0	1	1.7	0	0
	Others	0	0	0	0	0	0
Area of Residence	Rural	9	15	6	10	9	15
	Urban	11	18.3	14	23.3	11	18.3
Type of Family	Joint	9	15	9	15	13	21.7
	Nuclear	11	18.3	11	18.3	7	11.7
Educational Qualification	Graduate	6	10	3	5	1	1.7
	Higher secondary	5	8.3	9	15	8	13.3
	Secondary	3	5	6	10	7	11.7
	Primary	6	10	2	3.33	4	6.67
Occupation	Service	5	8.3	2	3.3	1	1.7
	Business	6	10	8	13.3	9	15
	Farming	2	3.3	2	3.3	6	10
	Housewife	7	11.67	8	13.3	4	6.67
Monthly Income (Rs.)	<5000	0	0	0	0	0	0
	5000-10000	3	5	4	6.7	7	11.7
	10000-20000	9	15	11	18.3	10	16.7
	>20000	8	13.33	5	8.33	3	5
Dietary History	Vegetarian	3	5	5	8.3	4	6.7
	Non-vegetarian	17	28.3	15	25	16	26.7
Personal Habits	Tobacco	6	10	4	6.7	3	5
	Smoking	8	13.3	8	13.3	13	21.7
	Alcohol	1	1.7	3	5	1	1.7
	No habit	5	8.33	5	8.33	3	5

ing in urban, 18.3 percent were nuclear family, 15 percent were higher secondary group, 13.3 percent housewife, 18.3 percent earned Rs 10,000-20,000 income, (25%) were on non-vegetarian diet, 13.3 percent had smoking habit.

The demographic data of experimental planned nurses interaction group represents that 15 percent of

people were of age group 51-60 years, 26.7 percent were male, 31.7 percent were Hindu, 18.3 percent were staying in urban, 21.7 percent were from joint family, 13.3 percent were higher secondary group, 15 percent were in business, 16.3 percent earned Rs. 10,000-20,000 income, 26.7 percent were non-vegetarian diet, 21.7 percent were smokers.

Effects of music therapy: Table 3 shows the unpaired 't' test to assess the effectiveness of music therapy which represents statistically significant relation on haemodynamic parameters; this means the music therapy is effective for maintaining normal haemodynamic parameters during the intra angiography procedure.

Effects of nurses interaction: Unpaired 't' test to assess the effectiveness of nurses interaction which represents statistically significant relation on heart rate, diastolic pressure and oxygen saturation rate except systolic pressure which means the nurses interaction is effective for maintaining normal hemodynamic parameters during the intra angiography procedure (Table 4).

Table 5 shows the unpaired 't' test to assess the effectiveness of music therapy and nurses interaction which represents statistically not significant relation on hemodynamic parameters.

Discussion

The findings of the study represents that music therapy and nurses interaction is maintained, normal haemodynamic parameters are there but there is no significant relationship between music therapy and nurses interaction. Present study revealed that there was statistically significant relation on haemodynamic parameters (heart rate, systolic blood pressure, diastolic blood pressure and oxygen saturation rate) regarding the use of music therapy.

This study was supported by Triller et al (2006) Mok & Wong (2003), Smolen et al (2002), Allen et al (2001) Schneider et al (2001) and results show that blood pressure (systolic,

diastolic, or mean) was significantly lower in the music group as compared to the control groups. Heart rate also reduced significantly in patients using music during invasive procedures or perioperatively.

Kei et al (2005) conducted a study in Hong Kong to assess the effectiveness of music and its effect on the physiological responses and anxiety levels of patients

Table 3: Unpaired 't' test for comparing on haemodynamic parameters of control group and experimental music therapy group (N=20+20)

Item	Mean		Calculated t value	p value
	Control group	Experimental music therapy group		
Heart Rate	82.8	78.9	2.08073 *	0.0443
Systolic pressure	130.6	120.4	2.24481*	0.0307
Diastolic pressure	85.3	76.2	3.366**	0.0018
SPO ₂	97.25	98.05	2.19017*	0.0347

Degree of freedom= 38, p≤0.05 * - Statistically significant ** - Very statistically significant

Table 4: Unpaired 't' test for comparing on haemodynamic parameters of control group and experimental planned nurses interaction group (N=20+20)

Item	Mean		Calculated t value	p value
	Control group	Experimental planned nurses interaction group		
Heart rate	82.8	77.05	3.39482**	0.0016
Systolic Pressure	130.6	124.6	0.043145	0.9658
Diastolic Pressure	85.3	80	2.03791*	0.0486
SPO ₂	97.25	98.4	2.92972*	0.0057

Degree of freedom= 38, p≤0.05; * - Statistically significant; ** - Very statistical significant

Table 5: Unpaired 't' test for comparing on haemodynamic parameters of experimental music therapy group and experimental planned nurses interaction group (N=20+20)

Item	Mean		Calculated t value	p value
	Experimental music therapy group	Experimental planned nurses interaction group		
Heart rate	78.9	77.05	1.068684	0.292
Systolic pressure	120.4	124.6	1.0509	0.2999
Diastolic pressure	76.2	80	1.49741	0.1425
SPO ₂	98.05	98.4	1.11046	0.2738

Degree of freedom= 38, p≤0.05 * - Statistical significant ** - Very statistical significant

receiving mechanical ventilation. The result showed that heart rate, respiratory rate, blood pressure, restlessness, facial distortion, restfulness were significantly more relaxed when pre-test measurements were compared with post-test measurements, whereas the control group showed no significant differences between pre- and post-test results.

Present study also revealed statistically significant relation in haemodynamic parameters, which means nurses' interaction was effective for maintaining normal haemodynamic parameters during intra angiography procedure.

Implications: The use of music therapy is one of most important aspects to be included in the clinical nursing practice. Findings about effectiveness of music therapy can help in clinical practice in different invasive procedure. But as music therapy is not used routinely during angiography procedure, so nurses should be encouraged to use music therapy in cath-lab during angiography and others such as permanent pacemaker

implantation, ASD and VSD closure procedure. Nursing personnel should get interacted and maintain good interpersonal relationship with the patient during the period of hospitalisation and they should explained about all procedure before doing.

Recommendations

Keeping in view the finding of the present study, the following recommendations are made.

- ❑ Similar study can be conducted on (a) large sample for a large period of time (b) in permanent pacemaker implantation, ASD and VSD closure with different target population.
- ❑ A comparative study can be conducted using of different types music.
- ❑ Similar study can be conducted by using the music and interaction intervention in a different session.
- ❑ A standard nursing interaction protocol should be established & used by the nursing personnel in the clinical setting.

Conclusion

There was significant improvement in haemodynamic parameters in patients undergoing angiography procedure. Music therapy and nurses interaction are found to be useful for stabilising the hemodynamic parameters among the patients undergoing angiography procedure.

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