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Original Research Article

Music Effect on Distressed Relatives Waiting Outside ICUs

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ABSTRACT

Listening a music soothes irritate nerves, it stir up and melts emotion in tears though a process is unknown. A music CD of 30 minutes duration created by investigator. That consists of 8 Indian *ragas* played through 7 musical instruments by musicians. The limit of each music were2-5 minutes either single or combinations of 2to3 instruments. These Indian ragas effect are followings mood elevators, pleasing nerves, relieve insomnia, brings physical and mental relaxation, prepare deep slumber, soothing CNS and retain emotional outburst. Objectives of the study were to assess the level of distress experiencing among relatives of patients waiting outside critical care unit before and after introduction of intervention of listening above music and also to identify self rating relaxation after listening music half an hour. A pre-experimental one group design was considered suitable for the study considering mortality rate of ICU patients. Result showed distress score was reduced in signifant level and 96% participants experience maximum relaxation. Listening instrumental music has a positive effect on distressed mind and contributes relaxation without adverse effect. Study also revealed relaxing music can be used as an alternate coping measure in difficult situations.
Key words: *Music, Music Therapy, Relaxation, Distress, Indian Ragas.*

INTRODUCTION

Attending and waiting for a critically ill near one in hospital and hospitalization with a life threatening situation considered one of the most stressful experiences of life. It is highly technical and dehumanizing atmosphere, where close relatives will be under distress namely feeling of loss in an unknown, unexpected, uncontrolled situation. Relatives watching their loved one with lots of tubes, open wound changed identity. When people are under distress they use different coping patterns. Listening music can be taught as a new coping strategy, friendly technology to care threatens human mind as a complimentary therapy.

Music has always enchanted the humanity. It can calm the strained nerves, soothes the depressed, comfort the lonely and delighted the living mind. It is evident from the scriptures of Egypt priests energizes their body by enchanting in a particular manner. [(1)] Relaxing music flows through the central nervous system to encounter stress of body and mind. The right kind of music can stimulate alpha brain waves for clear thinking. Certain kind of music promotes sense of calmness of body and mind. Researchers accepted right kind of music can be used as a therapy safely as an effective alternate therapy. [(2)] Music can be considered as the most used tranquilizer in modern era to reduce anxiety, tension and also physiological index like high blood pressure.

Therapeutic Uses of Music: Decrease stress, [(3)] banishes feeling of fear, it touches body, mind and spirit [(4)] discharge anger, [(5)] strengthens self-esteem, uncover

options, reduces social and emotional closeness, [6] encourages sense of trust and gives maximum relaxation. Objectives of the study was to determine the level of distress among relatives of patients waiting outside critical care units as measured by a self reported distress experienced questionnaire before and after introduction of music, to evaluate change of distress scores after music listening. To identify level of relaxation assessed by a relaxation scale and to evaluate music effect to find out the correlation between level of distress and level of relaxation.

MATERIALS AND METHODS

Music: In this study Hindustani instrumental Music played by a CD player (CD named "Vishram" means Rest) for 30 munities. This CD- Rome is developed for special purpose and validated by expert musicians. Components of this as such: [Table 1]

Table 1: Description of the Instrumental Music & effect on body and Mind

Name of CD	Name of Player	Instruments	Time in min	Name of the Raga (Indian)	Effect of Raga
Premlin [7]	Pt. Ravi Shankar & Hari Prasad Chowrasia	Sitar ,Guiter Flute	4	Kalavathi	Mood elevator, pleasing effect on the nerves and relieves insomnia
Raagini [8] Vol 1	Pravin Godkhindi	Flute,Key board, Tabla	5	Jaijavanthi	Relaxation create deep slumber
Relaxation [9]	Sombodhi Prem	Guiter,Key Board	4	Ahir Bhairavi	Relief physical and emotional tension
Relaxation [10]	Rudram Bapu	Veena,Bamboo Flute	3	Kalyani	Same effect
Thanav [11]	Ronu Mazumder	Flute, Violin	4	Kalavathi	Mood elevator
Thanav (lonliness)	Pt.Abhijeet Banerjee	Tabla	3	Ahir Bhairavi	Worries dissipate and mind will wake up to sense of freedom
Emotion [12]	Silvia Nakkach	Guiters, Keyboards	5	Mallika	Restrain the emotional outbursts
Shanthi(peace) [13] for Relaxation	Chris Kimber	Piano, KeyBoard, Guter,Sitar	2	Neelambari	Soothing to CNS

Permitted by Sr Prasada KK , Validated by Expert Musicians
**Suddha (without error or mistake) Ragas played by eminent & expert musicians.

In this study Distress refers to following experiences expressed by relatives of patients namely fear, anxiety, guilt, anger, conflict, frustration, physical discomforts, pain and aches etc.

In this Study relaxation is a personal state responded by relaxation scale. Scale graded as mild, moderate and maximum relaxation. In these study relatives refers to most close and significant family members such as parent, spouse, children, siblings and other close family members. In this study Critical care unit refers to highly specialized hospital care area namely MICU, NICU, PICU, CCU, and SICU etc. Twice day one visitors were allowed to observe patient to control infection .Relatives waiting with agony, sudden death news or serious outcomes.

All hypotheses were tested at the 0.05 level of significance. H_1: The mean post intervention distress score of patients' relatives will be significantly lower than the mean pre intervention distress score & H_2: There will be significant correlation between pre intervention distress score and post music relaxation score.

Research approach was cross sectional descriptive comparative and a design chosen was pre experimental one group pre and post intervention evaluation. In this study extraneous variables were age, gender, educational qualifications, condition of the patient, relation closeness, financial responsibilities, length of ICU stay, information receiving from medical teams, visiting hour, waiting room condition, death and seriousness of other patient and behavior of other relatives. Unique Settings of the study was waiting lounge of different ICUs of a selected Medical College Hospital. Super specialized five areas namely MICU, NICU, ICCU, SICU and PICU considered bed strengths of 20, 17, 11, 16 and 5 respectively. These areas 90% beds are occupied almost always. Without

even 15 minutes of proper relaxation many relatives waiting more than 12-16 hours during a day. Data collection were done after proper communication about intention of the study individually and continued 30 days. In this study stratified nonrandomized non proportional technique was adopted to select subjects from different ICUs. According to the bed availability of the ICU sample size were as such MICU (15 out of 20), NICU (13 out of 17), ICCU (7 out of 11), SICU (12 out of 16) and PICU (3 out of 5). Total 50 relatives selected from 5 critical unit and order of the ICU selection and number of relative selection done by lots to remove bias and all patient of different ICUs considered as critical, irrespective of their disease conditions. Sample criteria were following: Inclusion criteria: 1. Significant close relatives age above 15 years those who can communicate in local and English language ,both gender and can withstand listening 30 minutes music continuously. Exclusion criteria were friends and colleagues and hearing disabilities. Data collection instruments were developed by investigator 1. Baseline proforma of the participants were prepared (16 items), 2. Distress experience questionnaire (35 items lowest score 35 highest score 140) reliability r= 0.83 and 3. Self rating Relaxation Scale (20 items reliability r= 0.94).Data collection time varied from person to person from 8-20 minutes.

Statistical analysis:

Data gathered and analyzed in the light of objectives.

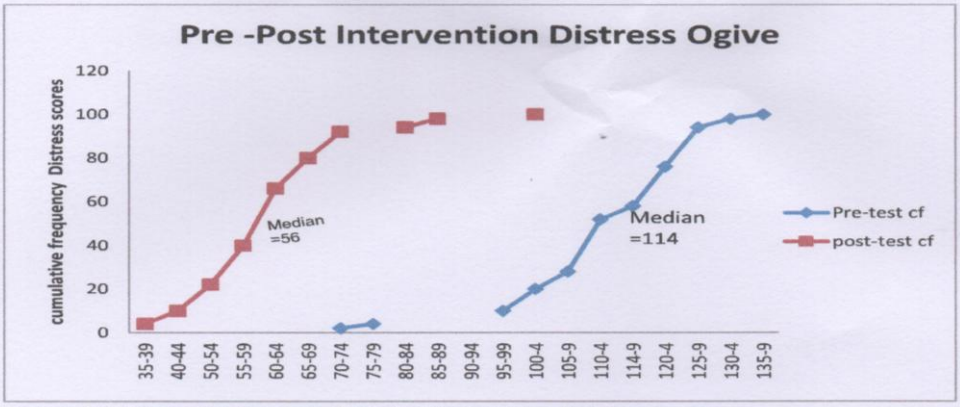

Figure 1: Ogive showing pre & post intervention distress scores

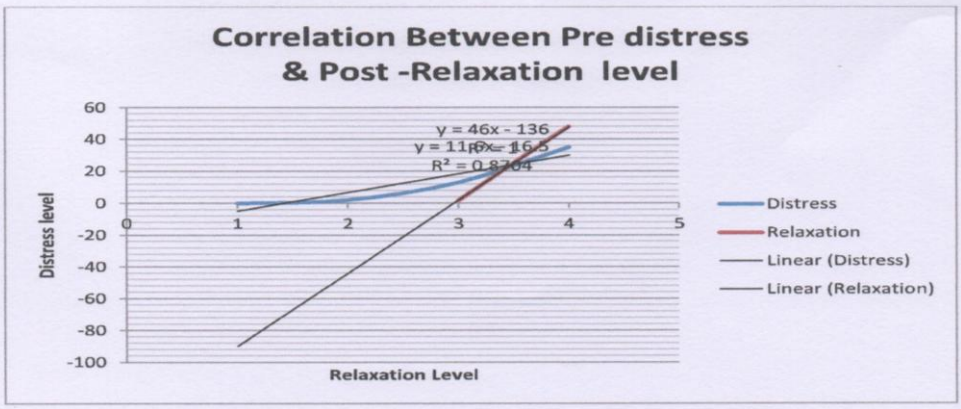

Figure 2: Scattered diagram showing correlations between after intervention distress level & relaxation level

Sample characteristics:

Table 2: Frequency and percentage distribution of sample characteristics of relatives of CCU patients

Sl No	Variable	Mean	f	Percentage (%)
1	**Age in years**			
	16-25		19	38
	26-35		14	28
	36-45	37.6	6	12
	46-55		7	14
	56 >		4	8
2	**Gender**			
	Male		27	54
	Female		23	46
3	**Religion**			
	Hindu		24	48
	Islam		14	28
	Christian		12	24
	other		-	
4	**Education**			
	Primary		8	16
	Secondary		26	52
	PUC		9	18
	Graduate		5	10
	Post Graduate		2	4
5	**Marital Status**			
	Single		11	22
	Married		38	76
	Widow		1	2
	Divorced		-	-
6	**Work Status**			
	Employed		21	42
	Unemployed		29	58
7	**Type of ICU**			
	MICU		15	30
	NICU		13	26
	ICCU		7	14
	SICU		12	24
	PICU		3	6
8	**Patient on Ventilator**			
	Yes		16	32
	No		34	46
9	**Relation**			
	Spouse		3	6
	Parent		22	44
	Children		15	30
	Sibling		8	16
	Uncle, Aunt, Niece etc		2	4
10	**Duration of Admission**			
	<2 days		29	58
	2-10 days		10	20
	11-20 days		4	8
	>20 days		1	2
11	**Financial responsibility**			
	Yes		45	90
	No		5	10
12	**Waiting time in days** 6 12			
	<1		8	16
	2		10	20
	3		8	16
	4		10	20
	5>		8	16
13	**Age of Patient in years**			
	<10		15	30
	10-20		-	-
	20-30		5	10
	30-40		5	10
	40-50		12	24
	50-60		9	18
	>60			
14	**Type of Family**			
	Nuclear		18	36
	Joint		32	64
	Extended			
15	**Reliever**			
	Yes		31	62
	No		19	38
16	**Other tragedy or emergency same time**			
	Yes		12	24
	No		38	76

N=50

Table 3: Comparison of Pre and Post music listening distress levels

Distress	Range of Scores	Range Percentage (%)	Pre(f)-Po (f) % - %	Mean(SD) Pre - Post	Mean Difference	t-value
No Distress	<38	<25	- 2(4)			22.06*
Mild	39-74	26-50	2(4)- 44(88)	101.8(14.1)	55.4	
Moderate	75-105	51-75	13(26)- 4(8)	55.36(10.3)		
Severe	106-140	76-100	35(70) -			

N=50, t_{49}=2.000, p<0.05, * significant

Table 4: Post music listening Relaxation Level, range, frequency, mean, mean percentage, and covariance

Relaxation level	Range	Mean	Mean %	SD	Post Music (f)	%
No	<20	73.96	92.45	6.80		
Mild	21-40					
Moderate	41-60				2	4
Maximum	61-80				48	96

N=50, Maximum score=80

Table 5: Chi-Square values showing association between relaxation score and selected variables

Sl no	Variable	Pre intervention Level of Relaxation			χ^2	df
		Moderate	Maximum	Total		
1	**Age(yrs)**					
	15-25	2	17	19		
	26-35		14	14		
	36-45		6	6	3.39	1
	46-55		7	7		
	56-65		4	4		
2	**Religion**					
	Hindu	1	23	24		
	Islam		14	14	1.17	1
	Christian	1	11	12		
3	**Education**					
	Primary		8	8		
	Secondary		26	26		
	PUC		9	9	4.42*	2
	Graduate	2	3	5		
	Post Graduate		2	2		
4	**Marital Status**					
	Single	2	9	11		
	Married		38	38	7.38*	2
	Widow/widower		1	1		
5	**Type of ICU**					
	MICU	2	13	15		
	NICU		13	13		
	ICCU		7	7	4.86*	2
	SICU		12	12		
	PICU		3	3		
6	**Relation with Patient**					
	Spouse		3	3		
	Parent		22	22		
	Son/daughter	1	14	15	2.08*	2
	Sibling	1	7	8		
	Uncle/Aunt, niece/nephew		2	2		
7	**Length of waiting days**					
	1	2	6	8		
	2		6	6	5.35*	2
	3		10	10		
	4		8	8		
	5		10	10		
	>5		8	8		

N=50, $\chi^{2(df\ 1)}$ =3.84, p<0.05, χ^2 (df 2) = 5.99 p<0.05, *=Significant

Association between relaxation scores & selected variables like age, education level, marital status, type of ICU, relationship with patients and length of ICU stay in days.

RESULT

The sample comprises 50 close relatives of different critical area namely Medical Intensive care unit (MICU), Neonatal Intensive care unit (NICU), Critical care unit (CCU), surgical intensive care unit (SICU) and Pediatric Intensive

care unit (PICU). About one-third of the relatives were waiting outside MICU compare to only 6 0f them were outside PICU. More than two-third of the patients were not on ventilator supports. Majority (90%) relatives had to bear financial responsibilities. The median value of pre vs post intervention score was 114 and 56.The null hypothesis was rejected and research hypothesis was accepted and no association between age and religion.

DISCUSSION

Present study supported and contradicted many studies in terms of sample characteristics A qualitative study was conducted in Taiwan to assess parental experiences of family stress. Result revealed more stress was experienced by parents (64%) than other family members and male (69%) responded more. This data consisted with present study, (44%) large number were parents but contradicted (54%) because of less number of male subjects' responded. [(14)]

A cross sectional study was conducted to identify psychological distress among spouses of patients undergoing cardiac rehabilitation. The mean difference of pre and post intervention distress score was19.95. Result revealed there was a significant difference between stress and coping strategies of elder and younger spouses (t_{98}=6.91, p<0.05), younger spouse had more ICU were in the age range of 31to >60 but among them only 3(6%) of them present. Because most of the ICU allows only one relative to wait outside, present study focused the fact of cultural difference in this society which decided during emergency particular close relative should carry most of the responsibilities. Study also support fact by showing post intervention level of relaxation had a significant association between marital status (4.42 p < 0.05) and relation with patient (2.08 p<0.05). [(15)]

A comparative cross sectional survey conducted to assess spouse stress while waiting a heart transplant and waiting for a donor heart. Study described there is a significant difference between employed (mean stress=0.99) and non employed (mean stress = 0.70) spouses(t_{83} = 6.39 p< 0.05) Study suggested working spouses perceived more stress than non working due to job and financial responsibilities. Study supported present study findings, 45 (90%) of them had financial responsibilities but 21 (42%) employed and had job related concern and also 19 (38%) had no reliever option. [(16)]

A quasi experimental study was conducted to assess the effects of music on anxiety of patient undergoing TURP surgery. Result showed significant difference between experimental and control group in terms of reduction of anxiety, mean pre (39.80) versus mean post (27.60) anxiety score after intervention. Researcher concluded music reduced pre operative anxiety, 44

Present study also after introduction of the music majority of the subjects 44(80%) decline from severe distress level to mild distress level. [(17)]

Findings of the present study contradict to following two studies a systematic review on coronary heart disease (CHD) with distress and anxiety was done (2009).Music was used on standard care to reduce distress and anxiety on psychological and physiological parameters. Total 23(N=1461) RCTs are included in review with extremely extended search strategies. Result indicated music has moderate effect on anxiety, study indicated reduction of blood pressure, heart rate, respiratory rate and pain. Study strongly suggests more study in this area with trained music therapists. [(18)] Present study music was validated by expert musicians demanded the ragas which can bring change in CNS [Table 1].

The objective of next review was to summarize evidence for the effectiveness of music therapy (MT) and to assess the quality of systematic reviews (SRs) based on randomized controlled trials (RCTs). Twenty one well selected studies indicated

improvement in global and social functioning in schizophrenia and/or serious mental disorders, gait and related activities in Parkinson's disease, depressive symptoms, and sleep quality. MT may have the potential for improving other diseases, but there is not enough evidence at present. Most importantly, no specific adverse effect or harmful phenomenon occurred in any of the studies, and MT was well tolerated by almost all patients. This review supported present study though critical condition of relatives continuing but music increased relaxation (relaxation mean score 73.96 out of maximum score 80. [(19)]

Absolute relaxation is possible when fear of death disappeared present study relaxed state of mind reduces fear 96% strongly agreed "I did not feel lonely while listening" Supporting following study where music used to anxiety induced due to height fear reduced after music intervention in subjective and physiological measures, confirming its efficacy as a stressor. A significant increase in state anxiety was found between pre and post-assessment in the silence group, but not in the music group, indicating that post-stress recovery was faster in the musical group. Results suggest that music can ameliorate the subjective anxiety produced by fear of heights. [(20)]

CONCLUSION

Based on the study we can draw certain conclusion as relatives waiting outside critical care units had high distress level particularly physical, emotional, financial, social and spiritual domains. Continuous listening music for certain time (30 minutes) was given maximum relaxes state of mind. Association was found between relaxation and selected variables namely education, marital status, type of ICU, relationship with patient, length of waiting days today's world is very stressful study result can be used in different stressful condition of life and to cope up with negative life events. Study can be used day to day clinical settings to relieve stress and to promote mental health Limitation of the study was it is conducted in a specific geographical area with small sample indicated less chance of generalization. Close relative concept is an issue of conflict and individual differences played a role in relaxation. Around 10% participants decline after listening 5-10 minutes due to serious condition of their patient. More significant outcome could have been expected from longer than 30 minutes of listening. Study suggested positive effect of complimentary/alternative therapies. Low volume Soothing music can be used serious hospital environments, various chronic illnesses, labour pain, depression, mania or patient with panic anxiety and hallucination. Pre intervention distress score (median= 114) was higher than post intervention (median= 56).

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