A STUDY TO DETERMINE THE CONTRIBUTING FACTORS FOR ICU STRESS AND TO ASSESS THE EFFECTIVENESS OF INTERVENTION PACKAGE IN REDUCING STRESS AMONG PATIENTS ADMITTED IN ICU

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ABSTRACT

The experience of an ICU is extremely stressful and disruptive for patients and family members. The environmental factors have affected the safety, patient outcome in ICU. Survivors of critical illness face a prolonged period of recovery due to physical weakness, malnutrition, breathlessness, lot of muscle mass and cognitive dysfunction. The Physical Environment such as noise, constant light, Sensory overload is implicated in ICU syndrome. Tactile touch therapy is the practice of massage which include Physical and Psychological outcome of the client. Psychoacoustic therapy is a Powerful distracter from distressful sounds and thoughts in the ICU. The Present study is aimed to determine the contributing factors for ICU stress and to assess the effectiveness of intervention package in reducing stress among patients admitted in ICU. A quasi experimental study with control group pretest and posttest design was adopted. A total of 200 samples admitted in ICU were selected. Convenience sampling technique was used. Contributing factors for ICU stress was assessed by Environmental Stressor Questionnaire (ESQ). The stressor identified were interpersonal, extra personal, and intrapersonal factors both in control and intervention group. Interpersonal factors (88% & 87.5%) contributed. More than the Extra personal (86% & 86.5%) and Intrapersonal factors (84.7% & 84.7%). Psycho acoustic therapy along with Tactile touch therapy were administered to intervention group for five days. Level of stress was assessed by Modified Stress scale. The result revealed that majority of the samples had high level stress in intervention group (54%) and control group (51%). After the intervention. Overall post test mean score of stress in experimental group is 38.14 (SD 7.54) the t value is 30.78 which is statistically significant at 0.05 level.

KEYWORDS: Stress, Psycho Acoustic Therapy, Tactile Touch Therapy & I C U

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I. INTRODUCTION

Intensive care unit is a place where patients with critical condition need special care and treatment. Roger Ulrich has described that the ICU setting is a sterile and bare as a cold garage and the patients have the feeling of hearing frightening sounds, fear of death, feeling of loneliness and insecurity about concrete matters happen because the technical equipment's are the dominating factors. Patients in intensive care unit face multiple stressors so they are critically ill, subject to pain and need pharmaceutical support for failing in vital organs. Intensive care units backgrounds are extremely stressful situation that results from emergencies, high technological complexity environment and the basis of an emotionally risky scenario both for the patients and their family members. Many authors have identified that the physical environment is a contributing factors for ICU stress.

Measurement of patients out come at regular interval is necessary to identify problems and guide the nurses to select intervention which helps to promote sleep, nutrition and wellbeing. Complementary and alternative

medicine (CAM) is not expensive, holistic and free from side effects. Massage is considered as medical therapy when the focus of care moves to biological science. Sound vibration directly aligns all energy field sound and music is used to move the attention away from an unwanted and unpleasant situation. The investigator has found that even though with the availability of beneficial complementary therapies they are not used as a nursing intervention in clinical setup. Hence the researcher would like to identify the effectiveness of psychoacoustic therapy and tactile touch therapy on stress in ICU patients.

Statement of the Problem

A study to determine the contributing factors for ICU stress and to assess the effectiveness of intervention package in reducing stress among patients admitted in ICU.

Objectives

- To find out the contributing factors for stress among patients admitted in ICU
- To assess the pretest and posttest level of stress among patients admitted in ICU in the experimental and control group.
- To evaluate the effectiveness of intervention package on stress among patients admitted in ICU
- To find out the association between level of stress in experimental group of patients with their selected demographic variables and clinical characteristics

Hypothesis

- The mean posttest level of stress among experimental group of patients in ICU will be significantly lower than the mean pretest level of stress
- The mean posttest level of stress among experimental group of patients in ICU will be significantly lower than the mean posttest level of stress among control group
- There will be a significant association between posttest level of stress in experimental group of patients in ICU and their selected demographic variables and clinical characteristics.

II. METHODOLOGY

Research Approach

Research approach used for this study is quantitative approach

Research Design

Quasi experimental pre test, post test control group design was used.

Group	Measurement of dep. Variables	Manipulation of independent variables	Measurement of dependent Variable on 6 th day
Exp. Group	O ₁	X	O ₂
Control group	O ₁	---	O ₂

Variables

- Independent variables
- Dependent variables
- Extraneous variables

Setting of the Study

The setting of this present study includes Devadoss Multispeciality Hospital and Madurai Institute of Traumatology (MIOT) Madurai.

Accessible Population

Patients who were admitted in ICU of Devadoss Multi-speciality Hospital and Madurai Institute of Traumatology (MIOT) Madurai.

Sample

Patients who fulfilled the inclusion and exclusion criteria were selected as samples

Sample Size

Based on power analysis the required sample size is 85 in each group, but the investigator took 100samples in experimental and control group.

Sampling Technique

Non probability purposive sampling technique was used.

Description of the Tool

Part I – Demographic Variables

- Part II – Modified Environmental Stressors Questionnaire (ESQ)
- Part III – Modified stress scale.

Modified Environmental Stressor Questionnaire

It include 20 items, which include intra personal factors (16 items) Inter personal factors (18 items) and extra personal factors (16 items)

Scoring

For each item the mean % was worked out (actual score/ Maximum possible score X 100) and arranged according to the mean value by providing ranking.

Modified Stress Scale

- It consists of 29 statements which include
- physical factors 12 statements

- psychological factors 12 statements
- social factors 5 statements

Scoring

- Low level stress 0 – 33%
- Moderate level stress 34 – 67%
- High level stress 68% - 100%

Development of an Intervention Package

- Tactile touch therapy. The investigator has undergone certified training under an expert at Valliammal Institute Madurai. The techniques involve are effleurage, pertisage, percussion and friction
- Psychoacoustic therapy. The Music is composed and based on Karnatic and Raga Hemendra Madyama. The music is integrated with natural sounds such as river, water, waves, rain and birds.

Testing of the Tool

Validity

The instruments were given to 13 experts in the field of medicine, nursing, yoga, etc.....

Reliability

S.No	Tool	No.of Items	N	Alpha Reliability	Validity
1.	Modified Environmental Stressor Questionnaire (ESQ)	50	200	0.810	0.900
2.	Modified stress scale	29	400	0.827	0.909

Method of Data Collection

Formal permission was obtained from concerned authority at Sacred Heart Nursing College & obtained consent from the Hospital authorities. Each day 2-4. Samples were selected assessed the contributing factors for ICU stress was assessed by modified ESQ. Pretest assessment of stress was done by modified stress scale. Intervention package were administered for 1,2,3,4,5th days. Post test assessment was done on 6th day.

Data Analysis & Interpretation

The data obtained are tabulated, analysed and interpreted using descriptive and inferential statistics based on the objective and hypothesis formulated for the study.

**Table 1: Ranking Order for the Stressors in Experimental Group and Control
Group of Patients Admitted in ICU N=200**

Experimental Group	Ranking Order	Control Group
❖ Observing treatment being administered to other patients (Interpersonal factor)	1	Observing treatment being administered to other patients (Interpersonal factor)
❖ Not knowing exactly where you are (extra personal factors)	2	Not knowing exactly where you are (Extra personal factor)

❖ Not knowing what time it is (extra personal factor)	3	Not knowing what time it is (Extra personal factor)
❖ Listening to the telephone ringing (extra personal factor)	4	Listening to the telephone ringing (Extra personal factor)
❖ Missing your spouse or partner (Inter personal factor)	5	Not able to eat (Inter personal factor)
❖ Don't know the doctors who cares you (Inter personal factor)	6	Missing your spouse or partners (Inter personal factor)
❖ Having men and women in same room (Inter personal factor)	7	Having to use oxygen (Extra personal factor)
❖ Not receiving adequate explanation about the treatment and procedure (Inter personal factor)	8	Not having to use oxygen (Inter personal factor)
❖ Having to use oxygen (Extra personal factor)	9	Having men and women in same room (Inter personal factor)

Table 1: Presents the top ten ranks for the stressors in experimental and control group. The stressors in top ten rank include interpersonal, extra personal and intra personal factors. Interpersonal factors and extra personal factors ranked from first to fifth which are observing treatment being administered to other patients, not knowing exactly where you are, not knowing what time it is, listening to telephone ringing, missing your spouse or partner, not able to eat.

Table 2: Comparison of Dimension of Stressors in Experimental Group and Control Group of Patients Admitted in ICU N=200

Stressors	Experimental Group		Control Group		't' Value
	Mean	SD	Mean	SD	
Intra personal factors	84.73	4.63	84.70	4.56	0.48 P>0.05 NS
Inter personal factors	88.27	3.96	87.55	3.22	1.413 P>0.05 NS
Extra personal factors	86.20	3.44	86.59	3.78	0.763 P>0.05 NS

P>0.05

Figuer 1

Table 2: reveals that the intra personal, inter personal and extra personal factors are equally contributed towards ICU stress in both the experimental and control group since the obtained 't' value is not significant at 0.05 level .

Table 3: Distribution of Samples based on Level of Stress in the Experimental and Control Group of Patients Admitted in ICU N=200

Level of Stress	Experimental Group				Control Group			
	Pre test		Post Test		Pre Test		Post Test	
	F	%	F	%	F	%	F	%
Low level	10	10	49	49	12	12	14	14
Moderate level	36	36	51	51	37	37	38	38
High level	54	54	0	0	51	51	48	48

Figure 2

The above bar diagram revealed that in pre test majority of the samples have high level of stress in the experimental and control group. However in experimental group during post test 49 (49%) samples have low level stress & 51 (51%) samples have moderate level stress. No sample has found to have high level stress.

In control group post test nearly half of the samples 48 (48%) have high level stress 38 (38%) samples have moderate level stress and only 14 (14%) samples found to have low level stress.

Table 4: Comparison Of Pre Test And Post Test Mean Scores Of Stress In Experimental Group Of Patients Admitted In ICU. N=100

S. No.	Dimension of Stress	Experimental				Mean Difference	‘T’ Value	P Value
		Pre Test		Post Test				
		Mean	SD	Mean	SD	Mean	SD	P<0.001
1.	Physical factors	56.97	13.94	31.33	11.95	25.645	13.24	P<0.001
2.	Psychological factors	86.25	4.77	38.10	10.33	48.145	41.596	P<0.001
3.	Social factors	55.70	8.73	45.00	8.07	10.700	9.284	P<0.001
4.	Over all	66.30	4.95	38.14	7.54	28.16	28.86	P<0.001

P<0.001 ***

Table 4 denotes that there is significant difference between pre test and post test level of stress in experimental group. The mean difference is found to be higher for the psychological factor (48.14) than the physical (25.64) and social factor (10.70) and the 't' value is significant at P<0.001 level. So it is concluded that the intervention was effective in experimental group.

Table 5: Comparison of Post Test Mean Scores of Stress between Experimental and Control Group of Patients Admitted in ICU N=200

S. No.	Dimension of Stress	Exp.Group Post Test		Control Group Post Test		Mean Difference	't' Value	P Value
		Mean	SD	Mean	SD	Mean	SD	P<0.05
1.	Physical factors	31.33	11.95	55.29	11.87	23.95	14.21	P<0.05
2.	Psychological factors	38.10	10.33	85.93	4.83	47.83	41.92	P<0.05
3.	Social factors	45.0	8.07	54.85	9.54	9.85	7.87	P<0.05
4.	Over all	38.14	7.54	65.33	4.611	27.21	30.78	P<0.05

P<0.05 ***

The above figure revealed, that there is a significant difference between post test mean score of physical, psychological, and social factors between experimental and control group since the obtained 't' values are significant at P<0.05 level.

Table 6: Item Wise Comparison of Post Test Mean Scores of Stress in Experimental and Control Group of Patients Admitted in ICU N=200

Item No.	Items of Stress	Exp.group Post Test		Control Group Post Test		't' Value
		Mean	SD	Mean	SD	
4	Feeling nervous when left alone	1.94	.239	3.53	.502	28.62 (p<0.01)
6	Find it difficult to tolerate the interruption of sleep	1.26	.630	3.02	.738	18.139 (p <0.01)
7	Having an uncomfortable feeling like butterflies in the stomach	1.55	.770	2.60	1.06	7.99 (p <0.01)
15	Night mares	1.58	.684	3.79	.409	27.715 (p <0.01)
23	Spells of terror and panic	1.51	.759	3.31	.692	17.53 (p <0.01)
29	Feel anxious due to financial crisis	1.25	.435	3.26	.613	26.728 (p <0.01)

P<0.01 ***

The above findings revealed that there is significant difference between post test mean score of various items of stress in the experimental and control groups since the 't' value for the each component is significant at P<0.01* level.

Table 7: Association between Post Test Mean Score of Stress in Experimental Group and Clinical Characteristics of Patients Admitted in ICU. n=100

Clinical Characteristics	N	Mean	SD	Stat Results	Significance
Diagnosis on admission					
• Surgery	14	33.60	5.72	t value 2.604	P<0.05***
• Trauma / orthopedic	86	38.94	7.56		
Other illness					
• Yes	14	33.60	5.72		P<0.05***
• No	86	38.94	7.56		
No. of medicines					
3	9	36.45	7.52	F Ratio 7.461	P<0.05***
4	17	33.26	5.47		
5	17	43.90	5.59		
5	57	37.96	7.53		
Respiratory rate					
• Normal	11	42.53	7.75	t value 2.190	P<0.05***
• Deviated	89	37.54	7.35		

Visual Analogue score					
• Low pain	29	34.846	5.960	t value	P<0.05***
• High pain	71	39.493	7.737	2.899	
Length of ICU stress					
>5 days	81	37.428	7.129	t value	P<0.05***
<5 days	19	41.206	8.640	1.995	
No. of hospitalization					
Experience					
Once	29	35.325	6.85	t value	P<0.05***
twice	71	39.297	7.54	2.450	

P<0.05 ***

It is inferred that there is a association between post test mean score of ICU stress in experimental group with the clinical characteristics such as diagnosis on admission, other illness, number of medication, respiratory rate, visual analogue score, length of ICU study and number of hospitalization experience.

DISCUSSIONS

The first objective is to determine the contributing factors for ICU stress

The results revealed that the mean score of interpersonal factors in both the experimental and control groups are higher than the intra personal and extra personal factors. The researcher concluded that the environmental factors such as observing treatment that are administered to other patients, missing the spouse, Men and women in the same room, not receive adequate explanation about the treatment and procedure etc.

The above finding was supported by the study done by syen-Tore and Frederickson who identify the stressors experienced by the ICU patients were in three ways which includes related to body, related to room and relationship (stress reaction, being alone, lack of privacy, missing of spouse or partners)

The second objective of the study is to assess the pre test and post test level of stress in experimental and control group.

The pre test level of stress in experimental (54%) and control group (51%) samples have high level of stress. However in post test 49% of samples in experimental group found to have low level stress and nobody found to have high level stress. In control group post test 48% samples found to have high level stress. The above findings configured with the research study of Balasubramaniyan. The findings revealed that majority of the samples had high level of anxiety (42%) in ICU.

The third objective is to evaluate the effectiveness of intervention package in ICU stress. The findings indicate that the overall post test mean score of stress in experimental group is 38.14 (SD = 7.54) and the overall pre test mean score is 66.30 (SD=4.95) which is statistically significant at 0.001 level ($t=28.863$ $P<0.001$)***

It is also statistically proved that there is difference between the experimental and control group post test scores of various dimensions of stress namely physical factors ($t=14.21$ $P<0.05$), psychological factors ($t=41.92$ $P<0.05$) and social factors ($t=7.87$ $P<0.05$).

The researcher concludes that psychoacoustic, and tactile touch therapy reduce the physical, psychological and social factors related to stress in the experimental group. Ross Adams et.al conducted the study to evaluate the

effectiveness of massage therapy on pain, relaxation, emotion, sleep and recovery. After massage the post test mean pain score was reduced than mean pre test mean score which improve the emotional well being, sleep of the samples.

The fourth objective is to find out the association between post test level of stress in experimental group with the clinical characteristics. It is inferred that there is an association between post test mean score of ICU stress in experimental group with the selected clinical characteristics of patients such as diagnosis on admission ($t=2.604$ $P<0.05$) other illness ($t=2.604$ $P<0.05$) number of medications (F ratio 7.461 $P<0.05$) respiration rate ($t=2.190$ $P<0.05$) visual analogue score ($t=2.899$ $P<0.05$) length of ICU stay ($t=1.995$ $P<0.05$) and number of hospitalization experience ($t=2.45$ $P<0.05$).

These findings are supported by carina Aparacida et.al who conducted the descriptive study to identify the association between stressors with socio demographic and clinical characteristics of patients in Intensive Care Unit. Stressors were associated with female gender, the samples without previous hospitalization. Etc....

Implications of the Study

Nursing Practice

The study reveals the fundamental responsibility of the ICU nurse (ie) is to support the patient on various domains such as physical, psychological and social which will hard to minimize distress.

Nursing Education

Nursing curriculum should emphasize not only the physical domains of the patients in ICU but more on the psychological domain which could be achieved through appropriate environmental assessment in the ICU.

Nursing Administration

- Nursing administrators can collaborate with the nursing researchers to conduct further research in utilization of complementary and alternative therapies.
- Short term certification course on complementary and alternative therapy could be arranged for nurses to uplift their knowledge and practical skill

Nursing Research

Nurse researcher should disseminate the research finding which help the future researcher to build upon and motivate other researcher to conduct further studies.

CONCLUSIONS

Evidence of present study suggested that ICU experience could be the stressful environment to the patient admitted in ICU. It is the role and functions of the critical care nurses to perform comprehensive assessment on contributing factors for stress in ICU clients. Routine ICU treatments have its benefits over the physical need of the clients but not the psychological, psycho social needs of the patients. The study finding has offered statistical evidence regarding the benefits of psychoacoustic therapy and touch therapy.

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