IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A STUDY TO ASSESS THE EFFECTIVENESS OF MODIFIEDABCD BUNDLE ON ICU PSYCHOSIS AMONG POST OPERATIVE CARDIAC PATIENTS AT A SELECTED HOSPITAL, PANIPAT

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Abstract:

Aim of the Study: To assess the effectiveness of modified ABCD bundle on level of ICU psychosis among cardiacpost-operative patients in the experimental and control group. **Methodology:** The research design used in this study was true experimental post-test only design with 60 sample using simple random sampling technique, with 30 each in the experimental and control group. The informed consent was obtained after collecting the demographic data. The patients in the experimental group were administered the modified ABCD bundle. Awakening aspect of orientation was given to the patients during the pre-operative day, whereas the other components were given during the post-operative period. The patients in the control group were administered with hospital routine care.The post-test level of ICU psychosis was assessed using the Intensive care delirium screening checklist. The post-test I was conducted on the 3rd POD and the post-test II was conducted on the 4th POD. Both the post-test levels of ICU psychosis were measured using ICDSC. The data were coded and entered in the main coding sheet. **Results:** The experimental group's post-test I level of ICU psychosis was 1.20 with SD 1.09. The control group scored 3.23 with SD 1.67. The experimental group had a mean post-test II ICU psychosis score of 0.63 with SD of 0.81, while the control group had 3.06 with SD of 1.74. The student's unpaired t-test showed great statistical significance between the experimental and control groups in post-test I ($t = 5.565$ at $p<0.001$), proving that modified ABCD bundle reduced ICU psychos in cardiac post-operative patients. The student's unpaired t test ($t=6.944$atp<0.001) showed that modified ABCD bundle had sustained substantial impact on ICU psychosis in cardiac post-operative patients. The paired 't' test showed that the experimental group's post-test I and II ICU psychos levels were statistically significant at $p<0.001$ with $t=2.984$. The modified ABCD bundle reduced cardiac post-operative ICU psychosis immediately and permanently. The results also showed that the post-test I level of ICU psychosis in the experimental group was associated with gender, marital status, and occupation ($p<0.05$, $p<0.001$, and $p<0.05$, respectively). Male married and skilled employees had sub-syndromal delirium. **Conclusion**: The findings verified that modified ABCD bundle was very effective in reducing the level of ICU psychos is of patients who under went cardiac surgery and can be used as a non-pharmacological measure to reduce ICU psychos is during ICU stay.

Key Words: Assess, Effectiveness, Modified ABCD Bundle, ICU Psychosis, Post Operative Cardiac Patients.

Introduction:

Environment is the gift of nature given by God, from the birth till death human beings constantly interact with the environment they live. Because of the permanent interaction between man and his environment, our health is to a considerable extent determined by the environmental quality. **According to WHO, —**Health is a state of complete physical, mental, social and spiritual well-being and not merely the absence of disease or infirmity.

The health illness spectrum emphasizes that health of an individual is not static. It is a dynamic phenomenon, continuous changes occur from positive health to illness and death. Physiological, psychological and environmental factors impinge on the individual‘s health that leads to illness **(Berman A, 2015).**

Cardiovascular diseases have evolved substantially in the last few decades. It is becoming an increasingly common disease worldwide. Mortality due to cardiovascular diseases are increasing suchas is chaemic heart disease. Cardiac diseases include those of the rheumatic, hypertensive, ischemic and cardiovascular diseases. In India the prevalence rate of coronary artery disease was found to be 65.4 per 1000 males and 47.8 per 1000 females respectively **(WHO, 2018).** The peak age was attained between 50 – 60 years and males were affected more than females. Disparity among gender regarding cardiovascular diseases, its risk factors, morbidity and mortality are gradually decreasing. Women traditionally had a low risk, but recent epidemiological studies indicate an increasingpattern of mortality and morbidity with regard to cardiovascular disease in all parts of India **(S. Dinkar, 2018).**

The World Health Organization (2018) reported that 17.5 million people die each year from cardiovascular diseases and this value is estimated to reach 23 million by 2030, an estimated 31% of all deaths worldwide. More than 75% of the deaths due to cardiovascular diseases occur in low and middle-income countries. It is proven that 80% of the deaths are through either myocardial infarction or stroke.

ICU psychosis involves qualitative as well as quantitative alterations in consciousness with diminished orientation to the present environment. ICU psychosis is an understudied complex neuropsychiatric syndrome, developing in 11%-42% of general medical patients **(Siddiqi, 2016)** and ICU psychosis is occurring up to 50% of hospitalized elderly patients **(Cole, 2014**). Historically, management of ICU psychosis focuses on underlying causes but the increasing attention to advanced age related problem, has heightened awareness that ICU psychosis rather than being in a benign transient stage, is often persist with an independent impact on the patient‘sfunctional capacity, mortality and morbidity **(Pitkala, 2015**).

ABCD bundle therapies reduce ICU psychosis risk variables. Several reviews found that post-operative cardiac patients have greater ICU psychosis, although post-operative care typically misses it. Consequently, ICU psychosis is the most common condition in critically ill patients and stays undiagnosed. The literature evaluation and clinical experience inspire the student researcher to do this study. Assessing prevalence and presenting nurses with an ABCD bundle booklet on ICU psychosis therapy may alter minds and reduce ICU patient mortality, morbidity, and hospital stay.

In Prem Hospital Panipat Haryana, 5-8 cardiac procedures are performed daily. A 2018 study found that 39% of ICU patients have ICU psychosis and 40% are at danger. The investigator found that ICU nurses are not trained on ICU psychosis and its management. The investigator chose this study topic because of this.

Objectives:

1. To assess the post-test level of ICU psychosis among the cardiac post-operative patients inthe experimental and control group.
2. To assess the effectiveness of modified ABCD bundle on level of ICU psychosis amongthe cardiac post-operative patients in the experimental and control group.
3. To associate the post-test level of ICU psychosis among the cardiac post- operativepatients with their selected demographic variables of experimental and control group.

Methodology:

Experimental research is usually used to figure out how well a certain method gets the desired result. In this study, the researcher wanted to find out how bad the psychosis was in the ICU two times after giving the modified ABCD bundle. It seemed like the best way to do things was to try things out. For this study, a true experimental post-test only design was chosen, which included randomization, manipulation, and control. This was done to make sure that the results of this study were accurate.

	Group	Intervention	Post test-i 3rd pod	Post test -ii 4th pod
RANDAMI Z AT I ON	mentalgroup	Modified ABCD Bundle + Hospital routine care	O_1	O_2
	ontrolgroup	Hospital routinecare only	O_1	O_2

Figure – 1: Schematic Presentation of Research Design

Prem Hospital Panipat Haryana hosted the study. 200-bed multi-specialty hospital. Its 50-bed cardiothoracic facility includes a Cath lab, cardiac OT, adult ICU, step-down ICU, and cardiac wards. The OT transfers patients to the adult ICU after surgery. After being cleared, patients are moved to cardiac wards on day 4. Two cardiac operation theatres do 100 open heart procedures per month. The study was conducted in a 20-bed adult ICU that received patients from cardiac operation theatre. In this study, all cardiac post-operative patients at Prem Hospital Panipat Haryana who met the sample selection criteria had undergone cardiac procedures like coronary artery bypass graft-on pump, graft-off pump, valve replacement, or valve repair. 60 cardiac post-operative patients (30 in study group and 30 in control group) were moved to adult ICU from cardiac OT following surgery and met sample selection criteria. The researcher first got the operation list of all cardiac patients from reception every day. As patients arrived at cardiac wards from reception, samples that fit sample selection criteria were selected by simple random sampling utilising lottery method. The investigator divided the samples into experimental and control groups by lot. The investigator also chose 60 samples, 30 each in the experimental and control groups, across four weeks. Tool's two components. The investigator developed a data gathering instrument after a thorough literature research, expert consultation, and professional experience.

Section A: Assessment tool Assessment tool consists of two parts

Part I- Demographic variables Consisted of age, gender, educational qualification, monthly income, occupation and marital status. The questions had multiple options and the investigator collected the responsesby interview method.

Part II-Intensive Care Delirium Screening Checklist (ICDSC) Assessment of level of ICU psychosis by using Intensive care delirium screening checklist (ICDSC) which is a standardized tool, consisted of 8 items, which are related to signs and symptoms of ICU psychosis. Namely,

1. Altered level of consciousness
2. Inattention
3. Disorientation
4. Hallucination, delusion or psychosis
5. Psychomotor agitation or retardation
6. Inappropriate speech or mood
7. Sleep-wake cycle disturbance
8. Symptom fluctuation

The 8 dimensions were observed by the investigator, each symptom carried 1 mark, total score was 8.

Scoring and interpretation:

The scores were interpreted as,

Score	Interpretation
0	Normal
1-4	Sub-syndromal delirium
5-8	Delirium

The intensive care delirium screening checklist included eight items representing ICU psychosis symptoms, with the presence of a symptom carrying one mark and the absence of a symptom carrying zero. The tool received an overall score of 8.

Section B: intervention tool: Modified ABCD bundle is a group of intervention which were given to every cardiac post- operative patients to prevent ICU psychosis.

The four distinct components of the modified ABCD bundle were,

1. ***Awakening***
2. ***Breathing exercises***
3. ***Cognitive stimulating activities***
4. ***Daily exercises***

After receiving ethical committee approval from Dr. Prem Hospital Panipat and Ravindra Hospital in Panipat, Haryana, the data collection procedure was carried out. A formal written permission was obtained from the Director of Cardio-thoracic Surgery and the Medical Superintendent, and official information was distributed to the Nursing Superintendent, AICU and cardiacward in-charges, and other relevant personnel.

The lottery method was used to select samples and assign them to experimental and control groups. The samples were adequately informed about themselves and the study. Both patients and their relatives provided written and verbal consent. The responses were kept anonymous and confidential. The information was gathered in three stages.

Phase 1

Demographic data from the selected samples were collected on the pre-operative day, which was the day before surgery, and then for the experimental group. The modified ABCD bundle component Awakening was administered alongside hospital routine care as part of the intervention protocol. The patients were informed that the intervention would be continued on the second post-operative day.

Phase-II

The awakening component, which highlights the orientation, was administered on the first post-operative day. The other components of the modified ABCD bundle, such as breathing, cognitive stimulating activities, and daily exercises, were initiated immediately after the extubation or on the second post-operative day and continued until the fourth post-operative day. Only routine hospital care was provided to the control group.

Phase-III

The post-test I assessment, which identifies the level of ICU psychosis, was performed on the third post-operative day among cardiac post-operative patients from both the experimental and control groups, using an intensive care delirium screening checklist. The post-test II assessment, which identifies the level of ICU psychosis among cardiac post-operative patients in both the experimental and control groups, was administered on the fourth post-operative day using an intensive care delirium screening checklist. The collected data was tabulated and analysed using descriptive and inferential statistics.

Data analysis: Descriptive and inferential statistics analysed the data. This study described mean, standard deviation, and percentage. Inferential statistics uses a one-sample paired "t" test to determine the relationship between demographic variables and evoked problems.

Results:

Table 4.1: Frequency and percentage distribution of demographic variables of cardiacpost-operative patients in the experimental and control group.

(N = 60)

Demographic Variables	Experimental Group		Control Group		i-SquareValue
	No.	%	No.	%	
Age of the patient in years					χ^2=0.936 d.f=4 p=0.919N.S
20 - 30	2	6.67	1	3.33	
31 - 40	6	20.00	4	13.33	
41 - 50	5	16.67	6	20.00	
51 - 60	9	30.00	10	33.33	
61 - 70	8	26.67	9	30.00	
Gender					χ^2=1.667 d.f=1 p=0.197N.S
Male	26	86.67	22	73.33	
Female	4	13.33	8	26.67	
Educational status					χ^2=0.220 d.f=5 p=0.999N.S
Illiterate	1	3.33	1	3.33	
Primary school	4	13.33	4	13.33	
Middle school	3	10.00	4	13.33	
High school	7	23.33	7	23.33	
Intermediate	7	23.33	6	20.00	
Graduate & above	8	26.67	8	26.67	
Occupation					
Unemployed	7	23.33	8	26.67	

Unskilled worker	1	3.33	4	13.33	χ^2=8.819 d.f=6 p=0.184
Semi-skilled worker	5	16.67	1	3.33	
Skilled worker	6	20.00	8	26.67	
Clerical shop owner, Farmer	6	20.00	2	6.67	
Semi-profession	5	16.67	5	16.67	N.S
Profession	0	0.00	2	6.67	
Demographic Variables	**Study Group**		**Control Group**		**Chi-Square Value**
	No.	**%**	**No.**	**%**	
Monthly family income in Rs.					χ^2=6.987 d.f=5 p=0.222N.S
<1500	0	0.00	0	0.00	
1500 - 4000	0	0.00	1	3.33	
4000 - 7000	7	23.33	4	13.33	
7000 - 11,000	11	36.67	8	26.67	
11,000 - 15,000	4	13.33	11	36.67	
15,000 - 31,000	5	16.67	2	6.67	
>31000	3	10.00	4	13.33	
Marital status					χ^2=0.583 d.f=3 p=0.900N.S
Married	25	83.33	23	76.67	
Unmarried	1	3.33	1	3.33	
Separated	1	3.33	1	3.33	
Widowed	3	10.00	5	16.67	

N.S – Not Significant

The above table 1 depicts the frequency and percentage distribution of demographic variables of cardiac post-operative patients in the experimental and control group.

There were a total of 60 samples used in the analysis (30 for the experimental group and 30 for the control group). Age-wise, 30% were between the ages of 51 and 60 in the experimental group and 33% were between the ages of 51 and 60 in the control group. Males made up 26 (86.67%) of the samples in the experiment group and 22 (73.33%) of the samples in the control group. Eight (26.67%) in the test group and one (3.33%) in the control group had college degrees or higher in education. Seven (23.33%) members of the control group were unemployed, and none of the test subjects were in the professional class. Similarly, among the control group's samples, 8 (26.67%) were unemployed, 8 (26.67%) were skilled workers, and 1 (3.33%) were semi-skilled. Eleven (36.67%) of the experimental group's members reported having a monthly household income of $0 or of them made between Rs. 7,000 and Rs. 11,000 per year, and not one of them made less than Rs. No one in the control group had a monthly income of less than Rs.1500, and eleven (36.67%) of them made between

Rs.11,000 and Rs.5,000. The marital status distribution was as follows: 25 (83.33%) of the experimental group and 23 (76.67%) of the control group were married. Most of the study's participants were men between the ages of 51 and 60 who were married and had bachelor's degrees or higher but were unable to find gainful employment. And between Rs. 7,000 and Rs. 11,000. The chi-square test results verified the homogeneity of the samples by showing that there was no statistically significant difference in the demographic variable between the experimental and control groups.

Table - II: Frequency and percentage distribution of post-test I and post-test II level of ICU Psychosis among cardiac post-operative patients in the experimental group.

N = 30

erimentalGroup	**Normal (0)**		**Sub-syndromal delirium (1 – 3)**		**Delirium (4 – 8)**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Post-test I	9	30.0	20	66.67	1	3.33
Post-test II	16	53.33	14	46.67	0	0

The frequency and percentage distribution of ICU psychosis level among cardiac post-operative patients in the control group is shown in table 2.

Nine patients (30%) were classified as having normal cognition, twenty (66.67%) as having sub-syndromal delirium, and one (3.33%) as having delirium after completing post-test I for ICU psychosis. The results of the second post-test showed that 16 (53.33%) had normal cognition, 14 (46.67%) had sub-syndromal delirium, and 0% had delirium. The number of patients with ICU psychosis decreased from post-test I to post-test II, as measured by observation of the level of ICU psychosis in the experimental group. ICU psychosis was lower in the experimental group's samples. The results showed that the modified ABCD bundle helped reduce the rate of psychosis in the intensive care unit for patients recovering from heart surgery.

Table – III: Frequency and percentage distribution of posttest I and posttest II level of ICU psychosis among cardiac post-operative patients in the control group.

N = 30

Control Group	Normal (0)		Sub-syndromaldelirium (1 – 3)		Delirium (4 – 8)	
	No.	%	No.	%	No.	%
Post-test I	1	3.3	17	56.67	12	40.0
Post-test II	4	13.3	12	40.0	14	46.67

The above table 3 depicts the frequency and percentage distribution of level of ICUpsychosis among cardiac post-operative patients in the control group.

Post-test I results revealed that 1 patient (3.3%), 17 patients (56.67%), and 12 patients (40%) had sub-syndromal delirium and delirium, respectively. The results of post-test II revealed that four (13.33%) had normal, twelve (40.0%) had sub-syndromal delirium, and fourteen (46.67%) had delirium.

From post-test I to post-test II, the number of patients with ICU psychosis increased, according to the findings. The results also indicated that the hospital routine has no positive impact on the level of ICU psychosis among cardiac post-operative patients.

Table – III: Comparison of posttest I and posttest II ICU psychosis scores among cardiac post-operative patients within and between the experimental and control group.

N = 60 (30+30)

Group	Post-test I		Post-test II		Paired „t" Value
	Mean	S.D	Mean	S.D	
erimentalGroup	1.20	1.09	0.63	0.81	**t = 2.984 p = 0.006, S****
Control Group	3.23	1.67	3.06	1.74	t = 0.530 p = 0.600, N.S
Unpaired „t" Value	**t = 5.565 p = 0.000, S*****		**t = 6.944 p = 0.000, S*****		

***p<0.001, **p<0.01, S– Significant, N.S – Not Significant

Table 4 compares the post-test I and post-test II ICU psychosis scores of cardiac post-operative patients within the experimental group and between the experimental and control groups.

Regarding the post-test comparison between the experimental and control groups, I found that the experimental group's mean score was 1.20 with an SD of 1.09, while the control group's mean score was 3.23 with an SD of 1.69. The students' unpaired t' test value of t = 5.56 indicated a statistically significant difference between the experimental and control groups in post-test I at the p 0.001 level, demonstrating that the modified ABCD

bundle had a significant impact on reducing the incidence of ICU psychosis among cardiac post-operative patients.

Comparing experimental and control groups on the post-test II revealed that the experimental group had a mean score of 0.63 with a standard deviation of 0.81, while the control group had a mean score of 3.06 with a standard deviation of 1.74. The students' unpaired t-test t= 6.944 also demonstrated a statistically significant difference between the experimental and control groups in post-test II at the p0.001 level, indicating that the modified ABCD bundle was effective.

Discussion:

Kanova M. (2017) conducted a prospective observational study to determine the prevalence and risk factors for ICU psychosis in ICU patients. The results of the present study were consistent with those of Kanova's study. The research was conducted for a year in the ICU department of Prem Hospital Panipat, Haryana, which had 30 beds. Patients in the ICU were evaluated using a confusion assessment procedure. The findings of the study indicated that the incidence of ICU psychosis was 26.1% and identified the risk factors, which were age over 65 in males and a history of alcohol misuse. ICU psychosis was associated with a greater need for mechanical ventilation and a longer ICU stay.

Kram S L et al [2015] implemented the ABCDE bundle on ICU psychosis in an evidence-based practise project. The research was carried out in a 30 bed adult intensive care unit of a rural community hospital. The implementation of the ABCDE bundle reduced hospital length of stay by 1.8 days, and the baseline delirium prevalence was only 19% over a three-month period. The study's findings revealed that implementing the ABCDE bundle reduced the prevalence of ICU psychosis while also lowering health-care costs. This study's findings provide strong evidence that the ABCDE bundle can be effective for ICU psychosis and can even be implemented in rural community hospitals. It was also a cost-effective method for lowering the level of ICU psychosis.

Conclusion:

This study looked at the impact of a modified ABCD bundle on the level of ICU psychosis in cardiac post-operative patients at a specific hospital in Panipat. According to the findings, the modified ABCD bundle was very effective in reducing the level of ICU psychosis among cardiac post-operative patients and can be used as a non-pharmacological measure for patients during their ICU stay.

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