

A Study to Assess the Effectiveness of Sensory Stimulation to Improve the Level of Consciousness among Traumatic Brain Injury Patients in Selected Hospitals at Udaipur

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ABSTRACT

Unconsciousness, more appropriately referred to as loss of consciousness or lack of consciousness, is a dramatic alteration of mental state that involves complete or near-complete lack of responsiveness to people and other environmental stimuli. Being in a comatose state or coma is an illustration of unconsciousness. Loss of consciousness may occur as the result of Traumatic Brain Injury, brain hypoxia (e.g., due to a brain infraction or cardiac arrest), severe poisoning with drugs that depress the activity of the central nervous system (e.g., alcohol and other hypnotic or sedative drugs), severe fatigue, and other causes. Title of the study “A study to assess the effectiveness of sensory stimulation to improve the level of consciousness among traumatic brain injury patients in selected hospitals at Udaipur.” Objective of the study was to assess the level of consciousness among traumatic brain injury patients in experimental and control group. To evaluate the effectiveness of sensory stimulation to improve the level of consciousness among traumatic brain injury patients in experimental group. To find out the association between pre-test score of level of consciousness with selected socio-demographic variables in experimental and control group. The method adopted for the present study was quantitative experimental research approach, as the study aimed at nursing intervention (Sensory Stimulations) for assessing the level of consciousness among traumatic brain injury patients admitted in Geetanjali hospital & Pacific hospital. This approach would help the investigator to evaluate the effect of specific intervention that is

“Sensory Stimulations – Auditory, Visual & Movement” on traumatic brain injury patients in selected hospitals at Udaipur. In this study samples were drawn by using purposive sampling technique. Data was collected by using standardized glasgow coma scale. Result revealed that The level of consciousness of traumatic brain injury patients was assessed. The “t” value was 7.23, and was significantly higher than the table value 2.05 at 0.05 level. This indicates that there was significant difference between pre-test and post-test level of consciousness among traumatic brain injury patients in experimental group. Hence, the research hypothesis H1 was proved and accepted. There was a significant association between pre-test level of consciousness score with selected socio- demographic variables, such as gender ($\chi^2=5.66$), educational status ($\chi^2=9.60$), lesion of brain injury ($\chi^2=14.72$), duration of hospital stay ($\chi^2=6.55$) were significant at 0.05 level in experimental group. Hence, research hypothesis H2 was accepted.

KEYWORDS: *unconsciousness, dramatic alteration, environmental stimuli. comatose state, illustration*

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Need for the study

Malav R A states that the Traumatic brain injuries represent 12% global burden of disease and main cause of death among 1-40 year old. Though some studies have described about traumatic brain injuries in India, very limited information is available from central part of India. Road traffic accident are the most common cause of traumatic head injuries in central part of India and mainly occurs in young productive age groups. At least 10% mortality or severe disability occurred in Traumatic head injury patients. Knowledge about epidemiology, etiology, clinical outcome are extremely helpful for further policy making, research and health management at national level in developing countries.

Statistics says that in the year 2015 India in TBI is estimated that nearly 4,50,000 people died due to injury as per official report .As per a recent report entitled “ First India Report” problem solutions it is estimated that during 2017 nearly 8,50,000 person died and 16.5 million were hospitalized due to injuries in India.

OBJECTIVES

1. To assess the level of consciousness among traumatic brain injury patients in experimental and control group.
2. To evaluate the effectiveness of sensory stimulation to improve the level of consciousness among traumatic brain injury patients in experimental group.
3. To find out the association between pre-test score of level of consciousness with selected socio-demographic variables in experimental and control group.

Material and method:-

Research approach and design: - Quantitative approach with quasi experimental (non randomized control group), design was adopted.

Setting of the study: - Geetanjali Medical College & Hospital for experimental group and 30 patients from Pacific Institute of Medical Science Hospital were selected for control group.

Study population: - Traumatic brain injury patients with GCS 6-10.

Accessible population: - 60 traumatic brain injury patients with GCS 6-10.

Sample size: - 60

Sampling technique: - Non probability purposive sampling technique.

Inclusion Criteria

- Patients with GCS 6-10.

- Both male and female traumatic brain injury patients.
- Patients who are willing to participate.
- Patients with medically diagnosed as TBI.
- Patients who are able to understand Hindi and English

Exclusion Criteria

- Patients with GCS below 6
- Patients with increased Intra cranial pressure
- Patients on Endotracheal intubation
- Patients with mechanical ventilator.

Variables under study

Independent variable: In this study, independent variable is sensory stimulation among traumatic brain injury patients.

Dependent variable: In this study, dependent variable is level of consciousness among traumatic brain injury patients.

Demographic variables: - In this study the selected socio- demographic variables are age in years, gender, educational status, occupation status, habit, mechanism of injury, accompanying injury, lesions of the brain & duration of hospital stay.

Description of Tools

The tool used in this study consists of three sections.

Section A: Socio-Demographic Variables

This section deals with socio-demographic variables such as age in years, gender, educational status, occupation status, habit, mechanism of injury, accompanying injury, lesions of the brain & duration of hospital stay. This section consists of 9 items.

Section B: Glasgow Coma Scale

A standardized Glasgow coma used to assess the level of consciousness, which include aspects like:

Aspects	Items
Eye opening response	4
Verbal response	5
Motor response	6

The assessment aspects placed on a rating scale. The scale consists of 3 aspects of 15 items Total score is dived as:

Aspects	Score	Percentage
Poor recovery	0-6	0-40%
Average recovery	7-12	46.6-80%
Good recovery	13-15	86.6-100%

Section C: Development of Intervention (Sensory Stimulation) to Improve Level of Consciousness.

Sensory stimulations play an important role in to improve level of consciousness in traumatic brain injury patients. It refers to a reaction that promotes

the physiological or nervous activity in the body. It includes auditory stimulations for 15 minute, visual stimulations for 15 minute and movements for 15 minute twice a day for 7 days.

Data collection procedure: -

Phase-I (Pre-Test): Pre-test was conducted to assess the existing level of consciousness score of traumatic brain injury patients in experimental and control group.

Phase-II (Intervention): Sensory stimulations were administered to traumatic brain injury patients in experimental group.

Phase-III (Post-Test): Post-test was conducted to assess the level of consciousness score of traumatic brain injury patients in experimental and control group.

Data collection is a systematic gathering of information (data) relevant to the research purpose. Formal permission was obtained from the nursing superintendent of Geetanjali Medical College & Hospital and Pacific Institute of Medical Science Hospital. The data was collected from 20/05/2023 to 27/06/2023. The patient who fulfill the inclusion criteria were selected from the hospital by non-probability sampling technique. Out of 60 patients 30 patients from Geetanjali Medical College & Hospital for experimental group and 30 patients from Pacific Institute of Medical Science Hospital were selected for control group. Their socio-demographic variables were collected by structured questionnaire. The pre-test was done by using standardized glasgow coma scale to assess the level of consciousness in both experimental and control group. After pre-test in experimental group investigator perform the sensory stimulations to the experimental group for 45 minutes twice a day for 7 days. Patient in control group did not receive any intervention other than routine care. The post-test was done immediately after the sensory stimulations by using the same scale. All the samples were cooperated during the data collection.

DELIMITATIONS

- The study is delimited to the period of 7 days.
- The study is delimited to unconscious patients with GCS 6-10.
- The sample size is limited to 60.
- The study is delimited to assess the effectiveness of selected sensory stimulation only.

RESULTS

Section I: Description of Socio-Demographic Variables of Respondents.

- **Age in years:** In experimental group most of the respondents were to the age group of 21-30 years i.e. 36.67% while in control group 40% were to

age group of 21-30 years.

- **Gender:** In experimental group most of the respondents were females i.e. 53.33%, while in control group most of the respondents were male i.e. 63.33%.
- **Educational status:** In experimental group the majority of the respondents were non-formal education i.e. 30% while in control group 30% were graduation and above.
- **Occupational status:** In experimental group the majority of the respondents were from government sector i.e. 36.66% while in control group 40 % were from private sector.
- **Habit:** In experimental group the majority of the respondents had smoking habit i.e. 36.67% while in control group 30% had using tobacco.
- **Mechanism of injury:** In both experimental and control group the majority of the respondents were injured in car accidents i.e. 46.67% & 33.34%.
- **Accompanying injury:** In both experimental and control group the majority of the respondents had rib fracture i.e. 40% & 33.34%.
- **Lesion of brain injury:** In experimental group the majority of the respondents had lesion in right frontal or B/L frontotemporal-parietal area of the brain i.e. 23.33% while in control group 26.67 % had lesion in right frontal area of the brain
- **Duration of hospital stay:** In experimental group the majority of the respondents were stay in hospital for above 21 days i.e. 36.67% while in control group 40.33% were stay in hospital for 7-14 days.

Section II: Effectiveness of Sensory Stimulations on Level of Consciousness among Traumatic Brain Injury Patients in Experimental Group and Control Group.

In experimental group the improvement in level of consciousness from pre-test to post-test the mean was 7.73 to 13.30, SD was 1.05 to 1.32; mean % was 51.56% to 88.67%. The mean difference % was 37.11. The data further represent that the, "t" value of 7.23 was significantly higher than the table value 2.05 at 0.05 level. This indicates that there was difference in pre-test and post-test level of consciousness score of respondents and the sensory stimulations was effective to improve the level of consciousness among traumatic brain injury patients.

In control group the score of level of consciousness from pre-test to post-test the mean was 7.70 to 8.43, SD was 0.92 to 1.10; mean % was 51.33% to

56.22%. The mean difference % was 4.59. The data further represent that the, “t” value of 0.01 was not significantly higher than the table value 2.05 at 0.05 levels. This indicates that the pre-test and post-test level of consciousness score of respondents and the sensory stimulations was not significant among traumatic brain injury patients.

Section III: Association between Pre-Test Levels of Consciousness with Selected Socio- Demographic Variables in Experimental Group and Control Group.

In experimental group there was a significant association between pre-test level of consciousness score with selected socio-demographic variables. In experimental group such as gender ($\chi^2=5.66$), educational status ($\chi^2=9.60$), lesion of brain injury ($\chi^2=14.72$), duration of hospital stay ($\chi^2=6.55$) were significant at 0.05 level and there was no significant association between age in years, occupation status, habit, mechanism of injury & accompanying injury at 0.05 level.

In control group there was significant association between age in years ($\chi^2=9.52$), lesion of brain injury ($\chi^2=12.75$), duration of hospital stay ($\chi^2=7.92$) and there was no significant association between gender, educational status, occupation status, habit, mechanism of injury & accompanying injury at 0.05 level.

CONCLUSION

This study concluded that there was improvement in level of consciousness among traumatic brain injury patients which indicates that the sensory stimulations were effective. The socio-demographic variables of traumatic brain injury patients were significantly associated with the pre- test level of consciousness score. The sensory stimulations will help the traumatic brain injury patients to improve the level of consciousness.

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