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## **Effectiveness of Planned Teaching Program on Nurses Knowledge and Practice Regarding Glasgow Coma Scale for Neurological Clients of a Selected Hospital, Kolkata**

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### **Abstract**

The investigators conducted an pre-experimental study on effectiveness of planned teaching program on nurses knowledge and practice regarding monitoring Glasgow Coma Scale for neurological clients in selected hospital of Kolkata, West Bengal. The objective of the study was to assess the knowledge and practice of staff nurses regarding monitoring Glasgow Coma Scale before and after planned teaching program. The final study was conducted in Rabindranath Tagore International Institute of Cardiac Sciences, Kolkata. Study findings depicted that the majority (42%) were belongs to the age group of 24-27 years, 72% were male nurses, 82% were GNM nurses and 65% of participants had 6-12 months of working experience.

Out of 60 participants, 44 (55%) staff nurses had unsatisfactory knowledge level. The mean post test knowledge score (16.13) of the participants was higher than the mean pretest knowledge score 13.28 (0.21,  $p < 0.20$ ) after their exposure to planned teaching program. Majority i.e. 28 nurses scored average in pretest whether 24 nurses scored very good in posttest. The posttest mean score of practice (45.93) on monitoring Glasgow Coma Scale among staff nurses was higher than mean pretest practice score 28.88 (8.51,  $p < 0.001$ ). There was no significant relationship between pretest knowledge and practice of staff nurses regarding monitoring Glasgow Coma Scale ('t' 0.03,  $p > 0.05$ ).

**Keywords :** Knowledge, Practice, Monitoring Glasgow Coma Scale, Planned Teaching Program

### **Introduction**

Consciousness is a term that has been used to refer to a variety of aspects to the relationship between the mind and the world with which it interacts. In medicine, consciousness is assessed by observing a patient's arousal and responsiveness and can be seen as a continuum of states ranging from full alertness and comprehension, through disorientation, then delirium and loss of meaningful communication and ending with loss of movement in response to painful stimuli. Glasgow Coma Scale is a neurological scale that aims to give a reliable, objective way of recording the conscious state of a person for initial as well as subsequent assessment. A patient is assessed against the criteria of the scale, and the resulting points give a score. The score 3 indicating deep unconsciousness, score 7 indicates coma and either 14 or 15 indicating fully awareness. The score can be assessed by Best Eye Response (4)- No eye opening (1) Eye opening to pain (2) Eye opening to verbal command (3) Eyes open spontaneously (4), Best Verbal Response (5)- No verbal response (1) Incomprehensible sounds (2) Inappropriate words (3) Confused (4) Orientated (5), Best Motor Response (6)- No motor response (1) Extension to pain (2) Flexion to pain (3) Withdrawal from pain (4) Localizing pain (5) Obeys Commands (6) [1].

There are many possible neurological presentations that a nurse may encounter. The challenge for the nurse includes the quick recognition of acute events, for example, head injury, infection, hemorrhage or post surgery complications and the monitoring and recording of neurological observations.

It is therefore important that nursing staff, particularly those working in critical care setting should be competent to monitor and record neurological observations and be equipped with clinical skills required that ensure high levels of patient safety and quality care. There are several tools used for assessing and monitoring the neurological status of clients in critical units. One such widely and universally accepted tool is the Glasgow Coma Scale, an assessment tool designed to note trends in a client response to stimuli [2].

The Glasgow Coma Scale first developed by Graham Teasdale and Bryan J. Jennett in 1974, is a common way to assess a patient's activity, by assessing the different area of the patient's behavior including eye opening, verbal response and motor response. Each area is allocated a score therefore enabling objectivity, ease of recording and comparison between recordings [1].

Assessing a patient's level of consciousness is an essential component of a neurological examination. In assessing conscious level the nurse detects any neurological changes in a client and is thus able to inform the medical team to initiate prompt action that can improve client's outcome. It is paramount that nurses have the knowledge and skills to competently carry out neurological assessment using Glasgow Coma Scale.

The GCS is a tool that, with education, is simple to use, highlights changes in the patient's condition and allows nurses and doctors working in different hospitals to communicate the patient's state of consciousness in a clear and objective way'. Addison and Crawford (1999) recommend that all new staff to be taught how to apply the GCS tool in clinical practice. This should be extended to all healthcare practitioners involved in the care and management of potentially vulnerable and unconscious patients, and should apply to all neurological observations. (Addison and Crawford 1999) [3].

An explorative study conducted in Edinburgh on nursing students understanding of the GCS, it has been observed that most respondents have not been confident in practical use of the GCS. The study has concluded that a short training course would be needed to make sure that students are able to use the GCS effectively while minimizing errors [4].

A study was conducted to explore nurses' practise and knowledge of the GCS in January 2007, across six clinical areas: neurosurgery, neuro-intensive care, neuromedicine, general medicine, accident and emergency, and general intensive care. Observational studies compared nurses' performance, recording and documentation of GCS observations in each of these units. Results of the study identified several areas for improvement; including the use and application of painful stimulus. Study also suggested a lack of knowledge of the patho-physiology underpinning the three components that make up the scale. Problems were evident in the record keeping, with very few examples of documentation within nursing records of the separate components of the GCS, further the study concludes that instruction on the performance of GCS observations, if taught in the first year of training, should be re-examined, linking theory to practice prior to qualifying [5].

A study was conducted on Effectiveness of instructional video on Glasgow Coma Scale for EMS providers in Albert Einstein Medical Center,USA. Results found that before observing the instructional video, only 14.7% score all of the scenarios correctly, whereas after viewing the video, 64.0% scored the scenarios. Results were observed after viewing the video for those who used the GCS cards ( $p = 0.001$ ; RR = 2.0; 95% CI = 1.29 to 3.10) than for those not using the cards ( $p < 0.0001$ ; RR = 10.0; 95% CI = 2.60 to 38.50). The study concludes that Post-video viewing scores were better than those observed before the video presentation [6].

A study was conducted on aspects of neurosurgical assessment using the Glasgow Coma Scale in UK. This study compared the assessment findings of Registered General Nurses (RGNs), Enrolled Nurses and Student Nurses after viewing videotaped neuro-assessments of patients in a high dependency unit. RGNs had the highest proportion of correct assessments and students the least. Further study concludes that subjects were identified as having difficulty in determining the relative amounts of weakness that a patient exhibited, and in correctly distinguishing between flexion and extension [7].

The above studies focuses on lack of nurses knowledge and practice on monitoring Glasgow Coma Scale as well as emphasize the need for continuing professional development. Furthermore, the investigators during the clinical experience found that there is a need for continuous

evaluation on the knowledge and skill of nurses regarding monitoring of Glasgow Coma Scale and emphasizing continuous professional development.

It has been also observed that there are very few studies conducted on assessing nurses knowledge and practice on monitoring Glasgow Coma Scale thus the investigators are interested to conduct the study.

### **Objectives**

- To assess nurses knowledge regarding monitoring Glasgow Coma Scale before and after planned teaching program
- To assess nurses practice regarding monitoring Glasgow Coma Scale before and after planned teaching program
- To evaluate the effectiveness of planned teaching program
- To find out relationship between nurses knowledge and practice regarding monitoring Glasgow Coma Scale

### **Hypotheses**

**1:** Posttest mean score on nurses knowledge regarding monitoring Glasgow Coma Scale is significantly higher than pretest mean score after planned teaching program at 0.05 level of significance.

**2:** Posttest mean score on nurses practice regarding monitoring Glasgow Coma Scale is significantly higher than the pretest mean score after planned teaching program at 0.05 level of significance.

### **Materials and methods**

**Research approach** – Pre-Experimental research approach

**Research design** – One group pretest and posttest design

#### **Variables -**

- Dependent Variable – Nurses knowledge and practice
- Independent variables : Planned Teaching Program

**Setting** – Critical care units of Rabindranath Tagore International Institute of Cardiac Sciences (RTIICS), Kolkata.

**Population** - Registered staff nurses who deals with neurological clients in the critical care units of the hospital.

**Sample and sample size** - 60 registered staff nurses

**Sampling technique** – Convenient sampling technique

**Sampling criteria** – staff nurses who are assigned to the care of neurological patients, who are present at the time of data collection and willing to participate in the study.

#### **Data collection tools and technique**

Tools	Variables	Technique
1. Structured Knowledge Questionnaire	Knowledge	Paper pen test
2. Structured Rating Scale	Practice	Observation

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#### **Definition of terms**

**Effectiveness** – it refers to the efficiency of planned teaching program in increasing the knowledge and practice of nurses regarding monitoring Glasgow Coma Scale for neurological clients.

**Planned teaching program** – it is a planned teaching activity provided to the nurses regarding monitoring of Glasgow Coma Scale with the help of a lesson plan, power point presentation and live practical demonstration.

**Knowledge** – it refers to the written response of the nurses to the items related to measurement of neurological status of the clients as assessed by structured knowledge questionnaire.

**Practice** – it refers to the steps followed by the nurses in measuring neurological status of the clients following Glasgow Coma Scale as assessed by structured rating scale.

**Nurses** – registered staff nurses who deals with care of neurological clients.

**Neurological clients** – individual who is suffering from neurological deficit due to cerebro-vascular accident or head injury and in unconscious state.

### Data collection procedure

- Formal permission was taken from the General Manager (Nursing) of RTIICS and principal, College of Nursing, Asia Heart Foundation.
- Sister In-charges of the critical care units were informed about the purpose of the study and requested to help in arranging the duties of the staff nurses.
- Purpose of the study was explained to the samples and their informed written consent was taken.
- The samples were coded in number so that anonymity could be maintained.
- Data collected for final study was from 6<sup>th</sup> June to 12<sup>th</sup> June, 2011
- At first structured knowledge questionnaire was administered to them
- They were given approximately 15 minutes to respond to the questionnaire
- Then the investigators observed the practice of the subjects regarding monitoring Glasgow Coma Scale by the help of structured rating scale.

### Results and Discussion

Out of 60 participants, the majority (42%) were belongs to the age group of 24-27 years, 72% were male nurses, 82% were GNM nurses and 65% of participants had 6-12 months of working experience.

**Table 1 : Findings related to knowledge level of staff nurses regarding monitoring Glasgow Coma Scale. N=60**

Sl. No.	Pretest Knowledge level (score range)	Frequency	Percentage
1.	Satisfactory ( $\geq 70\%$ )	36	45
2.	Unsatisfactory ( $< 70\%$ )	44	55

The data presented in table 1 show that out of 60 participants, 44 (55%) staff nurses had unsatisfactory knowledge level.

**Table 2 : Mean, SD and ‘t’ value of pretest and posttest knowledge level of staff nurses regarding monitoring Glasgow Coma Scale. N=60**

Test	Group	Mean	SD	‘t’ value
Knowledge Score	Pretest	13.28	3.21	1.21
	Posttest	16.13	2.16	

t(58)=1.29, p<0.20

Date presented in table 2 show that the mean post test knowledge score (16.13) of the participants is higher than the mean pretest knowledge score ( 13.28) regarding monitoring Glasgow Coma Scale as evident from ‘t’ value 0.21 with df 58 at 0.20 level of significance after their exposure to planned teaching program. So, it can be interpreted that after the planned teaching program the post test knowledge of the staff nurses was increased significantly indicating the effectiveness of the planned teaching program.

**Table 3 : Findings related to practice level of staff nurses regarding monitoring Glasgow Coma Scale. N=60**

Sl. No.	Practice level	Score range	Pretest	Posttest
1.	Average	<25	28	00
2.	Satisfactory	26-35	19	06
3.	Good	36-45	11	23
4.	Very Good	46-55	02	24
5.	Excellent	>55	00	07

The data presented in table 3 show that the practice level of the participants is higher in posttest than the pretest after administration of planned teaching program. Majority i.e. 28 nurses scored



average in pretest whether 24 nurses scored very good in posttest denotes the effectiveness of the planned teaching program.

**Table 4: Mean, Median and SD of practice on blood sugar measurement technique among staff nurses. N=60**

Test	Group	Mean	SD	't' value
Practice	Pretest	28.88	2.1	8.51
	Posttest	45.93	1.1	

t(58)=3.46, p<0.001

Data presented in table 4 show the posttest mean score of practice (45.93) on monitoring Glasgow Coma Scale among staff nurses is higher than mean pretest practice score (28.88) which is evident from 't' value 8.51 with df 58 at 0.001 level of significance. Thus the research hypothesis is accepted and null hypothesis is rejected. So it can be interpreted that after the planned teaching program the post test practice of the nurses was increased indicating the effectiveness of the planned teaching program.

**Table 5: Findings related to relationship between pretest knowledge and practice of staff nurses regarding monitoring Glasgow Coma Scale. N = 60**

Sl. No.	Variable	'r' value	't' value
1.	Pretest Knowledge	-0.0019	0.03
2	PretestPractice		

't' (58) = 2.66, p >0.05

Data presented in table 4 reveal that there is no significant relationship between pretest knowledge and practice of staff nurses regarding monitoring Glasgow Coma Scale as computed by 't' value 0.03 with df 58 at 0.05 level of significance. Thus the research hypothesis is rejected and null hypothesis is accepted. So it can be interpreted that the nurses who had good knowledge may not had good practice and vice versa.

The study findings are limited to a small sample of critical care unit nurses of a selected hospital only and adopting convenient sampling technique. Thus the generalization of the study findings would not be possible. On the basis of the study findings the following recommendations can be offered for future research:

- similar study can be done for a large sample of staff nurses in various unit of same hospital
- random sampling technique can be adopted
- a comparative study can be conducted between male and female nurse, between different units of a hospital or between staff nurses of government and private hospitals
- an experimental study can be carried out using other teaching strategies like information booklet, video based CD etc.

## **Conclusion**

It has been observed that the majority of the participants were young male nurses, had GNM degree and minimal working experience. It has been also observed that pretest knowledge and practice level was not so satisfactory which could be because of their young age, having basic nursing degree and minimum exposure to the critical care units and its procedures. It might be possible that with the increase of working experience with handling neurological clients they may be skilled with the assessment of the neurological clients by using Glassgow Coma Scale. But it has been evident that knowledge and practice level of nurses significantly improved after the teaching program as evident from the obtained 't' value (knowledge  $p < 0.20$ , practice  $p < 0.001$ ). Thus it can be depicted that there is an obvious role of continuing professional development of nurses which have ultimate reflection in better client care outcome. To produce competent and knowledgeable nurse, emphasis should be made on in-service education program and frequent evaluation of nurses performances which will help in proper assessment and management of clients through monitoring and formulating

early diagnosis. Nursing supervisors and in-charges should take the initiation to continue staff development program in the unit.

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