International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 6s, 2025
https://theaspd.com/index.php

Knowledge And Practice Of Glasgow Coma Scale (GCS) Among Nurses Working At Intensive Care Units Of Public Hospitals In Punjab, Pakistan

[1]**Nazia Kanwal,** [2*]**Samina Kausar,** [3]**Meshal Margrate,** [4]**Shamsa Rafique,** [5]**Gulnaz Banu**
[1] MS Nursing Scholar, Institute of Nursing, University of Health Sciences, Lahore, Pakistan
[2]Professor of Nursing, Institute of Nursing, University of Health Sciences, Lahore, Pakistan, saminamanzoor31@yahoo.com
[3]Assistant Professor/Principal, Akhtar Saeed College of Nursing, Lahore, Pakistan
[4]MS Nursing Scholar, Institute of Nursing, University of Health Sciences, Lahore, Pakistan
[5]MS Nursing Scholar, Institute of Nursing, University of Health Sciences, Lahore, Pakistan

Abstract
Background: *The Glasgow coma scale (GCS) is widely known as a quick way to communicate a patient's neurological status. Therefore, this research was designed to investigate the level of knowledge and practice of Glasgow coma scale (GCS) among nurses working in the public hospitals of Punjab, Pakistan.*
Materials And Methods*: This descriptive cross-sectional study conducted at Intensive Care Units of two public hospitals i.e. General Hospital Lahore and Services Hospital Lahore. The simple random sampling was used to draw the sample by observing the inclusion and exclusion criteria of the study. A sample size of 150 male and female nurses were drawn from the two public hospitals with the study's confidence level set at 95% and the margin of error set at 8%. The used questionnaire was adopted from another research study. The data was analyzed by using percentage and correlation.*
Results: *The findings indicate that knowledge about Glasgow coma scale were overall good (81.59%) among nurses and only 2.41% of the nurses had poor knowledge. Congruent with knowledge, the level of practice was also good (80.35%) among the nurses and only 5.07% of the nurses had poor practices. Significantly, the knowledge and practice of Glasgow coma scale were positively associated with the background characteristics of the nurses such as qualification, work experience and formal training on Glasgow coma scale at the significant of 5%. The relationship of knowledge and practice of Glasgow coma scale were found insignificant with the age group of nurses.*
Conclusion: *In the light of findings, it can be concluded that nurses working at the intensive care units of the public hospitals were well equipped in terms of knowledge and practice of Glasgow coma scale to assess the patient's consciousness.*
Keywords: *Knowledge and Practice, Nurses, Glasgow Coma Scale (GCS), Public Hospitals*

INTRODUCTION

Glasgow Coma Scale is one such valid, accurate, objective and reliable tool for neurological assessment which gives precious information, describe the patients' level of consciousness on every stage of assessment such as initial, ongoing and final assessment.[1] The valuable findings from the neurological assessment are found and entered into an objective practical scale for effective communication among doctors, nurses and other health care workers.[2] More precisely, the Glasgow Coma Scale is a basic device to record the patient's state of consciousness, which is used to grade the patients over time to indicate any changes in patients' clinical conditions.[3] Assessing the state of consciousness is the first step in neurological examination in a clinical setting, and it is well known that this is a very important evaluation measure.[4] It is believed that quick and accurate neurological assessment will minimize trauma complications, burden of unnecessary diagnostic procedures and ultimately will decrease morbidity and mortality.[5]

During neurological assessment the level of consciousness comes at first step because of its high importance. Glasgow Coma Scales has clear and defined parameters used for rapid and clear determination in patients' level of consciousness.[6] It is regarded as one of the most precise and trustworthy methods for determining the depth and duration of low levels of consciousness, especially in patients with significant head injuries. After its development, everywhere in the world it got enough popularity because it appeared as a classical communication tool among health care professionals.[7] With the passage of time the use of Glasgow coma

scale among nurses and other health care workers further extended to assess other conditions such as clinical specialties and different research works. After 2003, the GCS has been validated and found accurate and reliable in grading severity of conditions, and in predicting outcomes in conditions such as acute stroke, subarachnoid haemorrhage, acute poisoning and other critical illnesses.[8]

Now-a-days a cultured and well-informed nurse is that person who encounters in current health care delivery system.[9] Nurses can take an exceptional chance to help patients and observe the prognosis. They identify risks and possible areas for modification. They provide guidance on the adapted plan and simplify their aims achievement.[10] That can't be completed without a well-informed methodically familiar nurses, particularly in serious situations. Meanwhile, they must have effective assessment and evaluation skills in order to deal with and manage their patients, especially those who have a low degree of understanding about the usage of G.C.S.[11]

Rationale of the Study

On the whole there is high number of head injury and so many other neurological problems in the world which require effective use of Glasgow Coma Scale monitoring. Despite the high incidence of neurological problems, there is not much studies on assessing the knowledge of nurses about the Glasgow Coma Scale. Both nationally and internationally according to the researcher's understanding and explanations though on medical education of student nurses in the neurological unit and other units where comatose clients are tended, performance of nurses in assessing patients using the GCS seem in-congruent, sometimes it leads to an incorrect patient's condition assessment. Hence, this study was carried out to evaluate nurses' knowledge and practice of GCS in neurological assessment in the Public Hospitals of Punjab, Pakistan.

Research Objective

To examine the level of knowledge and practice of Glasgow Coma Scale (GCS) among nurses working at intensive care units of Public Hospitals in Punjab, Pakistan.

MATERIALS AND METHODS

A descriptive cross-sectional approach was used to assess nurses' knowledge and practice of using the Glasgow Coma Scale in clinical settings. Descriptive Cross-sectional studies provide estimates of prevalence of disease, traits such as smoking behavior, people's attitudes, and knowledge or health behaviour.[12] The study was carried out at Intensive Care Units of Lahore General Hospital and Services Hospital of Lahore. Most leading and developed hospitals providing care and treatment to varieties of diseases from all over the Punjab. Nurses providing direct patient care in Intensive care units of Lahore General Hospital and Services Hospital of Lahore. The simple random sampling was used to draw the sample.

Inclusion Criteria

- Male and Female Nurses working in the intensive care units of these two tertiary care hospitals i.e. Lahore General Hospital and Services Hospital of Lahore, Pakistan.
- Male and Female Nurses having working experience more than 1 year.

Exclusion Criteria

- Male and Female Nurses having working experience less than 1 year in the intensive care unit.
- Student nurses
- Male and Female Nurse managers

Sample Size

The sample size was determined using the formula below, with the study's confidence level set at 95% and the margin of error set at 8%.

Z2 1-a/2=for 95% confidence level=1.96
P=Anticipated proportion of knowledge =60%
d= Margin of error =8%
n= Sample size =150

Data Collection

A self-administered Questionnaire was used to collect data. The questionnaire is adopted from a previous study "Assessing Nurses Knowledge of Glasgow Coma Scale in Emergency and Outpatient Department" [13].

It is divided into two parts. In Part A there are 4 questions related to background characteristics addressing age, level of education, gender, and years of service. Part B consists of 15 multiple choice questions related to knowledge and part C is an observational check list to assess the practice of Glasgow Coma Scale (GCS) among nurses. It was modified by reviewing the extensive literature consulting with subject experts and ethical review committee. Content validity checked by adapted modified questioners given to the two experts in the field of study to evaluate.

Data Analysis

For adequate analysis, the data was examined using SPSS Software version IBM-20. The background characteristics of the respondents are provided as percentages and frequencies and data related to knowledge and practice was analysed by using correlation.

Ethical Approval and Consideration

The Ethical Consideration was followed according to the ethical principles of Helsinki declaration 2017. The privacy and consent of the participants was ensured.

RESULTS

Table 1. Background Characteristics of the Respondents

Demographic Characteristics		Frequency	Percentage (%)
Age Group (years)	21-25	25	16.66
	26-30	74	49.34
	31-35	43	28.66
	Above 35 years	8	5.34
Gender	Male	32	21.33
	Female	118	78.67
Qualification	General Nursing	56	37.33
	Advanced Diploma	51	34
	BSN/Post RN BSN	43	28.67
Working Experience	1-2	48	32
	3-5	60	40
	6-10	25	16.67
	Above 10 Years	17	11.33
Formal Training on GCS at the Job	Yes	121	80.67
	No	29	19.33

The above table 1 presents the information about the background characteristics of the respondents such as age, gender, qualification, working experience and formal training on the Glasgow coma scale. The age distribution of the respondents in the study offers a comprehensive view of the participants' age groups. Among the total of 150 respondents, 16.66% were aged 21-25, 49.34% fell within the 26-30 age bracket, 28.66% were in the 25-29 range and 5.34% were aged more than 35 years. In this study, most of the participants were female as compared with male (78.67% vs 21.33%). Regarding the qualification, most of the nurse (37.33%) had general nursing education, 34% of the participants had advanced diploma of nursing and 28.67% of the participants had qualification of BS nursing and post RN BS nursing. Most of the nurses (40%) had 3 to 5 years work experience, 32% of the nurses had 1 to 2 years work experience, 16.67% of the nurses had 6 to 10 years work experience and 11.33% of the respondents had more than 10 years work experience. Formal training on Glasgow coma scale is very important for serving in the intensive care unit. Most of the participants (80.67%) had formal training on Glasgow coma scale and 19.33% of the respondents had not formal training on Glasgow coma scale.

Table 2. Level of Knowledge about Glasgow Coma Scale among Nurses (N=150)

Sr. No.	Items	Correct	Incorrect	Don't Know

1	What is the meaning of GCS?	135 (90%)	10 (6.67%)	5 (3.33%)
2	The Glasgow Coma Scale was initially devised for.	105 (70%)	42 (28%)	3 (2%)
3	What is the function of Glasgow Coma Scale?	123 (82%)	23 (15.33%)	4 (2.67%)
4	What are the specific sections that comprise the Glasgow Coma Scale?	112 (74.67%)	33 (22%)	5 (3.33%)
5	A patient in the ICU after traumatic brain injury is assessed with verbal response, motor response and eye opening. What assessment tool is being used?	135 (90%)	12 (8%)	3 (2%)
6	Which part of the brain is being assessed when you are assessing verbal response?	145 (96.67%)	3 (2%)	2 (1.33%)
7	To assess verbal response, examiner should begin with:-	132 (88%)	13 (8.67%)	5 (3.33%)
8	Which part of the brain is being assessed when you are assessing eye opening?	98 (65.33%)	48 (32%)	4 (2.67%)
9	To asses eye opening examiner should begin with:-	123 (82%)	24 (16%)	3 (2%)
10	To assess best motor response, examiner should begin with:-	117 (78%)	31 (20.67%)	2 (1.33%)
11	Which part of the brain is being assessed when you are assessing motor response?	60 (40%)	83 (55.33%)	7 (4.67%)
12	On assessing a patient's motor response, who is unable to comply. You inflict a pain stimulus, and the client pulls his/her arm away. He/she should show one of the following behaviour:	121 (80.67%)	23 (15.33%)	6 (4%)
13	To test motor response in quadriplegic patients (paralyzed in all four limbs),	123 (82%)	24 (16%)	3 (2%)
14	The lowest score of the Glasgow Coma Scale which indicates deterioration in conscious level of patient:	127 (84.67%)	21 (14%)	2 (1.33%)
15	Glasgow Coma Scale interval that indicates moderate severity is between:-	133 (88.67%)	14 (9.33%)	3 (2%)
16	While monitoring the Glasgow Coma Scale, the most adequate response of clients for scoring is:-	137 (91.33%)	11 (7.34%)	2 (1.33%)
17	In Glasgow Coma Scale take notes for:-	141 (94%)	7 (4.67%)	2 (1.33%)
18	A patient who does not respond to body or environmental stimuli is:-	136 (90.67%)	10 (6.67%)	4 (2.66%)
Overall Level of Knowledge		**Good**	**Fair**	**Poor**
		81.59%	16%	2.41%

The above table 2 presents the level of knowledge about the Glasgow coma scale among the nurses including male and female working in the intensive care unit of the General Hospital Lahore and Services Hospital Lahore. It can be gauged from the above findings that most of the male and female nurses had good overall level of knowledge (81.59%), 16% of the participants had fair knowledge and 2.41% of the participants had poor knowledge about the Glasgow coma scale.

Table 3. Level of Practice of Glasgow Coma Scale (GCS) among Nurses (N=112)

GCS Response Category		Response Rate # (%)		
		Done Correct	Done Incorrect	Not Done
Eye Opening	Spontaneously To Speech To Pain None	88 (78.57%)	19 (16.96%)	5 (4.47%)
Best Motor Response	Obey Commands Localize to Pain Withdraw to Pain Flexion to Pain Extension to Pain None	86 (76.79%)	20 (17.85%)	6 (5.36%)
Best Verbal Response	Oriented Confused Inappropriate wards Incomprehensive Sound None	96 (85.71%)	10 (8.93%)	6 (5.36%)
Total Practice		**Good**	**Fair**	**Poor**
		80.35%	14.58%	5.07%

The above table 3 presents the information about the total practice of Glasgow coma scale among male and female nurses in the intensive care unit of General Hospital Lahore and Services Hospital Lahore. The overall 80.35% of the participants had good practice, 14.58% of the participants had fair practice and 5.07% of the participants had poor practice.

Table 4: Correlation between Level of Knowledge about the Glasgow Coma Scale (GCS) and Background Characteristics

Correlation		Age Group	Academic Qualification	Work Experience	Formal Training
Knowledge about GCS	Pearson Correlation	.071	.253	.285	.344
	Sig. (2-tailed)	.163	.000	.000	.000
	N	150	150	150	150

**significant level at 5%*

The above table 4 indicates the correlation between the level of knowledge about Glasgow coma scale and background characteristics of the male and female nurses. The analysis shows that knowledge about Glasgow coma scale has significant association with the academic qualification (p-value=.000), work experience (p-value=.000) and formal training on Glasgow coma scale (p-value=.000). And, there was no significant relationship between the knowledge of Glasgow coma scale and different age groups (p-value=.745).

Table 5: Correlation between Practice of Glasgow Coma Scale (GCS) and Background Characteristics

Correlation		Age Group	Academic Qualification	Work Experience	Formal Training
Practice of GCS	Pearson Correlation	-.84	.103	.109	.107
	Sig. (2-tailed)	.745	.002	.000	.001
	N	112	112	112	112

**significant level at 5%*

The above table 5 presents the correlation between practice of Glasgow coma scale and background characteristics of the male and female nurses working in the intensive care unit of General Hospital Lahore and Services Hospital Lahore. Statistically, it was found that practice of Glasgow coma scale has significantly associated with the academic qualification (p-value=.002), work experience (p-value=.000) and formal training on Glasgow coma scale. There was no significant relationship between the practice of Glasgow coma scale and different age groups (p-value=.745).

DISCUSSION

The knowledge about the Glasgow coma scale (GCS) is highly integral and vital for the practice in the intensive care units. The primary purpose of the Glasgow coma scale is to assess the conscious level of the patients. The accurate and good practice of the Glasgow coma scale provers very helpful for intervening and recovering the patients. Therefore, current study is adhered to investigate the level of knowledge and practice of Glasgow coma scale (GCS) among nurses (male and female) working in the intensive care units of the tertiary hospital in Lahore, Pakistan. In the same manner, a research study was also conducted by the Al Sinan and Mansour (2020) with the titled "knowledge and practice of the nurses regarding usage of Glasgow Coma Scale for assessment of patient's level of consciousness".[14]

The background characteristics of the study's participants were greatly associated with the knowledge and practice of Glasgow coma scale among nurses. The age of the most of the participants were between the 26-30 years (49.34%), most of the participants were also female nurses (78.67%), higher number of participants (37.33%) had qualification of general nursing, most of the participants (40%) had work experience of 3 to 5 years and most of the male and female nurses were well trained on the Glasgow coma scale in the tertiary care hospitals of Lahore. Similarly, Gill et al. (2004) conducted research study in the adult intensive care unit at a teaching facility with the background characteristics of the nurses such as age, gender, education, qualification and length of service.[15]

Regarding the knowledge and practice of Glasgow coma scale among nurses, the findings reveals that 81.59% of the respondents had overall good knowledge and 2.41% of the participants had poor knowledge of Glasgow coma scale. Compliance with the overall good knowledge, 80.35% of the participants had good practice and 5.07% of the participants had poor practice of Glasgow coma scale in the intensive care units of the General Hospital Lahore and Service Hospital Lahore. According to the Sherin et al. (2019), 10.01% had good knowledge, scoring is 80–100% (12–15 points), 30.09% had satisfactory knowledge, and the knowledge of 60% of the nurses who participated in the questionnaire was poor.[16]

Most importantly, background characteristics of the participants were significantly associated with the knowledge and practice of Glasgow coma scale among nurses in the General Hospital Lahore and Services Hospital Lahore. The knowledge about Glasgow coma scale positively associated with the academic qualification (p-value=.000), work experience (p-value=.000) and formal training on Glasgow coma scale (p-value=.000). In the same manner, the practice of Glasgow coma scale has also significantly associated with the academic qualification (p-value=.002), work experience (p-value=.000) and formal training on Glasgow coma scale. The findings of the research study conducted by the Al Sinan and Mansour (2020) also supported the findings of this research study. They also found that age, gender, educational level and length of service are the major factors contributing to the knowledge and practice of the nurses regarding the usage of Glasgow coma scale for assessment of patient's level of conscious level.[17]

The discussion can be summarized that male and female nurses had overall good knowledge and practice of Glasgow coma scale in the General Hospital Lahore and Services Hospital Lahore.

Limitation

The research study is limited to only public hospitals i.e. General Hospital Lahore and Services Hospital Lahore. Therefore, the limited findings with limited sample size of 150 nurses from these two public hospitals cannot be generalized into whole Pakistan. Secondly, this study has limited scope covering the knowledge and practice of Glasgow coma scale among nurses. The scope can be enhanced by conducting further research involving the doctors and other medical practitioners by observing the relationship between the knowledge and practice of Glasgow coma scale.

CONCLUSION

All the above findings and discussions can be concluded that male and female nurses working in the intensive care units of General Hospital Lahore and Services Hospital Lahore had adequate knowledge of the Glasgow coma scale. Congruent with the overall good knowledge among the nurses, they had also good practice of Glasgow coma scale in the intensive care unit for the assessment of patient's consciousness. Apart from this, the background characteristics of the male and female nurses were also significantly associated with the knowledge and practice of Glasgow coma scale in the intensive care units. Most importantly, the nurses with higher work experience and well-trained were well equipped with the knowledge and practice of Glasgow coma scale in the intensive care units. In the light of findings, it can be recommended that specialised courses and training on the job may be initiated for the better understanding and accurate practice of Glasgow coma scale to assess the patient's consciousness.

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