

NURSES' KNOWLEDGE OF GLASGOW COMA SCALE IN NEUROLOGICAL ASSESSMENT OF PATIENTS IN A TERTIARY CARE HOSPITAL

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Abstract: Neurological evaluation is a critical component of patient care, especially in tertiary care facilities where complex cases are often managed. The Glasgow Coma Scale (GCS) is a widely used tool for assessing the level of consciousness, particularly in patients with brain injuries, providing a standardized approach to evaluating neurological status. **Objectives:** This study aimed to evaluate nurses' knowledge of the GCS in neurological assessments of patients and to explore the relationship between nurses' knowledge of the GCS and demographic characteristics in a tertiary care hospital. **Methods:** A descriptive cross-sectional study was conducted at Services Hospital Lahore. A sample of 80 nurses was selected through a convenience sampling method. Data were collected using structured questionnaires, and the analysis was performed using SPSS version 25, employing frequencies, percentages, and Chi-Square tests to examine associations. **Results:** Among the 80 nurses, the majority were female (75%) with an age distribution predominantly between 36-40 years (37%). Most nurses had 1-2 years of experience (37%) and held a General Nursing Diploma (37%). Knowledge levels varied, with 28% of nurses demonstrating poor knowledge, 46% having average knowledge, and 25% showing good knowledge of the GCS. Significant associations were found between knowledge levels and factors such as gender ($p = 0.0001$), qualification ($p = 0.0000$), experience ($p = 0.0002$), and department ($p = 0.0001$), while age showed no significant association ($p = 0.423$). **Conclusion:** The study revealed an average level of knowledge regarding the GCS among nurses, with significant associations between knowledge levels and demographic factors like gender, qualifications, experience, and department. These findings indicate the need for targeted educational interventions to improve nurses' understanding and application of the GCS, ultimately enhancing patient care in neurological settings.

Keywords: Knowledge, Glasgow Coma Scale, Nurses, Neurological Assessment.

Introduction

In Pakistan, where healthcare facilities handle a wide range of critical and complex cases, the importance of accurate neurological assessment is paramount. The Glasgow Coma Scale (GCS), developed by Teasdale and Jennett in 1974, is a globally recognized tool for assessing a patient's level of consciousness, primarily utilized in cases of head injury and other critical conditions affecting the brain (1). The GCS provides a structured approach to evaluating three core areas of neurological function: eye-opening response, verbal response, and motor response, which are essential indicators in tracking a patient's neurological status and potential clinical deterioration (2).

Nurses, who are often the primary healthcare providers in tertiary care settings in Pakistan, play a crucial role in the continuous monitoring and assessment of patients' neurological status. The GCS enables nurses to identify changes in consciousness levels promptly, facilitating timely interventions that can significantly affect patient outcomes. However, limited training and inconsistent knowledge of the GCS among nurses can lead to suboptimal patient care, particularly in emergency and intensive care settings where immediate action is crucial (3).

Research in Pakistan and other developing countries has highlighted gaps in nurses' knowledge and utilization of the GCS. Studies from similar settings show that factors such as educational background, years of experience, and department placement significantly influence a nurse's competency in using the GCS effectively (4). For instance,

a study in Karachi revealed that while nurses understood the basic principles of the GCS, only a small percentage could apply their knowledge accurately in clinical scenarios, underscoring the need for more rigorous training programs (5).

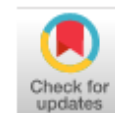
The current study aims to evaluate the level of knowledge among nurses regarding the GCS at a tertiary care hospital in Pakistan and to assess the demographic factors that may influence this knowledge. By identifying knowledge gaps and associated factors, this research seeks to inform strategies to improve training initiatives, ultimately aiming to enhance patient care through better neurological assessment practices in Pakistan's healthcare system (6).

Methodology

The study was conducted using a descriptive cross-sectional correlation design to assess the knowledge of nurses regarding the Glasgow Coma Scale (GCS) in neurological assessments of patients. The research took place at Services Hospital Lahore across various units, including medical, surgical, gynecology, emergency, ICUs, and pediatrics. The study spanned four months, from January 2024 to April 2024.

A sample size of 80 nurses was determined, and data was collected using a convenience sampling technique. Participants included both male and female nurses aged between 22 and 40 years, who were willing to provide informed consent. Exclusion criteria included nurses on

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leave during the study period, lady health visitors, midwives, paramedical staff, and student nurses.

Ethical considerations were strictly maintained. Written informed consent was obtained from all participants, ensuring that the study data remained confidential and participants' anonymity was preserved. Participants were informed about the voluntary nature of their involvement and assured that they could withdraw from the study at any time without any repercussions.

Data collection was conducted through structured questionnaires distributed to nurses across the various units. Participants were provided with one week to complete the questionnaire. The data collection tools comprised two main components: a demographic data tool and a knowledge scale. The demographic questionnaire gathered information on participants' age, gender, qualifications, experience, and department. The knowledge scale, adopted from previous studies, included 10 questions assessing nurses' knowledge of GCS, with correct answers scored as 1 and incorrect

answers as 0. The total score ranged from 0 to 10, with knowledge levels categorized as poor (0-49%), average (50-74%), and good (75-100%).

Data analysis was conducted using SPSS version 25. Frequencies and percentages were calculated for demographic characteristics and knowledge scores, while mean and standard deviation values were determined for the knowledge score. The Chi-Square test was applied to examine the relationship between knowledge levels and demographic variables.

Results

A total of 80 eligible participants were recruited for the study. Demographic characteristics, such as participants' age, gender, qualification, experience, and department, are presented in tables.

Table 1: Demographic characteristics of participants

Variable	Categories	Frequency	Percentage (%)
Age	20-25 years	15	19
	26-30 years	20	25
	31-35 years	15	19
	36-40 years	30	37
Gender	Male	20	25
	Female	60	75
Qualification	General Nursing Diploma	30	37
	Generic BSN	20	25
	Generic Post RN	25	31
	MSN	5	6
Experience	> 1 year	20	25
	1-2 years	30	37
	3-4 years	20	25
	≥ 5 years	10	12
Department	Medicine	12	15
	Surgery	18	22
	ICU	10	12
	Emergency	10	12
	Gynae and Obs	15	18
	Pediatrics	15	19

The table presents a breakdown of participants' characteristics. Regarding age distribution, the majority fall within the age brackets of 26-30 years (25%) and 36-40 years (37%), with smaller proportions in the age ranges of 20-25 years (19%) and 31-35 years (19%). In terms of gender, females represent the predominant group at 75%, while males constitute 25% of the sample. Qualification-wise, General Nursing Diploma holders comprise the

largest segment (37%), followed by Generic BSN (25%), Generic Post RN (31%), and MSN (6%). Experience levels vary, with the highest proportion having 1-2 years of experience (37%), followed by >1 year (25%), 3-4 years (25%), and ≥5 years (12%). Regarding departmental affiliation, Surgery (22%) and Gynae and Obs (18%) are the most represented, followed by Medicine (15%), Pediatrics (19%), ICU (12%), and Emergency (12%).

Table 2: Distribution of Answers of GCS

SR#	Questions	Frequency (%)
		Correct Answer
1	What is the function of GCS?	32 (40%)
2	How many indicators of GCS?	42 (52%)
3	What is the best score of GCS?	28 (35%)
4	What is the worst score of GCS?	30 (37%)

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5	What is the motor response in the number 4 GCS scale?	29 (36%)
6	Which GCS scale score indicates that the client is in a coma?	32 (40%)
7	What does a GCS of 3 mean?	29 (36%)
8	How can I check the patient GCS eye opening?	36 (45%)
9	How many types of comas?	33 (41%)
10	What does GCS stand for?	50 (62%)

Table 2 includes ten questions related to various parts of the GCS, along with the frequency of correct and incorrect answers expressed as percentages. For instance, Question 1, addressing the function of the GCS, garnered a correct response rate of 40% and an incorrect response rate of 60%. Similarly, Question 10, inquiring about the acronym "GCS,"

received a higher correct response rate of 62% compared to a 37% incorrect response rate. Overall, the table provides insights into the level of understanding and knowledge among respondents regarding different aspects of the GCS, highlighting areas where further education or clarification may be beneficial.

Table 3: Level of Knowledge of Nurses Regarding GCS

Level of Knowledge	Frequency	Percentage (%)
Poor knowledge	25	28
Average Knowledge	35	46
Good Knowledge	20	25

Table 3 presents the distribution of knowledge levels among nurses regarding the Glasgow Coma Scale (GCS). The table categorizes nurses' knowledge into three levels: poor, average, and good. It indicates that out of the total participants, 25 nurses (28%) demonstrated poor knowledge of the GCS, while 35 nurses (46%) exhibited an average

level of understanding. Furthermore, 20 nurses (25%) showcased a good understanding of the GCS. This breakdown provides valuable insights into the distribution of knowledge levels among nurses regarding this critical neurological assessment tool, highlighting areas where further education or training may be beneficial.

Table 4: Association Between Nurses' Demographic Characteristics and Knowledge of GCS

Variable	Knowledge Level	Poor (%)	Average (%)	Good (%)	P-Value
Age					0.423
	20-25 years	15	46	19	
	26-30 years	20	35	25	
	31-35 years	15	46	19	
	36-40 years	30	13	37	
Gender	Male	20	35	25	0.0001
	Female	30	25	25	
Qualification	General Nursing Diploma	30	40	10	0.0000
	Generic BSN	15	30	35	
	Generic Post RN	17	30	33	
	MSN	5	19	56	
Experience	> 1 year	26	34	20	0.0002
	1-2 years	13	40	27	
	3-4 years	20	35	25	
	≥ 5 years	10	48	22	
Department	Medicine	22	33	25	0.0001
	Surgery	38	22	20	
	ICU	10	20	50	
	Emergency	10	40	30	
	Gynae and Obs	35	30	15	
	Pediatrics	25	35	29	

Table 4 provides an insightful examination of the relationship between nurses' characteristics and their levels of knowledge concerning the Glasgow Coma Scale (GCS). It categorizes nurses' understanding into poor, average, or good and explores how demographic and professional variables correlate with their knowledge. Notably, while age groups show no significant association with knowledge

levels (p = 0.423), gender (p = 0.0001), qualification (p = 0.0000), experience (p = 0.0002), and department of work (p = 0.0001) exhibit significant associations. These findings suggest that factors such as gender, qualification, years of experience, and department of work play crucial roles in shaping nurses' comprehension of the GCS.

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Discussion

The results of this study demonstrate an average level of knowledge regarding the Glasgow Coma Scale (GCS) among nurses in a tertiary care hospital in Pakistan, with significant associations between knowledge and demographic factors such as gender, qualifications, experience, and department. These findings align with similar international studies indicating that, while nurses often have a basic understanding of the GCS, there are notable gaps in knowledge application, especially in high-stakes clinical settings like intensive care units (7).

Globally, the importance of GCS knowledge among healthcare providers, particularly nurses, has been emphasized as crucial for patient care in emergency and critical care settings. In a study conducted in Ethiopia, significant associations were found between GCS knowledge levels and factors such as educational background and experience, suggesting that targeted training and education could improve nurses' competencies (8). Similarly, research from India indicates that while most nurses receive some GCS training, refresher courses are often lacking, contributing to a decline in practical application skills over time (9).

In this study, it was observed that nurses with higher qualifications and more experience demonstrated better knowledge of the GCS. These findings are consistent with a study from the United Kingdom, which reported that nurses with specialized training or additional qualifications in critical care or neuroscience departments exhibited a more accurate understanding and use of the GCS, leading to better patient assessment and outcomes (10). This highlights the value of continuous professional development and specialized training in enhancing clinical competencies (11).

Interestingly, this study found no significant association between age and GCS knowledge, a finding that diverges from other research where younger nurses were found to have better theoretical knowledge but limited practical experience in GCS application (4). This suggests that knowledge levels may not always correlate with age, and instead, factors like department placement and recent training could play a more crucial role.

Additionally, significant gender differences were noted, with male nurses showing higher GCS knowledge scores. This aligns with findings from studies conducted in Ethiopia and India, where male nurses showed a greater tendency toward self-reported confidence in neurological assessments. However, some researchers caution that these differences may reflect cultural and educational biases rather than actual disparities in competency (3).

The current study underscores the need for targeted educational interventions to improve GCS knowledge and application. Implementing regular training programs, interactive workshops, and simulation-based learning could enhance the knowledge and confidence of nurses in performing neurological assessments accurately. Such interventions could be particularly beneficial for nurses in departments like emergency and surgery, where rapid neurological evaluations are critical for patient management and outcomes (1, 2)

Conclusion

In conclusion, this study contributes to the growing body of evidence supporting the need for enhanced GCS training among nurses, especially in developing countries where resources for continuous education may be limited. Addressing these gaps in knowledge and application through well-structured training programs could lead to improved patient outcomes and reinforce the role of nurses in critical care and emergency settings.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate.

Approved by the department Concerned. (IRBEC-SNU-221/24)

Consent for publication

Approved

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The authors declared an absence of conflict of interest.

Authors Contribution

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Revisiting Critically

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Data Analysis

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Coordination of collaborative efforts.

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Coordination of collaborative efforts.

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