

Glasgow Coma Scale Technique for Predicting Trauma And Patient Awareness in Hospitals in The Emergency Department: Certificate of Training and Emergency Nurses

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Abstract. The Glasgow Coma Scale (GCS) technique, developed since 1974, is used by nurses and other health care professionals to facilitate documentation of the scale-up of consciousness, assessment of consciousness needed in patients with head injuries, intracranial hemorrhage and many more. GCS can be used in many cases in hospitals not only to assess the presence of head trauma but to assess several conditions that require an awareness assessment. GCS is also needed to determine clinical decisions in the emergency department at the hospital. The purpose of the study, assess the ability of emergency nurses who already have training certificates in determining the value of patient awareness in hospitals using GCS neurological assessment and analyze the relationship between nurses who have a minimum training certificate with the ability of nurses to use GCS in the Government General Hospital Emergency Department. The method used is descriptive-analytic with a chi-square relationship test approach with a sample of all emergency nurses as many as 73 people spread across the three hospitals. The sample has nurses' inclusion criteria who have emergency department training certificates and served in the emergency room. Exclusion criteria were nurses who served structurally (head of the room and deputy head of the room) and were on leave/permission/ sick / not on duty. Samples were taken based on total sampling and cross-sectional. The results showed that the nurse's competence in performing GCS techniques was 58.3% in the good category and 41.7% in the poor category based on the mean value, 7.6 of the five cognitive questions and five competency questions in the case. This study also showed that there was no relationship between ownership of emergency nursing competency certificates with nurse competence in GCS indicated by $p\text{-value} > 0.05$. Conclusions GCS is indeed an instrument in assessing decreased awareness and evaluation of medical emergencies but is not affected by competency certificates for nursing.

1. Background

The Glasgow Coma Scale (GCS), developed since 1974, is used by nurses and other health care professionals to facilitate documentation of the scale of consciousness assessment, assessment of consciousness needed in head injury patients, intracranial hemorrhage and many more [1]. This means that GCS can be used in many cases in hospitals not only to assess the presence of head trauma but to assess several conditions that require an awareness assessment. GCS is also needed to determine clinical decisions in the emergency department at the hospital [2]. Blood pressure and GCS tests are



appropriate measures to predict mortality in adult patients with trauma [3]. GCS as a prediction to determine client care before going to the hospital to be taken into consideration as a matter of breathing assistance or in paralysis [4]. Patients who have four GCS (89%) will have more predictions of death than patients with three GCS (71) [5], this shows how important it is for nurses to provide the right scoring to describe the exact state of the patient. But in clinical situations, many problems that often arise are inaccuracies in GCS assessments that use eye responses, motor and verbal responses have been widely reported [6]. Nurses who carry out GCS assessments on patients are nurses who work in the emergency department and have minimum training qualifications Management of Emergency Patients (PPGD) or Basic trauma Cardiac Life Support (BTCLS) which is commonly used in government public hospitals. The purpose of the study, assess the ability of emergency nurses who already have training certificates in determining the value of patient awareness in hospitals using GCS neurological assessment and analyze the relationship between nurses who have training certificates PPGD or BTCLS with the competence of nurses using GCS in the Government General Hospital Emergency Room.

2. Methods

This study uses a descriptive-analytic method that analyzes the relationship between nurses who already have an emergency training certificate and their ability to assess GCS in patients with neurological impairment. Data analysis uses bivariate analysis to analyze the relationship between training and nurses' ability to assess awareness using GCS as evidenced by the P-Value <0.05 , so there is a significant relationship. The calculation of statistical analysis uses the Chi-Square Test to analyze the significance of the relationship between nurses who already have IGD training certificates and their ability to assess GCS in patients. The study sample was all emergency room nurses in 3 government public hospitals in Banjar City, Ciamis Regency, and Tasikmalaya City. Measurement of nurses' ability was measured using a questionnaire consisting of 4 questions regarding the characteristics of respondents, 5 questions regarding GCS theory, 5 questions about scenarios, 1 question regarding participation in training, and 1 question regarding whether or not the training was active. The questionnaire will be tested for validity and reliability at Garut District Hospital with a sample size of 10 people, with valid conclusions due to the 0.005 confidence test and a sample size of 10 people with Cronbach's alpha 0.989. The sample has nurses' inclusion criteria who have emergency department training certificates and served in the emergency room. Exclusion criteria were nurses who served structurally (head of the room and deputy head of the room) and were on leave/permission/ sick / not on duty. Samples were taken based on a total sampling of 73 nurses, the sample was damaged by 1 person so that the sample became 72 people. This research was funded by the Director-General of Research and Community Service Strengthening the Ministry of Research and Higher Education of the Republic of Indonesia so that the research was very neutral. Ethics This study was issued by the STIKes BTH Tasikmalaya Research Ethics Commission on behalf of the Ministry of Health of the Republic of Indonesia.

3. Results

Tabel 1. Research Results Ownership of certificates with GCS competency results for emergency department nurses

Results of competencies in emergency department nurses								
Training Followed	Results of competencies in emergency department nurses						Mean	P- value
	Good competence		less competence		Total			
	F	%	F	%	F	%		
Basic Life Suport (BLS)	3	4,2	3	4,2	6	8,3	7,6	0.889

Training Followed	Results of competencies in emergency department nurses						Mean	P- value
	Good competence		less competence		Total			
	F	%	F	%	F	%		
Basic Trauma Cardiac Life Support (BTCLS)	29	40,3	19	26,4	48	66,7		
Management of Emergency Patients (PPGD)	7	9,7	4	5,6	11	15,3		
Emergency Nurse Pediatric Course (ENPC)	1	1,4	1	1,4	2	2,8		
Advance Cardiac Life Support (ACLS)	2	2,8	3	4,2	5	6,9		

Statistical results showed that the competencies of emergency room nurses were 58.3% having good competence, 41.7% lacking competence. Ownership of emergency nursing training certificates does not have a significant relationship with nurse competence in the Glasgow Coma Scale with a p-value of 0.889. The mean for nurse competence in the emergency room is 7,6.

4. Discussion

Research in Nigeria shows that some medical personnel do not have enough knowledge to do the Glasgow Coma Scale (GCS) [7]. Not much different from in Indonesia, especially in West Java. IGD nurse competence consists of knowledge and competency. Research skills show nurses whose competency assesses GCS is still 58.3%. So that from nurses' knowledge and competence in 3 hospitals is not optimal if faced with a case of decreased awareness so nurses need to have comprehensive training or following the needs of the research field shows that nurse training is still needed especially triage because GCS is a triage [8]. Nurse competence in the emergency room in Indonesia requires nurses to have training competencies but the training competencies do not affect the nurses' competencies in assessing GCS. Because of this, when analyzed in terms of nurses' competencies, many of them answer incorrectly in theory questions about GCS, while in many cases the answers are correct, so many of the problems are wrong in theory, so routine training refreshes are needed. The mastery of GCS theory which consists of verbal motor eyes still contains a misunderstanding in perceiving [9]. The competency value is still 47.1%, it is also possible that the different cases vary in each emergency room so that emergency nurses rarely face cases that require GCS usage, work experience has an important role in the accuracy of the use of GCS. The need for GCS modification in the hospital environment also needs to be done on average at these three hospitals still using GCS that was developed in 1974. Research has developed a GCS that produces better results in predicting the accuracy of the modifications [10]. But the modification of scoring and better language use needs a special study for further research so nurses can predict deaths more precisely and better to be universal. After uniforming the language it is necessary to spend regularly, structured, and have the final

competency test as a license for use in the room [11]. This is to improve the clinical ability of nurses to balance knowledge and competence in the emergency room.

5. Conclusion

Ownership of training certificates does not have a significant effect on nurses' competencies in the use of GCS by nurses so it needs further research where the characteristics of nurses such as work experience, age, education level, and status. Nurse competence in terms of knowledge is needed so that nurses can be consistent in the use of GCS values.

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6. References

- [1] G. Teasdale, A. Douglas, P. Brennan, E. McElhinney, and L. Mackinnon, "Forty years on : updating the Glasgow Coma Scale," *Nurs. Times*, vol. 110, no. 42, pp. 12–16, 2014.
- [2] Y. Kondo, T. Abe, K. Kohshi, Y. Tokuda, E. F. Cook, and I. Kukita, "Revised trauma scoring system to predict in-hospital mortality in the emergency department : Glasgow Coma Scale , Age , and Systolic Blood Pressure score," *Crit. Care*, vol. 15, no. 4, p. R191, 2011.
- [3] M. Gerdin, N. Roy, M. Khajanchi, V. Kumar, L. Felländer-tsai, and M. Petzold, "Validation of a novel prediction model for early mortality in adult trauma patients in three public university hospitals in urban India," *BMC Emerg. Med.*, pp. 1–12, 2016.
- [4] M. Majdan, M. Rusnak, and H. F. Lingsma, "Glasgow Coma Scale Motor Score and Pupillary Reaction To Predict Six-Month Mortality in Patients with Traumatic Brain Injury : Comparison of Field and Admission Assessment," vol. 108, pp. 101–108, 2015.
- [5] A. Y. Zubkov, J. L. Elmer, and E. F. M. Wijdicks, "Validity of the FOUR Score Coma Scale in the Medical Intensive Care Unit," vol. 55905, no. August, pp. 694–701, 2009.
- [6] C. Heim, P. Schoettker, N. Gilliard, and D. R. Spahn, "Knowledge of Glasgow coma scale by air-rescue physicians," *BioMed Cent.*, vol. 6, pp. 1–6, 2009.
- [7] A. O. Adeleye, M. O. Owolabi, T. B. Rabi, and A. E. Orimadegun, "Physicians ' knowledge of the Glasgow Coma Scale in a Nigerian university hospital : is the simple GCS still too complex ?," vol. 3, no. March, pp. 1–7, 2012.
- [8] W. Febrina and I. O. Sholehat, "Experience of Nurse Assosiate to Implement Triage in Emergency Room Installation," *Endur. J.*, vol. 3, no. 1, pp. 138–145, 2018.
- [9] W. C. Santos *et al.*, "Assessment of nurse ' s knowledge about Glasgow coma scale at a university hospital em um hospital universitário," vol. 14, no. 55 11, pp. 213–218, 2016.
- [10] A. B. Peitzman, J. L. Sperry, M. I. Gutierrez, and J. C. Puyana, "Effect of the Modified Glasgow Coma Scale Score Criteria for Mild Traumatic Brain Injury on Mortality Prediction: Comparing Classic and Modified Glasgow Coma Scale Score Model Scores of 13," vol. 71, no. 5, pp. 1185–1193, 2012.
- [11] S. Bansal and R. Chawla, "Awareness of Glasgow Coma Scale in anaesthesiology post - graduates in India : A survey," *jnaccjournal*, pp. 227–232, 2016.