THE RELATIONSHIP OF NURSE CHARACTERISTICS AND THE ACCURACY OF GCS ASSESSMENT IN HEAD INJURY PATIENTS IN EMERGENCY ROOM GRESTELINA HOSPITAL

Ika Arfianti[1], Irma Andriyanis[2]

[1] Master of Nursing, Faculty of Nursing, Hasanuddin University
[2] Nursing Science, STIKES Gunung Sari

**correspondence: ikaarfiantyy@gmail.com*

Abstract

Background; Head injury is a leading cause of death, with mortality and morbidity rates of head injury approaching one-third of deaths in multitrauma patients. Head injury cases account for 52,000 or 40% of the total number of deaths caused by acute injury. **Objectives**: The relationship between nurse characteristics and the accuracy of GCS assessment in head injury patients in the emergency room Grestelina Hospital. **Method**; This study uses a quantitative research design with a total sampling approach method with a sample size of 33 respondents. **Result;** The results showed that age, education level and tenure obtained p=0.030, p=0.004 and p=0.000 < α (0.05). Thus Ha is accepted and Ho is rejected, meaning there is a relationship with the accuracy of GCS assessment in head injury patients. Meanwhile, the results showed that gender obtained a value of p=0.358> α (0.05). Thus Ho is accepted and Ha is rejected, meaning that it is not related to the accuracy of GCS assessment in head injury patients. **Conclusion;** The results show that age, education level and tenure have a relationship with the accuracy of GCS assessment in head injury patients in the emergency room Grestelina Hospital. While from the results of gender there is no relationship to the accuracy of GCS assessment in head injury patients in the emergency room Grestelina Hospital.

Keywords *: GCS Assessment Accuracy, Head Injury, Nurse Characteristics*

BACKGROUND

Individual characteristics have an impact on the performance of a nurse in carrying out their duties. According to Siagian (2008), biographical characteristics (individual) can be seen from age, gender, marital status, number of dependents, and length of service. This is supported by Morrow, who states that organizational commitment is influenced by personal (individual) characteristics, which include age, length of service, education, and gender (Prayitno, 2005). There is a significant relationship between age, gender, length of service, and education level with nurses' adherence to patient safety guidelines (Anugrahini, 2010).

Head injuries are a major cause of death, with the mortality and morbidity rate for head injuries approaching one-third of deaths in multi-trauma patients. Cases of head injuries contribute to 52,000 or 40% of the total number of deaths caused by acute injuries. According to a report from the World Health Organization (WHO), each year around 1.2 million people die from severe head injuries due to traffic accidents (Meilando, 2020).

According to WHO, there are 15,000 cases of head injuries in the United States every year. Of these, 100,000 result in disability and 50,000 result in death. Currently, 5,300,000 people in the United States live with disabilities due to head injuries. Data on head injuries in Europe in 2017 showed an incidence rate of 500 per 100,000 population. The incidence rate of head injuries in the United Kingdom in 2018 was 400 per 100,000 patients per year (Putri & Fitria, 2018). According to the Ministry of Health, the prevalence of head injuries in Indonesia is 11.9%, with the highest percentage of cases in Gorontalo at 17.9% and the lowest in South Kalimantan at 8.6%. However, from these results, head injuries rank second in the eastern part of Indonesia, with South Sulawesi (15.8%), Papua (15.7%), North Sulawesi (15.3%), West Nusa Tenggara (15.1%), and East Nusa Tenggara (15%) (Ministry of Health, 2018).

The Emergency Room (ER) is the main gateway in handling emergency cases in hospitals, playing a crucial role in life-saving efforts, particularly for head injury patients. Handling head injuries must be quick, precise, and accurate, following established procedures. Additionally, general principles of head injury management are also important references to prevent death and disability, such as managing Airway, Breathing, Circulation, Disability, and Exposure (ABCDE), monitoring vital signs, maintaining adequate oxygenation, assessing and correcting coagulation disorders, maintaining hemostasis and blood sugar, adequate nutrition, maintaining PaCO2 at 35-45 mmHg, etc. (Mudatsir, Sangkala, & Setyawati, 2017).

Head injuries are one of the most common types of injuries in the Emergency Room. Out of 100% of trauma patients, more than 80% have head injuries, and around 90% die before reaching the hospital due to brain injuries. The skills of ER healthcare workers are crucial for clinical decision-making to avoid errors in patient management.

Based on data from the Defense and Veterans Brain Injury Center in the United States in 2015, the most common degree of head injury is mild head injury, with 18,666 cases, followed by moderate head injury with 2,763 cases, and severe head injury with 174 cases. The severity of head injuries can be measured in several ways, one of the most frequently used being the Glasgow Coma Scale (GCS), which assesses three components of neurological function: eye opening, verbal response, and motor response. The results are scored from 3-15, with classifications of mild head injury (14-15), moderate head injury (9-13), and severe head injury (3-8).

Based on the above explanation, the researcher attempts to conduct a study on "The Relationship Between Nurse Characteristics and the Accuracy of GCS Assessment in Head Injury Patients in the Emergency Room at Grestelina Hospital".

METHODS

This research employs a descriptive quantitative approach with a total sampling method, aiming to determine the relationship between the characteristics of nurses and the accuracy of GCS assessment in head injury patients at the ER of Grestelina Hospital. This research will be conducted from August to September 2023 in the ER of Grestelina Hospital.The population in this study includes all nurses working in the ER of Grestelina Hospital, totaling 33 individuals.The sample for this study consists of all 33 nurses working in the ER of Grestelina Hospital.The data collection instrument used to assess the characteristics of the nurses is a questionnaire. A questionnaire is a list of well-structured questions designed to elaborate on the research variables, with each question item being meaningful in testing the research hypothesis. The questionnaire features closed-ended questions (Notoatmodjo, 2010).

RESULTS

Univariate Analysis

Tabel 1. Description of Responden Distribution Based on Age

Age	F	%
25 – 40	15	45.5
41 – 55	18	54.5
Total	**33**	**100.0**

Source : Data Primer 2023

From the table 1 above out of 33 respondents, there are 15 respondents (45.5%) aged 25-40 years and 18 respondents (54.5%) aged 41-55 years

Tabel 2. Frequency Distribution of Respondents Based on Gender in the Frequency Distribution of Respondents Based on Education

Gender	F	%
Male	9	27.3
Female	24	75.8
Total	**33**	**100.0**

Source : Data Primer 2023

From the table 2 above out of 33 respondents, there are 9 (27.3%) male respondents and 24 (72.7%) female respondents.

Tabel 3. Frequency Distribution of Respondents Based on Education Level in the Frequency Distribution of Respondents Based on Education Level

Educational Level	F	%
D3 Kep (Assosiate Degree)	8	24.2
Ners	25	75.8
Total	**33**	**100.0**

Source : Data Primer 2023

From the Table 3 above out of 33 respondents, there are 8 (24.2%) respondents with D3 of Nursing educational leveand 25 (75.8%) respondents with an Ners educational level.

Tabel 4. Frequency Distribution of Respondents Based on Work Experience

Length of Work	F	%
< 5 tahun	8	24.2
> 5 tahun	25	75.8
Total	**33**	**100.0**

Source : Data Primer 2023

From the Table 4 above out of 33 respondents, there are 8 (24.2%) respondents with less than 5 years of work and 25 (75.8%) respondents with more than 5 years of work.

Tabel 5. Frequency Distribution of Respondents Based on Accuracy of GCS Assessment

GCS Assessment Accuracy	F	%
Accurate	26	78.8
Less Acurate	7	21.2
Total	**33**	**100.0**

Source : Data Primer 2023

From the Table 5 above out of 33 respondents, 26 (78.8%) had accurate GCS assessments, while 7 (21.2%) had less accurate GCS assessments.

Bivariate Analysis

Table 6. Distribution of Age and Accuracy of GCS Assessment in Head

Injury Patients Age	Accuracy of GCS Assessment				Total		
	Accurate	%	Less Accurate	%	N	%	PValue
25 - 40	9	27.3	6	18.2	15	45.5	
41 - 55	17	51.5	1	3.0	18	54.5	**0,030**
Total	**26**	**78.8**	**7**	**21.2**	**33**	**100.0**	

source: Data Primer 2023

Table 6 shows that among respondents aged 25-40, there are 15 (45.5%) respondents, with 9 (27.3%) having accurate GCS assessments of head injury patients and 6 (18.2%) having less accurate assessments. Meanwhile, among respondents aged 41-55, there are 18 (54.5%) respondents, with 17 (51.5%) having accurate GCS assessments of head injury patients and 1 (3.0%) having a less accurate assessment.

Analysis on the chi-square test, the p-value is 0.030, which is less than α (0.05), thus Ha is accepted.

Tabel 7. Distribution of Gender and Accuracy of GCS Assessment in Head Injury

Patients Gander	Accuracy of GCS Assessment				Total		PValue
	Accurate	%	Less Accurate	%	N	%	
Male	6	18.2	3	9.1	9	27.3	
Female	20	60.6	4	12.1	24	72.7	**0,358**
Total	26	78.8%	7	21.2	33	100.0	

Table 7 shows that among respondents who are male, there are 9 (27.3%) respondents, with 6 (18.2%) having accurate GCS assessments of head injury patients and 3 (9.1%) having less accurate assessments. Meanwhile, among respondents who are female, there are 24 (72.7%) respondents, with 20 (60.6%) having accurate GCS assessments of head injury patients and 4 (12.1%) having less accurate assessments.

Analysis on the chi-square test, the p-value is 0.358, which is greater than α (0.05), thus Ho is accepted.

Tabel 8. Distribution of Education Level and Accuracy of GCS Assessment in Head Injury Patients

Educational Level	Accuracy of GCS Assessment				Total		PValue
	Accurate	%	Less Accurate	%	N	%	
D3 Kep (Assosiate Degree)	3	9.1	5	15.2	8	24.2	
Ners	23	69.7	2	6.1	25	75.8	**0,004**
Total	**26**	**78.8**	**7**	**21.2**	**33**	**100.0**	

Source : Data Primer 2023

Table 8 shows that among respondents with an Associate Degree in Nursing (D3 Kep), there are 8 (24.2%) respondents, with 3 (9.1%) having accurate GCS assessments of head injury patients and 5 (15.2%) having less accurate assessments. Meanwhile, among respondents with a Bachelor's Degree in Nursing (S.Kep Ners), there are 25 (75.8%) respondents, with 23 (69.7%) having accurate GCS assessments of head injury patients and 2 (6.1%) having less accurate assessments.

Analysis on the chi-square test, the p-value is 0.004, which is less than α (0.05), thus Ha is accepted.

Tabel 9. Distribution of Length of Work and Accuracy of GCS Assessment in Head Injury Patients

Length Value Of Work	Accuracy of GCS Assessment				Total		P
	Accurate	%	Less Accurate	%	N	%	
< 5 Tahun	2	6.1	6	18.2	8	24.2	
> 5 Tahun	24	72.7	1	3,0	25	75.8	**0,000**
Total	**26**	**78.8**	**7**	**21.2**	**33**	**100.0**	

Source : Data Primer 2023

Table 9 shows that among respondents with less than 5 years of service, there are 8 (24.2%) respondents, with 2 (6.1%) having accurate GCS assessments of head injury patients and 6 (18.2%) having less accurate assessments. Meanwhile, among respondents with more than 5 years of service, there are 25 (75.8%) respondents, with 24 (72.7%) having accurate GCS assessments of head injury patients and 1 (3.0%) having a less accurate assessment.

Analysis on the chi-square test, the p-value is 0.000, which is less than α (0.05), thus Ha is accepted

DISCUSSION

There is a significant relationship between age, gender, length of service, and education level with nurses' adherence to patient safety guidelines (Anugrahini, 2010).

Head injuries are one of the most common types of injuries in the Emergency Room. Out of 100% of trauma patients, more than 80% have head injuries, and around 90% die before reaching the hospital due to brain injuries. The skills of ER healthcare workers are crucial for clinical decision-making to avoid errors in patient management.

The Relationship Between Nurse Age and Accuracy of GCS Assessment in Head Injury Patients The p-value obtained is 0.030, which is less than α (0.05). Thus, Ha is accepted and Ho is rejected, indicating that there is a relationship between nurse age and the accuracy of GCS assessment in head injury patients in the Emergency Room of RS. Grestelina.

According to Notoatmodjo (2018), nurse age influences the accuracy of GCS assessment, as age affects cognitive ability and thought processes. As age increases, cognitive abilities and thought processes also typically improve. During middle age, individuals are more active in social and community life and engage in more preparation for aging. Intellectual capacity, problem-solving skills, and verbal abilities are reported to show minimal decline at this age (Fitriani, 2020).

From the researcher's perspective, the accuracy of GCS assessment in head injury patients may be influenced by age, as cognitive maturity generally increases with age. However, this process may stagnate or even decline after a certain age, such as in elderly individuals.

The Relationship Between Nurse Gender and Accuracy of GCS Assessment in Head Injury Patients The p-value obtained is 0.358, which is greater than α (0.05). Thus, Ho is accepted and Ha is rejected, indicating that there is no relationship between gender and the accuracy of GCS assessment in head injury patients in the Emergency Room of RS. Grestelina.

This is consistent with the psychological theory proposed by Robbins and Judge (2008), which found that females are generally more compliant with authority, whereas males are more aggressive and have slightly higher expectations of success. However, these differences are minimal. The researcher believes that there is no significant difference in the accuracy of GCS assessment between male and female nurses; both apply their understanding of GCS assessment similarly.

According to the researcher's assumption, statistical testing concludes that there is no meaningful relationship between gender and the accuracy of GCS assessment. Gender, in general, does not affect the accuracy of GCS assessment.

The Relationship Between Nurse Education Level and Accuracy of GCS Assessment in Head Injury Patients The p-value obtained is 0.004, which is less than α (0.05). Thus, Ha is accepted and Ho is rejected, indicating that there is a relationship between nurse education level and the accuracy of GCS assessment in head injury patients in the Emergency Room of RS. Grestelina.

According to Arfida (2015), one factor that can enhance nurse productivity or performance is formal education. Education provides not only the knowledge required for task performance but also the foundation for self-development and the ability to utilize available resources effectively. Higher education levels generally lead to greater work productivity (Faizin, 2020).

From the researcher's perspective, an Associate Degree in Nursing (D3 Kep) is the lowest level of education among the respondents, with a formal education duration of 6 semesters (3 years), which is shorter compared to higher education levels. As a result, the amount of material taught is less compared to more advanced education. In contrast, a Bachelor's Degree in Nursing (S.Kep Ners) involves 8 semesters (4 years) or more, generally focusing more on theory than practice, which might lead to forgetting some learned concepts if not frequently applied. Other factors beyond education, such as age, gender, and length of service, might also influence the study results. Thus, based on the above explanation, the researcher assumes that education level is generally related to the accuracy of GCS assessment. This finding aligns with Faizin's (2020) study, which found a relationship between nurse education level and nurse performance.

The Relationship Between Nurse Length of Work and Accuracy of GCS Assessment in Head Injury Patients The p-value obtained is 0.000, which is less than α (0.05). Thus, Ha is accepted and Ho is rejected, indicating that there is a relationship between length of service and the accuracy of GCS assessment in head injury patients in the Emergency Room of RS. Grestelina.

Length of Work refers to the duration of employment. The longer a person works, the more knowledge they gain about GCS assessment. Experience has a significant impact, both positively and negatively. More experienced individuals tend to perform better than those with less experience. A length of service of 5-10 years is considered to be a peak period for career development (Notoatmodjo, 2018).

According to the researcher's assumption, length of service can affect the accuracy of GCS assessment. This is evident from the study results, where respondents with more than 5 years of service had 25 accurate GCS assessments compared to 6 less accurate assessments among those with less than 5 years of service. Longer service allows individuals to frequently apply their knowledge, which helps retain information, particularly in GCS assessment. Conversely, less experienced individuals have fewer opportunities to apply their knowledge, which may lead to forgetting. This is consistent with Faizin's (2020) research, which states that there is a relationship between nurse length of service and nurse performance.

CONCLUSION

Based on the research findings regarding the relationship between nurse characteristics and the accuracy of GCS assessment in head injury patients in the Emergency Room of RS. Grestelina, the following conclusions can be drawn:

1. There is a relationship between age and the accuracy of GCS assessment in head injury patients, as the chi-square test shows a p-value of 0.030, which is less than α (0.05).
2. There is no relationship between gender and the accuracy of GCS assessment in head injury patients, as the chi-square test shows a p-value of 0.358, which is greater than α (0.05).
3. There is a relationship between education level and the accuracy of GCS assessment in head injury patients, as the chi-square test shows a p-value of 0.004, which is less than α (0.05).
4. There is a relationship between length of service and the accuracy of GCS assessment in head injury patients, as the chi-square test shows a p-value of 0.000, which is less than α (0.05).

REFERENCES

Anugrahini, C. *Thesis Hubungan Faktor Individu dan Organisasi dengan Kepatuhan perawat dalam menerapkan Pedoman Patient Safery di RSAB Harapan Kita Jakarta. Fakultas Keperawatan Universitas Indonesia*. Tidakdipublikasikan. 2010.

Brain Injury Association Of America. 2016. Types of brain Injury. Http://www.biausa.org (diakses pada 24 September 2017).

Faizin & Winarsih. "Hubungan Tingkat Pendidikan dan Lama Kerja Perawat dengan Kinerja Perawat Di RSU Pandan Arang Kabupaten Boyolali". http://publikasiilmu.ums.ac.id/bitstream/handle/123456789/499/3g.pdf (21 Juli 2020).

Gustia, M. dan Manurung, m. (2018). Hubungan Ketepatan Penilaian Triase Dengan Tingkat Keberhasilan Penanganan Pasien Cedera Kepala di IGD RSU HKBP Balige Kabupaten Toba Samosir. Jurnal Jumantik, (3) 2, pp. 98-114.

Kementrian Kesehatan RI. 2018. *Profil Kesehatan Indonesia 2017*. Jakarta: Kemenkes RI. Diakses pada tanggal 31 Januari 2019 dari http:///www.depkes.go.id/resources/download/pusdatin/profil-kesehatan- indonesia/Profil-Kesehatan-Indonesia-tahun-2017.pdf.

Meilando, R. (2020). Analisa Kemampuan Perawat Dalam Mengklasifikasikan Pasien Cedera Kepala Berdasarkan Nilai Glasgow Coma Scale (GCS).

Mudatsir, S., Sangkala, M. S., & Setyawati, A. (2017). Related Factors OfResponden Time In Handling Head Injury In Emergency Unit Of Prof. Dr.

H. M. Anwar Makkatutu. *Indobesia Contemporary Nursing Jurnal,* 2(1), 1- 12.

Notoadmodjo.(2015).*Metodologi Penelitian Kesehatan Jakarta*: PT Rineka Cipta. Notoatmodjo, S. Promosi Kesehatan & Ilmu Perilaku. Jakarta: Rineka Cipta, 2018.

Robbins, S. & Judge, Y. 2010. Perilaku organisasi. (Terj. D. Angelica, R. Widyaswara. S.P.A, Titin. A.W., Mukhamad F. (2016). *Analisa Faktor-Faktor yang*

Berhubungan dengan Outcome Pasien Cedera Kepala di IGD RSUD Prof. Dr. Margono Soekardjo Purwokerjo. Jurnal Ilmu Kesehatan Keperawatan 12(3), 154 – 164.