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Improving the Ability to Identify the Degree of Severity of Trauma by Nurses at the Peterongan Health Center Jombang Regency

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ABSTRACT

Introduction: Determination of the severity of trauma patients as a basis for treatment to prevent worsening of the patient's condition, determining prognosis, the basis for determining appropriate treatment, as well as flagging or a sign of patients with the need for immediate resuscitation and immediate surgery. **Objective:** To measure the ability of nurses to identify the severity of trauma and evaluate the improvement in their abilities after an intervention in the form of learning and simulation. **Methods:** This research is quantitative research. Quasi-experimental research method with pretest-posttest design approach. The sampling technique used a total sampling technique of 25 nurses at the Peterongan Health Center, Jombang Regency. Data collection was carried out directly before and after the intervention using a questionnaire instrument. Interventions in the form of learning and training with the simulation method to identify the severity of trauma. Data analysis was carried out by univariate and bivariate analysis using the Wilcoxon sign Rank test. **Results:** Pretest data on the ability of nurses to identify the severity of trauma showed that most (68%) were in the poor category. Posttest data on the ability of nurses to identify the severity of trauma showed that most (84%) were in the Good Category. Univariate data analysis presents research results from cognitive, affective, psychomotor aspects and data on the ability of nurses. Bivariate data analysis comparing data before and after intervention showed p value = 0.000. This shows that there is an influence between learning and training in simulation methods with the ability of nurses. **Conclusion:** Learning about identifying the severity of trauma using trauma scores GCS, GAP, ISS, RTS, followed by training on simulation methods can improve the ability of nurses. The ability of nurses in identifying the severity of trauma was shown to increase after the intervention

ABSTRAK

Latar belakang: *Penentuan derajat keparahan pasien trauma sebagai dasar tatalaksana mencegah terjadinya perburukan kondisi pasien, penentuan prognosis, dasar penentuan tatalaksana yang tepat, serta sebagai Flagging atau tanda pasien dengan kebutuhan resusitasi segera dan operasi segera.* ***Tujuan:*** *Mengukur kemampuan perawat dalam mengidentifikasi derajat keparahan trauma dan mengevaluasi peningkatan kemampuan setelah dilakukan intervensi berupa Pembelajaran dan Simulasi..* ***Metode:*** *Penelitian ini merupakan penelitian kuantitatif dengan jenis penelitian Quasi eksperimen desain menggunakan pendekatan Pretest posttest. Teknik pengambilan sampel menggunakan teknik purposive sampling dengan Total partisipan 25 Perawat Puskesmas Peterongan Kabupaten Jombang. Pengumpulan data dilakukan secara langsung sebelum dan setelah Intervensi dengan menggunakan Instrumen Kuesioner. Intervensi berupa pembelajaran dan Pelatihan dengan metode Simulasi Identifikasi derajat keparahan trauma. Analisis data dilakukan secara univariat dan analisis bivariat menggunakan Wilcoxon sign Rank test.* ***Hasil:*** *Data Pretest tentang kemampuan perawat dalam Identifikasi derajat keparahan trauma menunjukkan bahwa Sebagian besar (68%) dalam kategori kurang. Data Posttest tentang kemampuan perawat dalam Identifikasi derajat keparahan trauma menunjukkan bahwa Sebagian besar (84%) dalam Kategori Baik. Analisa data Univariat menyajikan hasil penelitian dari aspek Kognitif, afektif, psikomotor dan data Kemampuan perawat. Analisa data Bivariat membandingkan data sebelum dan sesudah Intervensi menunjukkan nilai p = 0,000. Hal ini menunjukkan ada pengaruh antara pembelajaran dan pelatihan metode simulasi dengan kemampuan perawat.* ***Kesimpulan:*** *Pembelajaran tentang identifikasi derajat keparahan trauma menggunakan trauma Skor GCS, GAP, ISS, RTS, dilanjutkan dengan pelatihan metode simulasi dapat meningkatkan kemampuan perawat. Kemampuan perawat dalam identifikasi derajat keparahan trauma terbukti meningkat setelah Intervensi.*

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Introduction:

The incidence of trauma in the world and in Indonesia has increased in prevalence. According to WHO, the incidence of death due to accidents occurs every 5 minutes of events worldwide (WHO, 2017). While data from the 2018 RISKESDAS results show the incidence of trauma is 9.2% compared to the previous 8.2% in 2013 (Riskesdas, 2018)

The high incidence of trauma makes health care facilities, especially in primary care, have to prepare themselves to provide the best possible help for trauma patients. Services at the puskesmas can be optimal with the support of health resources that have good competence. The nurse, one of the health workers on duty, must also be able to identify the severity of the trauma patient, before the patient gets the right treatment. The team is always ready and focused on the priority of patient management. Life-threatening problems related to the patient's airway, breathing, circulation and consciousness are identified, evaluated, and action is taken within minutes of the patient coming to the emergency unit (Ulya, Ikhda., 2017).

The initial determination of the severity of trauma patients can be done in several ways including: Glasgow Coma Scale (GCS), GCS age pressure (GAP), Revised Trauma Score (RTS), and Abbreviated Injury Scale (AIS) as the basis for determining the Injury Severity Score (ISS) (Huber-W et al., 2010). This assessment can be carried out by puskesmas nurses to determine the degree of severity in trauma patients. Health center nurses have not fully measured the severity of trauma patients. Determination of the severity of trauma patients is mostly done by measuring the GCS alone.

The purpose of determining the severity of trauma patients as a basis for treatment is to prevent worsening of the patient's condition, determining prognosis, the basis for determining appropriate treatment, as well as flagging or a sign of patients with the need for immediate resuscitation and immediate surgery. Information on the degree of severity can be immediately informed to the hospital so that it is immediately prepared based on the patient's needs (Aspelund et al., 2019).

Early assessment is important because it can be used to provide information about disease severity and predict outcomes. There is no standard trauma assessment system so that not all emergency department services perform an initial assessment to determine the severity of trauma patients. The trauma scoring system tries to translate the severity of the injury into a number, helps quantitatively assess the severity of the injury, estimates the outcome of trauma (Salim, 2015).

The purpose of this study was to improve the ability of nurses at the Puskesmas in identifying the severity of trauma patients. Efforts to achieve these goals include the stages of providing modules, conducting learning using the discovery learning method, and conducting exercises using the Simulation method. Learning and training in determining the severity of trauma patients with trauma scores, namely: GCS, GAP, RTS, AIS/ISS. The ability of nurses to evaluate through pretest and posttest approaches. Differences in the ability of nurses in identifying the severity of trauma before and after treatment. According to several studies, the provision of training using the simulation method has been effective in improving the ability of nurses (Tawalbeh, 2020).

Methods:

This research protocol has been through an ethical review by the health research ethics committee (KEPK) STIKES Husada Jombang. Ethical approval number : 0110-KEPKSHJ dated August 18, 2021. The method used in this study is a quasi-experimental study with a pretest-posttest design approach. Quasi-experimental design (quasi-experimental design) Quasi-experimental research is research carried out using all subjects in the study group (intact group) to be given treatment (treatment) and not using subjects taken at random (Nursalam, 2016).

This study uses learning and simulation as an intervention to manipulate the ability of nurses in identifying the severity of trauma.

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The nurse's ability will be seen before and after the intervention is given. The ability of nurses will be identified using questionnaires and observations. Methods of collecting data using a questionnaire to see the ability of cognitive, affective, and observational aspects to measure the psychomotor ability of nurses. Learning is carried out as an intervention by providing discovery learning with learning materials about trauma, GCS, GAP, RTS and AIS/ISS scores and learning modules are given. After learning, training is carried out using the simulation method.

Simulation comes from the word simulate which means to pretend or act as if. As a teaching method, simulation can be defined as a way of presenting a learning experience by using imitation situations to understand certain concepts, principles, or skills. Simulation can be used as a teaching method with the assumption that not all learning processes can be carried out directly on the actual object (Priyono, 2016). This study uses a proband (sham patient) to be used as an exercise in identifying the severity of trauma using the simulation method.

The research was carried out at the Peterongan Public Health Center, Jombang Regency. The research was conducted from August 25 to October 28, 2021.

Figure 1. Research Design

Time 1	Time 2	Time 3	Time 4
Pretest	Learning	Simulation	Post test

The population obtained in the study was a number of 25 nurses. The number of samples used were 25 nurses. The sampling technique used was total sampling with all nurses on duty at the Peterongan Public Health Center, Jombang Regency as participants. The consideration of using total sampling is because the total population is less than 100 so that all populations are used as research samples (Nursalam, 2016). The inclusion criteria in this study were all nurses who served at the Peterongan Health Center, were willing to be participants and followed the research process from beginning to end. Exclusion criteria were nurses who were on leave during the study.

Analysis of the data used to see the effect of simulation on the ability to identify the severity of trauma by nurses at the Peterongan Health Center used the Wilcoxon Signed Rank Test. It is a nonparametric test to measure the significance of the difference between 2 groups of paired data on an ordinal or interval scale but not normally distributed (Dahlan, 2011).

Results:

The results of the study will be presented in a table of nurses' abilities in identifying trauma severity before the intervention (pretest) and after the intervention (posttest). The measurement uses a questionnaire to see the cognitive, affective and psychomotor domains of nurses. Then it is accumulated as the final result of the nurse's ability to identify the severity of trauma.

Table1. Research result

		Pretest		Posttest	
Cognitive	Category	Frequency	Percentage	Frequency	Percentage
	Good	7	28	22	88
	Less	18	72	3	12
	Total	25	100	25	100
Affective	Category	Frequency	Percentage	Frequency	Percentage
	Good	12	48	19	76
	Less	13	52	6	24
	Total	25	100	25	100
Psychomotor	Category	Frequency	Percentage	Frequency	Percentage
	Good	3	12	20	80
	Less	22	88	5	20
	Total	25	100	25	100
Nurse's ability	Category	Frequency	Percentage	Frequency	Percentage
	Good	8	32	21	84
	Less	17	68	4	16
	Total	25	100	25	100

2021 Primary Data

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Based on the results of the research above, the pretest data obtained. Most of the respondents in the less cognitive category (72%). Affective domain of nurses More than half (52%) have less cognitive ability. Psychomotor domain of nurses showed results Most (88%) in the Less category. The accumulated results of the Pretest measurement on the ability of nurses to identify the severity of trauma at the Peterongan Public Health Center showed that the majority (68%) were in the Less category.

The results of the Posttest measurement Most of the respondents in the Cognitive Domain are in the Good category (88%). Most of the nurses (76%) had a good affective domain. Psychomotor domain of nurses showed the results Most (80%) were in the Good category. The results of measuring the ability of nurses to identify the severity of trauma on the Posttest showed that most (84%) were in the Good category.

The data analysis test used the Wilcoxon Signed Rank Test to look for differences between the data before the intervention and after the intervention. The data were analyzed based on the cognitive, affective and psychomotor aspects as accumulated to determine the total ability.

Table .2 Rank test analysis

		N	Mean Rank	Sum of Ranks
Post_Abilities – Pre_Abilities	**Negative Ranks**	0	,00	,00
	Positive Ranks	13	7,00	91,00
	Ties	12		
	Total	25		

2021 data analysis

The results of the rank test test show that the ability of nurses in the negative ranks shows a value of 0 indicating that there is no decrease in the ability of nurses after getting the intervention. Positive rank showed N=13 indicating that 13 nurses experienced an increase in ability from pretest to posttest. The average increase in the ability is 7.00. While the number of positive ratings is 91.00.

Table. 8 Wilcoxon signed rank test analysis test

Wilcoxon Signed Rank statistical Test

	Cognitive Ability	Affective Ability	Psychomotor Ability	Nurse Abilities
Z	-3,873b	-2,333b	-4,123b	-3,606b
Asymp. Sig. (2-tailed)	0,000	0,020	0,000	0,000

2021 data analysis

Based on the results of the data analysis, it was found that there were significant differences in all aspects of the ability of nurses. The nurse's cognitive ability shows an analytical test with Asymp results. Sig. (2-tailed) of 0.000 (<0.05). This shows that there is a significant difference between before and after the learning and training intervention with the simulation method. Affective ability of nurses showed an analysis test with Asymp results. Sig. (2-tailed) of 0.020 (<0.05) this also shows that there is a significant difference. Psychomotor ability and total ability of nurses showed the results of Asymp. Sig. (2-tailed) of 0.000 (<0.05) This indicates that there is a significant difference between before and after the intervention was given. The analysis test showed that there was a significant increase in the ability of nurses after the learning and training intervention with the simulation method was carried out.

Discussion:

This study was conducted to see whether the provision of learning and training interventions with the simulation method provided an increase in the ability of nurses to identify the degree of trauma severity at the Peterongan Health Center. The ability of nurses to identify the severity of trauma has been carried out early measurements.

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Measurements are made based on instruments that can be identified based on the cognitive, affective and psychomotor domains. The ability of nurses is important to note considering that the ability of nurses will greatly impact patient safety (Lombogia et al., 2016). Nurses need to be encouraged to have the ability to identify the severity of trauma. Measurement of trauma severity or prognosis model is a very important step to support appropriate clinical decision making, plan effective and efficient treatment strategies, save time and money and can prevent disability and death (Huber et al., 2014).

Cognitive

Cognitive is a process associated with gaining knowledge and understanding of a person. Based on the results of the study above, the cognitive abilities of nurses at the Peterongan Public Health Center had a significant difference between before and after the intervention. This study is in line with research conducted by Aljohani in 2019 which showed that after the simulation training knowledge about ACLS was significantly higher in students in the posttest than in the pre-test (Aljohani et al., 2019). Cognitive abilities of nurses showed an increase after the intervention in the form of learning and training with the simulation method. Cognitive ability can be increased by learning by utilizing the five senses through seeing, hearing in this study using learning and simulation methods to improve cognitive abilities.

Affective

Affective ability is a domain related to attitudes and values. The results of the above study indicate that there is a significant difference between the affective abilities of nurses before and after the intervention. The results of the Wilcoxon sign rank test analysis have the lowest value of 0,020 compared to other domains. This shows that nurses in affective abilities tend to be more difficult to change than cognitive or psychomotor. A careful and thorough attitude in assessing patients is needed for patient safety (Lombogia et al., 2016). Nurse confidence is a key factor for clinical decision making and clinical competence (Zhu & Wu, 2016).

Psychomotor

Psychomotor ability of nurses is the ability to apply an action or behavior Skills that will develop if often practiced (Notoatmodjo, 2011). The analysis test showed that in the psychomotor domain, there was a significant difference between pretest and posttest data on nurses at the Peterongan health center. A person's skills can be improved with frequent practice. Training using the simulation method can improve the psychometric abilities of nurses. This is in line with research conducted by Tawalbeh in 2020 which stated that in the intervention group by providing simulations, it could improve the skills and confidence of nurses (Tawalbeh, 2020).

Ability of nurses

The ability of nurses in identifying the severity of trauma at the Peterongan Public Health Center, Jombang Regency. After accumulating from 3 domains, namely cognitive, affective and psychomotor, the total ability of nurses was obtained in identifying the severity of trauma at the Peterongan Health Center, Jombang Regency. There is an increase in the ability of nurses after learning and training with the simulation method. According to research conducted by Prasetiani in 2013 that the ability of nurses can be related to factors of length of work, education level and age of nurses (Prasetiani & Ismono, 2013).

Improving the ability of nurses needs to continue to be done to support the optimization of nursing services. Studies conducted to improve the ability of nurses have been carried out by researchers. According to Knipe in 2020, in his research, he said that to improve the ability of nurses, it was done by using the simulation method. Knowledge improvement is also done through learning and training. This has been done on

nursing students to improve nursing skills (Knipe et al., 2020).

The use of simulation methods in nursing learning was also carried out by previous research using software as a simulator. The use of this method is proven to be effective and reduces anxiety in the learning process. Simulation is effective for learning and improving psychomotor skills accurately for nursing education purposes (Işık & Kaya, 2014).

Conclusion:

Assessment of the ability of nurses seen from 3 domains, namely cognitive, affective and psychomotor. Cognitive ability is how nurses know, affective is how nurses behave and believe in themselves. While psychomotor is the skill of a nurse in implementing an action. The ability of nurses to identify the severity of trauma is done by using trauma scores in the form of GCS, GAP, RTS and AIS/ISS. The Trauma Score is one of the quantifications for determining the severity of trauma patients (Salim, 2015).

The ability of nurses to identify the severity of trauma can provide positive benefits for health services. This is indicated by the nurse's critical thinking ability about the condition experienced by the patient and the ability to determine the severity and predict the mortality rate. This study has shown the results that the provision of learning interventions with the Discovery learning method and simulation method training can improve the nurse's ability to identify the severity of trauma.

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