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Level of Knowledge of Basic Life Support (BLS) in Final Students of Diploma 3 Nursing Study Program in Indonesia

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ABSTRACT

Emergency cases requiring basic life support (BLS) are often found in the Emergency Department. Knowledge of BLS is very important for students, especially in the final year who are doing internships in hospitals. The purpose of this study was to describe the level of knowledge of BLS in final year students of the Diploma 3 Nursing Study Program in Indonesia. This study used a descriptive research design with a quantitative approach. The sample of this study was 203 students taken using the cluster random sampling technique. The research variable was the level of knowledge of BLS. The research instrument was a knowledge questionnaire. Data analysis used univariate analysis in the form of frequency distribution and percentage. The results showed that most students in Indonesia had a good level of knowledge of BLS of 73.8%. Regular simulations and exercises are expected to increase the confidence of students who already have good knowledge in carrying out BLS.

Keywords: Student of Nursing, Knowledge, Basic Life Support, BLS

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INTRODUCTION

Emergency cases requiring basic life support (BLS) are common both in and out of hospitals. In 2015, approximately 350,000 adults in the United States (US) experienced nontraumatic out-of-hospital cardiac arrest (OHCA) and were treated by emergency medical services personnel. Despite recent improvements, fewer than 40% of adults received layperson-initiated CPR, and fewer than 12% had an automated external defibrillator applied before the arrival of emergency medical services. After significant improvements, survival after OHCA has plateaued since 2012. Additionally, approximately 1.2% of adults hospitalized in the US suffer intrahospital cardiac arrest (IHCA). Additionally, more than 20,000 infants and children experience cardiac arrest each year in the United States. Although survival and favorable neurologic outcomes have improved after pediatric IHCA, survival rates after pediatric OHCA remain poor, especially in infants (AHA, 2020). Meanwhile, in Indonesia, there is no clear data regarding the prevalence of cardiac arrest

in everyday life or outside hospitals, but it is estimated that around 10,000 people per year, which means 30 people per day experience cardiac arrest (Mulyadi & Katuuk, 2017).

Factors causing failure in emergency handling such as cardiac arrest are minimal knowledge, experience and motivation. Low knowledge about emergencies causes a person to not know how to handle victims (Ardenita, 2019). When cardiac arrest and respiratory arrest occur, the victim must immediately undergo BLS. Basic life support is a first aid action that must be carried out on victims who experience respiratory arrest and cardiac arrest by providing respiratory assistance and chest compressions. Cessation of circulation will cause the body's organs to experience a lack of oxygen which can cause cell death and lead to death. The organ that is damaged the fastest is the brain, because the brain can only survive 10 minutes if oxygen and glucose are not supplied within 10 minutes. If brain cells die, the victim will also die (AHA, 2020). Good knowledge regarding high quality cardiopulmonary resuscitation can be improved through BLS training, Basic Trauma Cardiac Life Support (BTCLS) training, Advanced Cardiac Life Support (ACLS) training, or audiovisual hands only Cardiopulmonary Resuscitation (CPR) (Apriyani et al., 2023). A high level of knowledge can help the success of resuscitation which can effectively prevent disability or death (Millizia et al., 2020). Resuscitation skills must be possessed by everyone, both health workers and the general public, so that they are useful for reducing the negative impacts of cardiac arrest patients (Millizia et al., 2020).

Knowledge of BLS is also important for final year students of the Diploma 3 Nursing Study Program who are undergoing internships in hospitals. Final year students of the Diploma 3 Nursing Study Program are students who have completed almost all competencies. However, the results of field observations showed that 5 out of 6 students who worked one shift in the ER were not ready to help with cardiopulmonary resuscitation when asked by the nurse. Students tended to choose to stay away and avoid it because they were afraid of making a mistake, even though the students had received material about BLS during lectures. Another study stated that all students could only correctly state the meaning of BLS, but most of them did not understand the procedures that should be taken, such as the first actions to be taken when finding a victim, how fast or how often chest compressions should be, and where the correct massage fulcrum is (Nirmalasari & Winarti, 2020). The results of another study at a PTS in East Java stated that students felt less confident in carrying out BLS because they only got the material through lectures without further training (Wulansari & Wirasakti, 2022). Based on this phenomenon, this study aims to describe the level of BLS knowledge in final year students of the Diploma 3 Nursing study program in Indonesia.

METHOD

This study used a descriptive research design with a quantitative approach. Descriptive research is research that attempts to describe and interpret something (Notoatmojo, 2012). This research approach used a quantitative approach because it uses numbers starting from data collection, interpretation of the data, and the appearance of the results (Sugiyono, 2021). This research was conducted from January to June 2023. The

population in this study were final year of Diploma 3 Nursing students at Airlangga University, Riau Ministry of Health Polytechnic, East Kalimantan Ministry of Health Polytechnic, Makassar Ministry of Health Polytechnic, and Jayapura Ministry of Health Polytechnic, totaling 412 students. The sample used in this study was some final year students of the D3 Nursing study program who met the following inclusion criteria: 1) active status, 2) willing to be research respondents and willing to fill out questionnaires. The exclusion criteria in this study were: uncooperative during the study and did not fill out the research instrument completely.

The sampling technique in this study used probability sampling, namely cluster random sampling. Determination of the sample size using the Slovin formula obtained a total of 203 students. The research variable is knowledge of basic life support in final year students of the Diploma 3 Nursing Study Program in Indonesia.

The instrument used in this study was a questionnaire sheet. This instrument uses the Guttman scale, if correct it gets a score of 1 and if wrong it gets a score of 0. The questionnaire was adapted from the AHA 2020 BLS Guideline, which contains the definition, purpose, indications, algorithms, BLS steps, indications, BLS termination, chain of survival, and recovery process. Validity and reliability tests were carried out on 35 respondents who had the same characteristics as the research sample and showed that 20 questions on the questionnaire were declared valid and reliable with a Cronbach alpha of 0.782.

The data analysis used in this study used univariate analysis which aims to explain or describe the characteristics of each research variable. From the results of the univariate analysis, data were obtained in the form of frequency distribution, central tendency, size of distribution or presentation of each variable in the study. The study has been declared ethically feasible by the Research Ethics Commission of the University of Muhammadiyah Gresik with certificate No.222/KET/II.3.UMG/KEP/A/2023.

FINDING AND DISCUSSION

RESEARCH RESULT

Table 1: General characteristic of respondents

NO	General Characteristic	Frequency	Precentage (%)
1	Gender		
	Men	34	16.7
	Women	169	83.3
2	Age		
	20 yo	26	12.8
	21 yo	155	76.4
	22 yo	13	6.4
	23 yo	9	4.4
3	Institution		
	Airlangga University	23	11.3
	Riau Ministry of Health Polytechnic	38	18.7
	East Kalimantan Ministry of Health Polytechnic	25	12.3

	Makassar Ministry of Health Polytechnic	85	41.9
	Jayapura Ministry of Health Polytechnic	32	15.8
4	Prior participation in BTCLS training		
	Yes	156	76.8
	No	47	23.2
5	History of internship at Emergency Department or Intensive Care Unit		
	Yes	192	94.6
	No	11	5.4
6	History of BLS material in lecture		
	Yes	153	75.4
	No	50	24.6

Based on table 1, it shows that most of the respondents were female (83.3%), aged 21 years (76.4%), came from the Makassar Ministry of Health Polytechnic (41.9%), participated in BTCLS training (76.8%), received BLS material in lectures (75.4%), and had internships in the ED/ICU (94.6%).

Table 2: Distribution of students' knowledge level about basic life support (BLS)

NO	Level of Knowledge	Frequency	Precentage (%)
1	Good	150	73.8
2	Sufficient	50	24.6
3	Lacking	3	1.6
	Total	203	100

Table 2 shows that the description of the level of knowledge of basic life support (BLS) in final year students of the D3 Nursing study program is mostly categorized as good, as many as 150 people (73.8%), and a small number of respondents are categorized as lacking, as many as 3 people (1.6%).

DISCUSSION

The results of this study show that most students have a good level of knowledge. This is in line with research conducted by Prasetyo (2018) which shows that students in medical and nursing study programs have a good level of knowledge of basic life support (BLS). This could be because the medical and nursing education study programs are study programs that study how to maintain human health and restore humans to a healthy state by providing treatment for diseases and injuries. However, this study is in contrast to research conducted by Alamsyah (2023) regarding the description of students' knowledge about BLS, it was found that most respondents had a low level of knowledge because students had not been exposed to good information about how to handle BLS.

Based on this study, students' knowledge of BLS is good because most students have attended BTCLS training, received BLS material in lectures, and have had internships in the ED/ICU so that they have experience working with patients who require BLS. This is supported by the results of research by Resti et al. (2023) which states that the length of service can describe their experience in mastering their field of work. In general, officers with extensive work experience do not require guidance compared to officers with little experience. The longer a person works in an organization, the more experienced the person will be so that their work skills will improve (Ranupandojo & Husnan, 2005). Based on the results of this study, most students answered correctly on the BLS steps aspect. In a previous study conducted by Rashid et al. (2024) showed that all respondents answered correctly questions about the definition of BLS, chest compression sites, definition of recoil and depth of chest compression.

In addition, a small number of students answered incorrectly on the BLS algorithm aspect. This is in line with research conducted by Alamsyah (2023) which showed that most students answered incorrectly on questions about the BLS algorithm. The questions from the BLS algorithm consist of the components of the compression and ventilation ratio, the depth of cardiac massage, ensuring the pulse, the frequency of cardiac massage, and who can perform cardiac massage. This happened because students did not really understand the BLS algorithm material in AHA 2020. Based on the results of interviews with several respondents, it stated that when carrying out internship in the Emergency Department (ED) or Intensive Care Unit (ICU) when they found a patient with cardiac arrest, the student did not participate in the treatment from start to finish due to limited time on duty. In addition, during internship, several students never encountered cardiac arrest cases so that the application of BLS to patients had never been done directly.

CONCLUSION

Based on the results of the analysis and discussion of the research results, it can be concluded that most students in Indonesia have a good level of knowledge about basic life support. Students are expected to continue practicing BLS skills by conducting simulations and regular exercises to increase their confidence in providing first aid to cardiac arrest patients in pre- and intra-hospital settings.

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