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ASSESSMENT OF NURSES' KNOWLEDGE OF FIRST AID[4]

Abstract:
Introduction*. In the event of sudden cardiac arrest, professionalism in the rescue effort is essential. Every factor of the undertaken actions is important to save human life. Medical personnel should demonstrate special ability to perform basic and advanced life support. Human life depends largely on this group. They should constantly improve their knowledge and skills to improve the quality of resuscitation activities.* ***Aim of the study.*** *To assess the state of knowledge of basic and advanced life support. among medical personnel working in hospital departments with different specificities.* ***Material and methods.*** *The study was conducted in the Warmian-Masurian Voivodeship in 3 hospitals in surgical and conservative departments as well as anesthesiology and intensive care unit. The participants of the study were 100 nursing staff. The survey questionnaire consisted of 25 questions.* ***Results.*** *Based on the analyzed studies, it can be concluded that the level of knowledge in basic and advanced life support among nursing staff is average. Higher level of knowledge was distinguished by persons who completed a specialist course: "Cardiopulmonary Resuscitation" and specialization in nursing.*

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Introduction

The paper presents an assessment of the nurses' knowledge of first aid and emergency medical procedures. It is an interesting issue mainly because it is the respondents, by reason of their profession, often find themselves in situations in which someone's health and life may be endangered. Their knowledge may indirectly contribute to the success of rescue operations on the street, but also in their workplaces.

Basic life support in adults is aimed at restoring cardiovascular function.

The subject of resuscitation actions is the injured person, whose life is endangered, and the dying process has started in one of the systems affecting his life, starting from the respiratory system, cardiovascular system or the central nervous system [1]. The success of an emergency response depends on many factors, the key being: the time from cardiac arrest to successful resuscitation, knowledge, skills and organization of actions of a rescuer, as well as the potential viability of the injured person [1, 2, 3].

Material and methods

The study was carried out in 3 hospitals in the Warmińsko-Mazurskie Voivodship in surgical, conservative, anesthesiology and intensive care departments. The study participants included 100 nursing staff. The study was conducted from December 2019 to April 2020.

A diagnostic survey method was used in the study. The research tool was the author's survey questionnaire.

The survey questionnaire consisted of 25 questions, 9 of which were demographic, and the remaining 16 related to knowledge of basic and advanced life support.

All statistical calculations were performed using IBM SPSS 23 statistical package and Excel 2016 spreadsheet.

Qualitative variables were presented by counts and percentages, and quantitative variable was characterized by arithmetic mean and standard deviation. The significance of differences between more than two groups was tested using the Kruskal-Wallis test (Bonferroni post hoc tests were used when significant differences were obtained), and between two groups using the Mann-Whitney U test and Student's t test. In all calculations, $p \leq 0.05$ was used as the level of significance.

The aim of the study is to assess the knowledge of basic and advanced life support (BLS, ALS) of medical staff working in hospital departments with different specificities.

Results

A total of 100 nursing staff participated in the study. This included 66 women and 34 men. Most respondents were aged 20-25 years and the least were aged over 50 years.

The largest number of respondents had the short work experience. The largest number of people who responded were those with a bachelor's degree. The majority of those completing the questionnaire work in surgical departments.

There are few respondents with specialization in nursing. Among the nurses with a specialization, the largest number graduated from conservative nursing.

Table 1. Statistical summary

Age of the respondents	**N**	**%**
20-25	35	35,0
26-30	22	22,0
31-40	18	18,0
41-50	18	18,0
over 50 years old	7	7,0
Seniority		
0-4	53	
5-10	18	
11-20	12	
over 20 years	17	
Education		
medical high school	4	
vocational study	3	
Bachelor's degree	63	
Master's degree	30	

Source: own study.

Table 2. Statistical summary

Specialization	

Anesthetic and intensive care nursing	7
Surgical nursing	9
Emergency nursing	2
Internal medicine nursing	11
no specialization	71

Source: own study.

Table 3. Statistical summary

Departments	N
Surgical department	45
Internal medicine department	36
Department of Anesthesiology and Intensive Care	19

Source: own study.

Analysis of the results

Is the level of knowledge of medical personnel about the principles of BLS and ALS management sufficient?

To determine the level of knowledge, the number of points from the questions determining the level of knowledge in each question was summed up, and then descriptive statistics were calculated for the new variable thus created. The data is presented in the table below.

Table 4. Statistical summary

Descriptive statistics	**N**	**Min**	**Max**	**M**	**SD**	**K-S**	**P**
Level of knowledge	100	5	17	**12,93**	2,78	1,20	0,112

Source: own study.

The scores that could be obtained in the questionnaire measuring the level of knowledge ranged from 0 to 17. The lowest result obtained by the respondents was Min = 5 and the highest was Max = 17. The mean result was M = 12.93 with the standard deviation SD = 2.78. The mean result obtained indicates the average level of knowledge of the respondents. The distribution of the results is consistent with the normal distribution, which is confirmed by the Kolomogorov-Smirnov normality test (K-S (100) ¬ = 1.20; p> 0.05).

Does the gender of medical personnel influence the level of knowledge about the principles of BLS and ALS management?

The parametric Student's t-test was used. The analysis showed a relationship between the variables t (98) = 3.19; p <0.05. Men had a significantly higher knowledge of the knowledge of BLS and ALS principles than women.

Table 5. Statistical summary

Knowledge level vs gender	N	M	SD	t	Df	P
Woman	66	12,31	2,38	3,19	98	**0,002**
Man	34	14,11	3,15			

Source: own study.

Does the age of medical personnel affect the level of knowledge about the principles of BLS and ALS management?

The non-parametric Kruskal-Wallis test was used. The analysis did not show correlations between the variables. The age of respondents did not differ in the level of their knowledge H (4) = 7.36; p> 0.05.

Table 6. Statistical summary

Knowledge level vs age	N	M	SD	H	Df	P
20-25	35	12,25	2,81			
26-30	22	14,31	1,75			
31-40	18	12,88	2,92	7,36	4	0,118
41-50	18	12,77	3,15			
over 50 years old	7	12,42	3,15			

Source: own study.

Does the seniority of medical personnel affect the level of knowledge regarding the knowledge of the principles of BLS and ALS?

The non-parametric Kruskal-Wallis test was used. The analysis showed a relationship between the variables. The further analysis by means of multiple comparisons showed that, statistically significantly, the respondents with 5 to 10 years of work experience have a higher level of knowledge about the knowledge of BLS and ALS principles than the respondents working for over 20 years H (3) = 10.37; p <0.05. There were no significant differences p> 0.05 between the other groups.

Table 7. Statistical summary

Knowledge level vs work experience	N	M	SD	H	Df	P
0-4	53	12,60	2,49	10,37	3	**0,016**
5-10	18	14,27	2,53			
11-20	12	13,83	3,43			
over 20 years old	17	11,88	2,95			

Source: own study.

Does the education of medical personnel affect the level of knowledge about the principles of BLS and ALS management?

The non-parametric Kruskal-Wallis test was used. The analysis showed no relationship between the variables. The education of the surveyed respondents does not differentiate their level of knowledge H (3) = 4.40; p> 0.05.

Table 8. Statistical summary

Knowledge level vs education	N	M	SD	H	Df	P
Medical high school	4	12,25	2,75	4,40	3	0,221
Vocational study	3	12,66	4,93			
First-cycle studies	63	12,55	2,80			
Second-degree studies	30	13,83	2,43			

Source: own study.

Does the workplace of medical personnel affect the level of knowledge about the principles of BLS and ALS management?

The non-parametric Kruskal-Wallis test was used. The analysis showed a relationship between the variables. Further analysis by means of multiple comparisons showed that, statistically significantly, the highest level of knowledge about the knowledge of BLS and ALS principles was experienced by the respondents working in the Department of Anesthesiology and Intensive Therapy than those working in the surgical ward and internal medicine ward H (2) = 7.97; p <0.05. There were no significant differences p> 0.05 between the other groups.

Table 9. Statistical summary

Knowledge level vs workplace	N	M	SD	H	Df	P
Surgical department	45	12,53	2,31			
Internal medicine department	36	12,41	3,18	7,97	2	**0,019**
Depart. of anesth. and int. care	19	14,36	2,67			

Source: own study.

Does having the title of specialist in the field of nursing affect the level of knowledge about the principles of BLS and ALS management?

The non-parametric Mann Whitney U test was used. The analysis showed a relationship between the variables $Z = 2.43$; $p < 0.05$. A statistically significant higher level of knowledge was presented by people who had the title of specialist in the field of nursing.

Table 10. Statistical summary

The level of knowledge vs having the title of a specialist	N	M	SD	Z	P
Yes	29	14,03	2,36	2,43	**0,015**
Not	71	12,47	2,83		

Source: own study.

Does having a specialist course: "Cardiopulmonary resuscitation" affect the level of knowledge about the principles of BLS and ALS management?

Student's parametric t-test was used. The analysis showed a relationship between the variables $t(98) = 2.58$; $p < 0.05$. Significantly higher knowledge about the knowledge of BLS and ALS principles was found in the respondents who had completed the specialist course.

Table 11. Statistical summary

Knowledge level vs having a specialist course	N	M	SD	t	Df	P
Yes	55	13,56	2,82	2,58	98	**0,001**
Not	45	12,15	2,55			

Source: own study.

Discussion

Knowledge of basic and advanced life support should be a priority among healthcare professionals. These activities are essential procedures that have a decisive impact on human life during sudden cardiac arrest. Nursing staff must pay particular attention to updating knowledge of BLS and ALS in their work. A nurse is expected to do more than just call an ambulance. She should assess and prioritize and provide first aid in a competent and informed manner. The main aim of the procedure will be to protect life, then reduce suffering and prevent further injuries.

The study analyzes the level of knowledge of basic and advanced life support among nursing staff working in the departments of surgery, internal medicine, anesthesiology and intensive care. A total of 100 nurses participated in the study. The respondents included 66 women (66%) and 34 men (34%). Most people participating in the diagnostic survey were in the age range from 20 to 25 years. The smallest number of respondents was in the age group over 50.

The study found that the level of knowledge of the nursing staff in the field of basic and advanced life support was at an average level. The most difficult question for the respondents was: Whether it was possible to charge the paddles during chest compressions? Men presented a higher level of knowledge on resuscitation procedures than women. Based on the statistical analysis, the age of respondents did not affect the level of knowledge about BLS and ALS procedures.

The highest level of knowledge is represented by respondents working in hospital departments with 5 to 10 years of work experience. Low levels of first aid knowledge were observed among persons with seniority of more than 20 years. This may be because young people are more likely to take advantage of various forms of postgraduate education to improve their professional competence. Considering the place of work of the respondents, persons working in the department of anesthesiology and intensive care were distinguished by the highest level of knowledge in basic and advanced resuscitation procedures. The respondents who completed the specialist course in cardiopulmonary resuscitation demonstrated higher knowledge of the BLS and ALS principles. Age and higher education did not differentiate the level of knowledge in the field of basic and advanced life support.

Improving competences, including obtaining a specialist title in nursing, significantly improves the quality of knowledge of basic and advanced resuscitation procedures. This group made the fewest mistakes when completing the questionnaire. Similar study was conducted in 2019 by the Medical University of Warsaw on: "The level of knowledge of nursing staff about basic life support ". The research method used in the study was a questionnaire consisting of 19 questions. It was conducted among nurses from

various clinical departments. The study group consisted of 109 people [4]. Most of the respondents were over 40 (51.5%). The smallest group consisted of nursing staff aged 36-40 years (6.9%). The respondents were diverse in terms of education: 19 had graduated from medical high school, 11 had completed medical school, 37 had a bachelor's degree in nursing, 34 had a master's degree. Among the respondents, 13 had completed or were in the process of specialization [4]. The results of the study show that the respondents had sufficient about management algorithms, but insufficient knowledge of the use of external defibrillators.

Our study shows that the knowledge of respondents about cardiopulmonary resuscitation is at an average level. Higher levels of knowledge of the BLS and ALS principles were found among respondents who completed the specialist course in cardiopulmonary resuscitation. Age and higher education did not differentiate the level of knowledge of basic and advanced life support.

Conclusions

1. Nurses' knowledge of resuscitation activities is average.
2. Men showed a higher level of knowledge about performing life support.
3. The age of the surveyed medical personnel does not differentiate their knowledge of basic and advanced life support.
4. The seniority influences the level of knowledge of basic and advanced life support among the respondents. The highest level of knowledge was demonstrated by people with work experience between 5 to 10 years.
5. Education did not differentiate the level BLS and ALS knowledge among the surveyed nursing staff.
6. The highest level of knowledge was demonstrated by nurses working in the anesthesiology and intensive care unit.
7. Respondents with a specialist degree in nursing had a much higher level of knowledge in the management of BLS and ALS than those who did not have this title.
8. Among the respondents, the knowledge of BLS and ALS principles was significantly higher in those who completed the specialist course: Cardiopulmonary resuscitation.

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