

Comparison of the level of knowledge in the field of first aid amongst residents of urban and rural areas.



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ABSTRACT

INTRODUCTION: Knowledge of the principles of providing first aid is essential in the event of a sudden threat to both health and life. Proper implementation of resuscitation can improve survival rates by up to 50-70%. The aim of the study was to assess the level of first aid knowledge among the inhabitants of urban agglomerations and rural areas.

MATERIAL AND METHODS: The study was conducted in the years 2018-2019 in Poland. The research tool included a test questionnaire covering 10 thematic categories: cardiopulmonary resuscitation (CPR), automated external defibrillation (AED), choking, convulsions, external bleeding, diabetes, shock, thermal burns, position of the victim, chest pain. The statistical results were analyzed with the use of Pearson's chi-squared test and percentage calculations. The results at $p < 0.05$ were deemed significant.

RESULTS: The study was conducted on a group of 379 people, out of whom women accounted for 58.6% ($n=222$) and men - 41.4% ($n=157$). In terms of residence, 157 inhabitants came from rural areas while 222 participants came from the city. Both the inhabitants of rural areas ($n=140$; 89.17%) and urban agglomerations ($n=195$; 87.84%) considered their preparation to be either very good or satisfactory. The average result of the knowledge test for all respondents amounted to 76.59% of correct answers. The final result was not found to be dependent on the place of residence ($p=0.736$). The lowest level of knowledge was found in questions on the treatment of shock (54.78% vs. 52.25%) and burns (59.87% vs. 59.46%).

CONCLUSIONS: There was no statistically significant difference in the level of knowledge between the inhabitants of cities and villages. Despite first aid training and high self-esteem, the surveyed group requires increase in the level of knowledge through new educational programs. Particular attention should be paid to improving the preparation in the field of cardiopulmonary resuscitation amongst inhabitants of rural areas.

KEY WORDS: first aid, resuscitation, knowledge, education, test, cities, villages.

INTRODUCTION

First-aid includes measures aimed at saving human life and health in the event of injury or sudden illness [1]. There is no doubt that proceeding immediately with cardiopulmonary resuscitation (CPR) increases the chance of survival by 50-70%. An effective, synchronized response of first-aiders increases the survival of people with cardiac arrest in public places [2]. The time needed to take rescue actions by witnesses on the scene depends on their knowledge, skills and their ability to cope with stress in crisis situations. Many of these characteristics depend on the psyche and character of the witnesses of the incident, yet the skills acquired through first aid training are indisputable [3]. It is worth noting the need for widespread training in this field and the systematic consolidation of acquired knowledge and skills through periodic training, thanks to which witnesses or participants in critical events can proceed with first aid before the arrival of the rescue services. Rights and obligations concerning first aid are regulated by the applicable legal acts in force in a given country, but are always based on international guidelines (e.g. European Resuscitation Council, American Heart Association).

According to studies, witnesses of events requiring first aid are the most effective if they regularly attend BLS-Basic Life Support courses at 12-24 month intervals. Regular repetition and improvement seem extremely important as the skills acquired during trainings disappear within 3-12 months. In case of lack of access to courses run by qualified instructors, there is a possibility of self-education through literature studies and online courses [4]. This gives an opportunity to acquire knowledge among the inhabitants of both urban agglomerations and small towns and villages. Since out-of-hospital cardiac arrest (OHCA) occurs most often at home, the best chance of survival is provided by proper preparation of potential witnesses of the event, i.e. the patient's family. The aim of the study is to compare the level of knowledge on the principles of first aid amongst the inhabitants of both urban and rural areas.

MATERIAL AND METHODS

The survey was conducted in 2018 and 2019 among inhabitants of cities and rural areas across Poland. The research tool included an authorship test on the knowledge of first aid. The selection of respondents was random and participation in the survey was voluntary. The questionnaire was addressed to people who met the criteria for inclusion in the survey and was made available through online channels. The

exclusion criterion was medical education. The test questions covered 10 thematic categories: cardiopulmonary resuscitation (CPR), automated external defibrillation (AED), choking, seizures, external bleeding, diabetes, shock, thermal burns, position of the victim, chest pain. Each issue included four answer options, of which only one was correct. The analysis of statistical results was based on Pearson's chi-squared test and percentage calculations of the number of respondents. The results at $p < 0.05$ were deemed significant.

RESULTS

Test group

The study involved 379 people, 58.6% ($n = 222$) of whom were women and 41.4% ($n = 157$) were men. In terms of residence, 157 inhabitants came from rural areas while 222 participants came from the city. Among the respondents, 45.6% ($n = 173$) indicated secondary education, 32.7% ($n = 124$) indicated higher education, 11.1% ($n = 42$) had vocational education, and 10.6% ($n = 40$) had primary education. The largest group (68.6%; $n = 260$) were people aged 21-40.

The vast majority of respondents ($n = 322$; 84.96%) declared participation in first aid training in the past (village = 82.80%; city = 86.49%). The value of the Pearson's chi-squared test was 0.629 at $p = 0.428$, which indicated a lack of correlation between the place of residence and participation in first aid courses. This variable was therefore excluded as a possible distorting factor.

The authors asked the respondents to self-assess their knowledge of first aid principles. Both the inhabitants of rural areas ($n = 140$; 89.17%) and urban agglomerations ($n = 195$; 87.84%) considered their preparation to be very good or satisfactory. Only 10.83% ($n = 17$) of rural inhabitants and 12.16% ($n = 27$) of urban inhabitants stated that they lacked sufficient knowledge in the scope of first aid. The Pearson chi-squared test was 0.205 at $p = 0.651$, indicating no dependence of self-assessment on the place of residence.

Knowledge test results

The average result of the first-aid knowledge test for all respondents amounted to 76.59% of correct answers. Amongst the inhabitants of rural areas the level of 75.54% was obtained ($SD \pm 0.14$) while among urban inhabitants - 77.64% ($SD \pm 0.15$). The final result was not dependent on the place of residence ($p=0.736$). The highest score was achieved by both groups in terms of AED (93.63% vs. 96.65%) and

recovery position (96.82% vs. 95.50%). The lowest level of knowledge was found in the question on handling shock (54.78% vs. 52.25%) and burns (59.87% vs. 59.46%). A significant dependence of the level of knowledge on the place of residence was found only in the scope of cardiopulmonary resuscitation ($p = 0.045$), indicating a higher score among urban residents (Figure 1, Table 1).



Figure 1. Types of injuries and diseases in the study group.

Table 1. Types of injuries and diseases in the study group.

Thematic scope	correct answers				p value (Chi square)
	village		city		
	n	%	n	%	
CPR	118	75.16%	192	86.49%	0.045
AED	147	93.63%	219	96.65%	0.306
choking	98	62.42%	135	60.81%	0.770
convulsions	134	85.35%	182	81.98%	0.440
hemorrhage	121	77.07%	182	81.98%	0.479
diabetes	98	62.42%	161	72.52%	0.129
shock	86	54.78%	116	52.25%	0.776
burns	94	59.87%	132	59.46%	1.000
safe position	152	96.82%	212	95.50%	0.700
pain in the chest	138	87.90%	197	88.74%	0.824
AVERAGE	118,6	75.54%	172,8	77.64%	0.736

DISCUSSION

Knowledge and skills in terms of first aid are crucial in both sudden cardiac arrest and other life-threatening conditions [5]. The authors have analyzed the knowledge of ten aspects of first aid. A comparison of the level of knowledge depending on the place of residence (rural vs. urban) was made. The overall result of the knowledge test showed that the preparation of adult respondents is independent of their place of residence ($p=0.736$). The respondents gave correct answers to 76.59% of questions. According to the authors, the result is not high, taking into account the fact that 84.96% of respondents declared they had first aid training and 87.84% of them assessed their preparation at a satisfactory or even very good level. Significant intergroup differences were found only in the scope of cardiopulmonary resuscitation (village=79.16% vs. city=86.49%). In this aspect, the inhabitants of urban agglomerations proved to be much better prepared. The greatest deficiencies were found in the subjects of shock, choking and burns in all groups. Correct diagnosis of cardiac arrest and implementation of resuscitation actions increases the chances of survival, therefore it seems necessary to implement appropriate training programs. The study was limited to the evaluation of theoretical knowledge only, so it is necessary to deepen the research to include practical skills, as it may not be sufficient [6].

In order to achieve optimal results in first aid education, knowledge and skills need to be constantly updated during refresher trainings. Despite numerous educational programs, the level of preparation to provide assistance in life-threatening situations is insufficient. In today's world, however, there are solutions that can be effective and reach a wide audience more easily. These are courses using the e-learning form, which are accessible to the user but require the use of computer multimedia devices. Numerous studies indicate high effectiveness of online trainings, which may be helpful in creating new first aid improvement programs [7].

CONCLUSIONS

There was no statistically significant difference in the level of knowledge between the inhabitants of cities and villages. The greatest deficiencies were found in the management of choking, shock and burns. Despite first aid training and high self-esteem, the surveyed group requires increasing the level of knowledge through new educational programs. Particular attention should be paid to improve the preparation of rural inhabitants in the field of cardiopulmonary resuscitation.

Disclosure statement

The authors did not report any potential conflict of interest.

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