

# Assessment of the level of adults' knowledge about Cardio-Pulmonary Resuscitation (CPR) and the use of an Automated External Defibrillator (AED) in public places

(Ocena poziomu wiedzy osób dorosłych na temat resuscytacji krążeniowo – oddechowej (RKO) i użycia automatycznego defibrylatora zewnętrznego (AED) w miejscach publicznych)

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**Abstract** – Introduction: The number of accidents and diseases, especially cardio-vascular, is increasing along with the development of civilization and a growing pace of life. In Poland, the average number of accident fatalities is three times higher than the European average. The knowledge of first aid is very important for society, which is a strong pillar of first aid to victims in emergency situations that are dangerous to health and life.

The aim of the study: The aim of the study was to assess the knowledge of CPR and first aid in the event of sudden respiratory arrest and cardiac arrest (SCA) and the operation and use of the Automated External Defibrillator (AED).

Material and methods: The study group consisted of 160 people, among whom 80 were from Kraków, including 45 women and 35 men and 80 people were from Kielce, including 45 women and 35 men. All the respondents were adults. The method of diagnostic survey was applied in the study. The research instrument was an anonymous survey questionnaire created on the basis of the Cardio-Pulmonary Resuscitation Guidelines 2005 (CPR).

Results: Residents of Kraków have better knowledge of first aid, however the knowledge and operation of the AED among both residents of Kraków and Kielce is inadequate. Respondents from Kraków more often and more willingly participate in BLS-AED and first aid training than respondents from Kielce.

Conclusions: The level of knowledge of first aid and especially of Cardio-Pulmonary Resuscitation and the application of the AED is unsatisfactory among residents of Kraków and Kielce. There is an urgent need for a complementary system of first aid instruction which would be based on international standards, and which would ensure an appropriate quality of education and develop a proper attitude among people, starting with the earliest stage of school education.

**Key words** - Cardio-Pulmonary Resuscitation, Automated External Defibrillator, basic medical procedure, advanced medical procedure.

**Streszczenie** – Wstęp. Wraz z rozwojem cywilizacji, wzrastającym tempem życia, rośnie liczba wypadków i chorób, zwłaszcza chorób układu krążenia. W Polsce średnia liczba zgonów około wypadkowych jest trzy razy wyższa niż średnia europejska. Wiedza na temat pierwszej pomocy jest bardzo ważna wśród społeczeństwa, które stanowi mocny filar niesienia pierwszej pomocy poszkodowanym w nagłych sytuacjach, które są stanami zagrożenia zdrowia i życia.

Cel pracy. Celem pracy była ocena i porównanie wiedzy mieszkańców Kielc i Krakowa z zakresu pierwszej pomocy oraz obsługi i zastosowania Automatycznego Defibrylatora Zewnętrznego (AED).

Materiał i metody. Grupę badawczą stanowiło 160 osób, z czego 80 osób było z Krakowa, w tym 45 kobiet i 35 mężczyzn i 80 osób z Kielc, w tym 45 kobiet i 35 mężczyzn. Wszyscy respondenci byli pełnoletni. W badaniach posłużono się metodą sondażu diagnostycznego bezpośredniego, losowego wykorzystując do tego celu narzędzie badawcze w postaci anonimowego kwestionariusza ankiety, opracowanego na bazie Wytycznych Resuscytacji Krążeniowo- Oddechowej 2005 (RKO).

Wyniki. Mieszkańcy Krakowa wykazują lepszy poziom wiedzy, aczkolwiek znajomość i obsługa. Respondenci z Krakowa częściej i chętniej uczestniczą w szkoleniach z zakresu BLS-AED i pierwszej pomocy niż respondenci z Kielc.

Wnioski. Poziom wiedzy z zakresu udzielania pierwszej pomocy, a przede wszystkim w zakresie resuscytacji krążeniowo - oddechowej i użycia AED przez społeczeństwo z Krakowa i Kielc jest niezadawalający. Istnieje pilna potrzeba wprowadzenia kom-

plementarnego systemu nauczania zagadnień pierwszej pomocy opartego na międzynarodowych standardach, który zagwarantuje odpowiednią jakość edukacji oraz kształtowanie pozytywnych postaw niesienia pomocy, począwszy od wczesnego etapu edukacji szkolnej.

**Słowa kluczowe** – resuscytacja krążeniowo-oddechowa, automatyczny defibrylator zewnętrzny, podstawowe zabiegi medyczne, zaawansowane zabiegi medyczne.

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#### **Authors' contributions to the article:**

- A. The idea and the planning of the study
- B. Gathering and listing data
- C. The data analysis and interpretation
- D. Writing the article
- E. Critical review of the article
- F. Final approval of the article

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## **I. INTRODUCTION**

The number of accidents and diseases, especially cardiovascular, is increasing along with the development of civilization and a growing pace of life. In Poland, the average number of accident fatalities is three times higher than the European average. According to data provided by the Central Statistical Office of Poland, there were 38,000 various accidents in the year 2010, in which 48,000 people were injured and 3,900 died. It must be noted that sudden incidents putting the life and health of people at risk usually take place at home, in workplaces, schools, in the streets, and in travel – in places which may be reached by qualified medical aid only after a certain amount of time has passed. The average time needed by an ambulance to reach casualties in the city amounts to ca. 8-12 minutes, whereas even 15 minutes are necessary beyond city limits. Every minute of delay in case of resuscitation reduces the chances of success by 7-10%, and changes in the brain after 4 minutes may be irreversible. Numerous studies prove that a prompt

reaction and an immediate rescue operation conducted by the witnesses of an accident increase the chances of surviving several times, and they enhance its quality due to limiting the neurological impact. Unfortunately, bystanders take action in less than 20% of cases. Therefore, education is necessary in this respect as well as social awareness and the willingness of a potential witness of an accident to provide first aid [1-4].

The aim of the study was to assess and compare the knowledge of CPR and first aid and the operation and use of the Automated External Defibrillator (AED) among the residents of Kielce and Kraków.

## **II. MATERIALS AND METHODS**

The study group consisted of 160 people aged 25-62, from whom 80 (45 women and 35 men) lived in Kraków and 80 (45 women and 35 men) lived in Kielce. The study was conducted between 1st July and 15th September 2013. The method of a direct and random diagnostic survey was applied in the study. The survey questionnaire consisted of 31 questions. Questions related to the knowledge of first aid as well as the operation and use of the Automated External Defibrillator (AED).

## **III. RESULTS**

The results of the authors' own study indicate that 80% of male respondents in Kraków answered that they knew how to administer first aid to a victim, whereas 20% did not know. 69% of female respondents believed that they could administer first aid, whereas 31% would not be able to take such action.

In Kielce, 52% of male respondents found that they could administer first aid, whereas 48% could not. 22% of female respondents indicated that they knew how to give first aid, and 78% admitted that they did not.

Respondents from Kraków witnessed sudden incidents more often than those from Kielce.

In Kraków, 22% of women had been in situations which required giving first aid to a victim. In the female respondents' opinion, 78% of them would administer first aid if necessary, while 22% would not. Among men, 52% had been in situations which required giving first aid to an injured person. In the group of male respondents, 74% would administer first aid if necessary, while 26% would not.

In Kielce, 4.5% of female respondents had been in a situation which required providing basic life support to a casualty. Among the women surveyed, 62% would administer first aid if necessary, yet 38 % would avoid taking such action.

8.6% of men had been in a situation requiring life-saving action to be taken in the form of first aid. From all male respondents residing in Kielce, 92% would give first aid if need be, but 8% would refrain from taking such action.

The analysis of results concerning the knowledge of the AED and ability to use it demonstrates that 80% of female respondents and 69% of male respondents from Kraków know how to use the Automated External Defibrillator (AED), whereas in Kielce, 65% of women and 46% of men surveyed know how to use the AED.

Another question posed in the authors' own study was whether respondents had been taught the principles of first aid, including Cardio-Pulmonary Resuscitation and AED use, during driving lessons, .

In Kraków, 64% of women had a first aid course as part of obtaining the driver's licence, yet 36% did not participate in such a course. Among men, 77% had classes related to first aid, but 23% did not.

In turn, 27% of women from Kielce received instruction in first aid and 73% were not made familiar with the principles of first aid. 26% of men from Kielce had such a course, but 74% did not learn to administer first aid as part of driving lessons.

#### IV. DISCUSSION

Numerous studies conducted in various social and professional groups demonstrate that even though the readiness to administer first aid is gradually increasing in Polish society, it is still of a low quality [5].

Having assessed the level of knowledge among the inhabitants of Kraków and Kielce in the scope of first aid and AED use, it is found to be low, yet variable depending on the social group analysed.

The residents of Kraków have evinced a higher level of knowledge in that respect. However, familiarity with the AED is unsatisfactory among both people from Kraków and Kielce. This may be due to a variety of reasons. The insufficient knowledge results from, among others, the low social interest in first aid, unwillingness to participate in training programmes related to BLS-AED as well a missing sense that these issues are important. Perhaps, the more extensive knowledge of basic life support and related issues among respondents from Kraków is influenced by the fact that a considerable part of training programmes in the

Małopolskie province is co-financed or fully financed from EU funds obtained by local authorities and the Marshal Office. This generates a wider availability of first aid courses (participation is free of charge). One must also remember about a programme, which has been implemented in Kraków for many years, named "AED Impuls życia" [AED Life Impulse]. The idea originated in the Municipal Office of Kraków and the Polish Resuscitation Council has been its partner. Statistics demonstrate that in the centre of Kraków alone approximately 100 cases of cardiac arrest take place annually. This definitely requires the residents of Kraków to perfect their first aid skills. At the same time, it must be emphasised that early Cardio-Pulmonary Resuscitation and defibrillation carried out by witnesses may increase the victim's chances of survival before specialised medical aid takes over [6].

The study by Majewski et al. has demonstrated that in the opinion of nearly 90% students, Poles are not ready to administer first aid. A similar result was obtained in the study by Wiśniewski et al., in which the respondents were teachers – ca. 75% of them were not prepared to give first aid [5]. Both studies pointed to the same most frequent reasons for not administering first aid. Firstly, it is a lack of ability to provide basic life support. Secondly, people tend to count on the activity of other witnesses. Thirdly, there is fear that improperly administered first aid may cause even more harm to the victim. The above-mentioned research indicates that almost 70% of students surveyed had been in a situation which required life-saving action to be taken. According to Podlewski [7], half of the students surveyed could indicate the correct procedure of checking for breath. More than 80% of students from Poznań know how to assess breathing properly, and two-thirds of medical students can estimate correctly the respiratory rate of a healthy adult, compared to less than 50% of students from non-medical universities.

Among teachers, in turn, every fifth respondent on average had been in a situation where first aid was necessary. At the same time, nearly 50% of the respondents admitted that they would not be able to administer first aid correctly to a victim [5].

Research by Adamczyk et al. [8] demonstrates that roughly every second person in Poland has first aid skills. Similar results have been noted for other nations [9].

#### V. CONCLUSIONS

1. The level of knowledge of first aid, and especially of Cardio-Pulmonary Resuscitation and AED use

is unsatisfactory among the inhabitants of Kraków and Kielce.

2. There is an urgent need for a complementary system of first aid instruction which would be based on international standards, and which would ensure an appropriate quality of education and develop a proper attitude among people, starting with the earliest stage of school education.

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