

THE STATE OF INHABITANTS' KNOWLEDGE ON THE PUBLIC ACCESS DEFIBRILLATION ON THE EXAMPLE OF POZNAN*

STAN WIEDZY MIESZKAŃCÓW NA TEMAT PROGRAMU POWSZECHNEGO DOSTĘPU DO DEFIBRYLACJI NA PRZYKŁADZIE MIASTA POZNANIA

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ABSTRACT

Introduction. The Automated External Defibrillator (AED) is a device used to restore a normal heart rhythm in case of sudden cardiac arrest (SCA). It is a device that is easy to use and it issues voice commands for performing the subsequent rescue operations. Used in suitable time, it positively influences patient survival and post-hospital convalescence. Implementation of the Public Access Defibrillation (PAD) program plays an important role in spreading the use of the AED. The assumption of the program is placing defibrillation devices in public places with a large number of people and where there is a risk of sudden cardiac arrest.

Aim. The aim of this study is to check the implementation of the PAD program in the city of Poznan, by evaluating the knowledge of the inhabitants on AEDs and their location, and to examine the general opinion of people on the use of AEDs in the case of sudden cardiac arrest.

Material and methods. The study involved 100 randomly selected people near the location of defibrillators. The group of respondents consisted of 50 women and 50 men. The study was conducted by means of the authors' own questionnaire. The questions concerned the knowledge of Poznan residents of the availability of automatic external defibrillators.

Results and Conclusions. Based on the conducted survey, it was found that the inhabitants of Poznan do not have the knowledge of what an AED is and what it is used for, as many as 74% of the respondents answered the question concerning the knowledge and use of defibrillators negatively. Of the respondents, 71% did not know where such devices are located in Poznan. Despite the lack of knowledge (in over 70% of respondents) concerning the AED, 69% of the surveyed people would decide to use a defibrillator in an emergency.

KEYWORDS: Automated External Defibrillator, Public Access Defibrillation.

STRESZCZENIE

Wstęp. Automatyczny Zewnętrzny Defibrylator (AED) to urządzenie służące do przywracania prawidłowej pracy serca w przypadku nagłego zatrzymania krążenia (NZK). Jest urządzenie proste w obsłudze wydające głosowe polecenia, dotyczące wykonywania kolejnych czynności ratunkowych. Zastosowany w odpowiednim czasie, pozytywnie wpływa na przeżycie i rekonwalescencję poszpitalną. Istotną rolę w rozpowszechnianiu użycia AED jest wdrażanie programu Powszechnego Dostępu do Defibrylacji (PAD). Założeniem programu PAD jest umieszczanie urządzeń do defibrylacji w miejscach użyteczności publicznej, w których jednocześnie znajduje się duża liczba osób oraz istnieje ryzyko wystąpienia NZK.

Cel. Celem pracy jest sprawdzenie sposobu realizowania programu PAD na terenie miasta Poznania poprzez zbadanie stanu wiedzy mieszkańców na temat defibrylatorów AED oraz ich umiejscowienia, a także zbadanie powszechnej opinii na temat użycia AED w przypadku nagłego zatrzymania krążenia.

Materiał i metody. Badaniu poddano 100 losowo wybranych osób w pobliżu lokalizacji defibrylatorów. Grupę ankietowanych stanowiło 50 kobiet i 50 mężczyzn. Wykorzystano kwestionariusz ankiety własnej konstrukcji. Pytania dotyczyły wiedzy mieszkańców Poznania na temat dostępności do automatycznego zewnętrznego defibrylatora.

Wyniki i wnioski. Na podstawie przeprowadzonej ankiety stwierdzono, iż mieszkańcy Poznania nie mają wiedzy na temat czym jest i do czego służy AED, ponieważ aż 74% respondentów odpowiedziało negatywnie na pytanie dotyczące wiedzy i użycia defibrylatora. Podobne wyniki można zauważyć w przypadku pytania drugiego, gdyż 71% odpowiadających nie wiedziało, gdzie takie urządzenia znajdują się na terenie Poznania. Pomimo braku wiedzy dotyczącej AED większość przebadanego społeczeństwa zdecydowałoby się na użycie defibrylatora w nagłej sytuacji. Świadczy o tym fakt, że 69% ankietowanych odpowiedziało pozytywnie na to pytanie.

SŁOWA KLUCZOWE: defibrylator, Powszechny Dostęp do Defibrylacji.

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Introduction

The Automated External Defibrillator (AED) is a device used to restore normal heart rhythm. It is used in the case of ventricular fibrillation (VF) or pulseless ventricular tachycardia (VT). In the case of asystole, it is not recommended to perform external defibrillation [1]. Defibrillation is most effective if it is done within 3–5 minutes of sudden cardiac arrest (SCA). For every passing minute the patient's chances of survival decrease by 10–15% [2]. It shows how important the implementation of the PAD program is in order to increase the use of AEDs. Fast delivery and use of the device increases patient's survival after the sudden cardiac arrest, as well as having a positive impact on the quality of their future life. Appropriate marking of AEDs locations plays an important role here.

The Public Access Defibrillation program (PAD) was introduced in Poland in 2000. It assumes that defibrillation by means of an AED can be performed not only by individuals with appropriate training in this area, including police officers, security guards and paramedics but

Aim

The aim of this study is to check the implementation of the PAD program in the city of Poznan, by evaluating the knowledge of inhabitants about AEDs and their location, and to examine the general opinion of people on the use of an AED in the case of sudden cardiac arrest.

Material and methods

A survey consisting of the authors' own questions concerning the knowledge of AEDs, their location, as well as the residents' opinions on their availability was conducted in the city of Poznan. The research (voluntary and anonymous) included 50 women and 50 men (randomly selected) and was carried out near the places where defibrillators were located.

Results

Percentage distribution of the answers provided to the questions is illustrated in **Figures 1(a-c)** and **Figure 2**.

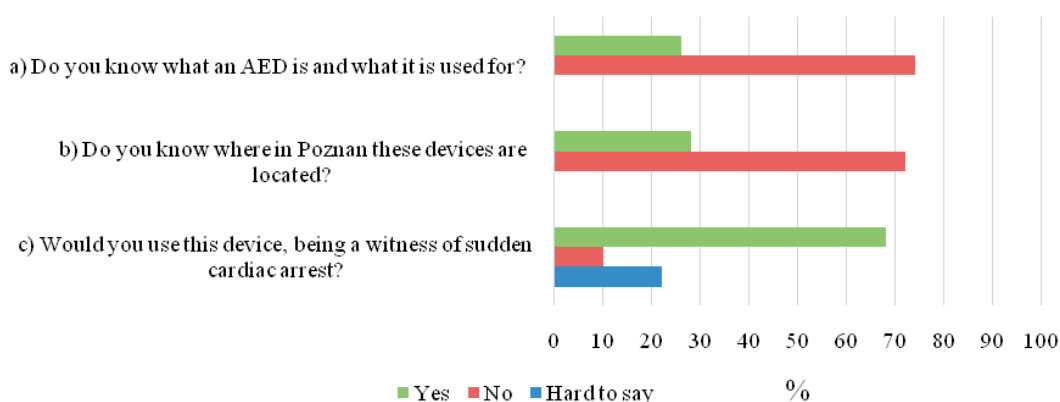


Figure 1 (a-c). The knowledge of the inhabitants of Poznan on the use and location of AEDs
Source: author's own materials.

also by witnesses of an emergency [3]. The assumptions of this program indicate that it should be implemented in places where over the last 2 years a sudden cardiac arrest has taken place, and the time to reach medical assistance at the scene exceeds 5 minutes. An important aspect is the speed of the delivery of an AED to the patient – it should not be no longer than 5 minutes [4].

The emphasis should be put on placing AEDs in areas where there is high concentration of people, e.g. airports, sports facilities, offices, casinos, shopping malls. It is due to the fact that in these places SCA occurs in the presence of witnesses, and trained staff is close enough to provide medical assistance very quickly [5].

As it may be concluded from Figure 1, the first question concerning the knowledge of the AED and its use in practice, was answered positively by only 26% of the respondents, the other 74% did not have the knowledge of the AED (**Figure 1a**). In terms of the question relating to the respondents' knowledge of the device location in their city, only 28% of them possess this information, while for the remaining (72%), the places where Automatic External Defibrillators are available are not known (**Figure 1b**). The percentage of negative responses (for both questions) is a very disturbing fact. In case of the question relating to the attitude of respondents in the situation of the

sudden cardiac arrest, 68% of them expressed the opinion that in such an emergency they would use an AED, while 22% of people were not able to provide a clear answer. The remaining 10% would not perform this activity (**Figure 1c**).

authorization, permission or qualifications, which further emphasizes that the defibrillator is a medical device approved for public use. The above-mentioned Act provides the possibility of the AED to be used by people without qualifications in order to save the life of the victim [7].

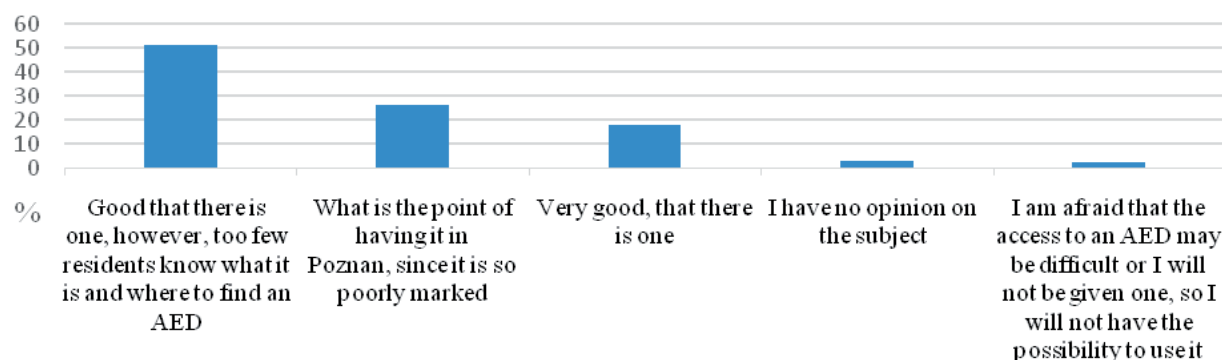


Figure 2. Opinions of the residents of Poznan on the AED
Source: author's own materials.

Discussion

The result of the conducted study may be a statement that the residents of Poznan have little knowledge of the Public Access Defibrillation program, which is being implemented in their city. A disturbing fact is that so many people do not know what the AED is and in what situations it can be used. This shows how important the role of further spreading the PAD campaign among the inhabitants is. The priority should be to improve first aid education from the very early age. Incompetence of the public associated with this may be due to people's unawareness concerning the legal obligation to provide the first aid. It is clear from the content of the Art. 162 of the Penal Code, which states that anyone who does not expose himself or another person to the danger of loss of life or serious harm to health is obliged to provide the first aid. The research carried out in Great Poland in 2008 shows that unfortunately, this article is mostly known to students and to a smaller extent to employees. In some cases, people do not have the awareness that this regulation applies to all citizens, not just the medical staff [6]. Performing the automated external defibrillation is considered among the medical society as one of fundamental links in the chain of survival and an action contained in the first aid, provided by random people at the scene of the accident. In accordance with the State Emergency Medical Services Act (art. 3 paragraph 7), the first aid are actions that are taken in order to save lives by witnesses of a threat by means of authorized medical devices and products. The use of the defibrillator in accordance with the law does not require any

The study clearly shows that it is an ineffective action to purchase defibrillators and put them in public places, while residents are not properly informed about it, and the staff has no training in this area. The lack of substantive knowledge of providing first aid with the AED results in a situation in which the population may consider using the device as too difficult, which leads to creating a psychological barrier. Defibrillators localized in public places are not as advanced and complex as those used in hospitals and emergency medical teams. The AED gives voice or visual commands thanks to which it is possible to perform the proper defibrillation. Some of these devices have additional information on how to do proper chest compressions [8]. The examined part of the inhabitants of Poznan drew attention to inadequate education in this field. As many as 51% of the respondents suggested it by choosing the answer *"It is good that there is one but too few residents know what it is and where the AED can be found"* (**Figure 2**). The challenge of modern medicine, especially cardiology, is to improve the functioning of health care systems and other auxiliary services, such as the police and fire service. It is also important to increase training in the field of cardiopulmonary resuscitation not only among the medical staff, but especially among the general public. The next step is to implement properly prepared educational programs, as well as placing defibrillators in public places [9], both visible and properly labeled.

Based on the analysis of the obtained material, it was found that the residents did not have the knowl-

edge about the location of defibrillators that are available in Poznan. The reason for this ignorance is insufficient marking of AEDs in their locations. This results in the limited efficiency of use of the equipment, which in turn leads to a decreased chance of survival of a sudden cardiac arrest victim. Therefore, an important element of the PAD program is effective marking of defibrillators. Markings should be placed not only at the main entrance to the building where the AED is located, but also directly next to the device. An effective solution would be to mark the whole road from the entrance to the institution, to the exact position of the device. The properly implemented PAD program results in an increase in the number of cardiopulmonary resuscitations (CPR) and allows to take an immediate defibrillation by witnesses of the emergency. An attention should also be paid to an important role played by employees in various institutions, since in many places, the AED is likely to be used only by them. It is due to two causes: in numerous locations where the AED is available, there is authorized staff that is only appointed to use it. Not without significance is also the problem of the lack of inhabitants' knowledge about the appearance of the signs on AEDs [4]. It is also important that a significant percentage of the residents of Poznan noticed the problem with AED marking. It was found that although the AED was located in the city, it was poorly marked and very few people know where it may be found.

Despite the lack of adequate knowledge on what the AED is and where it can be found, a significant part of the respondents indicated a willingness to use this device in an emergency situation. This proves the readiness of society to provide first aid. Before launching the PAD program, only 15% of victims experienced return of spontaneous cardiac circulation, and only 5–7% survived and were discharged from hospital. If witnesses of such a situation start the rescue operation, the chances of patient's survival may double or even triple. That is why, it has become such an important aspect to promote early defibrillation with the use of AEDs [7]. A significant element would be to increase the amount of campaigns offered on the subject of first aid with the use of a defibrillator. It is worth paying attention to the need to organize training on the basic life support. According to the guidelines of the European Resuscitation Council, self-study along with practice is essential, which is an alternative to instructor-led courses. After a period of 3 to 6 months, the participants' knowledge deteriorates, hence it is important to continuously monitor their skills [10]. The most efficient trainings are those where the group does not exceed 12 persons, assuming that 1 instructor supervises 4 participants. During group trainings an emphasis should be placed on prac-

ticing individual skills. A qualified instructor who has the Basic Life Support (BLS) certificate plays an important role here [11].

Of the respondents, 22% were not able to clearly determine whether they would use the AED in an emergency. This may result from the fear of taking responsibility for someone else's life. Among laymen, as far as the first aid is concerned, a very common reason for not taking it, is the fear that the victim's health status may deteriorate. It is important to pay attention to this aspect as early as during the trainings, because as it can be observed, people are unaware of the fact how important it is to take action before the arrival of emergency medical services. The fear of harming the patient may constitute a really serious problem, since it is a desire to improve somebody's health, or save someone's life that should outweigh the fear and motivate people to take such an action. Part of society, which also shows a fear of providing the first aid, mentions the risk of contracting a disease or just a lack of adequate theoretical and practical knowledge in relation to the principles of the first aid. It is a worrying phenomenon in the light of reports on a small share of accidental witnesses in performing resuscitation outside hospital [6]. Studies show that most commonly, cardiac arrest in adults occurs in pre-hospital settings, where the patient's survival depends on the reaction of witnesses. A large part of the population does not undertake or starts basic life support too late, which significantly worsens the prognosis of victims who have experienced the sudden cardiac arrest. The result is that only 25% of the victims have the chance to get alive to hospital where they can receive professional medical care [12].

Among the respondents, 9% of them admitted that if they witnessed a cardiac arrest they would not take rescue actions using the AED. Almost everyone said that they had no knowledge of the use of this device and that they would not be able to use it. Here it is important to refer to increasing the knowledge of Poznan residents of the use of defibrillators. The most important element is to recognize that there has been a sudden cardiac arrest and to stick two adhesive electrodes on the patient's chest. This device analyzes and points (using audio signals) the subsequent steps to perform. Once fully charged, it recommends defibrillation, and then it makes a new analysis. If defibrillation is ineffective, the device recommends starting CPR (cardiopulmonary resuscitation) by a person providing aid [13].

Conclusions

The conducted observations clearly show that it is not enough to invest in the purchase of AEDs, but first and foremost to inform residents about the location of the de-

vice and to educate people on how to use it. It is important to effectively spread the knowledge of the sudden cardiac arrest, especially for risk groups and their relatives, because the use of a defibrillator in the early stage of the sudden cardiac arrest increases the chance of patient survival and his/her successful convalescence. The PAD program should be promoted through all sorts of social campaigns concerning the first aid with the use of the AED. An emphasis should also be put on marking the location of defibrillators in the city of Poznań.

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