

Effects of first aid training in emergency preparedness and response

Skutki szkolenia z pierwszej pomocy w zakresie gotowości na wypadek sytuacji kryzysowych i reagowania na nie

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Abstract

The study deals with the relation between the level of public awareness in maintaining safety, responsibility for others and First Aid skills and accident rate and mortality rates in the event of emergency. The available data show that when immediate assistance is provided within 5 minutes after the accident, the wounded survival rate is 85%, while over 15 min it is 72%, and 20 min from the event it is 60%. What is most important and probably yields the most impact is the reform of education, which provides training in First Aid at all levels of education and has the task of shaping a new, conscious society. For that reason the role of schools is very important, as it influences development and prepares students to meet the various challenges of the modern world, including assistance to victims, the emergency response, and care for their own safety, victims and witnesses.

Streszczenie

W pracy poszukiwano związku pomiędzy poziomem świadomości społeczeństwa w zakresie zachowania bezpieczeństwa i odpowiedzialności za innych oraz umiejętnością udzielania pierwszej pomocy a wypadkowością i śmiertelnością w zdarzeniach nagłych. Z danych wynika, że gdy pierwsza pomoc udzielana jest poszkodowanym w ciągu 5 minut od wypadku, to odsetek przeżycia rannych wynosi 85%, gdy w ciągu 15 minut – 72%, a gdy w ciągu 20 minut – 60%. Oznacza to, że pierwsza pomoc udzielana ofiarom przez świadków zdarzenia od razu po wypadku zwiększa ich szanse na przeżycie nawet o 20%. Najważniejsza i prawdopodobnie najbardziej skuteczna jest reforma oświaty, która przewiduje kształcenie w zakresie pierwszej pomocy na wszystkich poziomach edukacji i ma na celu ukształtowanie nowego, świadomego społeczeństwa. Bardzo istotna jest rola szkoły, która wpływając na rozwój, przygotowuje uczniów do sprostania różnym wyzwaniom współczesnego świata, w tym niesienia pomocy poszkodowanym, reagowania w sytuacjach kryzysowych, dbania o bezpieczeństwo własne, poszkodowanych i świadków zdarzenia.

Introduction

The persistent permanently at a high level statistics on accidents and health risks help the public to realize the importance of the ability to perform first aid in reducing mortality after accidents and in emergency situations. Therefore, it becomes necessary to increase knowledge and skills that would allow everyone, not only to achieve their own full development, but also to take responsibility for another human life. To fulfill

these goals, educational reform was launched, which aims at shaping a new, conscious society. School strongly influences development, has been launched to prepare pupils, to face various challenges of modern world, including assistance to casualties, adequate reaction in emergency situations, being concern for own safety, witnesses' and victims' safety.

The study aims at researching a connection between teaching first aid and a decrease in fatality rate in accidents and urgent diseases.

Mortality problem in Poland

Poland has a persistently high level of accident victims' injuries which reflects the scale of trauma problems and seriousness of the situation. The highest percentage of people are injured in commuting accidents, then at work, at school, and at home. The World Health Organization in Poland, as in the world, informs that injuries after cardiovascular disease and cancer constitute the third cause of deaths, and among men 45 years of age even the first [1–4]. It is not fully understood how the mortality rate in road accidents in Poland reached such a high point. Even though a slight decrease has been noted in those figures over the last years it is not satisfactory [5, 6].

Foundation of the National Medical Rescue Program

In 1999, Poland introduced the Integrated Emergency Medicine Program, created by the Department of Health Protection of the Ministry of Health, now called the National Emergency Medical Service (EMS). According to Professor Juliusz Jakubaszko MD, implementation of modern software system integrated EMS structure is necessary because of the continuing high level of mortality due to sudden health threats. This mortality exceeds the standards adopted in international procedures [7]. Consequently, for every 100 thousand inhabitants in Poland there appear to be 17 deaths, while the European rate is at a level of 6 fatalities per 100,000. Even more, in our country four times more people than in the European Union are killed in road accidents. These figures prove the large backlog in the emergency medical service organization in Poland compared to the standards of European Union countries and the world. The main goal of the National Medical Rescue Program is coordination of all entities in a system with a common network of emergency communications, emergency procedures and medical equipment that allows realization of tasks in a smooth manner by combining particular links beginning with first aid provided by random witnesses [8]. Among the main actors in the integrated network of emergency medical teams there should exist collaboration, alongside a requirement to cooperate, among medical emergency, Hospital Emergency Units, Emergency Notification Centres, Medical Rescue Teams, National Fire Service, as well as specialized mine rescue units, the marine, the Polish Red Cross, Volunteer Mountain Rescue Service and the Water Voluntary Rescue Service, and if necessary the police and army. The task of the modern rescue system is primarily to provide assistance in accordance with the principle of the "chain of survival", where the appropriate call for help fulfils an important role, allowing for proper arrival of forces and resources at the scene. The next step is to start treatment at the

scene, continuing during transport and followed by specialty care [9].

A significant role in implementing the new system, apart from smooth coordination, was assigned to appropriate time management. Moreover, time management from the viewpoint of the effectiveness of rescue proceedings is most important. The period elapsing from the time of the accident, first aid rules implementation, medical rescue team arrival and transport for specialist treatment is called the "golden hour" [10]. It is the efficiency of the rescue team that decides whether it lasts for 60 min or longer. It should be emphasized that the chances of survival and recovery of the patient who suffered injury depend on the severity and extent of the injury, but are also connected with immediate assistance at the scene, the time from the accident until provision of specialist support, or in other words how long the golden hour takes. That is why the sense of the modern emergency system is connected to the best and most efficient use of every minute in saving the lives of casualties [11].

As far as the bill concerning emergency services in our country is concerned, it is stated that ambulance travel time should not exceed 8 min in the city and 15 min outside the city. This time is counted from the moment the call is received by the medical dispatcher. It seems to be a moment; however, taking into consideration irreversible changes happening in casualties during the waiting period, it starts to be regarded as a prolonged episode. Moreover, just a moment of reflection and a simple calculation of the minutes that pass are sufficient to make it clear. After 4–5 min of the onset of cardiac arrest, in the oxygen deprived brain irreversible changes occur. When it is thought that the ambulance gets to the victim within the stipulated time, it exceeds the life of the patient's brain after a cardiac arrest.

Therefore, it follows that without immediate action taken by a witness resuscitation, chances of rescuing victims of cardiac arrest are minimal. Consequently, for this reason the willingness of society to render first aid is very important. As a result, knowledge and training connected to first aid should be popularized among the Polish community, as it has a direct impact on the survival of victims. Additionally, quite often the ambulance arrival time is longer. The question arises why the ambulance does not arrive on time. The most common reason for the delay is that the person requesting help gives an incorrect address – an unimaginable situation, but it sometimes happens. The stress that accompanies the threat to human life situations causes that the name of the street where a situation occurs, the block number or house or apartment number is unknowingly confused. In addition, not without significance is the increased traffic on the streets in large cities. You cannot eliminate it. Therefore, the only solution is to follow

proper behavior while passing an emergency vehicle on the signals. This can occur through education of drivers and influencing a change in their mentality. Some of these reasons can be eliminated by using the experience of other countries, such as coordination of all services, facilitating access to housing and ambulances equipped with the latest GPS maps. In big cities you can use a system of “green wave”, which works so effectively in the U.S.

Even operation of the rescue system, the availability of modern treatment methods, and the latest equipment are not everything. Furthermore, it is worth noting that fortuitous witnesses are a key element in the process of assistance, because their activities including emergency notification of the circumstances of the event, the type of threats, the number of victims, and maintaining their vital functions depend on assembly of relevant parties and rescue equipment. Early recognition of the state of emergency and an early call for help can also prevent cardiac arrest, which can determine survival. Moreover, early resuscitation implemented by witnesses, and the use of early defibrillation in automatic mode, can double or even triple the victim's chances for recovery. It has been proven that defibrillation combined with resuscitation during the first 3–5 min of unconsciousness may increase the chances of survival up to 49–75% [12]. This applies to both acute illness and serious injury as a result of trauma. Often the basic steps of first aid provided by witnesses, such as airway patency, clogging hemorrhage or placement in a recovery position, may be crucial for victims of accidents, especially since travel time of the medical rescue team ranges from a few to several minutes. Studies show that proper functioning of the emergency medical system combined with a high level of knowledge and skills in first aid among the public significantly increases the survival rate of casualties after the accident [13].

Education in first aid – present and planned changes

A key task of education reform is a greater emphasis on learning first aid, during the first three stages of education in thematic blocks and education paths at primary level, while in secondary schools as a separate subject. A comprehensive education first aid program includes all four stages of learning, built on the principle of gradual training, from the first until the fourth stage. This means that at different stages of training, knowledge is gradually expanded, and includes more details. Supplemented by practical exercises using increasingly modern phantoms, it creates opportunities for permanent maintenance of acquired skills. Furthermore, it is clear that early introduction of first aid into educational programs, even at primary level, is beneficial for the development of proper habits related to living in society. Even more, it creates a natural

response when facing a threat to another person's life, taking care of their own and others' safety. The key to success is first of all meeting the criteria, modern curricula, textbooks accessible to the reader, and most importantly attractive teaching methods implemented by educated staff [14].

Education in first aid in secondary schools is currently included in course preparation for defense. The obligation of undergoing the subject applies to students of colleges, secondary schools, technical secondary schools, and profiled high schools, public and private. It is a separate subject, and it takes place for one hour a week in the first and second grade, which is stipulated in the regulation of the Minister of National Education and Sport of 26 February 2002. During the lesson, the First Aid division applies to the group [15, 16].

Nevertheless, analyzing bills regarding leading classes of preparation for defense and education for safety, similarities were noticed between the number of hours designated for these subjects, division into groups and possibilities of organizing training camps for students. This does not mean, however, as it might seem at first, that there are no changes. The direction of education has been transferred from pro-defensive to safety in general and the anticipation towards threats against life and health. Additionally, education for safety omits shooting practice and orientation in terrain. Moreover, the subject much more prominently relates to the issues of emergency situations and behavior in crisis situations. Reorganization also applies to changes in requirements for the preparation of teachers to conduct classes in this area.

Discussion

The persistently high numbers of accidents and fatalities indicate the need to introduce many changes in education especially in the field of behavior of laymen safety, first aid, and logistics assistance for victims of trauma. Furthermore, the statistical data show that traumatism is a huge problem for Polish society, starting with the number of fatalities, from the high cost of treatment, rehabilitation, disability, and ending with the economic loss due to absentees and total inability to work. The downward trend in the number of accidents in recent years is certainly a result of increasing public awareness on the need for emergency action and the consequences of ignoring safety issues. Consequently, education and prophylaxis constitute significant factors in this case. Even more, the decline in the number of fatalities in accidents is caused by functional improvement of the Emergency Medical System as well as by implementing the rules of first aid by random witnesses at the scene of emergency. Moreover, analysis of causes of victims' deaths in emergency situations indicates that in many cases it was possible to rescue the injured, as long as there

were provided proper rescue procedures at the scene [17]. The obtained data show that when the first victim assistance is provided within 5 min after the accident, the wounded survival rate is 85%, while over 15 min it is 72%, and 20 min from the event it is 60%. Therefore the conclusions are that first aid provided to the casualties by witnesses immediately after an accident increases their chances of survival by up to 20% [18]. Therefore, what is most important and probably yields the greatest impact is the reform of education, which provides training in first aid at all levels of education and has the task of shaping a new, conscious society. Overall, the role of schools is very important, in influencing development, preparing students to meet the various challenges of the modern world, including assistance to victims, the emergency response, and care for their own safety, victims and witnesses. The Ministry of Education has taken the decision to adapt the curriculum to the requirements of modernity and the European Union.

Similar procedures were introduced in other countries, including the United Kingdom. The country's British Heart Foundation is leading a campaign named HeartStart UK, aiming at teaching members of the public, especially children, what to do in situations of imminent threat to life. By and large, the program is intended to facilitate, support and take action to strengthen the development of teaching first aid in schools. The campaign involves organized actions of schools that decide to enter a program promoting the same way of teaching, using the same rules regarding a compulsory subject. On the whole, HeartStart is implemented as a phased, comprehensive first aid education program designed for children from 5 years of age and continued for next years. The program has qualified staff, which gradually, in stages, teaches both the theory of first aid fields as well as practical measures [19]. Teaching the public first aid has also been performed for many years by the organization of the International Red Cross and Red Crescent, located in various countries including Iceland, Germany, Ukraine, and Turkey. In a study conducted by the authors in 2010, among high school students and university students there was demonstrated a significant impact of the way of teaching first aid at the level of knowledge and willingness to perform rescue. The study was conducted through a survey among 500 people. During the statistical analysis of research material special attention was drawn towards issues concerning the recognition of cardiac arrest, resuscitation, and care for the safety of rescuer and victim, and willingness to help. Furthermore, an evaluation of first aid classes implemented during preparation for a defense lesson was conducted. Additionally, most of the young people confirmed the use of phantoms and auxiliary materials. However, among the proposed methods of teaching first aid some of the respondents draw more

attention towards practical exercises, and classes being conducted by medical personnel. As stated in article 8 paragraph 2 of the Emergency System Act, education for safety may be conducted only by doctors and nurses specializing in emergency medicine and by the rescuers. First aid instruction can also be provided teachers, but they must be qualified. This was introduced and developed jointly by the Department of Health and Education. It will determine the scope of knowledge and skills necessary to conduct classes in first aid.

Taken as a whole, knowledge of basic principles of recognition of cardiopulmonary arrest and implementing resuscitation was better among young people interested in preparation for defense classes. Additionally, another positive element was taken from the survey: an increasing number of people ready to help victims. As far as the involved material was concerned, the percentage of respondents was 80%, while A. Rasmus' findings provided a proportion close to 19% [20]. However, it should be noted that there is a conspicuous discrepancy between a declaration of aid and the actual granting, but the increasing proportion of people who see this issue courageously should be welcomed. On the whole, the keys to success here are, above all, meeting the criteria, modern curricula, textbooks accessible to the reader, and most importantly attractive teaching methods implemented by educated staff.

Conclusions

The inclusion in the curriculum of first aid has an impact on reducing mortality as far as injury or sudden illnesses are concerned. There is a noticeable connection between the methodology of teaching first aid and knowledge acquired by students. It is advised to introduce differentiated methods of teaching the subject, using phantoms or simulations in order to increase interest in topics. Every effort should focus on the more attractive course of first aid and take care of qualified medical professional leading the course.

Conflict of interest

The authors declare no conflict of interest.

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