

# MEDICAL SCIENCE

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# MEDICAL SCIENCE PULSE

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**LADIES AND GENTLEMEN, FACULTY,  
GRADUATES AND STUDENTS OF  
UNIVERSITIES, READERS AND ENTHUSIASTS  
OF MEDICAL SCIENCE PULSE!**

We present you the second issue of *Medical Science Pulse* and inform you about the new point value after the evaluation of the journal in the Index Copernicus International database, which is changing to 100.00 points. The increase in the scientific quality and the internationalisation of the quarterly indicate the growing role of our periodical in the process of dissemination of knowledge.

Thank you to all the Authors, Readers, Members of the Scientific Council, Editors and University Authorities for their involvement in the creation of successive issues of *Medical Science Pulse*. We encourage all interested parties to collaborate with the Editorial Board.

It is with great satisfaction that we share the news of *MSP* quarterly's publisher – the Opole Medical School was ranked no. 1 in the Premium Brand 2017 Reputation Ranking of State Higher Vocational Schools and no. 7 in the Perspektywy 2017 Ranking. The school advanced 9 spots (from no. 16) since last year's ranking, which is the result of the constantly growing scientific and didactic base, a high level of qualifications of the academic staff and consistent selection of majors

and education programmes. The *Medical Science Pulse* quarterly effectively fits into the scientific value of Opole Medical School.

We hope that the presented issue will meet your expectations this time as well. In the scientific section, we recommend original works on social knowledge about providing first aid, injuries of football players at various levels of sport proficiency, medicalization of vaccinations, as well as the phenomenon of professional burnout among nurses and paramedics. We also encourage you to peruse the review works on the legal aspects of physiotherapist practice before and after the introduction of the Act on the Profession of Physiotherapist, the relationship between the body image of women after pregnancy and during the lactation period and the decision to start and maintain natural feeding, the role of nurses in caring for potential organ donors in intensive care units, as well as the organisation and operation of the Polish Red Cross Rescue Group in Bedzin.

We invite you to publish your works in *Medical Science Pulse* – [www.medicalsciencepulse.com](http://www.medicalsciencepulse.com) – ranked at 6 pts by the Ministry of Science and Higher Education!

**SZANOWNI PAŃSTWO, PRACOWNICY,  
ABSOLWENCI I STUDENCI SZKÓŁ WYŻSZYCH,  
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MEDICAL SCIENCE PULSE!**

Przedstawiamy Państwu drugi zeszyt *Medical Science Pulse* i informujemy o nowej punktacji uzyskanej po ewaluacji czasopisma w międzynarodowej bazie indeksacyjnej *Index Copernicus*: ICV 100.00. Wzrost jakości naukowej i umiędzynarodowienia kwartalnika wskazuje na rosnącą rolę naszego czasopisma w procesie upowszechniania wiedzy.

Dziękujemy wszystkim Autorom, Czytelnikom, Członkom Rady Naukowej, Redaktorom i Władzom Uczelni za zaangażowanie w powstawanie kolejnych zeszytów *Medical Science Pulse*. Zachęcamy wszystkich zainteresowanych do współpracy z Redakcją!

Z wyjątkową satysfakcją informujemy również o sukcesie wydawcy kwartalnika MSP: Państwowa Medyczna Wyższa Szkoła Zawodowa w Opolu znalazła się na 1. miejscu w Rankingu Reputacji Państwowych Wyższych Szkół Zawodowych Premium Brand 2017 oraz na 7. miejscu w rankingu Perspektywy 2017! Uczelnia awansowała aż o dziewięć pozycji (z 16.) w stosunku do zeszłorocznego zestawienia, co jest efektem m.in. stale rozwijającej się bazy naukowo-dydaktycznej, wysokiego poziomu wykwalifikowanej kadry akademickiej oraz konsekwentnie dobieranych kierunków studiów i programów kształcenia. Kwartalnik *Medical*

*Science Pulse* efektywnie wpisuje się w naukową wartość PMWSZ w Opolu.

Mamy nadzieję, że prezentowany zeszyt spełni i tym razem Państwa oczekiwania. W części naukowej polecamy prace oryginalne na temat wiedzy społeczeństwa w zakresie udzielania pierwszej pomocy, kontuzji piłkarzy nożnych, którzy prezentują różny stopień zaawansowania sportowego, medykalizacji szczepień ochronnych oraz zjawiska wypalenia zawodowego wśród pielęgniarek i ratowników medycznych. Zachęcamy także do zapoznania się z pracami przeglądowymi dotyczącymi prawnych aspektów wykonywania zawodu fizjoterapeuty przed wprowadzeniem w Polsce ustawy o zawodzie fizjoterapeuty i po jej uchwaleniu, związku postrzegania przez kobiety swojego ciała po przebytej ciąży oraz w okresie laktacji z decyzją o rozpoczęciu i utrzymaniu karmienia naturalnego, roli pielęgniarki w opiece nad potencjalnym dawcą narządów na oddziale intensywnej terapii oraz organizacji i funkcjonowania Grupy Ratownictwa Polskiego Czerwonego Krzyża w Będzinie.

Zapraszamy do publikowania prac w *Medical Science Pulse* – [www.medicalsciencepulse.com](http://www.medicalsciencepulse.com) – 6 pkt. MNiSW!

# FIRST AID AWARENESS IN THE SOCIETY

## WIEDZA SPOŁECZEŃSTWA NA TEMAT UDZIELANIA PIERWSZEJ POMOCY

EWELINA KRZYSZKOWSKA<sup>A,B,D-F</sup>  
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**A** – przygotowanie projektu badania | study design, **B** – zbieranie danych | data collection, **C** – analiza statystyczna | statistical analysis, **D** – interpretacja danych | interpretation of data, **E** – przygotowanie maszynopisu | manuscript preparation, **F** – opracowanie piśmiennictwa | literature review, **G** – pozyskanie funduszy | sourcing of funding

### SUMMARY

**Background:** Every member of the society should possess first aid skills and knowledge thereof.

**Aim of the study:** The aim of the study was to determine public awareness of first aid, sudden cardiac arrest and the Automated External Defibrillator.

**Material and methods:** The study was conducted using an anonymous and voluntary on-line survey. The study population comprised of 250 subjects. The results were analysed using the t-Student test, F Test and Chi2 test.

**Results:** The analysis of the study results showed that 164 respondents, who gave 9 to 11 correct answers, had a good level of knowledge. 80 respondents had the average level of knowledge, as shown by 6 to 8 correct answers. 6 respondents had insufficient level of knowledge, as they gave less than 6 correct answers to questions included in the survey.

**Conclusions:** The principles and techniques on first aid are known to the public, as indicated by the fact that more than half of the respondents have a good level of knowledge.

**KEYWORDS:** first aid, automated external defibrillator, public, victim, cardiopulmonary resuscitation

### STRESZCZENIE

**Wstęp:** Umiejętność udzielania pierwszej pomocy oraz wiedza na ten temat powinny być bliskie każdemu człowiekowi.

**Cel pracy:** Celem pracy było określenie wiedzy społeczeństwa na temat pierwszej pomocy, nagłego zatrzymania krążenia oraz automatycznego defibrylatora zewnętrznego.

**Materiał i metody:** Do badania zastosowano ankietę internetową, która była anonimowa i dobrowolna. Badania zostały przeprowadzone na grupie 250 osób. Wyniki poddano analizie statystycznej, przeprowadzono test t-Studenta, Test F, test Chi2.

**Wyniki:** Analiza wyników badania wykazała dobry poziom wiedzy u 164 badanych, którzy udzielili od 9 do 11 poprawnych odpowiedzi. Średni poziom wiedzy odnotowano u 80 osób ankietowanych, udzielili oni prawidłowych odpowiedzi na 6 do 8 pytań. Niewystarczający poziom wiedzy ma 6 badanych, którzy prawidłowo odpowiedzieli na mniej niż 6 pytań zawartych w ankiecie.

**Wnioski:** Zasady i techniki dotyczące pierwszej pomocy są w społeczeństwie znane, świadczy o tym dobry poziom wiedzy więcej niż połowy badanych.

**SŁOWA KLUCZOWE:** pierwsza pomoc, automatyczny defibrylator zewnętrzny, społeczeństwo, poszkodowany, resuscytacja krążeniowo-oddechowa



## BACKGROUND

First aid constitutes immediate, ad hoc assistance provided to people who suddenly fell ill and or who were in an accident. The term means initiating a rescue operation by people on site, using personal protection or improvised equipment, and maintaining the rescue actions until emergency services arrive. The aims of providing first aid are: preserving human life and health, limiting the effects of trauma and sudden illness, providing care to the injured [1,2]. If an injured person receives first aid within 5 minutes after the accident, the survival rate is 85%, within 15 minutes – 72%, within 20 minutes – only 60% [3]. The recovery position is a stable position lying on the side with unobstructed airways. Every injured person with maintained respiratory function should be placed in the recovery position [4]. Cardiac arrest is a sudden stop in mechanical and eclectic heart function. It is characterised by: unresponsiveness of the patient to stimuli, apnoea or lack of pulse [5,6]. The causes of cardiac arrest include, inter alia: hypoxia, hypovolemia, heart valve disorders, myocardial infarction, heart failure, pulmonary embolism, slowing down or stopping of heart functions, poisoning or drug overdose, acidosis and trauma [6]. The mechanisms of cardiac arrest are: ventricular fibrillation (VF), ventricular tachycardia (VT), asystole, pulseless electrical activity (PEA) [7–9].

In Poland, the terms “first aid” and “sudden health risk” are regulated by article 3 of the National Emergency Medical Services Act of September 8th 2006 [10]. Article 4 of the Act establishes an obligation to inform an institution, which provides assistance in cases of sudden health risks, of an event [10]. Failing to take appropriate action to provide assistance to a person whose health or life is in danger can result in an up to 3-year incarceration, pursuant to the provisions of the Criminal Code of June 6th 1997. However, if there is a need for a doctor’s intervention or the conditions prevent the respondent from acting, or the respondent cannot act without legal ramifications, they have to alert emergency medical services [11].

Cardiopulmonary resuscitation (CPR) constitutes rescue activities which substitute circulatory and respiratory system functions in the event of cardiac arrest. The aim of performing Basic Life Support for adults is restoring basic life functions, i.e. at least circulatory functions, or circulatory and respiratory functions [2,5,6]. An Automated External Defibrillator (AED) is a computerised machine which analyses heart functions. Afterwards after vocal and visual commands, it informs about the state of the injured person and provides information about continuing the CPR or performs defibrillation, if it is indicated in the event of cardiac arrest. An AED can be used by both medical personnel, and people who were not trained in first aid [5,8]. Survival of a person with cardiac arrest depends on the response of the bystanders. After they establish cardiac arrest or pass on the information about the condition of the injured person to the Emergency

Call Centre dispatch, the person providing first aid should commence CPR. The guidelines of the European Resuscitation Council (ERC) stress that performing high-quality CPR facilitates significant blood flow, which can lead to a spontaneous return of circulation. If there is an AED on site or near the site, the person performing CPR should use it either for defibrillation, or to assess the patient’s condition. The survival rate oscillates between 49 and 75%, if the CPR is performed with defibrillation within 4 minutes of cardiac arrest. The effectiveness of defibrillation decreases by 7–10% every minute the cardiac arrest continues [2,5,12–14].

## AIM OF THE STUDY

The aim of the study was to determine public awareness of first aid, sudden cardiac arrest and the Automated External Defibrillator.

## MATERIAL AND METHODS

In October 2015, own survey was conducted in a group of 250 subjects. The survey was anonymous and voluntary, and the respondents were informed about the aim of the study. The survey consisted of 18 questions, the first four covering information about the respondent. The following 11 questions covered basic first aid knowledge, information about cardiac arrest and external defibrillators. The last three questions covered the respondent’s opinion about first aid. The questionnaire did not ask about the respondent’s occupation. The scores were divided into three categories based on the level of knowledge: good, average and insufficient – the respondents who gave between 9 and 11 correct answers had good level of knowledge, those who gave between 6 and 8 answers had average level, and those with less than 6 correct answers had insufficient knowledge.

Statistical analysis was performed using Statistica 12 software. The results were analysed using t-Student test for independent variables, F one-way ANOVA test, HSD Tukey’s test and Chi2 test. Statistical significance was set at  $p < 0.05$ .

## RESULTS

The study population consisted of 250 subjects, 214 women and 36 men. The largest group, 136 subjects, was between 21 and 30 years old. Two respondents were over 60 years old. The respondents had secondary (21 subjects), high school (129 subjects), vocational (18 subjects), and higher (82 subjects) education. The place of residence was: village (59 subjects), town up to 200,000 residents (87 subjects) and city over 200,000 residents (104 subjects).

Out of the study population, 195 respondents knew that AED stands for Automated External Defibrillator, 55 provided wrong answer by selecting manual

defibrillator or implantable cardioverter-defibrillator. According to 244 respondents, Polish abbreviation NZK (cardiac arrest) stands for cardiac arrest, only 6 think that NZK probably stands for cardiac arrest. The correct chest compression to rescue breath ratio is 30:2 and is known to 208 respondents, according to 42 the ratio is 10:2 or 30:5. According to 217 of the respondents the rescuer should have straight elbows during chest compressions, while 33 wrongly believe that they should be bent or that one of the hands should be placed against the floor and the other performing the compressions. 245 respondents correctly answered that the recovery position is a stable position lying on the side, while 5 wrongly believed it is a position lying on the back. Most of the respondents (161) did not know that the correct number of chest compressions per minute is 100–120, instead choosing 50–70 or 70–90, with only 89 choosing the correct answer (Figure 1). 189 respondents correctly answered that the use of an AED is not limited to doctors and paramedics, but rather available to anyone, while 61 provided the wrong answer. 236 respondents are aware of their obligation to help an injured person and 14 were not aware of such an obligation. The correct number for the Emergency Call Centre, 112, was known to 246 respondents and unknown to 5, who chose answers 111 or 122. Out of the study population, 68 respondents wrongly believed that an AED can be used only after the injured person loses consciousness, while 182 respondents answered correctly that it is used after establishing cardiac arrest has occurred. 207 respondents know that failing to provide first aid has legal ramifications, while 43 were unaware of such consequences.

231 respondents would help an injured person, 19 would not. Most of the respondents (241) believe first aid courses should be obligatory, with only 9 being against it. 165 respondents have not seen a sign about an AED available nearby in public, 85 have seen such a sign, informing about the location of an Automated External Defibrillator.

The 164 respondents who gave between 9 and 11 correct answers have a good level of knowledge. The 80 respondents who gave between 6 and 8 correct answers have an average level of knowledge. The 6 respondents who gave less than 6 correct answers have an insufficient level of knowledge.

Statistical analysis showed that the mean for correct answers was higher among men (9.86) than women (8.89). The result was statistically significant, with  $p=0.001$ . The F test was used to analyse the mean number of correct answers in particular age groups, however the obtained result, 0.717, was not statistically significant. That same test was used to analyse the mean number of correct answers in groups divided by place of residence and the obtained result, 0.124, was also not statistically significant. The HSD Tukey's test was used to analyse the results in groups divided by types of education; comparison in pairs showed that the mean results in groups with secondary, high school

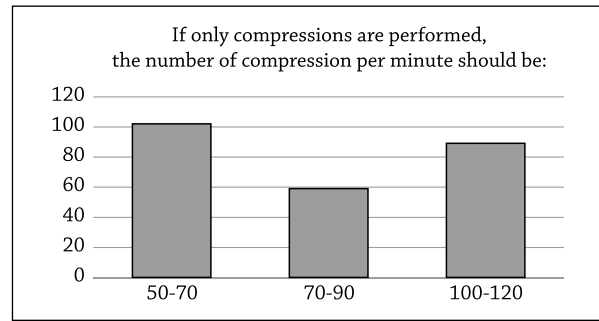


Figure 1. The number of compressions per minute

Table 1. Respondents' answers to the questions in the questionnaire

Question	Correct Answer	Incorrect Answer
What is an AED?	195 (78.0%)	55 (22.0%)
When can you use an AED?	182 (72.8%)	68 (27.2%)
NZK (Polish abbreviation) stands for?	244 (97.6%)	6 (2.4%)
The proper chest compression to rescue breath ratio is...	208 (83.2%)	42 (16.8%)
Position of the rescuer's hands on the casualty's chest during compression	217 (86.8%)	33 (13.2%)
The number of chest compressions per minute	89 (35.6%)	161 (64.4%)
Legal ramifications of not providing first aid	207 (82.8%)	43 (17.2%)
Recovery position	245 (98.0%)	5 (2.0%)
Who can use an AED?	189 (75.6%)	61 (24.4%)
Who is obligated to provide first aid?	236 (94.4%)	14 (5.6%)
Telephone number for Emergency Call Centre	245 (98.0%)	5 (2.0%)

and higher education did not differ significantly, but at the same time were significantly higher from the mean for the group with vocational education (Table 2). The Chi<sup>2</sup> test was used to analyse the results for the question about seeing a sign for the AED depending on the demographic variables, non of the variables showed statistically significant results.

Table 4 shows the percentage reflecting the level of knowledge in regards to the questions in the survey.

## DISCUSSION

Commencing first aid activities by bystanders, including assessing the state of the casualty as soon as possible after the event or the onset of sudden illness occurs, is a necessary element of saving a life. Knowledge of and the ability to provide first aid should not be limited to medical personnel, but common among all members of the society. The 2015 resuscitation guidelines of the ERC stress that people who do not have first aid training should alert emergency medical services after assessing the casualty's state and their level of consciousness [13]. The results of the present study show that men have a higher level of knowledge



Table 2. The mean for correct answers in groups divided by education

	secondary (n = 21)		vocational (n = 18)		high school (n = 129)		higher (n = 82)		ANOVA	
	M	SD	M	SD	M	SD	M	SD	F(3, 246)	p
Number of correct answers	8.62a	2.01	7.22b	2.46	9.25a	1.41	9.18a	1.58	9.02	< 0.001

Table 3. The number of respondents willing to provide first aid

	willingness to provide first aid				t-Student test	
	yes (n = 231)		no (n = 19)			
	M	SD	M	SD	t(248)	p
Number of answers	9.13	1.68	7.79	1.23	3.39	0.001

Table 4. The respondents' level of knowledge in percentage points

Correct answers in [%]	Level of knowledge
90% - 100%	Good
80% - 89%	Average
Less than 80%	Insufficient

of first aid, cardiac arrest and the Automated External Defibrillator. Men gave 89.6% correct answers, women gave 80.8%. The statistical analysis showed that the result was statistically significant, with  $p < 0.05$ . The good results can indicate that the respondents work in health care or are rescuers working with Volunteer Water Rescue Services, Volunteer Mountain Rescue Services, or had taken a qualified first aid course. Members of such groups have to know how to give first aid and have to keep their knowledge up to date. The questionnaire did not contain a question about the respondent's occupation, nor a question about working in health care, which did not allow to compare the state of knowledge of health care professionals with non-health care professionals. As shown by the results in Table 4, the society has an average level of knowledge, but is familiar with CPR standards and first aid issues. More and more frequently the bystanders initiate first aid activities, even though they do not have adequate training or knowledge. However, there are situations where the casualties are left without help. This is probably due to the fact people are afraid to make mistakes or the fact that few people participated in first aid courses and have insufficient knowledge to act [15–19]. The results of the present study showed that 231 respondents would give first aid. Therefore, it can be surmised that the society is willing to provide first aid, which is consistent with the results of other studies [15,17,19–21]. The answers to the question about the willingness to provide first aid was analysed based on demographic data, however the results were not statistically significant for sex, age and place of residence. In order to improve prevention, diagnosis and action in case of sudden illness or an accident, first aid education courses and training should be held [13]. The respondents believe that everyone

should participate in a first aid course, which is corroborated by results of other studies. The respondents are willing to participate in such a course, which would improve their level of knowledge about first aid, AED and proper CPR techniques [18,22–24]. The answers to the question about the need to participate in a first aid course was analysed based on demographic data, however the results were not statistically significant for sex, age and place of residence.

The results of the present study show that 236 of the respondents know everyone is obligated to provide first aid, which is corroborated by other studies [16,18]. The ERC guidelines stress that performing high quality CPR increases the chances of survival of a patient with cardiac arrest between 49 and 70% [5,13]. However, many studies and the present survey confirm that the society does not know the correct number of chest compressions per minute [16,19,20,25]. Only 35.6% of the respondents knew the correct number of compressions is between 100 and 120. As seen in the results presented in Table 4, the knowledge is insufficient. During CPR, the compression to rescue breath ratio, 30:2, is very important. This ratio is known to 208 of the respondents, which shows the standards are known and which is corroborated by the results of other studies [17,23,26–28]. The recovery position, which is a stable position lying on the side, is broadly known, as corroborated by 245 correct responses in the present study and the results of other studies [17, 21,23,24,27]. 195 respondents were familiar with the abbreviation AED, which stands for Automated External Defibrillator. However, the knowledge of its use is insufficient, 182 respondents know that anyone can use an AED in case of cardiac arrest. Other studies reported similar level of knowledge or higher [18,23,24]. The Pub-

lic Access Defibrillation (PAD) is not available in many cities. Maintaining a register and creating maps with AED placements allows the Emergency Call Centre and Emergency Services dispatch to direct people on site to an AED. Probably due to the low number of publicly available AEDs and bad marking of their locations, only 85 out of 250 respondents saw a sign for an AED in a public place. The answers to the question about the location of an AED was analysed for co-dependency based on demographic data, however the results were not statistically significant for sex, age, education and place of residence.

An analysis of the results showed that the respondents between 41 and 50 years old gave the most, 86.8%, correct answers. These are people in productive age, which is why they probably have regular first aid courses in their workplaces, as shown by their correct answers. The respondents over 60 years old gave the least correct answers (77.2%). The one-way ANOVA test showed that the mean for correct answers is not statistically significant for age groups. In terms of education, respondents with vocational education gave the least correct answers (65.6%). This is surprising, as they often do physical labour which is connected with accidents. Respondents with high school education gave the most correct answers (84%), which is probably due to the fact that high schools and technical high schools curricula include subjects which teach first aid. Comparison in pairs shows that mean results in groups with secondary, high school and higher education were not statistically significantly different, but at the same time were significantly higher than the mean results for the group with vocational education. Respondents living in towns up to 200,000 residents gave 84.4% correct answers, while those living in villages gave the least correct answers (79.1%). These results are not statistically significant.

The results of the present study allow to surmise that the society has a good level of knowledge of cardiac arrest, which is corroborated by 97.6% correct answers. The same level of knowledge was reported for knowing the telephone number for the Emergency Call Centre. This is probably due to the fact that boards with

numbers for emergency institutions, such as the emergency medical services, the police or the fire department should be displayed in public places, on public transportation and in the workplace. The respondents have an average level of knowledge about the legal ramifications of not providing first aid, 82.8% know not providing aid is a legal offence. This is probably due to the fact the society is not familiar with current rules and regulations, and the Criminal Code. 86.8% of the respondents know that the rescuer's elbows should be straight during chest compressions, which constitutes average level of knowledge. Correct placement of the rescuer's body during CPR increases the number of correct compressions and, furthermore, it takes longer for the rescuer to grow tired. The most incorrect answers were given to three questions about the AED, which constitutes an insufficient level of knowledge. This is probably due to the fact that it is a subject rarely covered by first aid courses and occupational hazards trainings. 78% of the respondents know the meaning of the abbreviation AED, 72.8% know it is used after cardiac arrest. The mean number of all correct answers on the willingness to provide first aid were analysed using t-Student's test. The result was statistically significant ( $p=0.001$ ).

## CONCLUSIONS

The results of the present study show that the society is aware of first aid techniques and principles, which is corroborated by the fact that over half of the respondents had a good level of knowledge about the issues raised in this survey. However, this knowledge should be kept up to date, seeing as medicine is constantly developing and the European Resuscitation Guidelines are updated. First aid courses should be generally available and advertised in the media and the press. Taking a several-hour-long course could save a life and encourage people, who are afraid to approach an injured person because they fear they might break their ribcage with inept CPR. Breaking bones is a risk of CPR, however this type of injury is not the greatest problem when saving a life is a priority.

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# SOCCKER PLAYERS' INJURIES AT DIFFERENT LEVELS OF THE SPORT

## KONTUZJE PIŁKARZY NOŻNYCH O RÓŻNYM POZIOMIE ZAAWANSOWANIA SPORTOWEGO

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**A** – przygotowanie projektu badania | study design, **B** – zbieranie danych | data collection, **C** – analiza statystyczna | statistical analysis, **D** – interpretacja danych | interpretation of data, **E** – przygotowanie maszynopisu | manuscript preparation, **F** – opracowanie piśmiennictwa | literature review, **G** – pozyskanie funduszy | sourcing of funding

### ABSTRACT

**Background:** Soccer players are injury prone, and increasing competition - especially at the highest level - leads to increasing training loads, and these may contribute to more injuries to players. Hence, the aim is to increase preventive measures and treatment in this field.

**Aim of the study:** The paper examines soccer players' susceptibility to injuries occurring at different levels of the sport's development, and describes the accompanying conditions.

**Material and methods:** The study involved 215 players of different levels, of which 105 came from the II and III league clubs (group I) and 110 from IV league clubs (group II). The conducted research was based on a diagnostic survey using an anonymous questionnaire containing 15 questions developed by the authors.

**Results:** Similar traumas (injuries) were observed among respondents of both groups. Group I had suffered injuries in the case of 92 (87.62%) respondents, while Group II contained 87 (79.09%) subjects who had suffered injuries. Group I trained harder than Group II, but the nature of the injuries was similar for all the players. The surveyed Group I had 100% access to physio-therapeutic help; in Group II this was the case for only 48 (43.64%) subjects. Group I also applied preventive anti-injury measures to a greater extent than Group II, in the form of pre-training warm-ups and post-training stretching and loosening.

**Conclusions:** Among the more advanced soccer players there was a trend toward more traumas with similar kinds of sustained injuries, despite the greater availability of physiotherapy care and their use of more anti-injury prevention techniques than in the group representing the lower levels of sport advancement in soccer. This adverse effect is associated with the more intense training and training loads of the more advanced players.

**KEYWORDS:** soccer, injuries, treatment, prevention

### STRESZCZENIE

**Wstęp:** Piłka nożna jest sportem powodującym wiele kontuzji a wzrastająca rywalizacja – szczególnie na najwyższym poziomie – prowadzi do zwiększania obciążeń treningowych, które mogą się przyczyniać do powstawania większej ilości uszkodzeń ciała piłkarzy. Stąd dąży się do zwiększenia działań prewencyjnych i terapeutycznych w tym zakresie.

**Cel pracy:** Zbadanie częstości pojawiania się kontuzji, przyczyn i skutków ich występowania oraz stosowanych sposobów prewencji urazów u piłkarzy nożnych o różnym poziomie zaawansowania sportowego.

**Materiał i metody:** W badaniu wzięło udział 215 piłkarzy nożnych, z których 105 pochodziło z klubów II i III-ligowych (grupa I), a 110 z klubów IV-ligowych (grupa II). Przeprowadzono je w oparciu o metodę sondażu diagnostycznego z zastosowaniem anonimowego kwestionariusza ankiety własnego autorstwa zawierającej 15 pytań.

**Wyniki:** W obydwu grupach zaobserwowano podobieństwa w zakresie odniesionej urazowości. W grupie I występowała ona u 92 (87,62%) ankietowanych, a w II grupie u 87 (79,09%) osób, przy czym grupa I trenowała intensywniej niż II, a charakter urazów był podobny u wszystkich piłkarzy. Badani grupy I mieli 100% dostępność do pomocy fizjoterapeutycznej, a w grupie II miało ją tylko 48 (43,64%) osób. Grupa I również w większym stopniu niż grupa II stosowała środki prewencji urazów w postaci rozgrzewki przed treningiem oraz rozciągania i rozluźniania mięśni po treningu.

**Wnioski:** W grupie bardziej zaawansowanych piłkarzy nożnych występowała jedynie tendencja do większej urazowości przy podobnym rodzaju odniesionych uszkodzeń ciała, pomimo większej dostępności do pomocy fizjoterapeutycznej i stosowania przez nich w większym stopniu prewencji przeciwurazowej niż w grupie reprezentującej niższy poziom sportowy. To niekorzystne zjawisko związane jest z większymi obciążeniami treningowymi i startowymi bardziej zaawansowanych piłkarzy.

**SŁOWA KLUCZOWE:** piłka nożna, urazy sportowców, leczenie, prewencja

## BACKGROUND

The International Federation of Association Football (FIFA – Fédération Internationale de Football Association) reported that in 2006 about 270 million people in the world's countries registered in the Federation played football [1]. Complementing the above data, it should be noted that in Switzerland in recent years, there were 226 000 licensed soccer players and 600 000 who played football occasionally [2]. Football has grown on the professional and amateur levels. In light of the division of the league made in 2016 in Poland, lower leagues for amateurs can be regarded as level IV of competition, and teams playing in the third league and higher should be classified as professional teams. Soccer training at each level of the practice extensively develops the human body due to the improvement of: metabolism, cardiovascular and respiratory functions, and improving the efficiency of skeletal muscle [3,4]. However, due to the fact that football is a direct contact sport, and that the dynamic development of the sport has made training and competition more intense and aggressive [5], the sport is characterized by a high proneness to injury [6]. Injury in this popular sport is significant. Hawkins and Fuller [7] showed that soccer players have more than 1,000 times the number of injuries encountered in industrial professions at high accident risk. This large trauma rate entails high losses, not only in sports, but also financial, health and moral losses. So, for example, in the English soccer league in the 1999–2000 season a total loss of 118 million Euros was sustained due to injuries [8]. Similarly, in Switzerland these losses for the year 2003 amounted to 95 million Euros and 500 000 lost working days [2], and in the Netherlands in the year 2008, medical costs and absenteeism from work due to soccer injuries reached 1.3 billion Euros [9]. Injuries in soccer are concentrated mainly in the lower limbs [10], and the time of their occurrence is associated with the periods of the annual training cycle [10], the position of a player in the field, a player's experience [11], along with many

other contributing factors. Therefore, in order to prevent injuries and their adverse consequences various preventive strategies were introduced. According to Van Mechelen et al. [12] this is a comprehensive system and should be carried out in four stages. "The first should be to identify the size of the problem and describe it. Secondly, reveal the factors and mechanisms of sports injuries. Thirdly introduce a preventive strategy, and in the fourth stage assess the effects of this strategy and return to the first stage". FIFA also proposes its anti-injury prevention programs in football, for example FIFA 11+ [13].

## AIM OF THE STUDY

The aim of this study is to investigate the frequency of the occurrence of injuries, the causes and consequences of their occurrence, and the methods of anti-injury prevention for soccer players at different levels of the sport.

## MATERIAL AND METHODS

In order to carry out the study it was first approved by the Bioethics Committee of the Public Medical Higher Vocational School in Opole, approval number 222/2015. The study was carried out between January and August 2016, and involved 215 players from the Silesian province and the city of Lodz, with 105 athletes (22.42±2.87 years) representing the second and third leagues (Group I - professional), and 110 respondents (23.37±3.36 years) representing soccer players in Division IV (Group II - amateur). The study was performed by a diagnostic survey using an anonymous questionnaire of our own design consisting of 15 questions, of which 3 were included in specifications: the age of respondents, the level of competition (represented leagues), the respondent's position on the field. Further questions include one or multiple choice and in the order 4–15 related to:

- the kind of injury sustained,



- the situation in which the injury occurred,
- the number of training sessions performed in a week, excluding played matches
- return to full fitness after the injury,
- the consequences of the injury,
- the soccer player's relation to training during the time of injury,
- the player's participation in regular medical examinations,
- the possibility of the use in a sports club of a physiotherapist and wellness center,
- the possibility of a physiotherapist's help during convalescence,
- the ability to obtain a physiotherapist's instructions concerning the possibility of injury prevention,
- the ability to practice a chosen form of warm-up before training,
- the ability to do stretching and loosening exercises after training.

The results were expressed in absolute terms, and/or as a percentage. After checking the normal age distribution of the respondents with a skewness test (value = -0.421) and a kurtosis test (value = 1.498), the t-Test for unrelated values was used for analysis. Differences in the responses between the two groups differing in their level of sport has been demonstrated by the use of the test structure ratio (fraction test). Values at  $p < 0.05$  were taken as statistically significant.

## RESULTS

The results of the study are presented in tables and descriptively, grouping them into similar thematic issues. The number of respondents and the age of the two groups did not differ statistically ( $p > 0.05$ ). Injuries

in group I constituted 87.62% (92 athletes), and 79.09% in the second one (87 players), and did not differ significantly ( $p = 0.094$ ). The number of competitors in terms of positions on the soccer field was similar in both groups, and also did not differ statistically – table 1.

In Group I and Group II there were 292 injuries in total, of which Group I had 152 cases, and Group II 140 cases, and the difference between the two groups was not statistically significant ( $p = 0.321$ ). Studies have shown that the most common injuries were related to muscles and ankles. Injuries occurred more frequently during the preparation period in Group II than in Group I ( $p = 0.006$ ), while Group I more often succumbed to injuries during matches when compared with respondents of Group II ( $p < 0.001$ ). These data are contained in table 2.

Group I players trained harder, because a greater number of players from this group performed six workouts per week ( $p < 0.001$ ) than in Group II (table 3). With regards to participation in clinical tests, subjects in Group II more often did not participate ( $p < 0.001$ ) compared to athletes from Group I, and the ambivalent response „not always” to this question was more often given by players from Group I ( $p < 0.001$ ) than from the second group. The availability of a physiotherapist for players at the clubs' facilities in Group I was 100%, while in Group II it was only 43.64%, which in absolute terms was a statistically significant difference ( $p < 0.001$ ). This significant difference in the availability of physiotherapists for players in both groups determined the significant intergroup difference in terms of the answer to this question ( $p < 0.001$ ).

83.24% of the respondents returned to good pre-injury condition after the sustained injuries, of which Group I constituted 79.35% and Group II, 87.36%, with a recurrence of injury which occurred earlier, on aver-

Table 1. Characteristics of soccer players

Group	Subjects [n;%]	Age [years] [x; ±SD]	Position on the field [n;%]			
			Striker	Midfielder	Defender	Goalkeeper
I	105 (48.84)	22.42±2.87	16 (15.24)	51 (48.57)	26 (24.76)	12 (11.43)
II	110 (51.16)	23.37±3.36	22 (20)	51 (46.37)	29 (26.36)	8 (7.27)
I & II (total)	215	22.89±3.11	38 (17.67)	102 (47.45)	55 (25.58)	20 (9.3)

Table 2. Type and duration of the annual cycle in which the injury occurred

Type of injury/ Group	Group I	Group II	Period of Injury	Group I	Group II
	[n; %]	[n; %]		[n; %]	[n; %]
Muscles	47(30.91)	40(28.58)	PR	53(34.87)	71(50.71)**
Ankle joint	40(26.32)	38(27.15)	PT	21(13.81)	29(20.71)
Fractures	19(12.50)	20(14.29)	Match	53(34.87)	21(15.00)***
Meniscus	19(12.50)	17(12.14)	Training	25(16.45)	19(13.58)
Ligaments	11(7.24)	10(7.14)			
Other	16(10.53)	15(10.71)			
Total in each Group	152(100)	140(100)		152(100)	140(100)
I & II gr. (total. n=292)	152(52.05)	140(47.95)		152(52.05)	140 (47.95)

\*-comparison between Groups I & II; \*\*- $p < 0.01$ ; \*\*\*- $p < 0.001$ ; TR – training in the preparatory annual cycle; TP – training in the prestart annual cycle.

age, at 55.31%, and in both groups this figure reached similar values, which did not differ statistically. Players' awareness of the acquired injury was higher in group I because those subjects less often ignored acquired injuries ( $p = 0.039$ ) and were more likely to be fostered neglected existing injury ( $p = 0.007$ ), although at the same time athletes from this group more often committed errors by training despite medical contraindications ( $p=0.021$ ) than Group II players (table 4).

After an injury physiotherapy care was provided in 74.30% of cases, of which more frequently it was afforded in Group I (89.13%) than in Group II - 58.62%, as compared with the absolute values it showed a statistically significant difference ( $p<0.001$ ). Similar differences existed between the groups in terms of providing information to the players tested by physiotherapists

on how to prevent injuries. In Group I it was 85.87%, while in Group II it was only 62.07% ( $p<0.001$ ). Negative responses to both questions also differed between the groups ( $p<0.001$ ), as shown in table 5.

Also, the preventive effect was more intense in Group I, since they always warmed up before training (72.38%), and post-exercise stretching, loosening and relaxing was performed by 60.0% of the athletes in this group (table 6). Those in Group II who warmed up and loosened up were 48.18% and 20.9%, respectively, and statistical procedures for a description of these values in absolute numbers showed significant differences between the groups ( $p<0.001$ ). Group II more often provided answers on pre-workout warm-ups as „usually done” ( $p=0.005$ ) and post-workout stretching performed „sometimes” ( $p<0.001$ ) than in group I.

Table 3. Training loads and medical care of surveyed players [n; %]

Group	Number of training sessions in a week [n;%]				Participation in medical research [n;%]			Accessibility to a physiotherapist [n;%]	
	3	4	5	6	yes	no	not always	yes	no
I (n=105)	0.00	35(33.34)	22(20.95)	48(45.71)	76(72.38)	10(9.52)	19(18.1)	105(100)	0,00
II (n=110)	30(27.28)***	54(49.09)*	20(18.18)	6(5.45)***	70(63.64)	36(32.72)***	4(3.64)***	48(43.64)***	62(56.36)***
I & II (n=215)	30(13.95)	89(41.41)	42(19.52)	54(25.12)	146(67.9)	46(21.4)	23(10.7)	153(71.16)	62(28.84)

\* comparison between Groups I & II; \* $p<0.05$ ; \*\*\* $p<0.001$

Table 4. Effects of experienced injury and players' behavior during its treatment

Group	Return to form after injury Group I (n=92) Group II (n=87) Total (n=179)		Injury Recurrence Group I (n=92) Group II (n=87) Total (n=179)		Behavior during injury Group I (n=103), Group II (n=98), Total (n=201)				
	yes	no	yes	no	Ignored injuries	Training with pain	Training in spite of contraindications	Injury concealment	Lack of neglect of existing injury
I	73(79.35)	19(20.65)	51(55.43)	41(44.57)	47(45.63)	32(31.07)	12(11.65)	0.00	12(11.65)
II	76(87.36)	11(12.64)	48(55.17)	39(44.83)	59(60.20)*	34(34.70)	3(3.06)*	0.00	2(2.04)**
I & II	149(83.24)	30(16.76)	99(55.31)	80(44.69)	106(52.73)	66(32.84)	15(7.46)	0.00	14(6.97)

\* comparison between Groups I & II; \* $p<0.05$ ; \*\*  $p<0.01$

Table 5. Inter group difference in the area of accessibility to posttraumatic physiotherapy care and information on injuries prevention [n; %]

Group	Physiotherapy help [n;%]		Information on injuries prevention [n;%]	
	yes	no	yes	no
I (n=92)	82(89.13)	10(10.87)	79(85.87)	13(14.13)
II (n=87)	51(58.62)***	36(41.38)***	54(62.07)***	33(37.93)***
I & II (n=179)	133(74.30)	46(25.70)	133(74.30)	46(25.70)

\* comparison between Groups I & II; \*\*\*  $p<0.001$

Table 6. Intergroup difference of anti injury training methods [n;%]

Group	Warm up before training [n;%]				Stretching and relaxing exercises [n;%]			
	always	usually	sometimes	probably not	always	usually	sometimes	probably not
I (n=105)	76(72.38)	26(24.76)	3(2.86)	0.00	63(60.0)	26(24.76)	16(15.24)	0.00
II (n=110)	53(48.18)***	47(42.73)**	9(8.18)	1(0.91)	23(20.90)***	27(24.55)	57(51.82)***	3(2.73)
I & II (n=215)	129(60.0)	73(33.95)	12(5.58)	1(0.47)	86(40.00)	53(24.65)	73(33.95)	3(1.40)

\* comparison between Groups I & II; \*\* $p<0.001$ ; \*\*\* $p<0.001$

## DISCUSSION

It has been observed that the age of soccer players may determine the severity of the resulting injury [14]. It was also shown that susceptibility to the occurrence of injury increases with the player's age and is highest in the range of 29–30 years [11]. In the cases studied by us of soccer players, this factor was not important because the two groups did not differ in age ( $p > 0.05$ ). In the search for other factors determining the formation of injuries in sport Kristenson et al. [11] indicate that the position in which the sportsman plays is also associated with the incidence of injury, and the lowest level of injury was observed in among goalkeepers. In the course of this study the soccer players in both groups sustained similar amounts of injuries in relation to the position occupied on the field, but the results could be unreliable due to the small number of respondents in each group. For example, in Group I only 12 goalkeepers were tested, and in Group II – 8 (table 1).

The obtained results also show that although the number of injuries in both groups was similar, in group I, representing a higher sport level, there was a tendency for more injuries. This trend is confirmed by the research of Peterson et al., [14] and is associated with the fact that in recent decades the sport has required players to achieve better physical and mental preparation. Athletes are playing more and more matches, and their sport is much more intense and, unfortunately, more aggressive, than previously [15]. Kristenson et al. [11], extending the issue, found that experienced players often struggle with injuries, including even bone lesions associated with fatigue.

In our study the most common injuries were muscle and ankle contusions, which occurred in similar proportions in both groups (table 2). Herrero et al., analyzing more than 134,000 amateur players registered with the Spanish Football Association, showed that the most frequently injured body parts in these studies were knees and ankles that underwent twisting or ligament rupture [16]. Of all the described injuries in these studies 67.2% resolved spontaneously, while 32.8% required medical intervention. 87% of them were injuries which eliminated the athlete for a minimum of 1 match. In our study the majority of injuries occurred in the second group, representing the lower level of sports, and with less availability of physiotherapy care mainly during the preparatory training period. In Group I, in which physiotherapy care was provided in 100% of cases, injuries during training (more than in Group II) were significantly lower (table 3). This statement indicates that during the training periods the presence of physiotherapy care reduces the amount resulting injury to a greater extent than the size of the applied loads at the time. This principle does not operate during competition when matches are played in higher sport leagues, which are more dynamic and injury prone than in the lower leagues. Therefore, in our study we had a significantly greater amount of injury sustained during matches and training in group I than

in group II, despite the provided sufficient medical and physiotherapy care. A conclusion could be drawn that the intensity of sport involvement, and not the quality medical-cum-physiotherapy care determines the number of sustained injuries. Van Beijsterveldt et al., observing for one season 456 amateur and 217 professional soccer players from Dutch leagues, confirmed our observations, and noted an increased number of injuries among amateur rather than professional soccer players in the preparation period, and the inverse relationship of a larger proneness to injury during matches and training among professional football players relative to amateurs [17].

It was also shown that there is a correlation between the number of completed training sessions and a team's success [18], which is confirmed by our survey, in which nearly half of the players representing a higher level of sports (Group I) trained six times a week, while nearly half of the Group II players trained only 4 times a week (table 3). It also described the opposite relationship between the number of days without training as a result of injury and lack of team success [19].

Also, previous injury which was insufficiently cured is a factor conducive to the emergence of new injuries, and hence the proper rehabilitation and consideration of a preexisting injury, and prevention are important factors in the formation of subsequent injury [20]. In the present study it was shown that earlier injuries influenced the formation of new injuries later with the same frequency in groups I and II - (table 4). This comparison shows that the level of sports players had no effect on the recurrence of the injury. However, van Beijsterveldt et al. suggest that injuries frequently recur in the case of players at lower levels of sports [17]. It turns out that an important factor in the prevention of an injury is the athlete's relation to that newly occurred injury. In our research Group I respondents were presented who approached existing injuries with more respect than athletes in Group II, which also indicates the higher anti-injury consciousness of players representing more advanced level of sport. It has been demonstrated that 5 untreated minor injuries ultimately caused the players equally long absence from training (days without training), which entails serious injury [20]. Therefore, minor injuries should not be neglected, and awareness should be raised among players. Neglecting minor injury is often due to the fact that doctors and physiotherapists are always available only during competition, and less frequently during workouts, which are far more common sports activities, and it is during these regular activities that most minor injuries occur.

The effectiveness of the physiotherapy process is conditioned by other problems formulated in parts of the questions from the questionnaire used in our research. These questions include: the systematic participation of athletes in medical research, the possibility of using physiotherapists in sports clubs every day and during the occurrence of injury, and physiotherapists providing information about possible preven-

tion to a soccer player after his recovery from injury (Tables 3 and 5). A positive response to such questions is to demonstrate the extent to which soccer players sustained injuries after returning to good pre-injury sport and health condition.

It has been shown in our study that good sport fitness and good health condition with a history of injury was achieved to a similar extent in both groups, suggesting that the sustained injuries were of a similar type and severity. The number of sustained injuries is one of the most important factors determining the success of a sports team. Therefore, in a soccer team, in order to reduce the number of injuries, various special programs for their prevention have been introduced [21,22], which in the past have included only small groups of players, fewer than 200 people [2]. A recently introduced anti-injury prevention program, FIFA 11+, addressed many thousands of players and coaches [13,23]. This program is based on a duly performed warm-up and promotes a focus on stabilizing the body, eccentric thigh muscle training, proprioceptive training, dynamic stabilization and plyometric exercises. In our research in the field of anti-injury prevention, respondents were asked only whether before training they perform the selected forms of warm-up, and after the main training they perform stretching exercises and relaxation. Within these ranges differences were also observed between the players of both groups (table 6). The surveyed subjects in group I much more frequently performed warm-up (72.38%) and stretching-cum-relaxation exercises, while lower level soccer players (amateurs) did not appreciate the

value of these activities, and consequently performed them relatively infrequently. In our opinion, these differences result from higher anti-injury awareness and better physiotherapy care in the case of more advanced soccer players (professionals in higher leagues), and reveal far-reaching differences between professional and amateur sport.

## CONCLUSIONS

1. Players with different skill levels in soccer experience injuries to similar parts of the body with similar frequency.
2. Increased proneness to injury occurring in players with a higher level of playing skills took place during competition, in spite of better physiotherapy care in this group, and more anti-injury prevention, indicating that the main factor in proneness to injury in these conditions is the intensity of sport competitiveness.
3. For athletes with lower levels of sporting skills injury occurred most frequently mainly during the preparatory training period, which is associated with inadequate physiotherapy care, lower awareness, and lower anti-injury prevention.
4. The high level of injuries in soccer compels those involved to seek preventive measures, which in this study were presented as the availability and attitude of physiotherapists, as well as the attitude and behavior of athletes.

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# VACCINATIONS AS A PROBLEM OF MEDICALIZATION

## MEDYKALIZACJA SZCZEPIEŃ OCHRONNYCH

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**A** – przygotowanie projektu badania | study design, **B** – zbieranie danych | data collection, **C** – analiza statystyczna | statistical analysis, **D** – interpretacja danych | interpretation of data, **E** – przygotowanie maszynopisu | manuscript preparation, **F** – opracowanie piśmiennictwa | literature review, **G** – pozyskanie funduszy | sourcing of funding

### SUMMARY

**Background:** The process of medicalization as a form of biopower is present in many aspects of human life, including vaccination.

**Aim of the study:** The study aims to determine social attitudes towards medicalization in the context of vaccination, and to assess the relationship between children's vaccinations and the knowledge and education of their parents.

**Material and methods:** This survey-based study involved 180 subjects – 141 women and 39 men. The median of age was 28 years. 32.2% of the participants (58) had a medical education and 67.8% (122) non-medical education. 52.78% of people included in the study (95) had at least one child and 47.22% (85) were childless. The study was conducted using the authors' questionnaire followed by the test of knowledge.

**Results:** Respondents with a high level of knowledge are afraid of vaccination policy and believe that the fact that the state decides on these issues is a violation of human rights. The majority of them do not vaccinate their children. People with medical education vaccinate their children more often than those with non-medical education.

**Conclusions:** In the context of vaccination, it is clear that the level of the knowledge and the number of vaccinated children are unsatisfactory. Repeated myths about harmfulness of vaccinations and fear of adverse post-vaccination reactions are the reasons, why parents refuse to vaccinate their children. The control of biopolitics over vaccinations is a part of medicalization, which is strongly experienced by individuals with a high level of knowledge. Reliable information provided by a physician could increase the number of parents, who decide to vaccinate their children.

**KEYWORDS:** medicalization, biopower, biopolitics, vaccination, prevention, anti-vaccination movements

### STRESZCZENIE

**Wstęp:** Proces medykalizacji jako biowładzy i kontroli objął wiele płaszczyzn i sfer ludzkiego życia, w tym w obszar szczepień ochronnych.

**Cel pracy:** Określenie społecznego odczucia medykalizacji w kontekście szczepień ochronnych oraz ocena poziomu wyszczepialności dzieci w odniesieniu do poziomu wiedzy i wykształcenia rodziców.

**Materiał i metody:** Badania przeprowadzono wśród 180 osób – 141 kobiet i 39 mężczyzn, mediana wieku wynosiła 28 lat. Wykształcenie medyczne miało 32,2% (58), niemedyczne – 67,8% (122); 52,78% (95) badanych miało co najmniej jedno dziecko, osoby bezdziejne stanowiły 47,22% (85). Zastosowano sondaż diagnostyczny z wykorzystaniem autorskiego kwestionariusza ankiety wraz z testem wiedzy.

**Wyniki:** Respondenci o wysokim poziomie wiedzy obawiają się polityki szczepień ochronnych oraz twierdzą, że decyzyjność państwa w tej sprawie to łamanie praw człowieka. Większość z nich nie szczepi swoich dzieci. Osoby z wykształceniem medycznym częściej niż osoby z wykształceniem niemedycznym poddają dzieci szczepieniom ochronnym.

**Wnioski:** W kontekście szczepień ochronnych uwidacznia się niezadowolający poziom wiedzy społeczeństwa i niezadowolający poziom wyszczepialności dzieci. Powielanie mitów na temat szkodliwości szczepień oraz obawa przed niepożądanymi odczynami poszczepiennymi powoduje rezygnację rodziców ze szczepienia dzieci. Kontrola

biopolityki nad procesem wyszczepialności wchodzi w obszar medykalizacji, co silnie odczuwają osoby o wysokim poziomie wiedzy. Dostarczenie rzetelnych informacji w relacji lekarz – rodzic mogłoby spowodować wzrost pozytywnych decyzji o szczepieniu.

**SŁOWA KLUCZOWE:** medykalizacja, biowładza, biopolityka, szczepienia ochronne, profilaktyka, ruchy antyszczepionkowe.

## BACKGROUND

Medicalization has been associated only with an increasing domination of medicine since 1970's. Twenty years later studies on medicalization embraced already a broader sociological and cultural context, thus the term "medicalization" was introduced to the medical terminology for naming various social and cultural issues [1,2]. According to Foucault's (2010), the medicalization means mechanism introducing the biological characteristics of the human species into the politics, turning it into the object used in the strategy of power [3]. This phenomenon rests on economical basis and leads to utilization of medicine to define the health by the categories of risk and material benefits [4]. Application of medical achievements into the control of health condition of the society reflects in the policy of vaccinations. According to the present regulation, the arrangement of vaccination program is based on many foundations - starting with regulations on necessity of prophylaxis, the tasks of doctors, nurses and midwives, ending with legal sanctions in case of when someone refuses to follow imposed rules. An attempt is made to vaccinate as many people as possible, in order to immunize the population and decrease the morbidity, thus preventing epidemia [5]. Medical prevention in the context of vaccinations focuses on reduction of morbidity and eradication of infectious diseases. A maximum increase in utilization of available vaccines is one of the priorities indicated by WHO [5].

## AIM OF THE STUDY

The aim of the study was to determine the social impression of medicalization in the context of vacci-

nations and to evaluate the vaccination ration in the context of knowledge and education.

## MATERIAL AND METHODS

The study was conducted between May and June, 2014 using a diagnostic survey with the questionnaire elaborated by the authors, including the knowledge test. The test consisted of 9 questions. The participants had to chose the correct answer - Table 1. The study was conducted on 180 people, including 141 women (78.3%) and 39 men (21.7%), median age was 28 (range: 55–19), medical education received 32.2% of participants (58), whereas non-medical education 67.8% of them (122) [Tab. 2]. The statistical analysis was conducted with the IBM SPSS 24.0 program. The distribution of constant variable was performed with the Shapiro-Wilk test. The Pearson's chi-squared test was used in the study. The statistical significance threshold was set at 0,05. The study was financed by the authors.

The knowledge in the study group was assessed using the following levels: no knowledge (0 points), very low level of knowledge (1–4 points), low level of knowledge (5–6 points), and average level of knowledge (7–8 points) high level of knowledge (9 points).

## RESULTS

1 of 5 evaluated people vaccinates his/her children according to the vaccination schedule (20.6%, 37), and 42.2% (76) of people, who do not have children at this moment declare that they will vaccinate their children [Tab. 3]. 37.9% (22) of respondents with medical edu-

Table 1. The knowledge regarding medicalization of vaccination

Questions:	Answers:	Questions:	Answers:
How often is the vaccination schedule issued (the schedule indicating when a particular vaccine should be administered)?	Every year.	Vaccination is performed by:	Family doctor
	Every two years.		Health promoter
	Approximately every five years.	Can vaccination cause a partial or total hearing loss?	Yes
	A new schedule is issued only when a change is implemented.		No
The body that qualifies a child for immunization is:	Doctor	Can complications after vaccination lead to the death of a child?	Yes
	Parent		No
	Nurse	Do adverse reaction to vaccination occur in each vaccinated child?	Yes
	Midwife		No
Vaccination is performed by:	Every nurse / midwife	Does the parent have the right to demand that a vaccination to be performed by the other person than the one currently on duty?	Yes
	Nurse / midwife with vaccination course		No
	Family doctor	Vaccinations are mandatory in Poland until the age of	8 years
	Health promoter		15 years
Every nurse / midwife	17 years		
Vaccination is performed by:	Nurse / midwife with vaccination course		19 years

Table 2. Sociodemographic characteristics of the study group

Variable		Overall N (%)	Medical education N (%)	Non-medical education N (%)	Test P
		180 (100.00)	58 (32.22)	122 (67.78)	
<b>Sex:</b>	women	141 (78.33)	46(79.31)	95 (77.87)	0.827
	men	39 (21.67)	12 (20.69)	27 (22.13)	
<b>Age:</b>	X ± SD	7.70	9.33	6.5	0.022
	Me	28	30	27.5	
	Mini-max	19–55	20–55	19–52	
	Q1 – Q3	24–34	26–41.25	24–32.25	
<b>Place of residence:</b>	city	150 (83.33)	42 (72.41)	108 (87.52)	0.007
	village	30 (16.67)	16 (27.59)	14 (11.48)	
<b>Having children:</b>	no	85 (47.22)	27 (46.55)	58 (47.54)	0.9
	Yes	95 (52.78)	31 (53.45)	64 (52.46)	
<b>Number of children:</b>	1 child	49 (51.58)	13 (41.94)	36 (56.25)	0.215
	2 children	35 (36.84)	13 (41.49)	22 (34.38)	
	3 children	7 (7.37)	2 (6.45)	5 (7.81)	
	4 children and more	4 (2.22)	3 (9.68)	1 (1.56)	
<b>Workplace:</b>	Related to medicine	38 (21.11)	35 (60.34)	3 (2.46)	<0.0001
	Unrelated to medicine	138 (76.67)	21 (36.20)	117 (95.90)	
	No answer	4 (2.22)	2 (3.45)	2 (1.64)	
<b>Education:</b>	grammar	0 (0.00)	0 (0.00)	0 (0.00)	0.395
	professional	2 (1.11)	0 (0.00)	2 (1.64)	
	secondary	59 (32.78)	22 (37.93)	37 (30.33)	
	higher	119 (66.11)	36 (62.07)	83 (68.03)	
<b>Vaccinated respondents:</b>	Yes	177 (98.33)	58 (100.00)	119 (97.54)	0.230
	no	3 (1.67)	0 (0.00)	3 (2.46)	

cation declared that they do vaccinate their children. 40.2% (49) of parents with non-medical education do not vaccinate their children. Statistically significant correlation has been shown between vaccination of children or declaration of vaccination and the type of education ( $\text{Chi}^2= 19.11; \text{df} = 3; p < 0.001$ ).

The highest proportion of people, who vaccinated their children presented a low level of knowledge (27.3%, 15) [Tab. 4]. The people, who do not have children but declare that they would vaccinate their children presented a very low level of knowledge (68.4%, 26). The

people, who presented a high level of knowledge do not vaccinate their children. The relationship between vaccination of children and the level of knowledge of their parents was statistically significant ( $\text{Chi}^2=34.01; \text{df}=9; p=0.00$ ).

The decision regarding vaccination was influenced not only by the level of general knowledge but also the knowledge of anti-vaccination movements. As many as 79.7% of parents (47), who do not vaccinate children are aware of the statement presented by anti-vaccination movements ( $\text{Chi}^2= 36.199; \text{df} = 3; p < 0.001$ ).

Table 3. Vaccination according to the vaccination schedule

Variable	Education		Overall	Test p	
	Non-medical education	Medical education			
Yes	N	15	22	37	0.00
	%	12.3%	37.9%	20.6%	
No	N	49	10	59	
	%	40.2%	17.2%	32.8%	
I do not have children, but I think that if I had, I would vaccinate them.	N	53	23	76	
	%	43.4%	39.7%	42.2%	
I do not have children, but I think that if I had, I would not vaccinate them.	N	5	3	8	
	%	4.1%	5.2%	4.4%	
Overall	N	122	58	180	
	%	100.0%	100.0%	100.0%	

Table 4. Vaccination according to the vaccination schedule

Variable	Level of knowledge				Overall	Test p	
	very low	low	average	high			
Yes	N	8	15	10	4	37	0.00
	%	21.1%	27.3%	15.4%	18.2%	20.6%	
No	N	4	11	32	12	59	
	%	10.5%	20.0%	49.2%	54.5%	32.8%	
I do not have children, but I think that if I had, I would vaccinate them.	N	26	25	21	4	76	
	%	68.4%	45.5%	32.3%	18.2%	42.2%	
I do not have children, but I think that if I had, I would not vaccinate them.	N	0	4	2	2	8	
	%	0.0%	7.3%	3.1%	9.1%	4.4%	
Overall	N	38	55	65	22	180	
	%	100.0%	100.0%	100.0%	100.0%	100.0%	

Among the people, who presented a high level of knowledge, 59.10% (13) is afraid of vaccinations [Tab. 5] The overwhelming majority thinks that vaccination policy goes in the wrong direction, which means increased state control over the health of children and adolescents (36.4%, 8). Parents with a very low level of knowledge are not concerned about vaccination regime (71.1%, 27). The relationship between the fear of vaccination and the level of knowledge was detected ( $\text{Chi}^2=25.671$ ;  $\text{df} = 12$ ;  $p = 0.012$ ). The people, who express their concern regarding mandatory vaccinations (35.6%, 21) and adverse post-vaccination reactions (45.8% 27) refuse to vaccinate their children whereas, the parents who vaccinate their children do not express concerns (56.7%, 22). Concerns about adverse post-vaccination reactions affect the decision on vaccinating children ( $\text{Chi}^2= 108.249$ ;  $\text{df} = 12$ ;  $p < 0.001$ ).

The highest percentage of respondents (49.4%, 89) believe that the health care system in Poland does not respect the rights of the patient. This view is expressed by 72.7% of people (16) with high levels of knowledge about vaccinations. People, who believe that patient's rights are respected presented a low level of knowledge (29.1%, 16) ( $\text{Chi}^2= 17.256$ ;  $\text{df} = 6$ ;  $p = 0.008$ ). Patient's rights are not respected in Poland according to 44.8% of people (26) with medical education and 51.6%

(63) with non-medical education. The differences are statistically significant ( $\text{Chi}^2= 8.210$ ;  $\text{df} = 2$ ;  $p = 0.016$ ).

Considering medicalization of vaccinations respondents believed that by means of vaccinations the state cares for the health of the population (33.5%, 60) [Tab. 6]. The major percentage of people, who gave such an answer presented a low level of knowledge (50%, 19). Respondents with a high level of knowledge (54.5%, 12) claimed that mandatory vaccinations are an ordinary example of human rights violation. There was a statistically significant relationship between the perception of medicalization of vaccinations and the level of knowledge of the respondents ( $\text{Chi}^2= 8.210$ ;  $\text{df} = 2$ ;  $p = 0.016$ ).

## DISCUSSION

The own studies show that the medicalization process can therefore be considered both positive and negative, and in most cases it is subjectively experienced by the patient [6].

The knowledge of respondents was not satisfactory. Only one out of 12 respondents presented a high level of knowledge on vaccinations. Based on the own studies it can be concluded that respondents would refer to the general practitioner in case of any doubts and a need to extend their knowledge, or they would search

Table 5. Fear of vaccination and adverse post-vaccination reactions.

Variable		Level of knowledge				Overall	Test P
		very low	low	average	high		
No. I was vaccinated and nothing happened to me.	N	18	20	12	2	52	0.012
	%	47.4%	36.4%	18.5%	9.1%	28.9%	
No. I believe that vaccinations are safe.	N	9	7	9	3	28	
	%	23.7%	12.7%	13.8%	13.6%	15.6%	
Yes. The policy of mandatory vaccinations goes in the wrong direction.	N	4	9	12	8	33	
	%	10.5%	16.4%	18.5%	36.4%	18.3%	
Yes. We hear alot about post-vaccination complications these days.	N	5	14	21	5	45	
	%	13.2%	25.5%	32.3%	22.7%	25.0%	
Other:	N	2	5	11	4	22	
	%	5.3%	9.1%	16.9%	18.2%	12.2%	
Overall	N	38	55	65	22	180	
	%	100.0%	100.0%	100.0%	100.0%	100.0%	

Table 6. Do compulsory vaccinations limit people's right to decide about their own health?

Variable		Level of knowledge				Overall	Test P
		very low	low	average	high		
No, I believe that by means of vaccinations the state cares about the health of the society and everyone should obey it.	N	19	20	17	4	60	<0.001
	%	50.0%	37.0%	26.2%	18.2%	33.5%	
No, since such a regulation exists, it apparently has a purpose.	N	9	16	5	1	31	
	%	23.7%	29.6%	7.7%	4.5%	17.3%	
Yes, I think there are attempts to subject us to the top-down procedures.	N	5	5	15	4	29	
	%	13.2%	9.3%	23.1%	18.2%	16.2%	
Yes, I believe this is an obvious violation of human rights.	N	3	13	24	12	52	
	%	7.9%	24.1%	36.9%	54.5%	29.1%	
Other:	N	2	0	4	1	7	
	%	5.3%	0.0%	6.2%	4.5%	3.9%	
Overall	N	38	54	65	22	179	
	%	100%	100.0%	100.0%	100.0%	100.0%	

for needed information on Internet. According to Łopata et al., more than 87.1% of respondents (88) admitted that the doctor did not talk to them about vaccination at all [7]. According to Cepuch et al (2014), information provided by a physician / nurse were considered sufficient by 64% of the respondents (64) [8], because it is important that before the consent or objection the person receives precise knowledge of vaccination, it is the task of the doctor to provide reliable knowledge, which is comprehensive and understandable for people without medical education and to give information about the drug, dosage, and the course of the vaccination [9]. Moreover, the physician should inform about the risk associated with post-vaccination reactions [10]. According to the research conducted by Wojczyk, education in this area is not satisfactory since medical students

show a low level of knowledge about terminology and main definitions related to vaccinations [11]. The medicalization of vaccinations is therefore, not just a medical problem but also a social and legal one.

## CONCLUSION

Information on vaccination is still insufficient. This leads to a low level of knowledge in general population and therefore, results in a low number of vaccinated children and adolescence. Everlasting myths and fears of vaccinations and of adverse post-vaccination reactions scare the parents out of vaccinating their children. The control over the policy of vaccinations is a part of medicalization, which is strongly experienced by people with a high level of knowledge.

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# PROFESSIONAL BURNOUT AMONG NURSES AND PARAMEDICS

## ZJAWISKO WYPALENIA ZAWODOWEGO WŚRÓD PIELĘGNIAREK I RATOWNIKÓW MEDYCZNYCH

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### SUMMARY

**Background:** The burnout syndrome is characteristic for people who face constant human interaction in their work. Health care professionals are listed in this category.

**Aim of the study:** The aim of this paper was to determine the scope of the burnout syndrome and to assess the degree of burnout among health care professionals.

**Material and methods:** The study was conducted among a population of 110 nurses and paramedics working in the Opole Province. The research tool used was an own questionnaire, the MBI Ch. Maslach burnout questionnaire and the PSS – 10 scale (Perceived Stress Scale).

**Results:** The results show that passivity and uncertainty in dealing with people (33%) and low mental resilience (29%) are the main personality traits that influence the occurrence of burnout.

**Conclusions:** Professional burnout occurs in all three dimensions of the syndrome, with varying degrees of severity, among health care professionals.

**KEYWORDS:** burnout, stress, nurses, paramedics.

### STRESZCZENIE

**Wstęp:** Syndrom wypalenia zawodowego najczęściej występuje w zawodach wymagających intensywnych kontaktów z ludźmi, a do tych należą pracownicy ochrony zdrowia.

**Cel pracy:** Celem pracy jest określenie i identyfikacja wielkości problemu, jakim jest wypalenie zawodowe, oraz ocena stopnia wypalenia zawodowego wśród pracowników ochrony zdrowia.

**Materiał i metody:** Badania przeprowadzono wśród 110 pielęgniarek i ratowników medycznych pracujących na terenie województwa opolskiego. Narzędziem badawczym wykorzystanym w pracy był autorski kwestionariusz ankiety, kwestionariusz wypalenia zawodowego MBI Ch. Maslach oraz skali PSS-10 (Perceived Stress Scale).

**Wyniki:** Wyniki badań przeprowadzonych wśród personelu ochrony zdrowia wskazują, iż bierność i niepewność w obcowaniu z ludźmi (33%) oraz niska odporność psychiczna (29%) to główne cechy osobowości mające wpływ na występowanie zjawiska wypalenia zawodowego.

**Wnioski:** Objawy wypalenia zawodowego występują wśród pracowników ochrony zdrowia w każdym wymiarze tego syndromu.

**SŁOWA KLUCZOWE:** wypalenie zawodowe, stres, pielęgniarka, ratownik medyczny.

## BACKGROUND

According to C. Chreniss, professional burnout is: “chronic (prolonged) stress at work, where expectations placed on the employee exhaust and exceed the capacity of individual resources” [1].

Burnout is a reaction to prolonged stress; it stems from excessive strain at work and responsibility for others. Those working with other people, i.e. teachers, psychologists, policemen, nurses and other medical professionals, are in the group with highest risk of exposure to this kind of stress, as they have to frequently confront demanding clients, patients, and parents, and come in contact with human suffering [1–3].

A person suffering from burnout often feels there are no perspectives before them and has no enthusiasm for their work. They experience physical and mental exhaustion. The main causes of burnout are environmental factors, objectifying others, overwork and lack of job-satisfaction [4–6].

People who suffer from burnout expect a lot from themselves. They are perfectionists and overly ambitious when it comes to their work. Such attitude can be seen as the beginning stage of burnout, because a person with these characteristics feels constant need to prove themselves.

Another stage is neglecting own needs, over-valuing, internal emptiness, isolation from the world, cynicism and loss of own self-worth. In its final stages, burnout takes the form of complete emotional, mental and physical exhaustion [6–8].

An analysis of the available sources shows there are three categories of exhaustion, which lead to burnout [7]:

- Physical exhaustion, inter alia chronic fatigue, lack of energy, back pain, muscle cramps, nightmares, sleep disorders, being prone to accidents, changes in body weight, etc.
- Emotional exhaustion, inter alia disenchantment, feelings of loneliness, emotional void, lack of will to act, uncontrollable crying, feeling depressed and hopeless, etc.
- Mental exhaustion, inter alia loss of self-respect, low self-worth, breaking off contact with clients and colleagues, negative attitude towards work, cynicism towards clients/patients, etc.

## AIM OF THE STUDY

The aim of this paper was to determine the scope of the burnout syndrome and to assess the degree of burnout among health care professionals.

### Material and Methods

The study group consisted of 110 nurses and paramedics employed in Brzeg Medical Centre at the intensive care unit, internal diseases, general surgery and trauma-orthopaedic departments and the ER. The respondents were between 23 and 61 years old. Women constituted 86.4% (95) of the study population. 79.1%

(87) of the respondents were nurses, 20.9% (23) were paramedics. Participation in the study was voluntary and anonymous.

The research tools included: own questionnaire divided into two parts: population data and the substantial part, consisting of questions regarding stress and burnout.

Another used research tools were the MBI Ch. Maslach burnout questionnaire and the PSS – 10 scale (Perceived Stress Scale). The participants filled out the questionnaires voluntarily and anonymously. The level of burnout among health care professionals was determined in three dimensions – depersonalisation, burnout and sense of personal achievement. Based on the data from the MBI questionnaire, the results were presented as arithmetical means (M) with standard deviation (SD).

## RESULTS

The results show that passivity and uncertainty in dealing with people, 33% (36), and low mental resilience (29%) are the main personality traits that influence the occurrence of burnout. According to the respondents, empathy and the desire to help people - 5% (5) hold the least risk of facilitating the development of the burnout syndrome.

The most frequently listed stress-generating factors at work were: lack of cooperation and support at work - 28% (31), remuneration inadequate to responsibility – 24% (26) and critique and dissatisfaction of patients and their families – 36% (29).

An analysis of the effects of stress on health care professionals shows that physiological reactions (60% - 66) were the most severe. They manifested as increased arterial blood pressure, chronic fatigue and stomach disorders. Emotional reactions (32% - 35), such as anxiety, irritability, nervousness affected a third of the respondents. Behavioural and cognitive reactions (8% - 9) connected with changes in behaviour were the least experienced during stressful situations.

According to the respondents, the factors which facilitate the development of the burnout syndrome are contact with death and suffering (34% - 37) and being responsible for the lives of other people (28% - 31).

An analysis of the data from own questionnaire allowed to surmise that 54% (60) of the respondents are averagely invested in their work. This is a sign for both the employer and the employee that negative and dangerous changes are taking place.

The results of this study showed that employees unload negative emotions and counteract the development of burnout by seeking support from family (26% - 29), close friends, acquaintances (16% - 18) and colleagues (30% - 33). Every fifth respondent did sports. Only 6% (7) turned to substance abuse and medication (4% - 4). 1% of the respondents sought professional help, which is the only safe and qualified way of handling burnout. In the dimension of “emotional exhaustion”

the result was high, for “depersonalisation” - medium. Satisfaction with work corresponded to low result for “sense of achievement”.

## DISCUSSION

An analysis of the available sources on studies of burnout among health care professionals shows that such studies are conducted fairly frequently. Own results to a large extent correspond to the results of other studies. The main cause of burnout is considered to be lack of work-satisfaction. This is connected with the character of work, less than perfect organisation, stress and close interpersonal contacts, which arise from caring for the patient and tending to their mental health.

The results of empirical studies showed that burnout occurs in three dimensions with different intensity. Depersonalisation, which occurred on medium level among the study population (M=8.89), is characterised by cynicism, passivity, apathy and objectification of others.

Another dimension of burnout, emotional exhaustion, manifests as irritability and being prone to conflicts and occurred on a high level (M=20.94). The result for lack of sense of achievement dimension was low, which points to the desire to succeed at work and being satisfied with work (M=30.35) (Tab. 1).

Table 1. The level of burnout in the study group (measured with the MBI questionnaire)

Dimension of Burnout					
Emotional Exhaustion		Depersonalisation		Sense of Personal Achievement	
M	SD	M	SD	M	SD
20.94	8.78	8.89	4.95	30.35	8.73

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When taking into consideration the general burnout indicator, the result for the study group was on a medium level. The results differed significantly from those reported by, for example, Dębska [9], where the level of burnout among nurses working at a public health care facility was low. The respondents showed higher results in depersonalisation in comparison with nurses and doctors (M=7.41) [10] and teachers (M=6) [11,12], while a higher result was recorded for doctors (M=9.75) [14].

The emotional exhaustion dimension result of the respondents was slightly lower in comparison to policemen (M=16.86) [10], nurses and paramedics (M=19.8) [11,12] and doctors (M=18.31) [14].

The result for the third dimension of burnout, lack of sense of achievement, is similar to the result for paramedics and nurses (M=29.6) [13] and significantly lower from the result of doctors (M=9.75) [14].

The burnout syndrome and stress are a significant problem among health care professionals, which is why negative factors have to be eliminated by educating the staff. Learning to cope with failure, disappointment and increasing the sense of control or developing unloading mechanisms can have enormous effect on the quality of provided care and job-satisfaction [5,8].

## CONCLUSIONS

1. The factors promoting the development of the burnout syndrome are, inter alia, passivity and uncertainty in contacts with people, lack of support and appreciation from the employer and heavy mental strain connected with the responsibility of the medical professional.
2. Symptoms of burnout can be observed in every dimension, i.e. high reference level for emotional exhaustion dimension, medium for depersonalisation and low for sense of achievement.

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# WORKING AS A PHYSIOTHERAPIST BEFORE AND AFTER THE SIGNING OF THE PHYSIOTHERAPISTS ACT OF SEPTEMBER 25<sup>TH</sup> 2015 INTO LAW: SELECTED ASPECTS

## WYKONYWANIE ZAWODU FIZJOTERAPEUTY PRZED I PO WPROWADZENIU USTAWY O ZAWODZIE FIZJOTERAPEUTY Z DNIA 25 WRZEŚNIA 2015 ROKU: WYBRANE ASPEKTY

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### SUMMARY

Article 68 of the Constitution establishes a universal right to health care. However, when considering the legal regulation of the profession of a physiotherapist, the security provided by the constitution is not guaranteed. There is no single, strict act, which would regulate the rights and obligations of patients and physiotherapists. What constituted working as a professional physiotherapist raised many doubts. The Physiotherapists Act of September 25<sup>th</sup> 2015 has long been awaited by physiotherapists. Its entry into force has a lot of positive aspects. Adopted with the consensus of the professional environment, it provides an opportunity to guarantee the patients' safety better than ever, and also to develop treatment and cooperation with the countries of Western Europe. The previous lack of legal regulations for the profession of a physiotherapist still carries negative consequences for both the patients and physiotherapists, as it creates a gap that can be exploited by non-physiotherapists who offer their services. The aim of the study was to present the current legal status of the physiotherapist's profession and to compare it after the Physiotherapists Act entered into force.

**KEYWORDS:** physiotherapist profession, rights and obligations of a physiotherapist, legal aspects of working as a physiotherapist

### STRESZCZENIE

Zgodnie z art. 68 Konstytucji RP każdy ma prawo do ochrony zdrowia. Niemniej, patrząc z perspektywy regulacji prawnych zawodu fizjoterapeuty, bezpieczeństwo, które daje nam, obywatelom, konstytucja, nie jest zagwarantowane. Brakuje jednolitego, ścisłego aktu, który regulowałby prawa i obowiązki przysługujące zarówno pacjentom, jak i fizjoterapeutom. Wykonywanie zawodu fizjoterapeuty budziło wiele wątpliwości. Ustawa z dnia 25 września 2015 r. o zawodzie fizjoterapeuty to regulacja od dawna oczekiwana przez to środowisko. Wejście jej w życie niesie za sobą wiele pozytywnych aspektów. Uchwalona w konsensusie środowiska zawodowego daje



pacjentom gwarancję większego niż dotychczas bezpieczeństwa, jest szansą na rozwój fizjoterapii i postępy w leczeniu oraz na współpracę z krajami Europy Zachodniej. Dotychczasowy brak prawnego uregulowania zawodu fizjoterapeuty ma wciąż negatywne konsekwencje zarówno dla pacjentów jak i dla samej grupy zawodowej, stwarza bowiem lukę dla wykonywania tego zawodu przez osoby niebędące fizjoterapeutami. Celem pracy jest przedstawienie obecnego statusu prawnego zawodu fizjoterapeuty oraz porównanie go po wejściu w życie ustawy z dnia 25.09.2015.

**SŁOWA KLUCZOWE:** zawód fizjoterapeuty, prawa i obowiązki fizjoterapeuty, prawne aspekty zawodu fizjoterapeuty

## INTRODUCTION

Modern physiotherapy, both in Poland and abroad, has come a long way, formulating its aims in different degrees and from different points of view. The term “physiotherapy” was coined for the new discipline of knowledge and practice that emerged from medicine and physical culture. In terms of treatment, physiotherapy is a set of actions aimed at restoring a patient’s impaired motor functions or, if that is impossible, developing replacement ones to compensate for the loss. The very name (from Greek *physis* – nature and *therapeia* – treatment) suggests that physiotherapy uses natural factors, such as movement, light, electricity, air, and water, for treatment purposes. The term stands for stimulation of or intentional action in case of impaired physiological functions using natural physical means and based on the broadly defined rules of natural therapy [1]. The Physiotherapists Act [2], passed on September 25<sup>th</sup> 2015, was designed to regulate the legal aspects of a physiotherapist’s profession. The act was originally supposed to enter into force in June 2016, however due to the legislative initiative aimed at moving the date (Parliamentary Document no. 285/VIII term [3]), the *vacatio legis* will probably be extended by 24 months, i.e. until April 2018. The aim of the initiative is to present which legal acts regulate the current status of a physiotherapist and what consequences the Act of September 25<sup>th</sup> 2015 will have.

## THE LEGAL STATUS OF A PHYSIOTHERAPIST IN THE CONTEXT OF CURRENT LEGAL ACTS (SELECTED ASPECTS)

Article 2 paragraph 1 point 2 of the Health Care Act of April 15<sup>th</sup> 2011 [4], defines a person working in a medical profession as someone who is authorised by other regulations to provide medical services and as someone who can present documents confirming relevant qualifications authorising them to provide medical services in an indicated scope or area of medicine. The term “practice of a medical profession” corresponds to individuals who competently, constantly and for the purposes of earning money work in a field connected with medicine and who have appropriate qualifications. Therefore, even though the act regulating a physiotherapist’s profession is not yet in force, physi-

otherapists should be included in medical professions. Pursuant to the regulation of the Minister of Labour and Social Policy of April 27<sup>th</sup> 2010 on the classification of occupations and specialisations for the requirements of the labour market and its scope of use [5], the physiotherapist was entered as item 228301 and a physiotherapy technician was entered as item 5 325401, in the group of physiotherapy technicians and massage therapists. Pursuant to the regulation of the Minister of Social Policy of September 22<sup>nd</sup> 2005 on specialist care services [6], specialist care services can be provided by individuals with relevant qualifications, which includes physiotherapists. Article 43 paragraph 1 of the Physical Culture Act of January 18<sup>th</sup> 1996 [7] establishes the competences of physiotherapists in physical recreation and motor therapy. The paragraph states that: “Physical therapy exercises and physical therapy treatment can be performed by physiotherapists and graduates of higher education institutions with specialisation physical therapy or therapeutic exercise, and physiotherapy technicians.” [8] Article 68 of the Constitution of the Republic of Poland [9] establishes a universal right to health care. However, when considering the legal regulation of the profession of a physiotherapist, the security provided by the constitution is not guaranteed. There is no single, strict act, which would regulate the rights and obligations of patients and physiotherapists.

## PHYSIOTHERAPIST’S EDUCATION

In Poland, a physiotherapist’s education consists of an undergraduate and graduate programme. It is possible to continue education in a PhD programme or during a four-year specialisation. Several hundred Polish physiotherapists have academic credentials or are enrolled in doctoral programmes. Over 700 completed the specialisation programme. Poland has a well-developed occupational training system with certified courses teaching physical therapy methods recognised by the universal system of education and courses, which are held by Polish lecturers with many years of professional experience, specialists in different areas of physical therapy. An estimated number of 30,000 physical therapists in Poland completed occupational training. Physiotherapists are employed by public and private health care institutions, integrated and special needs

schools and kindergartens, social care facilities, sports clubs and higher education institutions [10]. Furthermore, physiotherapists gain professional experience at internships during their studies. The Physiotherapists Act provides opportunities for growth and teaching in the area of physical therapy and medicine. Granting more rights to physiotherapists can help the level of this field of medicine reach new heights. In Western Europe physiotherapists have great influence on a patient's treatment. They decide, *inter alia*, about the course of action during surgery. The Act will ensure the cooperation between physiotherapists and doctors is more effective.

The rights and obligations of a physiotherapist pursuant to the Physiotherapists Act of September 25<sup>th</sup> 2015 (selected aspects)

The Act mainly describes the rights and obligations of a physiotherapist. The first issue covered is the right to practice, which is granted to a person with:

- Full legal capacity
- Clean bill of health, certified by a doctor
- Sufficient level of Polish
- A diploma, certificate or another document which certifies their professional qualifications [11]

If a physiotherapist did not practice for a period longer than 5 years within the last 6 years and intends to return to work, they are obligated to inform the National Physiotherapists Council and undergo a training, which last up to 6 months [11]. This is one of the more significant provisions of the Act, which allows the physiotherapists to avoid malpractice after a long break in practice. It is a mechanism intended to protect the patients, but also to help physiotherapists returning to their profession.

A physiotherapist is obligated to:

- Maintain medical records and provide access to them
- Provide the patient or their legal representative or next of kin or actual guardian with information necessary for the offered health services
- Maintain the confidentiality of the patient's information [11]

Institutions included in the Physiotherapists Act of September 25<sup>th</sup> 2015

The competent authority issuing authorisation to work as a physiotherapist in the National Physiotherapists Council, which enters a person into a register, issues a certificate the physiotherapist has submitted a declaration and relevant documents. A physiotherapist from one of EU's member states, the Swiss Confederation or one of the member states of the European Free Trade Association can temporarily and from time to time work as a physiotherapist, if they submit the following documents to the National Physiotherapists Council:

- A written declaration of intent to temporarily or from time to time work as a physiotherapist in Poland
- A document confirming their citizenship

- A certificate stating they worked as a physiotherapist for at least one year in the last 10 years or a document confirming regulated education
- A document certifying their qualifications as a physiotherapist [11]

The National Physiotherapists Council maintains a National Register of Physiotherapists. It contains the data of physiotherapists qualified to practice. The Council issues certificates stating that a physiotherapist is qualified to practice [11]. The Register is available to both private individuals looking for physiotherapists and to entities offering services in connection with the theme and scope of the Register. Being entered into the National Register of Physiotherapists, Massage Therapists and Bio-Massage Therapists (Polish abbreviation KRFMiB) confirms the individual's credentials and ensures their qualifications and competences were verified by the KRFMiB. A clear search panel allows you to find a specialist or a facility which offers required services and assess their competences [12]. Another significant institution is the physiotherapists' self-government, which ensures the physiotherapists carry out their duties diligently, represents physiotherapists, provides pro-health education and promotes health, establishes the professional ethics rules and ensures they are followed, cooperates with national science associations, whose members include physiotherapy specialists, and finally safeguards professional dignity [11]. Clearly, the self-governance body is active not only in the physiotherapists' community, but also in the society. Its activities have significant effect on the society, *inter alia* by promoting a healthy lifestyle. The body is also active in associations which provide physical therapy to patients.

## PROFESSIONAL LIABILITY OF PHYSIOTHERAPISTS

Working as a physiotherapist raised many doubts, mainly in regards to civil liability for malpractice during diagnosis or treatment, but also in regards to instances rules of professional ethics were broken. Pursuant to article 85 point 2 of the Physiotherapists Act, both Polish citizens and citizens of the EU who temporarily and from time to time work as a physiotherapist in Poland are subject to professional liability [11].

Malpractice can occur in a physiotherapist's practice, even on the diagnostic stage. Types of malpractice include:

- Diagnostic malpractice – error in diagnosing a disease entity based on the symptoms or during the taking of the patient's medical history
- Therapeutic malpractice – implementing an incorrect method of treatment, performing a procedure which should not have been performed
- Technical malpractice – incorrect technical execution of an action; it can especially refer to faulty execution of a procedure [13]

A physiotherapist working in a private practice can make one of the abovementioned types of malpractice, because they have to examine the patient themselves. Therefore there is room for malpractice even at the very beginning, e.g. during diagnosis, which lead to malpractice during treatment. In the event of bodily harm or damage to health, damages cover all resulting costs. In the injured party has lost full or partial the ability to work, or their needs increased or future prospects decreased, they can demand invalidity pension from the party obligated to compensate for the damage [14]. The National Physiotherapists Council maintains a register of penalised physiotherapists, which includes relevant records [11]. The list is published and available on the National Physiotherapists Council's website.

## CONCLUSIONS

The Physiotherapists Act of September 25<sup>th</sup> 2015 has been long awaited by physiotherapists. Adopted

with a consensus of the professional environment, it provides an opportunity to guarantee the patients' safety better than ever, inter alia by introducing mechanisms controlling the physical therapy activities, introducing a state exam which verifies the qualifications of a physiotherapist, establishing a National Register of Physiotherapists, and establishing legal accountability of physiotherapists. The previous lack of legal regulations of the profession of physiotherapist still carries negative consequences for both the patients and physiotherapists, as it creates a gap that can be exploited by non-physiotherapists who offer their services [3]. The Act introduces many restrictions, but also provides opportunities for growth. In other Western European countries physiotherapists have greater rights and carry more weight in the field of medicine, which translates into better quality medical care. Physiotherapists become more and more significant. The cooperation between physiotherapists and doctors in hospitals and other health care facilities could be more effective.

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# WOMEN'S BODY IMAGE AND BREASTFEEDING

## OBRAZ CIAŁA KOBIET A KARMIENTE PIERSIĄ

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### SUMMARY

Only a small number of studies draw attention to the relationship between body image after pregnancy and during lactation with the decision to undertake and continue breastfeeding. Body image is a complex mental construct, which consists of: cognitive, emotional and behavioural components, and which is subject to change during the life of the woman. Pregnancy, childbirth and lactation affect the physicality of women, which is also reflected in the way of defining their body image.

Dissatisfaction with own body can affect the decision to breastfeed or cause discomfort during breastfeeding. At the same time, undertaking breastfeeding can, through the hormones secreted at the time, positively influence the assessment of the woman's body before and during pregnancy. The discovery of this relationship, and in the future indicating the precise correlation phenomena, could have a practical use in working with patients whether to breastfeed.

By noticing and identifying an early onset of irregularities in the forming body image of a pregnant women, healthcare professionals can support those in need to build a real body image and positive attitude towards occurring changes and thus increase their comfort. Recognising and understanding the obstacles women experience on the road to breastfeeding, educators and professionals can create programs which consider a more complex, psycho-physical dimension of breastfeeding.

**KEYWORDS:** breastfeeding, acceptance of the body after pregnancy, dissatisfaction with body image

### STRESZCZENIE

Nieliczne z dotychczas przeprowadzonych badań naukowych zwracają uwagę na związek obrazu ciała kobiet po przebytej ciąży oraz w okresie laktacji, z ich decyzją o rozpoczęciu i utrzymaniu karmienia naturalnego. Obraz ciała jest złożonym konstruktem psychicznym, na który składają się komponenty: poznawczy, emocjonalny i behawioralny. Podlega on zmianom i przeformułowaniom w trakcie życia kobiety. Ciąża, poród i okres laktacji mają wpływ na fizyczność kobiety, co znajduje również swoje odzwierciedlenie w sposobie definiowania jej obrazu ciała.

Dostępne w literaturze wyniki badań wskazują, że niezadowolenie z własnego ciała może mieć wpływ na decyzję kobiety o karmieniu piersią lub też być przyczyną jej dyskomfortu w trakcie tego doświadczenia. Jednocześnie, podejmowanie aktu karmienia piersią, za pośrednictwem wydzielanych w tym czasie hormonów, może pozytywnie wpływać na ocenę ciała kobiety sprzed i w trakcie ciąży. Odkrycie tej zależności, a w przyszłości wskazanie precyzyjnych zjawisk korelacyjnych, może mieć praktyczne zastosowanie w pracy z pacjentkami wahającymi się czy podjąć karmienie swojego dziecka piersią.



Pracownicy służby zdrowia, zauważając i identyfikując jak najwcześniej nieprawidłowości w kształtującym się obrazie ciała ciężarnej kobiety, mogą wspierać ją w budowaniu realnego obrazu ciała i kształtowaniu pozytywnej postawy wobec zachodzących w nim zmian, a tym samym zwiększać jej komfort. Rozpoznając bariery kobiet na drodze do karmienia piersią, edukatorzy i specjaliści mogą tworzyć programy uwzględniające bardziej złożony psychofizyczny wymiar doświadczenia, jakim jest karmienie naturalne.

**SŁOWA KLUCZOWE:** karmienie piersią, akceptacja ciała po ciąży, niezadowolenie z własnego ciała

## INTRODUCTION

Women's breasts are one of attributes of femininity, extolled by artists, poets, and millions of men. In Ancient Egypt, a deep neckline symbolised, inter alia, health, fertility, beauty and the capacity to feed offspring. Nowadays, the views on the aesthetic and social function of women's breasts are divided [1]. They definitely are a key element of a woman's identity, affecting her acceptance of herself and, furthermore, the level of psychological wellbeing and functioning in close relationships, including the relationship with her children [2].

Body image is a complex construct, which is realised through the cognitive, behavioural and emotional components. Due to the complex structure of body image, it changes in the course of life and the differences in its perception, both in the holistic and partial aspects, affect self-worth. Women ask themselves questions, and thus constantly revise and modify, if necessary, the subjective assessment of their bodies. By observing their bodies, using the sensory perception of it and assigning emotional responses to particular observations, a woman establishes the level in which she accepts her physicality. The available sources are full of reports on women's body image in different socio-economic and personal situations [3]. However, the issue of the body image of breastfeeding women was rarely taken up. This area remains largely unexplored in Poland. However, it would appear that breastfeeding can affect women's satisfaction with their bodies [4].

Biologically, the main function of a woman's breasts is producing milk – sustenance for a new-born. The anatomy of the breast gland is individual, adapted to the woman's body and can differ in outward appearance, inter alia in size. The breast has the capacity to change size depending on the amount of fat tissue inside, which can be observed, e.g. during diets, when a decrease in body fat also causes a decrease in breast size. An increased amount of fat tissue in the breast has no effect on lactation. The development and maturing of the breast glands during puberty and procreation causes changes in a woman's appearance, both in the physical and the psychological sphere [5]. Once the breasts and other sex-specific characteristics develop, a young woman's body image changes in the cognitive component, which also affects the behavioural and emotional components [3].

A woman's acceptance of her breasts, as with other attributes such as hair or hips, affects her psychological

and emotional functioning and her self-worth. Being discontent with own appearance can negatively affect psychological well-being [6], and the need to appear attractive, which includes having a beautiful pair of breasts, may become a priority. Significant features constituting external appearance and attractiveness of breasts are size, symmetry, ratio to body size and firmness (consistency). The requirements in regards to these features raise interest in plastic surgery, which promises perfect breasts can be achieved by transplanting tissues or by implants [7].

The available sources and educational materials on breastfeeding stress the technical aspects of natural feeding, omitting its co-dependency, interaction and complexity. It is noteworthy that the available sources include very little empirical papers analysing the emotional and social context of breastfeeding [8]. It is also noteworthy that socio-emotional factors can affect a woman's decision whether or not to breastfeed and how soon to stop breastfeeding.

## BODY IMAGE AND NATURAL FEEDING

Body image is the mental structure representing individual experiences – in cognitive, emotional and behavioural spheres – connected with perception of own body [9]. For the subject of this paper, of key significance are studies researching the body image of women in the periparturient period due to its cognitive, emotional and behavioural dimensions, which can significantly affect well-being and the women's decisions regarding pregnancy, labour and postpartum. The cognitive component of body image covers the thoughts and beliefs a woman formulates about her appearance, based on empirical data and other peoples' views. The emotional component is connected with feeling happy or unhappy with own appearance or a part of it. It can cause significant emotional discomfort, which is often connected with increased body weight and changes in appearance of particular body parts during pregnancy and postpartum. The behavioural component of body image covers behaviours aimed at improving appearance, inter alia a diet, physical activity or specialised medicinal or beauty preparations [3,10].

Studies show that one of the factors pertaining to the decision to not breastfeed is the belief that natural feeding has negative effect on breast shape. Arora et al. list four more factors: lack of consent of the partner, worries about sufficient amounts of milk, return

to work and discomfort during breastfeeding [11]. Even though negative effect of breastfeeding on breast shape was not scientifically proven, subjective risk assessment and its results render the problem serious enough for many women to fear the aesthetic consequences [11]. Women also fear that breastfeeding will have effect on their physical appearance, assessed by their partner. However, studies show that men did not consider their breastfeeding partners any more or any less attractive than before the pregnancy. Within those results, 13% considered their partners less attractive and 27% considered their partners more attractive [12].

### **PSYCHOLOGICAL ASPECTS BEHIND THE DECISION TO BREASTFEED**

Dissatisfaction with own body stems from negative beliefs about own body, experiencing negative emotions connected with it and undertaking actions aimed at making the appearance more attractive [3]. This can affect the decision to breastfeed or be the cause of discomfort during breastfeeding. Women who are exposed to public opinion and have their breasts assessed as sexual objects, can have problems in perceiving their breasts as a tool to feed their children. Women who receive negative feedback about their breasts or have a negative view of their body can decide against breastfeeding, in order to improve their self-worth and feel more attractive [7].

Foster et al. (1996) confirmed the correlation between satisfaction with own body and choosing the method of feeding a child. According to Monteath and McCabe [13], breastfeeding can help a woman feel more attractive. Breastfeeding can help improve self-assessment and by generating positive emotions, affect the emotional dimension of body image, which eventually will improve satisfaction with body image after childbirth. In an analysis of the relationship between the decision to breastfeed, body image and attachment, the researchers found that women who chose to breastfeed had a more positive image of their bodies from before pregnancy than women who chose to feed with a bottle [14].

Pregnancy, labour and postpartum are a time of change and a normative developmental crisis. This special time is connected with exposure to additional stress, stemming from, inter alia, waiting for the child, fear for own health and the child's health, fear of labour, the so-called "baby blues", changes in appearance and life role, changes in the family. Studies on body image allowed to document the positive correlation between dissatisfaction with own body and stress [15]. Stress can cause worse lactation and is an important factor in maintaining positive production of milk. Moreover, depression induced by stress and negative body image can be pertinent to the mother's decision to not breastfeed [16]. Dissatisfaction with own body can lead to

depression [17]. Zanardo et al. [18] conducted a study to establish the connection between depression symptoms, negative body image and deciding against breastfeeding. The results confirmed the hypothesis that young mothers with depression symptoms often have negative image of their bodies and more frequently decide against breastfeeding. Furthermore, women who decide to breastfeed experience social costs, such as feeling restrained and lack of comfort when they breastfeed in public. Finally, some women believe breastfeeding causes them to temporarily lose their sex drive.

A different approach is presented by studies, according to which breastfeeding can protect against stress. Those studies show that breastfeeding women subjected to stressful exercises had significantly lower stress hormone, such as cortisol or ACTH, levels in the blood than women not breastfeeding or women without children [19].

### **DISCUSSION**

The presented results show, first of all, the significant role and effect of breastfeeding a new-born on the functioning of the physical, emotional, cognitive and behavioural spheres in women. The number of challenges faced by a new mother, including the decision to breastfeed and continue to breastfeed, carry a lot of stress. However, the quoted studies [19] show the protective effect of breastfeeding, which is realised by changes in the hormonal balance and which can have secondary effect on the psychophysical functioning of a woman and, to some extent, neutralise the negative effects of breastfeeding on body image, levels of stress and depression.

The ambiguous results concerning the effect of breastfeeding on the psychophysical functioning of a woman call for further research in this area, both in the negative and positive consequences for women's functioning. The long-term effect of breastfeeding on the psychophysical condition of a mother remain unexplored.

### **CONCLUSIONS**

Establishing the relationship between breastfeeding and body image can have practical applications. Health care professionals can identify the problem and support women in building a positive body image and thus increase their comfort. By recognising the barriers women face in deciding whether to breastfeed, the educators and specialists can create programmes which include a more complex dimension of the experience of breastfeeding, instead of focusing only on the medical and technical aspects of this process. We should stress the significance of breastfeeding for prophylaxis and its benefits for a woman's psychological functioning, and talk with the female patients about their fears, including those about appearance and other barriers preventing them from deciding to breastfeed.

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# CARING FOR A POTENTIAL ORGAN DONOR AT AN INTENSIVE CARE UNIT - THE ROLE OF THE NURSE

## OPIEKA NAD POTENCJALNYM DAWCĄ NARZĄDÓW W ODDZIALE INTENSYWNEJ TERAPII – ROLA PIEŁĘGNIARKI

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### SUMMARY

Brain death causes irreparable loss of function of the brain as whole and is tantamount to the individual death. According to the governing laws in Poland, a committee composed of three consultants, including a specialist in anaesthesiology and intensive care and a specialist in neurosurgery or neurology, states the individual death. Stating brain death has occurred discharges doctors from their obligation to continue therapy.

In the event the organs can be harvested for transplant, after ruling out the objection of the deceased and medical counter indications, medical staff continues to care for the donor during the period of preliminary observation, diagnostics and establishing brain death, and later for the deceased, until the organs are harvested. It includes all activities, from monitoring to therapy, diagnostic and nursing activities.

Nurses play an important role in the team providing care to a donor. The nurse should have extensive knowledge about brain death, its course and results, as they play an important role in proper diagnostic procedure and providing proper care until the organs are harvested. Strict nursing supervision of the donor allows the staff to detect deviations in the functioning of the organism early.

The aim of this paper was to present the procedures concerning declaring brain death and portraying the role of a nurse in caring for a potential organ donor at an intensive care unit.

Conclusions. Proper procedure is paramount in harvesting good quality organs for transplantation and assuring their proper functioning later. It is worthwhile to note the role of the nurse in contacts with the family, as cooperation with the donor's family is an important aspect of the process, especially the ability to conduct difficult conversations.

**KEYWORDS:** care, organ donor, nurse

### STRESZCZENIE

Śmierć mózgu jest przyczyną nieodwracalnej utraty funkcji mózgu jako całości i jest równoznaczna ze śmiercią osobniczą. Zgodnie z obowiązującym w Polsce prawem śmierć osobniczą stwierdza komisja złożona z trzech lekarzy specjalistów, w tym jednego specjalisty w dziedzinie anestezjologii i intensywnej terapii oraz jednego specjalisty neurochirurga lub neurologa. Stwierdzenie śmierci mózgowej zwalnia lekarzy z obowiązku kontynuowania terapii.

W przypadku możliwości pobrania narządów do celów transplantacyjnych po wykluczeniu sprzeciwu zmarłego i przeciwwskazań medycznych kontynuuje się opiekę nad dawcą w okresie obserwacji wstępnej, okresie diagnostyki i orzekania o śmierci mózgu, a następnie zmarłego, do czasu pobrania narządów. Obejmuje ona wszystkie czynności, począwszy od monitorowania po czynności terapeutyczne, diagnostyczne i pielęgnacyjne.

W zespołowej opiece, jaką otacza się dawcę narządów, bardzo ważną rolę odgrywa pielęgniarka. Powinna ona mieć obszerną wiedzę na temat śmierci mózgu, jej przebiegu i następstw. Ma to istotne znaczenie dla prawidłowego przeprowadzenia procedury diagnostycznej, jak również opieki do czasu pobrania narządów. Intensywny nadzór pielęgniarski dawcy umożliwi wczesne wykrycie odchyłań w funkcjonowaniu organizmu.

**Cel:** Celem pracy jest przedstawienie procedur dotyczących orzekania o śmierci mózgowej i ukazanie roli pielęgniarki w opiece nad potencjalnym dawcą narządów na oddziale intensywnej terapii.

**Wnioski:** Od właściwego postępowania zależy jakość narządów pobranych do transplantacji i ich późniejsze funkcjonowanie. Warto zwrócić uwagę na rolę pielęgniarki w kontaktach z rodziną potencjalnego dawcy. Ważnym aspektem jest współpraca z rodziną dawcy, a szczególnie umiejętność prowadzenia rozmowy.

**SŁOWA KLUCZOWE:** opieka, dawca narządów, pielęgniarka

## BACKGROUND

Brain death causes irreparable loss of function of the brain as whole and is tantamount to the individual death. Brain centres regulate heart function, blood pressure, breathing, body temperature and metabolism and hormonal balance via the hypothalamo-pituitary system [1]. Patients with brain death symptoms show severe homeostatic imbalance which leads to circulatory arrest. Establishing brain death criteria allowed the medical personnel to stop persistent and pointless treatment, and coincided with the first successful attempts to transplant organs from living donors and facilitated rapid development of transplantology [1]. Nowadays, transplanted organs are more frequently harvested from brain dead donors [1], with each case treated as a multiorgan donor. Proper treatment administered to the donor is one of the main factors determining the proper functioning of the organ in the recipient later on.

Caring for a potential organ donor at an intensive care unit means providing care to a patient with brain death symptoms and covers the period of preliminary observation, diagnostics and establishing brain death, and later for the deceased, if the organs are deemed viable for harvesting for a transplant. It includes all activities, from monitoring to therapy, diagnostic and nursing activities. The period of caring for a donor also covers transportation to the operating theatre, when the care often intensifies, and the harvesting, until circulatory arrest [2]. Caring for an organ donor is effective when it is performed by a team, comprising of a coordinating doctor, transplantologists, and a nurse.

The aim of this paper was to present the procedures concerning declaring brain death and portraying the role of a nurse in caring for a potential organ donor at an intensive care unit.

## BRAIN DEATH – DEFINITION AND DIAGNOSIS

In the past establishing the moment of death was quite simple. Vital signs, such as breathing and circulation, stopped and all available modes of treatment had failed [2]. However, with the development of medicine, especially methods of sustaining life and transplantology, the so-called “traditional” definition of death is

no longer sufficient. Death occurs in different types of tissues and systems at different rate. This means that some functions of systems or parts thereof can still be ongoing, while the others have already ceased. According to the new, modified definition, “irreversible loss of brainstem function means the death of the brain as a whole, however does not necessarily mean the instant death of other systems” [2].

According to the statistics maintained by the “Poltransplant” Coordination Centre, 90% of brain death cases are caused by primary trauma, with half of those cases caused by intracranial haemorrhage and the rest by cerebrocranial trauma. Secondary trauma constitutes 8–10% of cases. Around 2–3% of brain death cases are caused by central nervous system tumours [3]. It is estimated that 2,500 cases of brain death cases occur in Poland every year. In hospitals with high organ donor activity, the number of brain death cases oscillates around 1.2–2.5% of all hospital deaths [3].

The assessment criteria and process of declaring permanent, irreversible loss of brain functions is regulated by the Minister of Health in a notice published in the Official Gazette “Monitor Polski”. The basic criteria for declaring brain death are establishing the etiology of the brain damage and excluding possibly reversible causes of the damage. These criteria are reflected in the stages of the process: establishing and excluding, and in the need to conduct two series of clinical tests, which are performed to determine the lack of clearly specified stem reflexes and permanent apnea. The rules and regulations currently in force are included in the Act of July 1<sup>st</sup> 2005 on harvesting, storing and transplanting tissue and organ cells, the so-called “transplantation act”, and its amendments [4]. The Minister of Health’s Notice of July 17<sup>th</sup> 2007 on the criteria and procedure of declaring permanent and irreversible loss of brain function (Monitor Polski no. 46) contains detailed rules and regulations on diagnosing brain death in Poland [5].

According to the Polish law [5], brain death is declared by a committee composed of three consultants, including a specialist in anaesthesiology and intensive care and a specialist in neurosurgery or neurology. Stating brain death has occurred discharges doctors from their obligation to continue therapy.



In the event the organs can be harvested for transplant, after ruling out the objection of the deceased and medical counter indications, medical staff continues to care for the donor until the organs are harvested.

### DONOR'S MEDICAL RECORDS

The transplant coordinator is responsible for collecting medical records of the deceased donor which are pertinent to the transplant. Apart from standard records, including lab results, diagnostic imaging, and consultations, other documents are also required: protocol from the process of declaring brain death, protocol from the committee declaring brain death signed by all members, i.e. the three specialists (who cannot later participate in harvesting and transplanting the organs), a printout from the Central Objection Registry confirming no objection was stated signed by the director of Poltransplant, transplant coordination card, protocol of organ harvesting signed by the doctor or doctors performing the procedure and the recipient's card - protocol from the autopsy [6,7].

### THE ROLE OF A NURSE IN CARING FOR A POTENTIAL ORGAN DONOR

A nurse caring for a patient who has been declared brain dead or a deceased whose individual death has been declared by a committee, has to have specialist knowledge about pathophysiological changes leading to brain death and its consequences. Nurses play a very important role in caring for a potential organ donor. They maintain strict nursing supervision, perform therapeutic, diagnostic and nursing activities, and participate in the works of the declaring committee.

Strict nursing supervision of the donor enables early detection of deviations in the functioning of the organism and prevention of circulatory arrest or ischaemic damage of the organs for transplant. Early detection of clinical symptoms of vegetative disorders which accompany the herniation process is of great significance for the quality of the organs and helps undertake proper course of action, i.e. maintaining proper perfusion and oxidation of the organs and tissues, so that they function properly after transplantation [8]. A nurse monitors and documents in the observation chart the basic vital parameters of a potential donor (pulse, blood pressure and body temperature), monitors the cardiovascular system and is vigilant for signs of cardiac dysrhythmia (bradycardia, tachycardia, hypotension and hypertension), assists the doctor in establishing a central venous catheter and an arterial line, and later maintains them. The nurse is also responsible for taking blood samples for laboratory, serology and microbiology testing, and performing gasometrical tests. Moreover, the nurse performs blood and blood product transfusions [3,9-11]. The execution of all these tasks has to comply with procedures and stand-

ards established in the given hospital. Moreover, the nurse participates in diagnostic tests (e.g.: ultrasound, computed tomography, angiography of the cerebral arteries), operates the cardio monitor and defibrillator, and the infusion and syringe pumps. The nurse prevents infections associated with intravenous therapies. Furthermore, the nurse changes the dressing on post-operative wounds, in accordance with principles of the aseptic technique [3,9-12].

The nurse is responsible for ensuring proper ventilation and maintaining patency of the airways. A potential organ donor is ventilated mechanically, which is why the nurse assesses the symptoms of mechanical ventilation complications via auscultation (listening for lack of or weakened sounds over the lungs), and is vigilant for signs of tracheal deviation, subcutaneous emphysema or airway obstruction. The nurse assesses the placement of the intubation tube (the tube slipping into one of the bronchi can cause the lung to collapse), observes and assesses discharge from the airways (amount, consistency and colour), supervises and ensures proper working of the respirator and other medical equipment, e.g. the suction for evacuating the airway discharge, the nebuliser [3,13]. Furthermore, the nurse performs the bronchial toilet, which improves the lung function, prevents atelectasis and respiratory tract infections. The suction is preceded by hyperoxygenation with 100% oxygen, lasting 30s. The suction is performed in sterile environment and should last no longer than 15s. After the procedure is completed, the lungs are expanded with several breaths taken with an Ambu bag [9,10].

An important element in caring for a potential donor is preventing urinary tract infections. The nurse performs the catheterisation of the urinary bladder in accordance with principles of the aseptic technique. They control the diuresis, the amount and quality of the excreted urine, and check the patency of the Foley catheter. The urine bags should be sterile, with closed drainage system, and properly emptied to prevent cross-contamination. The urine is drained via a faucet on the bottom of the bag, and if the bag is full and there is no faucet, the bag is changed for a new one, maintaining fully aseptic conditions [12].

Maintaining normal temperature can be difficult in cases of potential donors, as one of the consequences of brain death is loss of function of the thermoregulatory centre, lowered metabolism and, consequently lowered body temperature. The donor's temperature should be between 36.0 and 38.0°C [8].

Another significant element of nursing care provided to a donor are hygienic and general care activities, which include: caring for the skin and mucosae by keeping them clean, preventing skin irritation (especially in the groin, the armpits and scrotum in the case on men), caring for the eyes (regular washing with sterile water, applying protective gel, Vidisic, and using moisture chamber glasses), maintaining oral hygiene (every 3 hours using Aphtin oral rinse, chlorhexidine

oral rinse or octemidol mouthwash), preventing bedsores from forming (recognising risk factors, providing proper care, using facilities, frequently changing the position of the body and using an anti-bedsores mattress) [9–11].

The nurse also provides assistance to the family of a potential donor, which requires proper support, mainly psychological in the form of a conversation. Very frequently the families cannot handle the fact their loved one is dead [14]. The relations with the family and the course of the conversation are affected by a number of factors, e.g. the circumstances the accident occurred, the time from the accident, the relationship between a deceased and their family, the family's beliefs and views on death. Prior to the conversation, it is recommended to equip oneself with information which can affect its results, provide a calm room and time to conduct the conversation. The medical staff are responsible for the course of the conversation [14]. Regardless of the result, the final will of the family has to be respected.

## CONCLUSIONS

According to the available prognoses, due to the constantly lengthening life span, there will be more and more patients with extreme multiorgan failures, with only means of treatment available for them being transplant [13]. Recently in Poland, the number of

deceased donors has increased, but the mean waiting time between registering for a transplant and the operation is still several months [8].

Therefore, there is a need for comprehensive action aimed at increasing the number of transplanted organs. One of such undertakings is the optimisation of caring for a potential donor, where the nurse plays a significant part. A nurse caring for a potential donor on an intensive care unit is required to act as though caring for a living person. It is the nurse's knowledge and skills in providing strict supervision, and involvement in caring for the donor until the moment the organs are harvested that the quality and the functioning of the organs after the transplant depend on. That in turn, is the foundation of the recipient's quality of life after the procedure. The nurse must be aware of the donor's family, for whom they are often the only link with the deceased loved one that will donate organs for transplant.

However, it has to be noted that the solutions offered by the rapid development of modern medicine is not accompanied by legal provisions and with the society being ready. The most basic barrier in the development of transplantology is still the lack of viable organ donors [8].

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# ORGANIZATION AND FUNCTIONING OF THE POLISH RED CROSS RESCUE GROUP IN BEDZIN

## ORGANIZACJA I FUNKCJONOWANIE GRUPY RATOWNICTWA POLSKIEGO CZERWONEGO KRZYŻA W BĘDZINIE

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### SUMMARY

Polish Red Cross is a humanitarian organization providing aid in the events of natural disasters, mass accidents, and search-and-rescue operations. It educates the citizens by providing first aid training. The Polish Red Cross Rescue Group System consists of three types of groups: the Rescue Group, the Medical Rescue Group and the Specialist Rescue Group. They are always ready to provide assistance, especially in times of catastrophes and natural disasters. Moreover, they provide medical support at mass events, such as concerts, live shows, etc.. The aim of this paper was to show in detail how these Rescue Groups function when providing medical support and to describe their legal status. In addition, I have described the organization and functioning of the Polish Red Cross Rescue Team in Bedzin, based on the documentation covering their activity in 2014. The documentation shows that the Rescue Team is a fully functioning, effective and efficient group, always at-the-ready. The number of rescue actions the group participated in shows that its members are fully qualified and experienced, thus the society can rely on them whenever necessary.

**KEYWORDS:** Polish Red Cross, mass event, medical support

### STRESZCZENIE

Polski Czerwony Krzyż jest organizacją humanitarną, działającą w przypadkach katastrof, wypadków masowych oraz akcji poszukiwawczych. Dodatkowo spełnia rolę edukacyjną, poszerzając wiedzę społeczeństwa na temat udzielania pierwszej pomocy. Wyodrębniony został System Ratownictwa Polskiego Czerwonego Krzyża, w którego skład wchodzi: Grupy Ratownictwa PCK, Grupy Ratownictwa Medycznego PCK oraz Grupy Ratownictwa Specjalnego PCK. Grupy te są w stanie gotowości, aby w sytuacjach krytycznych nieść pomoc społeczeństwu. Dodatkowo zajmują się zabezpieczeniem medycznym imprez o różnym charakterze. Celem pracy jest szczegółowe omówienie działania Grup Ratownictwa podczas zabezpieczenia medycznego oraz przedstawienie jego prawnej organizacji. Dodatkowo przedstawiona została organizacja i funkcjonowanie Grupy Ratownictwa PCK w Będzinie, na podstawie uzyskanej dokumentacji dotyczącej działań podjętych w 2014 roku. Z dokumentacji tej można wnioskować, że grupa ta jest organizacją sprawnie działającą, przygotowaną do szybkiej reakcji w sytuacjach nagłych. Liczba wydarzeń, w których uczestniczyła Grupa Ratownictwa PCK pokazuje, że jej członkowie mają ogromną wiedzę oraz doświadczenie, dzięki czemu społeczeństwo w każdej chwili może liczyć na ich pomoc.

**SŁOWA KLUCZOWE:** Polski Czerwony Krzyż, impreza masowa, zabezpieczenie medyczne

### INTRODUCTION

Polish Red Cross (PRC) is the oldest humanitarian organization in Poland. It was founded in 1919 and its main goal was to bring relief and aid in the event of wars, catastrophes, and natural disasters. From the beginning of its operations, volunteers were there to

help the medical professionals and the army. They would look for missing persons on a small and large scale, and tend to the wounded [1].

Furthermore, the PRC educates the society by providing first aid training. Trained instructors, members of the PRC, hold training courses at schools, organise

first aid presentations and provide medical support during mass events. The PRC holds blood drives, Addiction Prevention campaigns, and social awareness campaigns providing information about the disabled and ethnic minorities. Currently, such trainings are held on request from institutions, fairs, concerts and cultural events [2].

The Polish Red Cross Rescue Group System began to dynamically develop in the 1990s. It was then that the Medical Rescue Groups and the Specialist Rescue Groups were formed. The development of the Rescue Groups was accelerated by the passing of the National Emergency Medical Services Act of September 8<sup>th</sup> 2006. The bill established the standards of equipment for the medical vehicles and how they and the medical rescue personnel are marked. The Polish Red Cross Rescue Group System is an integrated system and operates under the premise that it provides assistance to and cooperates with all rescue units during rescue operations. All PRC Groups provide aid to the National Firefighting and Rescue System and the National Emergency Medical Services [3]. In 2015, there were 22 Rescue Groups in Poland, including PRC Specialist Rescue Group Trojmiasto and PRC Medical Rescue Group Wroclaw. The remaining units are PRC Rescue Groups in Czechowice-Dziedzice, Bielsko-Biala, Bedzin, Opole, Zabrz, Sandomierz, Przemysl, Kielce, Warszawa, Krakow, Poznan, Ostroda, Wejherowo, Zary, Torun, Ostrowiec Swietokrzyski, Koszalin, Olsztyn, Zgorzelc and Bydgoszcz [4]. The Rescue Groups receive funds from, inter alia, fees for providing medical support during mass events, holding training, subsidies, donations, and member fees [2].

The goal of all Rescue Groups is providing qualified medical assistance and undertaking medical rescue actions at the scene, which are determined by the Coordinator of Rescue Operations or the Coordinator of Medical Rescue Operations [5].

## AIM

The aim of this paper was to show the organization and functioning of the Polish Red Cross Rescue Team in Bedzin.

## MATERIAL AND METHODS

The activities of the Polish Red Cross Rescue Team in Bedzin were analysed based on the documentation maintained by the members of the team in 2014, released by the Chief of the Polish Red Cross Rescue Team in Bedzin. The documentation included:

1. Reports from events where medical support was provided
2. Patients' medical records
3. List of team members
4. List of used equipment

## RESULTS

The Polish Red Cross Rescue Group in Bedzin was formed in 2001 and operated as the Polish Red Cross Medical Rescue Group, Bedzin division. The rescuers working for the Group underwent several trainings, including training in chemical, road and medical rescue. In 2002 the Group helped provide medical support in Bedzin and was included in the district natural disaster and catastrophe relief system. In 2004, pursuant to a resolution of the General Board, the Bedzin Polish Red Cross Rescue Group was formed.

Subsequently, the Group participated in different events and disasters. In 2005, the Group signed an agreement with the Emergency Medical Services and the National Firefighting Services Headquarters in Bedzin. Four years later, in 2009, the Group was the only unit in the Silesia Province to be listed as cooperating with the National Medical Rescue System. That same year, the Group began to cooperate with Provincial Emergency Medical Services in Katowice providing assistance in the event of natural disasters, mass casualties and catastrophes [6]. Afterwards the Group expanded its operations by opening a Polish Red Cross Rescue Station in Bedzin. This allowed the Group to be on-call on select days and to organise medical transportation. The Polish Red Cross Rescue Group and Rescue Station in Bedzin are now a unit of the National Firefighting and Rescue System.

In 2014 the Bedzin Polish Red Cross Rescue Group comprised of 20 members, with additional 8 on internship. A detailed division of the members based on qualifications is presented on Figure 1.

The interns improved and supplemented their knowledge on the operations of the Group under the supervision of paramedics, qualified first aid rescuers and medical doctors. The internship lasts a year and is concluded with an exam, assessing whether the person can enter the Group as a full member. The interns can take the exam only if they actively participated in medical support activities and trainings held by the members of Bedzin Rescue Group.

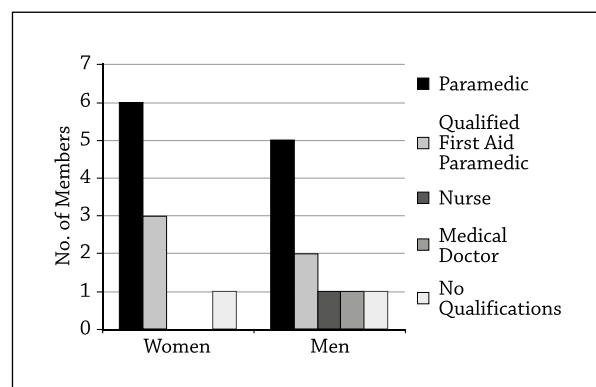


Figure 1. Professional qualification of PRC Bedzin Rescue Group

The Bedzin Rescue Group has signed relevant memoranda with selected units:



1. Memorandum with Volunteer Water Rescue Services
2. Entered into the register of units cooperating with the National Emergency Medical Services

Being entered into the register of units cooperating with National Emergency Medical Services means the Group declared the time in which it can arrive on scene. The maximum estimated time for arrival for rescuers is 60 minutes, if the event occurred within the district or the province.

In 2014, the Bedzin Polish Red Cross Rescue Group participated in the 4<sup>th</sup> Rescue Services Exercises "Kolobuck-Zawady 2014", which allowed the Group to expand their knowledge and begin cooperation with other rescue services. Apart from Rescue Groups, volunteer firefighting services participated in the exercises.

Moreover, that same year the Group provided medical support on 140 events and held 7 first aid presentations.

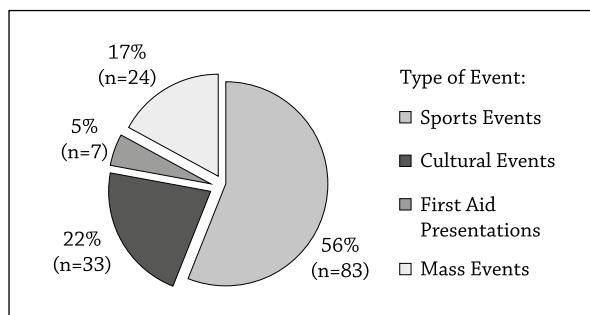


Figure 2. Medical support and first aid presentations held by Bedzin Polish Red Cross Rescue Group in 2014.

Furthermore, in 2014 the Group treated 321 patients, to whom they provided qualified first aid and for whom they carried out medical rescue activities. Out of the total number of the treated patients:

1. 30 required medical rescue activities
2. 291 required qualified first aid

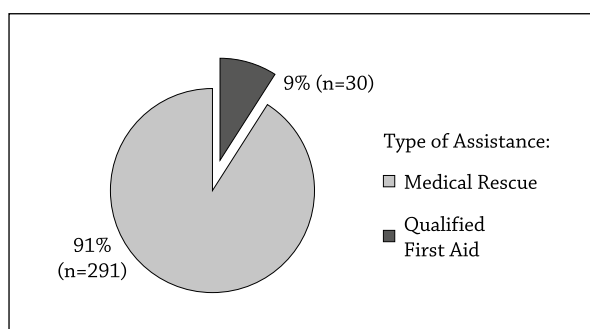


Figure 3. Recipients of first aid and medical rescue activities provided by Bedzin Polish Red Cross Rescue Group in 2014.

## DISCUSSION

Rescue Groups provide invaluable assistance to other rescue services, such as the National Emergency Medical Services or the National Firefighting and Rescue

System. As an example, we can recall the rail crash near Szczekocin on March 3<sup>rd</sup> 2012. The accident occurred ca. 9.00 pm and despite the late hour and the distance to the site, the Rescue Groups were quick to respond. The rescuers who arrived on scene were members of the Bedzin and Kielce PRC Rescue Groups. The second disaster which called for a broad response from the rescue services was the collapse of the International Katowice Fair hall in 2006. Rescue Groups from, inter alia, Silesia Province and Wroclaw, took part in the rescue operation. Furthermore, rescuers from GOPR (Volunteer Mountain Rescue Services), Search-and-Rescue Groups with rescue dogs, Military Police and a Maltese Medical Services unit also worked on the scene. Accidents and mass events are not the only situations, where Polish Red Cross can be seen. Also natural disasters, such as the flood in Sandomierz, see responses from PRC rescuers. It is worth to note, that Rescue Group members work in various, often difficult, weather conditions.

Even though there are more and more institutions and companies offering medical support during mass events, the Rescue Groups continue to cover a substantial percentage of the demand. Pursuant to the Mass Event Security Act of March 20<sup>th</sup> 2009, the organisers of such events are obligated to ensure medical services are available on site. The organisers choose their medical support providers at their discretion. The PRC Rescue Groups rescuers are very well trained and, actually, often are paramedics, nurses, or doctors. Their equipment used for medical support meets all requirements for Rescue Groups. The only problem can be an insufficient number of members in a Group. The Mass Event Security Act clearly states the number of rescuers that need to be present, depending on the number of people attending an event. It also classifies the types of mass events, based on their character, which translates to the number of staff providing medical support required on site [7]. It is important that the Groups actively participating in the life of a community promote their desire to help others, organise courses and presentations, encouraging people to sign up as members.

## CONCLUSIONS

1. The Bedzin PRC Rescue Group is ready to respond quickly, within the scope of equipment and training of the rescuers, and undertake rescue operation in the event of crisis.
2. The Bedzin PRC Rescue Group is an organization which continues to grow by cooperating with the National Emergency Medical Services and the National Firefighting and Rescue System units.
3. Forming new Rescue Groups is not a priority, because it is more important to improve the abilities and teamwork of the existing Groups.
4. The activities of Polish Red Cross should be promoted and publicised, which will significantly help in recruitment efforts.

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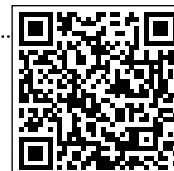
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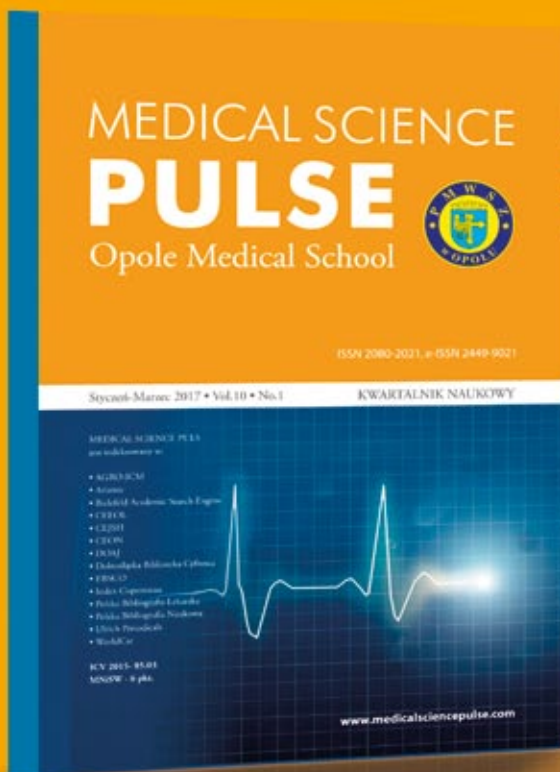
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