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The Level of Public's Practical Skills in Provision of First Aid to Patients with Major Epileptic Seizure

Poziom praktycznych, społecznych umiejętności w zakresie udzielania pierwszej pomocy pacjentowi z dużym napadem padaczkowym

Mária Šupínová, **Elena Janiczeková**, **Zuzana Pojezdálová**

Faculty of Health SMU in Banská Bystrica

Abstract

Introduction. Despite the significant progress in medicine, epilepsy is still a severe medical and social problem. It is the most common primary chronic neurological disease; it is of various aetiology, course and treatment, affecting people of all genders, age, race or social status.
Aim. The article aims at verification of basic public's knowledge about the disease of epilepsy and identification of the extent of capabilities of general and professional public in helping a patient with a major epileptic seizure.
Material and Methods. Quantitative study using questionnaire and experiment. The study included a total of 200 respondents from general (GP) and professional non-medical public (CW).
Results. 39% of GP respondents and 54% of CW respondents were capable of providing first aid. The most frequent mistake was forcing an object into the mouth in 17% of GP and 10% of CW. In the GP group, the level of skills significantly depends on respondents' gender (p=0.028), age (p=0.012) and education (p=0.003). Attainment of first aid course does not play a role in the level of knowledge and skills. In the CW group, significant results were found between evaluation of first aid provision and the age of respondents (p=0.032) and provision of first aid and the category of health care workers (p=0.014).
Conclusions. Respondents' basic knowledge and practical skills show signs of insufficiency. First aid courses need to be repeated regularly. **(JNNN 2019;8(2):54–61)**
Key Words: epilepsy, epileptic seizure, first aid

Streszczenie

Wstęp. Pomimo znacznego postępu w medycynie, padaczka jest nadal poważnym problemem medycznym i społecznym. Jest to najczęstsza pierwotna przewlekła choroba neurologiczna o różnej etiologii, przebiegu i leczeniu, dotykająca ludzi wszystkich płci, wieku, rasy lub statusu społecznego.
Cel. Artykuł ma na celu weryfikację podstawowej wiedzy społeczeństwa na temat padaczki oraz określenie zakresu możliwości społeczeństwa ogólnego i zawodowego w zakresie pomocy pacjentowi z dużym napadem padaczkowym.
Materiał i metody. Badanie ilościowe z wykorzystaniem kwestionariusza i eksperymentu. W badaniu wzięło udział 200 respondentów z ogółu społeczeństwa (GP) i społeczeństwa pozamedycznego (CW).
Wyniki. Wykazano, że 39% ankietowanych GP i 54% ankietowanych CW było w stanie udzielić pierwszej pomocy. Najczęstszym błędem było wpychanie przedmiotu do ust u 17% GP i 10% CW. W grupie GP poziom umiejętności w znacznym stopniu zależy od płci respondentów (p=0,028), wieku (p=0,012) i wykształcenia (p=0,003). Ukończenie kursu pierwszej pomocy nie odgrywa roli w poziomie wiedzy i umiejętności. W grupie CW stwierdzono istotne rezultaty pomiędzy oceną udzielania pierwszej pomocy a wiekiem respondentów (p=0,032) i udzielaniem pierwszej pomocy oraz kategorią pracowników służby zdrowia (p=0,014).
Wnioski. Podstawowa wiedza i umiejętności praktyczne respondentów wykazują oznaki braku wystarczającego poziomu efektywności. Kursy pierwszej pomocy muszą być regularnie powtarzane. **(PNN 2019;8(2):54–61)**
Słowa kluczowe: epilepsja, napad padaczkowy, pierwsza pomoc

Introduction

Despite the significant progress in medicine, epilepsy is still a severe medical and social problem. It is the most common primary chronic neurological disease; it is of various aetiology, course and treatment, affecting people of all genders, age, race or social status. Among famous people, who suffered the disease were Socrates, Cezar, Napoleon, Joan of Arc, Paganini, van Beethoven, Vincent van Gogh, Dostoevsky, Tchaikovsky, Agatha Christie [1].

Epilepsy (hereinafter referred to as EPI), in its various forms affects approximately 1% of world's population, the equivalent of approximately 50 million individuals [2]. Incidence of EPI varies with regards to the age of the affected people. It most frequently occurs in children younger than one year, which is 4 times higher than in adult population and in seniors over 65 years of age [3,4]. Considering the gender, men are more often affected by the diagnose, specifically 2.5 times more often than women [5]. In general, 75% of the epileptics undergo their first seizure before the age of 20 [6]. The incidence of new EPI cases in developing countries can reach 110–190 cases per 100 000 inhabitants within a year. In these countries, 60–90% of subjected population is without the adequate treatment. In developed countries the incidence is lower, specifically within 24–53 affected people per 100 000 inhabitants annually [4,7]. In Europe, approximately 25 million people suffer from EPI seizures, of which 5 million is diagnosed with active EPI [8]. Slovakia has about 5.5 million inhabitants, out of which 30 to 50 000 people are affected by EPI. Annually there are about 2.5 to 3000 more patients with this diagnosis [9]. Hospitalization is necessary in 4500 epileptics every year [10].

EPI is the separate disease; however epileptic seizures can be the symptom manifesting various other diseases other than EPI. That is why Donáth [11], stresses the importance to distinguish epileptic and non-epileptic seizures of more or less similar character from quite uniform and stereotypical epileptic seizures.

EPI seizure arises suddenly and the patient needs to be provided first aid necessarily [12], defines first aid as the immediate help provided to the injured or ill person. However, this does not substitute health and medical treatment; it is just the precondition for its success. According to [13], about every twelfth patient in the rescue service in bigger Slovak cities is a patient treated for epileptic seizure. Medical assistance should be called for patients with epilepsy only under special circumstances; these are: in case of status epilepticus (cramps lasting longer than 5 min), in case of repeated seizure with the unconsciousness by 30 minutes, in case of lasting unconsciousness (over 1 hour after seizure) and in case of bleeding injuries [13].

Slovakia is, in ranking of European first aid education, along with other countries, situated towards its end. Accurate first aid can be provided only to 5–10% of Slovaks [14]. Norway is the leader in the first aid education with 95% [15]. Results of the research conducted in Grenada, West India suggest that people with the epileptic seizures may be at the increased risk of injury due to the lack of knowledge about the correct procedure for provision of first aid in case of a seizure [16].

The purpose of the work is to determine the level of theoretical knowledge and practical skills of the general public and professionals in providing first aid to a patient with a serious epileptic seizure. Another purpose of the work is to compare differences in practical skills of the general public and professional healthcare workers in non-medical professions.

Material and Methods

This analysis used quantitative methods: questionnaire and experiment. Test was used for verification of theoretical knowledge about the disorder of epilepsy in respondents' representing general public. Questionnaire was used for demographic data mapping and further additional questions were used for experiment enrichment. For objective data collecting, the experiment focusing on correct provision of first aid to a person with major epileptic seizure, showing the efficiency of knowledge in both files of respondents was used.

Experiment planning

Each respondent was asked to deal with a model situation: You are walking down the street; there is just you and a person a few meters in front of you. Suddenly you can see the person sitting down on the ground, putting aside their shopping bag. Shortly the person is lying on the ground, having cramps all over the body; most evident are cramps on their upper and lower limbs and in their face. Person's face is blue, he is having problems breathing; the person is wheezing and clear foamed saliva is oozing out of his mouth. There are no evident injuries in their head or limbs. The person does not respond to words. Correct procedure for provision of first aid is according to Kelnarová et al. [17].

Grading for practical procedure in first aid provision (scale 1–5 school grading system):

1 — Gained point (full score, total adherence to the manual).

2 — Call RZP/ RLP (operation centre) followed by obeying to their instructions (in Slovakia RZP — refers to the ambulance with paramedics, while RLP — is the ambulance with medical help).

3 — Gained 3–4 points (for following 3–4 steps from correct procedure).

4 — Gained 1–2 points (for following 1–2 steps from correct procedure).

5 — No gained points (including not providing first aid at all).

Evaluation of mistakes categories occurring in first aid provision:

0 — No substantial mistakes that could threat patient.

1 — Forcing something into mouth, opening it and putting objects in it.

2 — Restraining limbs.

3 — Pulling out the tongue.

4 — Unfamiliarity with RZP/RLP phone number.

5 — Attempts to provide cardiopulmonary resuscitation (hereinafter as CPR).

Theoretical questions to the respondents from general public were focused on basic knowledge of epilepsy.

File

1. General public file (hereinafter referred to as GP). The condition for respondent's inclusion is the absence of any health education. The experiment was joined by 100 respondents from general public older than 18 years old; N/%=36 men, N/%=64 women.
2. File of health care workers in non-medical professions (hereinafter referred to as CW). The file included 100 respondents; nurses N/%=65 (in Slovakia — workers with attained university education in the field of Nursing), health care assistants N/%=21 (in Slovakia workers with attained secondary education in health profession) and sanitarians (in Slovakia with attained health courses) N/%=14. The file consisted of N/%=9 men and N/%=91 women.

The procedure for experimental testing of first aid provision to a person with epileptic seizure was identical in both (GP) and (CW) files. The only difference was the extent of the questionnaire, which only mapped demographic data, not the knowledge in CW group (Here it was assumed unnecessary).

Experiment procedure

The model situation was read to the respondents. During the reading the model involved acting situation problem. After reading, respondents were asked to act. Joining the experiment was voluntary. The results of the questionnaire were anonymous. No personal data were used.

The respondent was supposed to answer the questions:

1. Would you call RZP/RLP, if so, what number would you call?
2. Can you diagnose the disease occurring in the model situation?

This was followed by completion of the questionnaire mapping demographic data and basic knowledge test about epilepsy (each group its version).

The procedure was organized this way in order to avoid affecting respondents' knowledge about the disease.

The research has been conducted since September 2016 until November 2017 in Kysucké Nové Mesto and Banská Bystrica (both in Slovakia). Health care workers, who joined the experiment, were employees of local hospitals.

Results

Table 1. Composition of respondents by age

Age	GP	CW
	N/%	N/%
Younger than 20 years	11	4
21–30 years	26	35
31–50 years	37	37
<51	26	24
Total	100	100

GP — file of general public; CW — file of non-medical health care workers

Composition of respondents by the age categories is shown in Table 1.

Group of General Public (GP)

The largest group within GP category is represented by the respondents with attained secondary education with the matriculation exam — (In Slovakia secondary education leaving exam) (53%), vocational secondary education attained 27% of respondents and the smallest group within the GP category includes respondents with attained university education (20%).

Classification considering the attained first aid course; in the GP file there were 27% of respondents, who have never attended any first aid course. 26% of respondents attained the course more than 10 years ago. 5–10 years back — 22% of respondents and less than 5 years back — 25% of respondents.

Gained score representing theoretical knowledge about the disease of epilepsy in general public demonstrates that the level of knowledge is lower than average (Table 2). Mentioned variables were statistically processed (Table 3).

In two out of four knowledge questions there was statistical dependence of the selected answer on the gender. Namely the question: What is epilepsy? (p=0.002) and in question about regime measures in epilepsy

Table 2. Overview of gained points in GP in general and considering the age

	N/%	18–20 years	21–30 years	31–50 years	<51
Theoretical knowledge and practical skills — GP					
1 — 5 gained points (full score)	8	0	2	4	2
2 — calling RZP/RLP (operation centre) followed by obeying to their instructions	21	1	3	8	9
3 — 3 to 4 gained points	20	1	4	11	4
4 — 1 to 2 gained points	23	2	10	8	3
5 — no gained points, respectively not providing first aid	28	7	7	6	8
Total gained score	3.42	4.36	3.65	3.10	3.23
Mistakes occurring during provision of first aid					
0 — no substantial mistakes	39	3	8	14	14
1 — forced mouth opening and forcing objects in them	17	3	5	6	3
2 — restraining limbs	13	0	4	6	3
3 — pulling out the tongue	15	2	5	7	1
4 — unfamiliarity with RZP/RLP phone number	9	1	4	1	3
5 — CPR	7	2	0	3	2
Calling RZP/RLP					
1 — yes	76	8	17	32	19
2 — no	24	3	9	5	7

Table 3. Statistical dependence of theoretical knowledge and practical skills in GP

GP (File of general public)	Gender		Age		Education		First aid course	
	χ^2	p	χ^2	p	χ^2	p	χ^2	p
What is epilepsy?	14.613	0.002	12.605	0.398	9.864	0.362	7.988	0.535
Does epilepsy have any effect on intellect?	5.143	0.076	17.363	0.027	6.807	0.339	8.383	0.211
Regime measures	15.902	0.003	16.706	0.405	37.527	0.000	7.411	0.829
Inappropriate jobs for epileptics	1.820	0.611	15.901	0.196	17.531	0.041	5.146	0.821
Diagnostics of the situation	8.409	0.015	36.783	0.000	5.199	0.519	7.097	0.312
Grade (evaluation of first aid provision)	12.529	0.028	37.055	0.012	34.421	0.003	14.178	0.512
Mistakes occurring in provision of first aid	22.749	0.000	17.193	0.640	33.255	0.004	11.737	0.699
Calling RZP/RLP	1.658	0.198	4.038	0.401	6.527	0.089	2.613	0.455

χ^2 — chi-square test; α=0.05

patients (p=0.003). Practical skills in provision of first aid in general public are evaluated by grade (points); these are statistically significantly dependent on gender (p=0.028). The dependence between mistakes occurring in provision of first aid and the gender of the respondents was proven to be statistically significant p=0.000. The theoretical knowledge of general public about the epilepsy disease is not age related. Practical skills of general public manifested by the number of points gained for provision of first aid to a patient with major epileptic seizure are age related. The dependence in the relation between evaluation of practical skills in provision of first aid and the age of respondents was proven to be statistically significant (p=0.012), as well as diagnostics of model situation and the age of the respondents (p=0.000). In two out of four knowledge questions was proven statistical significance of chosen answer to the education of the general public (GP). These are namely: the question of regime measures (p=0.000), the question about the inappropriate jobs for epileptics (p=0.041). The relation between the evaluation of practical first aid provision (p=0.003) and mistakes that occurred in it (p=0.004) was also statistically significant. Dependence of theoretical answers or practical skills in the relation to the attained course was not proven to be statistically significant in any of the researched variables (Table 3).

Group of Non-medical Health Care Workers (CW)

The file of CW was divided into three categories according to the occupation. Out of the total number of 100 respondents were 65% nurses, 21% health care assistants and 14% sanitarians.

Table 4. Mistakes in provision of first aid CW

	N/%
Mistakes occurring in provision of first aid CW	
Without substantial mistakes, that could be a threat to a patient	54
Forced mouth opening and forcing object inside them	10
Restraining limbs	30
Pulling out the tongue	6
Calling RZP/RLP	
Yes	57
No	43

The CW file had a model situation correctly diagnosed by 100% of respondents. First aid was provided with no mistakes in 54% of respondents (41 nurses, 10 assistants, 3 sanitarians); 3 to 4 points were gained by 44% of respondents and 1 to 2 points by 2% of respondents. None of the respondents, non-medical health care workers, showed the attempt to provide CPR and all of them could provide correct number for RZP/RLP contact.

In provision of first aid to a patient with major epileptic seizure there was statistically significant dependence between the age of CW and the evaluation of first aid provision (p=0.032), as well as dependence between the age and mistakes occurring in first aid provision (p=0.005). Statistical significance was proven in relation between the evaluation of practical skills in first aid provision and category of CW's occupation (p=0.014) and it was likewise in the relation between number of mistakes occurring in first aid provision and the category of non-medical health care workers p=0.004) (Table 5).

The statistical significance was proven between evaluation of first aid provision by grade and the occupation of health care worker vs. laic (p=<0.00005), also between the mistakes occurring in respondents and the occupation of health care worker vs. laymen (p=0.000). The results have shown statistical dependence between the ability to provide first aid without calling the operation centre during the provision of fist aid and the occupation of a health care worker vs. laic (p=0.004). Health care workers provided first aid independently, more appropriately and with the lesser mistakes than general public (Table 6).

Table 5. Statistical dependence of skills in first aid provision considering gender and age in CW

CW	Gender		Age		Occupation	
	χ^2	p	χ^2	p	χ^2	p
Grade (evaluation of first aid provision)	0.639	0.424	6.869	0.032	8.479	0.014
Mistakes occurring in first aid provision	1.913	0.591	18.367	0.005	18.893	0.004
Calling RZP/RLP	0.636	0.425	6.814	0.033	0.337	0.845

χ^2 — chi-square test; α=0.05

Table 6. Statistical dependence of practical skills in first aid provision and occupation GP vs. CW

General public vs. non-medical health care workers	χ^2	p
Grade (evaluation of first aid provision)	116.37	<0.00005
Mistakes occurring in first aid provision	30.812	0.000
Calling RZP/RLP	8.102	0.004

χ^2 — chi-square test; α=0.05

Discussion

Theoretical knowledge and practical skills play a key role in provision of adequate first aid due to its effect on occurring mistakes and overall dealing with the situation. General public mostly understands the term of epilepsy as cramps that often threaten the life of the affected person. That is the reason why epileptic seizures cause stress to public, as a result of which they cannot react adequately [13].

Gosavi et al. [18] say that low knowledge level about the provision of fist aid to a patient with epileptic seizure persists. Positive results in a situation diagnosing were noted by authors of French study [19], where out of the total number of 1777 respondents from general public 79.2% correctly identified epilepsy as the impairment of the brain. However, within the file there were worse results collected in respondents of older age, respondents of male gender and in respondents with the lower attained education; suggesting the importance of newness/correctness of the knowledge.

The situation in a neighbouring country of Hungary was mapped by the authors [20]; they were studying the attitudes of public towards epilepsy, its knowledge and perception of epilepsy in Hungary. Authors noticed the changes in public's attitudes within past six years. The results show, that

awareness, understanding and attitudes towards epilepsy are affected by demographical variables such as the age, gender, residence and status of the respondents.

Our research compared the group of general public to the group of non-medical health care workers considering their age, gender, education and attainment of first aid course and their effect in provision of first aid to a patient suffering a major epileptic seizure in the model situation. The results of the conducted research showed lack in general public's skills in provision of first aid to a person with epileptic seizures. In spite of significantly better results in the group of health care workers in comparison to the general public, the mistakes in first aid provision occurred in the professional group as well. The most frequent mistakes occurring in both groups were forcing objects into patient's mouth, restraining limbs, pulling out the tongue, respectively the attempt to provide CPR.

Mistakes in first aid provision are related to the knowledge. Respondents in our research made similar mistakes than the ones reported by [18], however in their study the improvement at the end of subjected period (year 2016) is evident, where only 25.6% of respondents would force object into the mouth of a person having epileptic seizure, while in 1999 would have acted this way up to 32% of respondents.

Occurrence of mistakes in group of professional public was the subject of the study dealing with the insufficient knowledge about provision of first aid to people suffering tonic-clonic cramps (with confirmed epileptic seizure) and the related mistakes by Martino, Lalla et al. [21], on the file of 154 respondents — health care workers. The results of questionnaire method pointed to the necessity to educate health care workers about the first aid procedure for epileptic seizure.

Bulíkova [22], agrees that in practice there are cases, where the provider of first aid in case of EPI seizure uses the incorrect, outdated method, one of which is forcing object into the mouth of an affected person. In the research conducted by Botíková and Počuchová [9], would make the same mistake up to 38% of respondents.

As an explanation Dobiáš [13] points that biting the tongue happens at the very beginning of the seizure, during the first cramp which affects the chewing muscles [13]. However, during the seizure cramps occur in vocal muscles as well, which is the reason, why swallowing or choking on tongue does not happen [13].

The other mi Sledding information in first aid provision is restraining the cramping movements during EPI seizure. This would have done 30% of our respondents belonging to non-medical health care workers and 13% of respondents belonging to general public. The group of general public evaluated their basic knowledge about the disease of epilepsy and their practical skills in first aid provision; in the professional public this was not necessary, as we assumed their professional education should cover the procedure. But from the presented results it is evident that the mistakes occurred in both groups, not only in general public. Here it is important to mention that the research points to the fact that level of knowledge and skills of GP group in provision of first aid during the seizure is significantly dependent on age, gender and the education of respondents. Women in the evaluation gained better results in comparison to men. Research also shows that the age does not affect the knowledge about EPI, but it does affect practical skills in provision of first aid during the major EPI seizure. It also shows that level of attained education significantly affects practical first aid provision skills and the number of occurring mistakes; however attained education only partially affects the level of knowledge about the disease. This is supported by significant result recorded in verification of the two questionnaire items.

According to Botíková and Počuchová [9] findings, the awareness of the general public about EPI is high (80%). Another example is the research conducted by Muayqil et al. [23], who found out that 71% of the overall number of 172 respondents from general public correctly identified epilepsy as the cause of the seizure. This also support Donáth and Čiernik [24] by their research, where 81% of patients treated for EPI think that the people around them are capable of providing them first aid during the epileptic seizure. But the same research shows that only 69% of respondents with frequent attacks are convinced of the correct reaction of the surrounding people in case of a seizure. In our research, the model situation was correctly diagnosed by all the respondents in CW group, but in the general public group it was 85%. The results suggest that the attained education affected the correct identification of the manifestations of major EPI seizure; therefore it shall not be underestimated.

The last aspect, of the subjected issue is dealing with the situation by the respondents — calling for help [13] said that the rescue service operation centres are often asked for support to provide phone assisted first aid, except for the cases, when the operation centre sends professional help. Such help would have been in our research used by 21% of respondents from general public, but none of the respondents in the health care workers.

Our research showed, that the attained first aid course is not related to the level of knowledge or skills of general public. This is contrasted by the results found by Botíková and Počuchová [9]. They confirmed that the attainment of first aid course markedly increases the knowledge of respondents; however the level of knowledge decreases depending on the time passed from the attainment course. Dobiáš [14], a physician and a rescuer (paramedic), recommends repetition of the first aid courses every five years in order to eliminate mistakes in first aid provision to epileptic patients.

In the conducted research, significant results between the evaluation of first aid provision and the age of the respondents as well as between the category of health care workers were noted in the CW file.

Conclusions

The main aim of the conducted research was to verify the basic knowledge about the epilepsy disease in a group of respondents in general public and to find out to what extent the general and professional public is capable of helping a patient with the major epileptic seizure. The respondents from general public have shown average success in the test mapping their basic theoretical knowledge about the epilepsy.

In verification of practical skills in a model situation for first aid provision to a patient with a major epileptic seizure, mistakes in both groups of respondents occurred.

The finding that the practical skills in the experiment were not affected by attained first aid course is significant.

Implications for Nursing Practice

Based on the results of research we recommend extension of syllabus of first aid courses for general public, by adding provision of first aid to the people with epileptic seizure and also include this topic in the health education taught at various school levels. We recommend inclusion of first aid to the patients with epileptic seizure as the main topic for the professional seminars and conferences for the nurses and other health care workers in non-medical professions as a part of continual lifelong learning.

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Corresponding Author:
Mária Šupínová
Faculty of Health SMU in Banská Bystrica
ul. Sládkovičova 21, 974 05 Banská Bystrica, Slovakia
e-mail: maria.supinova@szu.sk

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