Ošetrovateľstvo
teória - výskum - vzdelávanie

2020, roč. 10, č. 2
ISSN 1338-6263

Laypersons' awareness of cardiac arrest resuscitation procedures: cross-sectional study

Slavko Babić*, Gregor Budihna*, Melita Peršolja**

* Hospital Dr. Franc Derganc Nova Gorica

** University of Primorska, Faculty of Health Sciences, Unit Nova Gorica

Abstract

BABIĆ, S. – BUDIHNA, G. – PERŠOLJA, M. Laypersons' awareness of cardiac arrest resuscitation procedures: cross-sectional study**.** In *Ošetrovateľstvo: teória, výskum, vzdelávanie* [online], 2020, vol. 10, no. 2, pp. 55-62. Available on: https://www.osetrovatelstvo.eu/archiv/2020-rocnik-10/cislo-2/laypersons-awareness-of-cardiac-arrest-resuscitation-procedures-cross-sectional-study

Aim: This study aimed to research the awareness and willingness of laypersons to perform cardiopulmonary resuscitation and use an automated external defibrillator.

Methods and sample: In the cross-sectional study, a random sample of 198 people from five municipalities in Slovenia was selected. The self-designed questionnaire was prepared based on a literature review (Cronbach's alpha = 0.911).

Results: Most of the respondents had a good level of awareness, but the younger gave more correct responses on questions of cardiopulmonary resuscitation. Also, respondents who had participated in a Basic Life Support course in the last five years were significantly more aware of what was needed and willing to help a person who does not show any signs of life.

Conclusion: This study shows that effective public cardiopulmonary resuscitation training programs may increase the awareness of, and readiness to implement cardiopulmonary resuscitation in the general population. Basic life support courses have to be long-term to meet the needs of population. The new questionnaire has high internal consistency and could be used for evaluation of public cardiopulmonary resuscitation training programs.

Key words: cardiopulmonary resuscitation, defibrillators, health education

Introduction

In between a quarter to half of all cases cardiac arrest presents as ventricular fibrillation or ventricular tachycardia without the pulse. In such rhythm disorders the only effective treatment is defibrillation as soon as possible (Tavakoli Golpaygani, Movahedi, Reza, 2017). In the absence of immediate assistance, the rhythm of ventricular fibrillation or ventricular tachycardia without the pulse develops into asystole, with every minute reducing the probability of survival by more than ten percent (Soar et al., 2015). More than half of cases of out-of-hospital cardiac arrest (OHCA) occur in the home environment (Lai et al., 2018), and in a third (29 %) of cases resuscitation is performed by laypersons (Markota, Gradišek, 2017). Most often, however, such people are discouraged from offering help due to ignorance, fear of harm and self-doubt. In contrast, the main motivator for helping others is the desire to save a life (Ong et al., 2013).

The incidence of OHCA in developed countries is between 19 and 173 congestions per 100 000 people per year. Survival rates are between 2 and 11 %, although almost half of the patients with OHCA could be saved with immediate action (Soar et al., 2015). In Slovenia, the incidence of OHCA is about 69 cases per 100 000 people (Gräsner et al., 2016), the majority of whom die (Soar et al., 2015).

It is of great importance for laypersons to have good cardiopulmonary resuscitation (CPR) knowledge and willingness to help (Jarrah, Judeh, Aburuz, 2018), as this could increase the chances of patient survival two to three times (Pehlivan et al., 2019).

To increase knowledge of the appropriate actions among the general population, Baldi (et al., 2017) argue that the public must take courses with a practical demonstration of CPR. They found that the implementation of CPR by laypersons improved by 10 % if they had attended CPR training compared to those who were only familiar with CPR. In Slovenia, Basic Life Support (BLS) training is compulsory for those wishing to take a driving test. There are also many short, free workshops on CPR and use of an automated external defibrillator (AED) carried out by Red Cross Slovenia. These courses are organized in workplaces, villages, and in public locations where an AED is placed.

However, Smith (et al., 2017) claim that the data on the use of public access defibrillator is of very low quality, and that there is not enough information available. Since participation in a BLS course is reflected in better CPR quality (Lund-Kordahl et al., 2019), it is very important to evaluate the level of knowledge and skills with regard to CPR and the use of an AED among the public (Villalobos et al., 2019; Hart et al., 2013).

2020, roč. 10, č. 2
ISSN 1338-6263

Aim

The current research aimed to quantitatively analyze the data on: (a) Awareness of correct actions during a cardiac arrest; (b) Readiness to help during a cardiac arrest; (c) Awareness of the availability of an AED near their residence or current location; (d) Awareness of the correct use of an AED; (e) Willingness to use an AED; (e) Efficiency of BLS courses that include CPR with AED training.

Methods

This study used a cross-sectional design which aimed to observe, describe, and explore aspects of a situation at certain points in time.

Sample

A simple random sample was selected from the population of five municipalities in Slovenia. The research covered the area around the AED devices. According to the iHelp website (iHelp, 2019), at the time of the survey, 57 AED devices were recorded in the research area. The sample size of the minimum 381 individuals was calculated based on confidence level (95 %), confidence interval (5 %) and the number of total population (52 920 people). The eligibility criteria were: (a) Adults (over 18 years of age) who were within seven minutes of walking distance from a publicly located AED during the survey; (b) Adults residing within seven minutes of walking distance from a publicly located AED; (c) Adults capable of understanding the Slovene language.

Data collection

The data were collected from August to December 2019. On the research day, the first author personally contacted people in the research area. Subjects were informed that a "research on CPR" was being conducted, offered the name of the responsible, contact details when necessary, and provided with information regarding what would happen to the information provided. When willing to cooperate, individuals were offered a paper questionnaire to complete. From 400 people approached, 208 (52 %) accepted the questionnaire, and 198 (49.5 %; 0.38 % of population) responded with fully fulfilled questionnaires.

According to the study of literature, a self-designed questionnaire was prepared. It included selected questions from two freely accessible instruments in English language (Nielsen et al., 2013; Patsaki et al., 2012). The first questionnaire *Evaluation of Greek high school teachers' knowledge in basic life support, automated external defibrillation and foreign body airway obstruction: implications for nursing interventions* (Patsaki et al., 2012) aims to measure the theoretical knowledge of secondary school teachers in the field of AED use and action with a choking stranger. The items derived from the specific guidelines. It consists of 24 questions in which the respondent must choose the correct response from three or five potential answers.

The second questionnaire: *Can mass education and a television campaign change attitudes towards cardiopulmonary resuscitation in a rural community?* (Nielsen et al., 2013) focus on attitudes regarding different aspects of resuscitation and include a hypothetical rescue scenario where the respondents willingness to provide chest compressions, mouth-to-mouth ventilations and deploy an AED are assessed.

These two questionnaires were not validated by the primary authors and were selected for this study based on professional consistency with the purpose and aims of this research. The self-designed questionnaire was prepared in the Slovenian language, considering standard procedures for forward and backward translation. It includes some demographic items (age, gender, place of residence) and 22 items covering three main domains: (a) BLS course participation (1 item); (b) Awareness of cardiac arrest (7 items); (c) The attitude of the participants towards BLS (6 items); (d) Awareness of the participants towards BLS (8 items). Two questions are open-ended, others have from three to five options to answer, or an agreement scale.

The self-designed questionnaire was pilot-tested for readability and unambiguity using a group of 10 people. The instrument showed an acceptable (Tavakol, Dennick, 2011) Cronbach's alpha value (α) of 0.911 (n = 21) and validity ($R^2 = 0.951$). The internal consistency data of main domains were low: Awareness of cardiac arrest $\alpha = 0.261$; The attitude of the participants towards BLS $\alpha = 0.462$; Awareness of the participants towards BLS = 0.388.

Data analysis

In the process of analyzing the questionnaire data, we used the statistical computer program SPSS (*Statistical Package for Social Science*) version 24. The quantitative results are presented in frequency tables, while the descriptive statistics are described in the text. Pearson's correlation analysis and one-way ANOVA were used to detect the interrelationships among the variables. The results with $p < 0.05$ were considered statistically significant. Those questionnaires that were not fully completed where excluded from the study.

2020, roč. 10, č. 2
ISSN 1338-6263

While analyzing the data, we compiled two new variables: (a) AWARE, consisting of seven crucial questions about awareness of cardiac arrest; (b) BLS COURSE, consisting of 14 questions about awareness and readiness to help in a situation in which the patient shows no signs of life. The answers were scored from 0 to 18 regarding the positive result for the patient.

The appropriate cardiac arrest algorithms for BLS were determined according to the 2015 European Resuscitation Council Resuscitation Guidelines (Soar et al., 2015). STROBE reporting guidelines for observational studies (von Elm et al., 2007) were used.

Ethical aspects of the study and conflict of interest

The study was conducted under the Helsinki-Tokyo Declaration (WMA, 2013), the Code of Ethics for Nurses and Nurse Assistants of Slovenia (Zbornica-Zveza, 2014) and was approved by the faculty board. All respondents were informed of the study purpose and the research method that would be used. Participation was completely confidential and voluntary. The authorization to include the data in the survey was confirmed by each individual with the fulfillment of the questionnaire. The authors declare that there is no conflict of interest.

Results

The research sample consisted of 198 people, just over half (54.5%, n = 108), of whom were women, and a third (31.3 %, n = 62), were aged 55 or older. Most of the respondents (55.6 %, n = 110) finished high school. Slightly under a third (29.3 %, n = 58) had attended a course of BLS with CPR and use of an AED within the last five years.

The majority (71.3 %, n = 141) of respondents were sure that they would recognize a cardiac arrest but then gave the wrong response (66.2 %, n = 131) (Table 1). The majority (65.2 %, n = 129) of the respondents choose the right answer on how to check responsiveness, on how to check breathing and which information the ambulance dispatcher needs. Younger respondents gave significantly more correct responses on dispatcher information needs (r = 0.187, n = 196, sig. = 0.009), and on checking responsiveness (r = 0.256, n = 197, sig. = 0.000).

Tab. 1. Awareness of cardiac arrest assistance

Items	Frequency (n = 198)	%
Would you recognize a cardiac arrest?		
Yes, I would recognize it	32	16.2
I would probably recognize it	109	55.1
I probably would not recognize it	42	21.2
No, I would not recognize it	6	3.0
I don't know	7	3.5
Missing	2	1.0
Indication of cardiac arrest		
Dyspnea	10	5.1
Severe chest pain	84	42.4
Absence of breathing	52	26.3
Dizziness and nausea	5	2.5
Pain spreading to left arm, jaw and between shoulder blade	32	16.2
Missing	15	7.6
First action		
I release the patient's airway by turning their head and raising their chin	36	18.2
Check the patient's responsiveness	80	40.4
Take care of my own safety	18	9.1
Call for help	14	7.1
Call 112	40	20.2
Missing	10	5.1
Second action		
I call 112 and wait for ambulance instructions	45	22.7
I gently grasp the injured person, shake their shoulders and ask loudly "Are you okay?"	129	65.2

2020, roč. 10, č. 2
ISSN 1338-6263

Tab. 1 – continue

Items	Frequency (n = 198)	%
Turn on the AED and follow the instructions	20	10.1
I wet their face	2	1.0
Missing	2	1.0
When calling an ambulance dispatcher, I should say		
My first name, surname, location, and that the patient is not breathing	168	94.9
That the patient has had a heart attack	6	3.0
What the AED voice guidance says	2	1.0
Missing	2	1.0
Frequency of heart massage and artificial respiration		
5 heart massages / 2 breaths	57	28.8
15 heart massages / 3 breaths	51	25.8
30 heart massages / 2 breaths	88	44.4
Missing	2	1.0
How to check the patient's breathing		
Put a mirror in front of the patient's mouth	15	7.6
Observing the patient's chest to see if it is rising and falling	161	81.3
Check the patient's airway for any obstruction	19	9.6
Missing	3	1.5

Legend: n – number; % – percent

More than 40 % of the respondents chose the right answer on artificial respiration and heart massage frequency. Significantly more right answers came from the younger respondents (r = 0.285, n = 196, sig. = 0.000). The overall mean score of awareness with regard to cardiac arrest assistance was 10.43 ± 0.98 (score range: 0 - 14), but no one (n = 198, 0 %) responded correctly to all seven questions in the constructed variable AWARE.

Most (72.8 %, n = 144) of the respondents would help a stranger person with chest compressions, 53 (26.8 %) would not help or were unsure. Around 60 % (n = 120) of the respondents would help a stranger with artificial respiration, and 38.4 % (n = 76) would not, or were not sure. The most common reasons not to help were not having the proper knowledge, being scared of hurting the patient and being afraid to get a transmissible disease (Table 2).

Tab. 2. Obstacles to help with CPR

Reasons / obstacles to help	Artificial respiration		Heart massages	
	n	%	n	%
I don't have the proper knowledge	74	37.4	63	31.8
I'm scared to hurt the patient	29	14.6	46	23.2
I don't want to touch strangers	20	10.1	10	5.1
I don't think this procedure is effective	1	0.5	2	1.0
I'm afraid of transmissible diseases	29	14.6	1	0.5
Other	4	2.0	1	0.5
I do not know	12	6.1	1	0.5
Missing	29	14.7	74	62.6

Legend: n – number; % – percent

The majority (80.3 %, n = 159) of respondents would use the AED when needed. The majority of respondents knew where an AED is located (72.2 %, n = 143) in their neighborhood and whether it is accessible (70.2 %, n = 139). This item was not significantly correlated to any of the demographic variables.

The majority of respondents knew that an AED is needed when the patient is not breathing but did not know the main concern – to put the AED pads on the patient's chest (Table 3).

2020, roč. 10, č. 2
ISSN 1338-6263

Tab. 3. Proper use of an AED

Items on AED use	n	%
Patient's status when needing an AED		
Choking	16	8.1
Not breathing	178	89.9
Epileptic seizure	3	1.5
Missing	1	0.5
The main concern, after activating the AED		
Put the pads on the patient's chest	67	33.8
Shave the patient's chest	1	0.5
No one can touch the patient while the AED analyses their pulse	123	62.1
Withdrawal, why needed		
So that the AED displays the correct result	20	10.1
To prevent the user from receiving an electric shock	135	68.2
For the safety of the patient	41	20.7
Missing	2	1.0

Legend: AED – Automatic External Defibrillator; n – number; % – percent

BLS COURSE variable showed that nearly seventy percent (n = 137, 69.2 %) of the respondents got enough points (Mean = 10.22, SD = 3.16, Min. = 0, Max. = 17, n = 198) to save a life. Persons which attended a BLS course in the last five years (30.1%, n = 58) showed significantly more awareness and readiness to help a person who does not show any signs of life (Table 4).

Tab. 4. Awareness related to BLS training participation

Variables selected	Right answers				F	df	Sig.
	Participated		Not participated				
	n	%	n	%			
BLS COURSE	58	96.6	81	60.0	30.165	1	0.000
Frequency of chest compressions and artificial respirations	41	70.7	46	34.6	24.760	1	0.000
AED, when to use it	55	94.8	118	88.1	6.504	1	0.012
AED, willing to help a stranger	52	89.6	103	77.4	6.465	1	0.012
Cardiac arrest, what to do first	10	18.2	8	6.3	5.974	1	0.015
Evaluate breathing	45	77.6	84	62.7	6.084	1	0.015
Typical symptom of heart arrest	13	26.0	36	28.1	4.709		0.031
Frequency, heart massages	17	29.8	25	18.7	3.496		0.064
Recognize cardiac arrest	46	79.3	91	68.4	2.815		0.095
How to check response	51	89.4	120	89.6	2.186		0.141
AED, location	45	80.4	96	73.8	1.793		0.182
AED, accessible	45	77.6	92	68.7	1.212		0.272
Withdraw before electro shock, why	49	84.5	83	62.4	0.328		0.567
How to evaluate artificial respiration	49	87.5	108	80.6	0.033		0.857
Informing ambulance dispatcher	56	96.6	127	95.5	0.000		0.983

Legend: Participated –basic life support training, participated in last five years; Not participated – basic life support training not participated in last five years; n – number of right answers; % – percentage of right answers;
BLS COURSE – constructed variable from 14 questions; F – the result from one-way ANOVA test; df – degrees of freedom; Sig. – statistical significance; AED – automatic external defibrillator

2020, roč. 10, č. 2
ISSN 1338-6263

Discussion

Among the participants of this study, the overall awareness score was high. This result is higher than that seen in similar studies done in developing countries (Ganfure et al., 2018; Subki et al., 2018; Sangamesh et al., 2017). For example, in Ganfure (et al., 2018) and Subki (et al., 2018), only 20 to 40 % of respondents were knowledgeable of CPR. The respondents' high score for awareness in our study is probably the consequence of the obligatory training of BLS with CPR and AED use for those attending driving school. It seems that also short Red Cross workshops on CPR and use of an AED are effective.

In the current study, about one-third of respondents had taken a BLS course in the last five years. This percentage is similar to that reported in other studies (Pehlivan et al., 2019; Jarrah et al., 2018; Ganfure et al., 2018; Özbilgin et al., 2015). Research conducted in Slovenia also found that nearly 70 % of the subjects had attended courses on CPR, but the majority of them did so more than ten years ago (Rajapakse, Noc, Kersnik, 2010). The difference of results could be explained by the timeframe used, where the respondents of this study were reporting course participation within the last five years, but other studies did not use a time limit or applied a different one.

Notably, many of the respondents who attended a BLS course answered incorrectly on cardiac arrest typical symptom. This finding was a surprise, especially when compared to other studies. For example, Özbilgin (et al., 2015) found out that 49.3 % of respondents were aware that the typical sign of cardiac arrest is the cessation of breathing. The reason for the many wrong answers in our study might be that cardiac arrest was confused with a heart attack, as people often use these terms interchangeably (American Heart Association, 2020).

Significantly more right answers came from respondents who participated in BLS training in the last five years. These respondents were more likely to know the correct frequency of CPR, what to do first, were more willing to help with chest compressions, artificial respiration and using an AED. Similar to the findings of other researchers (Ganfure et al., 2018; Jarrah et al., 2018; Lund-Kordahl et al., 2019; Patsaki et al., 2012), we can thus confirm that attending a BLS course might have a positive effect on the awareness and willingness to help a person with a sudden cardiac arrest.

In this study younger respondents gave significantly more correct answers than older ones. Birkun and Kosova (2018) also found that the greater age of their respondents was negatively correlated with the number of correct answers. In contrast, Ghasemi (et al., 2019) found that older participants had better knowledge of CPR, while Ganfure (et al., 2018) reported that their respondents aged older than 35 years had four times more knowledge about first aid than those aged 25 and under. These results indicate that more research should be done about longitudinal factors influencing the knowledge of CPR.

Most respondents would help a stranger with chest compressions, artificial respiration and an AED when needed. A third of the respondents that were not willing to help stated that the most common obstacles were not having proper knowledge and being scared of hurting someone. These findings are congruent with those of other researchers (Birkun, Kosova, 2018; Jarrah et al., 2018).

Our study has some limitations. One of these is that it was conducted only in five municipalities, the sampling was random, and the number of participants is not representative. Therefore, the findings cannot be seen as generally valid. Moreover, the participants were asked if they knew how to use an AED but were not asked more about its detailed use.

Future research on individuals' awareness and knowledge of CPR should include more detailed questions and a practical test. More research is also needed about the relation between CPR awareness and the age of respondents.

Conclusion

This paper supports implications for widespread education regarding CPR and use of an AED. The results showed that the attendance at BLS training within the last five years provided significantly higher awareness on CPR and readiness to help people with no sign of life. Basic life support courses can be short (workshops, BLS courses, education media campaign), but seems that have to be redundant to increase self-confidence in proper knowledge of CPR. More research should be done on longitudinal factors influencing the knowledge of CPR, and should include a practical test on CPR and AED use. The self-designed questionnaire in Slovenian language is reliable and could be considered an indicator for evaluating the performance of BLS courses and the long-term population awareness.

Bibliographical References

American Heart Association. 2020. *Heart Attack or Sudden Cardiac Arrest: How Are They Different?* American Heart Association [online]. 2020. [cit. 2020-12-07]. Available on: https://www.heart.org/en/health-topics/heart-attack/about-heart-attacks/heart-attack-or-sudden-cardiac-arrest-how-are-they-different

BALDI, E. et al. 2017. Real-time visual feedback during training improves laypersons' CPR quality: a randomized controlled manikin study. In *Canadian Journal of Emergency Medicine,* 2017, vol. 19**,** no. 6, pp. 480-487.

2020, roč. 10, č. 2
ISSN 1338-6263

BIRKUN, A. – KOSOVA, Y. 2018. Social attitude and willingness to attend cardiopulmonary resuscitation training and perform resuscitation in the Crimea. In *World Journal of Emergency Medicine,* 2018, vol. 9**,** no. 4, pp. 237-248.

GANFURE, G. et al. 2018. First aid knowledge, attitude, practice, and associated factors among kindergarten teachers of Lideta sub-city Addis Ababa, Ethiopia. In *PloS one,* 2018, vol. 13**,** no. 3, pp. e0194263.

GHASEMI, Y. et al. 2019. Evaluating the awareness of ordinary people about relief operations and cardiopulmonary resuscitation when facing out-of-hospital cardiac arrest. In *Journal of Family Medicine and Primary Care,* 2019, vol. 8**,** no. 7, pp. 2318-2321.

GRÄSNER, J. T. et al. 2016. EuReCa ONE-27 Nations, ONE Europe, ONE Registry: A prospective one month analysis of out-of-hospital cardiac arrest outcomes in 27 countries in Europe. In *Resuscitation,* 2016, vol. 105**,** pp. 188-195.

HART, D. et al. 2013. Cardiopulmonary resuscitation and automatic external defibrillator training in schools: "is anyone learning how to save a life?". In *Canadian Journal of Emergency Medicine*, 2013, vol. 15**,** no. 5, pp. 270-278.

IHELP. 2019. *Automatic, External Defibrilator* [online]. 2019. [cit. 2020-12-07]. Available on: https://www.ihelp.life/aedall

JARRAH, S. – JUDEH, M. – ABURUZ, M. E. 2018. Evaluation of public awareness, knowledge and attitudes towards basic life support: a cross-sectional study. In *BMC Emergency Medicine,* 2018, vol. 18**,** no. 1, pp. 37.

LAI, C. Y. et al. 2018. Survival factors of hospitalized out-of-hospital cardiac arrest patients in Taiwan: A retrospective study. In *PloS one,* 2018, vol. 13**,** no. 2, pp. e0191954.

LUND-KORDAHL, I. et al. 2019. Relationship between level of CPR training, self-reported skills, and actual manikin test performance-an observational study. In *International Journal of Emergency Medicine,* 2019, vol. 12**,** no. 2, pp. 1-8.

MARKOTA, A. – GRADIŠEK, P. 2017. Ali imamo slovenske podatke o oživljanju? In VAJD, R. – GRIČAR, M. *24. Mednarodni simpozij o urgentni medicini.* Ljubljana: Slovensko združenje za urgentno medicino, pp. 45-52.

NIELSEN, A. M. et al. 2013. Can mass education and a television campaign change the attitudes towards cardiopulmonary resuscitation in a rural community? In *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine,* 2013, vol. 21**,** pp. 39.

ONG, M. E. et al. 2013. National population based survey on the prevalence of first aid, cardiopulmonary resuscitation and automated external defibrillator skills in Singapore. In *Resuscitation,* 2013, vol. 84, no. 11, pp. 1633-1636.

ÖZBILGIN, Ş. et al. 2015. Evaluation of Public Awareness, Knowledge and Attitudes about Cardiopulmonary Resuscitation: Report of İzmir. In *Turkish Journal of Anaesthesiology and Reanimation,* 2015, vol. 43**,** no. 6, pp. 396-405.

PATSAKI, A. et al. 2012. Evaluation of Greek high school teachers' knowledge in basic life support, automated external defibrillation, and foreign body airway obstruction: implications for nursing interventions. In *Journal of Emergency Nursing,* 2012, vol. 38**,** no. 2, pp. 176-181.

PEHLIVAN, M. et al. 2019. The evaluation of laypersons awareness of basic life support at the university in Izmir. In *Turkish Journal of Emergency Medicine,* 2019, vol. 19**,** no. 1, pp. 26-29.

RAJAPAKSE, R. – NOC, M. – KERSNIK, J. 2010. Public knowledge of cardiopulmonary resuscitation in Republic of Slovenia. In *Wien Klin Wochenschr,* 2010, vol. 122**,** no. 23-24, pp. 667-672.

SANGAMESH, N. C. et al. 2017. Awareness, Attitude, and Knowledge of Basic Life Support among Medical, Dental, and Nursing Faculties and Students in the University Hospital. In *Journal of International Society of Preventive & Community Dentistry,* 2017, vol. 7**,** no. 4, 161-167.

SMITH, C.M., et al. 2017. Barriers and facilitators to public access defibrillation in out-of-hospital cardiac arrest: a systematic review. In *European Heart Journal - Quality of Care and Clinical Outcomes,* 2017, vol. 3**,** no. 4, pp. 264-273.

SOAR, J., et al. 2015. European Resuscitation Council Guidelines for Resuscitation 2015: Section 3. Adult advanced life support. In *Resuscitation,* 2015, vol. 95**,** pp. 100-147.

SUBKI, A. H. et al. 2018. Basic Life Support Knowledge Among a Nonmedical Population in Jeddah, Saudi Arabia: Cross-Sectional Study. In *Interactive Journal of Medical Research,* 2018, vol. 7**,** no. 2, e10428.

TAVAKOL, M. – DENNICK, R. 2011. Making sense of Cronbach's alpha. In *International Journal of Medical Education,* 2011, vol. 2**,** pp. 53-55.

2020, roč. 10, č. 2
ISSN 1338-6263

TAVAKOLI GOLPAYGANI, A. – MOVAHEDI, M. M. – REZA, M. 2017. A Study on Performance and Safety Tests of Defibrillator Equipment. In *Journal of Biomedical Physics & Engineering,* 2017, vol. 7**,** no. 4, pp. 397-402.

VILLALOBOS, F. et al. 2019. Lay People Training in CPR and in the Use of an Automated External Defibrillator, and Its Social Impact: A Community Health Study. In *International Journal of Environmental Research and Public Health,* 2019, vol. 16**,** no. 16, pp. 2870.

VON ELM, E. et al. 2007. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for Reporting Observational Studies. In *Annals of Internal Medicine,* 2007, vol. 147**,** no. 8, pp. 573-577.

WORLD MEDICAL ASSOCIATION. 2013. World Medical Association Declaration of Helsinki, ethical principles for medical research involving human subjects. In *JAMA,* 2013, vol. 310, no. 20, pp. 2191-2194.

ZBORNICA-ZVEZA. 2014. Kodeks etike v zdravstveni negi in oskrbi. In *Uradni list Republike Slovenije,* 2014, vol. 71.

Contact

Assist. Prof. Melita Peršolja, RN, MSc, PhD
University of Primorska, Faculty of Health Sciences, Unit Nova Gorica
Delpinova 18a
5000 Nova Gorica
Slovenia
E-mail: melita.persolja@fvz.upr.si

Received: 18th November 2020
Accepted: 9th December 2020