



Perspective of Need for First Aid Education in Bulgarian Schools

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RESEARCH



ABSTRACT

Background: First aid and disaster response training for school teachers is not mandatory in many countries, including the Republic of Bulgaria, despite its importance for protecting lives and reducing long-term negative effects of injuries to students on school premises.

Methods: A sample of 419 teachers from 26 public and private schools in different cities, towns, and villages in all the six NUTS 2 level regions in Bulgaria filled in questionnaires in order to examine their current level of first aid and disaster response training and motivation for improving it. Chi-square, Cramér's V, and p-values were calculated in order to explore possible factors influencing teachers' motivations for learning first aid.

Results: Approximately 59% of respondents state their willingness to undergo further first aid and disaster response training. Analyzed data showed negligible relationships between teachers' desire to improve the level of their first aid and disaster response training and the type of school they teach in. A stronger relationship between the desire of teachers to improve their first aid training and having witnessed a situation requiring first aid exists but the effect size is weak. The analysis shows the discrepancies between the confidence and decisiveness of teachers reported during the survey and the level of their first aid training.

Conclusion: The majority of teachers that participated in the research wished to improve their first aid skills. This requires further research on the appropriate forms, duration, and means for organizing such training so that in the short term the general level of first aid training of teachers in the country would increase. The results of the conducted survey do not clearly show the factors influencing the lack of motivation of the rest of the teachers. Further research in this aspect could present possibilities for improving the level of first-aid training of teachers.

РЕЗЮМЕ

Предистория: Обучението за оказване на първа помощ и реагиране при бедствия има важно значение за опазване на живота и намаляване на дългосрочните негативни последици от нараняване на учениците в следствие на инциденти в училище. Въпреки това, в много държави, включително Република България, то няма задължителен характер.

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Методи: Формирана е извадка от 419 учители от 26 частни, държавни и общински училища в шестте планови икономически района в България. Участниците в проучването попълниха анкетни карти с оглед изследване на тяхното настоящо ниво на подготовка за оказване на първа помощ и реагиране при бедствия и мотивацията им за повишаването му в бъдеще. Изчислени са χ^2 , коефициент на Крамер и р стойността с оглед изследване потенциалното влияние на различни фактори върху мотивацията на учителите.

Резултати: Приблизително 59% от респондентите изразяват желание да бъдат допълнително обучени за оказване на първа помощ и реагиране при бедствия. Анализираните данни показва липсата на съществена връзка между желанието на учителите да подобрят нивото си на подготовка и вида училище, в който преподават. По-силна връзка съществува между това им желание и факта, че са били свидетели на ситуация, която е изисквала оказването на помощ. Въпреки това тази връзка е слаба. Анализът показва, че съществува несъответствие между изразената по време на анкетата увереност и решителност от учителите да окажат помощ и реалната им подготовка за това.

Заклучение: Преобладаващата част от учителите, участвали в изследването, биха искали да подобрят уменията си за оказване на първа помощ. Това предполага провеждането на допълнително изследване на подходящите форми, продължителност и средства за организиране на такава обучение. Резултатите от проведеното проучване не показват ясно факторите, които обуславят липсата на мотивация сред останалите учители, което може да бъде обект на следващо изследване.

RESUMEN

Antecedentes: La capacitación en primeros auxilios y respuesta a desastres para maestros de escuela no es obligatoria en muchos países, incluida la República de Bulgaria, a pesar de su importancia para proteger vidas y reducir los efectos negativos a largo plazo de las lesiones de los estudiantes en las instalaciones escolares.

Métodos: Una muestra de 419 docentes de 26 escuelas públicas y privadas en diferentes ciudades, pueblos y aldeas de Bulgaria en las seis regiones de nivel NUTS 2 completaron cuestionarios para examinar su nivel de capacitación en primeros auxilios y respuesta a desastres y su motivación para mejorarlo. Se calcularon los valores de Chi-cuadrado, V de Cramér y P-Valor para explorar los posibles factores que influyen en las motivaciones de los maestros para aprender primeros auxilios.

Resultados: Aproximadamente el 59% de los encuestados afirman estar dispuestos a recibir capacitación adicional en primeros auxilios y respuesta a desastres. Los datos analizados mostraron relaciones insignificantes entre el deseo de los docentes de mejorar el nivel de su capacitación en primeros auxilios y respuesta a desastres y el tipo de escuela en la que enseñan. Existe una relación más fuerte entre el deseo de los docentes de mejorar su capacitación en primeros auxilios y haber presenciado una situación que requería los primeros auxilios, pero la dimensión del efecto es débil. El análisis muestra discrepancias entre la confianza y la firmeza que reportan los docentes durante la encuesta y el nivel de su formación en primeros auxilios.

Conclusión: La mayoría de los docentes que participaron en la investigación deseaban mejorar sus habilidades en primeros auxilios. Esto requiere más investigación sobre la forma, la duración y los medios apropiados para organizar dicha capacitación de modo que, a corto plazo, aumente el nivel general de capacitación en primeros auxilios de los maestros en el país. Los resultados de la encuesta realizada no muestran claramente los factores que influyen en la falta de motivación del resto del profesorado. Una investigación adicional en este aspecto podría ofrecer posibilidades para mejorar el nivel de formación en primeros auxilios de los profesores.

Despite the significant success registered in recent decades in decreasing child mortality and long-term negative effects on children's health resulting from injuries these problems continue to be serious and need to be addressed, both in regard to providing a safe environment for children and for improving providing first aid when accidents occur. The main accidental causes leading to fatal injuries for children aged 5–14 years are road accidents (39%). Other major causes include drowning (14%), poisoning (7%), fires (4%), falls (4%), and others including choking, hypothermia, animal bites, and natural disasters (32%) (Hug et al. 2019, Sethi et al. 2008). Between 10% and 25% of accidental injuries of children occur on school premises or in close proximity to them, while data about the US show that 1 in 14 children between 5 and 19 years is injured at school (Faydali et al. 2018).

As in other countries, in the Republic of Bulgaria external causes for trauma and poisoning, including car accidents, falls, drownings, and conscious self-inflicted harm, are the main factors leading to death and illness for people aged 1–19 (National Statistical Institute, 2020). Despite the fact that there is no statistical data on the distribution of the places where children are injured, incidents resulting in such injuries have been registered on school premises or in close proximity to schools (Dimitrova, 2019; Manev, 2018, Trencheva, 2015). It is in this context, the importance of first aid training for teachers is realized.

Despite evidence-based first-aid training being available (Bulgarian Red Cross, 2003; Manusheva, 2020; Paideia Foundation, 2008) the perspective of actual teachers has not yet informed the Chain of Survival Behaviors (Gordon et al., 2019) to tailor first-aid education to their needs. This research focused on analyzing the necessity of first aid training, the current level of the training of teachers in Bulgaria, their motivation for learning first aid, and factors that influence it. Together they can inform the content and context for effective first-aid education.

METHODS

During the 2020–2021 school year, there were 1,948 schools of general education and 417 professional schools functioning in Bulgaria. Of them, 60 were shortlisted in order to be approached to participate in the survey. These schools were chosen to ensure a mix of school types: basic schools, colleges, secondary schools, and high schools; various types and sizes; and the type and size of the inhabited areas where they are located. Arts and religious schools are excluded as they are regulated by other institutions. Based on the division of the country used for statistical purposes in the European

Union, the survey included schools from all six NUTS 2-level regions. This level of regions includes populations between 800,000 and 3 million people, with area, topography, or history playing little or no role in forming the regions. The list of schools received the approval of the Bulgarian Ministry of Education. Each principal then had also to approve the participation of teachers in the survey. After the initiated talks with 26 school principals, the participation of teachers in the survey was approved and 419 teachers from these schools filled out a questionnaire (Supplemental A) on a voluntary basis while their anonymity was kept.

The survey aimed to achieve several goals which were decisive for the questions included. These main goals were first to examine the necessity of first aid training for teachers. For this purpose, teachers were asked to give information about the number and the type of cases requiring first aid that they have witnessed in the course of their careers. To examine the competence of teachers to provide first aid based on their prior training and their ability to prioritize their actions in cases where first aid is needed (according to answers to a question in the survey). To examine teachers' motivation to improve the level of their first aid training. To analyze teachers' professional opinions on how first aid training could be improved. And, to analyze teachers' emotions connected with first-aid situations and intended behavior in situations requiring first-aid.

In order to understand the full scale of the problem regarding the motivation for first aid training the influence of several demographic factors were included: the type of school they work in; whether teachers have previously witnessed a situation in which first aid was required; years of professional experience, age of respondents. We focus here on two of these factors, namely – the type of school that teachers work in and whether they have previously witnessed a situation requiring first aid.

Studying the potential influence of the type of school on the motivation of teachers to perfect their first aid training, for example, the following hypothesis could be made:

H_0 – there is no relation between the teachers' desire to improve their first aid training and the type of school they work in;

H_1 – there is a relation between the teachers' desire to improve their first aid training and the type of school they work in.

H_0 – there is no relation between the desire of teachers to improve their first aid competency and the fact that they have witnessed a situation requiring such aid;

H_1 – there is a relation between the desire of teachers to improve their first aid and the fact that they have witnessed a situation requiring such aid.

The survey was piloted in two schools in the city of Belene (in the Northwest region of Bulgaria) and demonstrated the specificity needed for the analysis. The survey was conducted in the period of June – July 2021. Given the hypotheses about the relationship between nominal variables (factors influencing the motivation of teachers for first aid training) were to be checked, Chi-square, Cramér's V, and p-values were calculated.

RESULTS

PARTICIPANTS

The survey captured data from 419 participants. Females comprised 86.1% of the sample. **Figure 1** describes the age and teaching experience distribution:

NECESSITY OF FIRST AID TRAINING FOR TEACHERS

The survey shows that approximately half of respondents have witnessed at least once in their careers a situation

that required first aid in school premises with an average of 2.2 cases witnessed by all teachers (see **Figure 2**).

Teachers were required to give further detail about the incidents they remembered witnessing. Analysis of the acquired data showed that teachers thought they needed to stop bleeding in 33% of cases and/ or provide psychological first aid (29%). In 24% of all cases, teachers called the emergency number (1-1-2) or asked the medical personnel at school to intervene (see **Figure 3**).

According to data from the survey the most common places where teachers reported that accidents requiring first aid occurred were classrooms and the schoolyard (cumulatively 68% of all registered cases), with another 11% occurring in the corridors of schools. In this context given the frequency and type of first aid required, it is important to understand teachers' abilities to react to the occurrence of such accidents. Their ability to react depends on different factors, one of the more important being the training they have received. According to the acquired data, 72.6% of teachers have gone through some form of first aid training. This percentage includes people that received basic first aid training in order to acquire their driving license (37.47%), as well as people that have participated in other courses in the last three years (9.07%), and those that took part in other courses

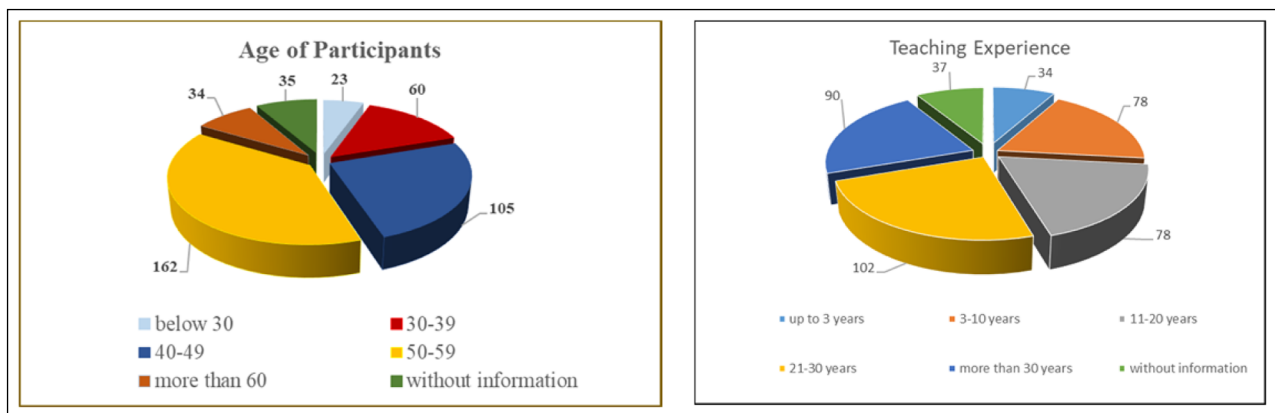


Figure 1 Age and Teaching Experience Distribution of Participants.

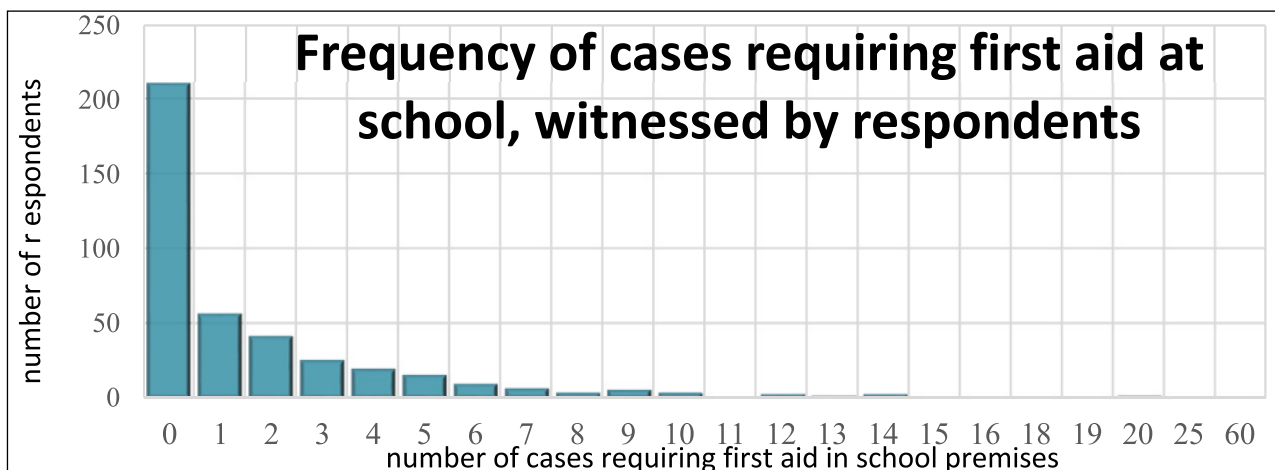


Figure 2 Frequency of Cases Requiring First Aid at School, Witnessed by Respondents.

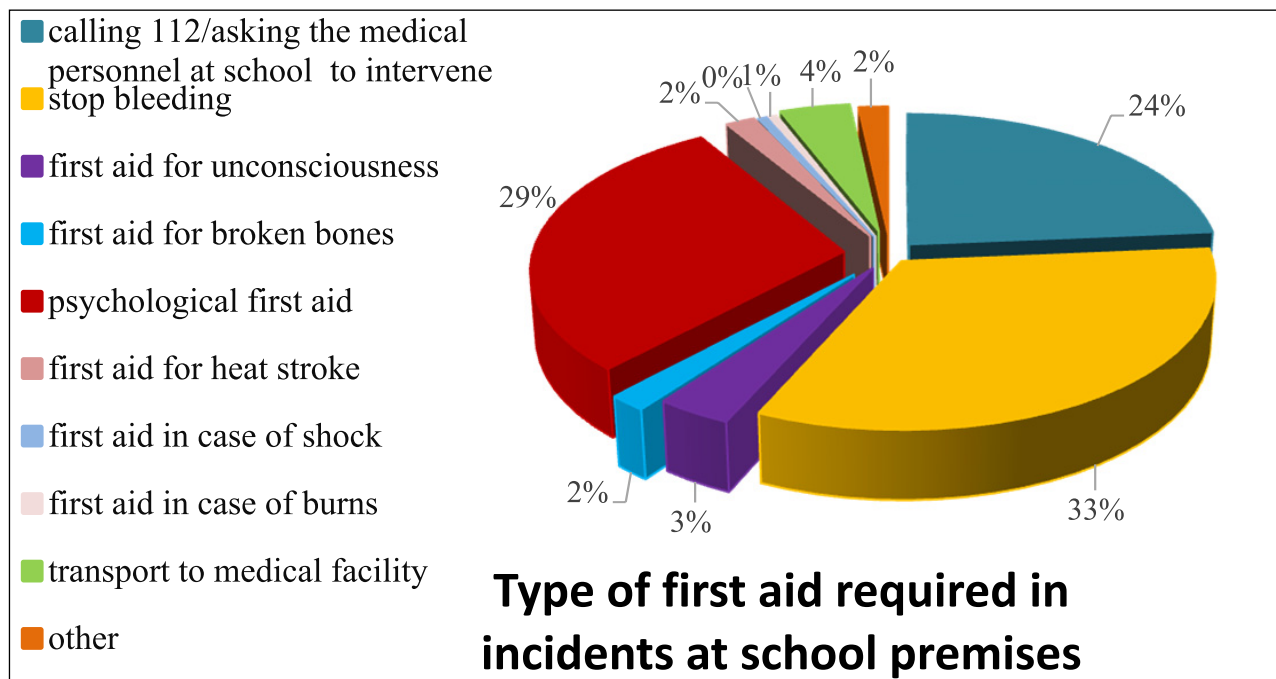


Figure 3 Type of first aid required in incidents at school premises.

more than three years ago (14.6%). Despite the fact that it is recommended to complete different courses periodically in order to refresh one’s abilities to give first aid (International Federation of Red Cross Red Crescent Societies, 2020), only 28 people (less than 7% of the respondents) indicated that they participated in more than one first aid course.

In order to receive additional information on the level of preparedness of teachers to provide first aid, participants in the survey were asked to put first aid actions in the correct order when responding to unconsciousness:

1. checking for response;
2. opening the airway;
3. checking if the person is breathing;
4. in case there are no other life-threatening conditions, putting the person in a recovery position and covering with a blanket;
5. calling 1-1-2;
6. checking repeatedly if the person is breathing and has regained consciousness. If the person stops breathing, calling 1-1-2 and starting CPR. (St. John Ambulance, St. Andrew’s First Aid, & the British Red Cross, 2021, pp. 62–67, Bulgarian Red Cross, 2021).

The results of the survey showed that only one person (0.24% of respondents) put all these actions in the correct order. The poor level of first aid knowledge evidenced by these results is confirmed by the fact that 81% of the respondents place between 0 and 2 activities in the correct order. Only 11% of teachers are well acquainted with the correct procedure. The main error that respondents make (in 89% of the cases) is to switch the order of “opening the airway” and “checking

if the person is breathing.” While they didn’t describe the correct procedure it is still obvious that they have some basic knowledge.

RESULTS OF THE STUDY ON MOTIVATION OF TEACHERS FOR FIRST AID AND DISASTER RESPONSE TRAINING

Another aspect of first aid training of teachers in Bulgarian schools is their motivation to receive training. The results of the survey show gaps in training and this was reflected in the number of participants (approximately 59% of respondents), who state their willingness to undergo further training. In spite of this significant percentage of teachers that are motivated to enhance their abilities to provide first aid, it should not be disregarded that more than 17% of respondents would refuse additional training if they were given the chance and another 23.4% are hesitant whether they would want to participate or not.

INFLUENCE OF THE TYPE OF SCHOOL ON MOTIVATION

Because of the fact that the relation between two qualitative characteristics is analyzed, the chi-squared, p-values, and Cramer’s V are determined. The data from the conducted survey and the relevant expected values are presented in Table 1.

The value of *chi-squared* determined on the basis of the information in Table 1 is 14.8341, with 8 degrees of freedom. The chosen level of significance (α) is 0.05 for a two-sided test. The chi-square values should be compared to the critical values for the respective degrees of freedom and level of significance ($\chi^2 = 2.1797$ for 8 degrees of freedom and $\alpha = 0.975$ and $\chi^2 = 17.5345$ for 8

TYPE OF SCHOOL		DESIRE FOR ADDITIONAL FIRST AID TRAINING			TOTAL
		YES	NO	COULD NOT BE DETERMINED	
Gymnasium	acquired data	69	23	44	136
	expected value	80.88	23.16	31.96	
Basic school	acquired data	108	35	33	176
	expected value	104.67	29.97	41.36	
Secondary school	acquired data	52	9	15	76
	expected value	45.20	12.94	17.86	
College	acquired data	6	3	2	11
	expected value	6.54	1.87	2.59	
Private secondary school	acquired data	13	1	4	18
	expected value	10.71	3.06	4.23	
Total		247	73	98	418

Table 1 Desire for Additional First Aid Training Based on the Type of School.

TEACHERS BEING WITNESSES TO A SITUATION REQUIRING FIRST AID		DESIRE FOR ADDITIONAL FIRST AID TRAINING			TOTAL
		YES	NO	CANNOT BE DETERMINED	
No witness to a situation requiring such aid	acquired data	110	49	50	209
	expected value	123.5	36.5	49	
Witness to a situation requiring such aid	acquired data	137	24	48	209
	expected value	123.5	36.5	49	
Total		247	73	98	418

Table 2 Desire for Additional First Aid Training Based on Teachers Being Witnesses to Situations Requiring Such Aid.

degrees of freedom and $\alpha = 0.025$). Based on that with a 5% risk of making a mistake, it should be considered that there is no reason to reject the null hypothesis therefore it should be accepted that there is no relation between teachers' desire to improve the level of their first aid training and the type of school they teach in.

Based on the information in **Table 1** the p-value can also be determined. This value is 0.073, which is greater than α . This confirms the fact that there is no reason to reject the null hypothesis. Similar results are established on the basis of Cramer's V. The value of this coefficient is $V_{cr} = 0.0666$. Despite the fact that this result is statistically significant, based on Lee's interpretation of the influence of the effect sizes (Lee, 2016) it can be considered that there is a practically negligible relation between the two variables.

INFLUENCE OF WITNESSING SITUATIONS REQUIRING FIRST AID ON MOTIVATION TO LEARN

As in the previous case, the relation between two qualitative characteristics is analyzed the χ^2 , p-values and

Cramer's V are determined. The data from the conducted survey and the relevant expected values is presented in **Table 2**. The value *chi-square* determined based on the data in **Table 2** is 11.554, with two degrees of freedom. The level of significance (α) is 0.05 for a two-sided test. The value of *chai-squared* should be compared to the critical values for the respective degrees of freedom and level of significance ($\chi^2 = 0.0501$ for two degrees of freedom and $\alpha = 0.975$ and $\chi^2 = 7.378$ for two degrees of freedom and $\alpha = 0.025$). Based on that information with a 5% risk of making a mistake the null hypothesis can be rejected and the alternative H_1 should be accepted (i.e. there is a relation between the desire of teachers to improve their first aid competency through training and the fact that they have witnessed a situation requiring first aid).

Based on the data in **Table 2** the p-value is determined. The fact that this value (0.003) is less than the level of significance confirms that the null hypothesis should be rejected. Cramer's V is the next coefficient to be calculated. Its value ($V_{cr} = 0.1176$) shows that despite the fact that there is a statistically significant relationship between the two variables, the size of the effect is weak.

EMOTIONS	NUMBER OF TIMES REPORTED	% OF RESPONDENTS
Decisiveness (being determined to act/provide first aid in order to help someone)	88	29%
Fear of being prosecuted if they make a mistake	18	5,9%
Fear not to hurt the injured person while trying to help	38	12.5%
Fear caused by the condition of the injured person	75	24.8%
Confidence in their first aid competency	57	18.8%
Feeling powerless	9	2.9%
Feeling unwell because of the sight of blood	7	2.3%
Other	11	3.6%

Table 3 Emotions Felt by Respondents When They Witnessed Situations Requiring First Aid.

Another factor that can influence the desire of people to provide first aid or even undergo additional first aid training is the emotions they felt when they witnessed an incident requiring first aid (Windsor First Aid, 2022, Lanza et al., 2018). It can be expected that people that are afraid (that they might harm the injured person if they try to help him or her, that they can be legally prosecuted if they make a mistake, etc.) would be more hesitant to provide first aid or even train to do so. Or different emotions like courage, determination, and confidence could influence people in the opposite way.

It should be taken into account that confidence can have a positive effect in cases that require providing first aid when people have received proper training. Conversely, overconfidence bias, described as the internal bias in which an individual's confidence in their abilities is more significant than what they are actually capable of, can occur. This could lead to greater risks of making mistakes (Miller & Geraci, 2011, Moore & Schatz, 2017).

The results of the survey with regard to the emotions that respondents experienced giving first aid are presented in Table 3. Some teachers report experiencing more than one kind of emotion in these cases. The figures present the total number of times the emotions were reported.

LIMITATIONS

As the sample of teachers that participated in the survey consists of volunteers, there is a risk that it is not representative of the general community. Given the fact that such a survey as the one conducted in the Bulgarian educational system can only be performed on a voluntary basis among the community of teachers, the only measures to decrease that potential risk that could be taken were: to keep the anonymity of the respondents; to keep the questionnaire as short as possible in order to decrease the likelihood that the teachers would reject participating due to lack of time; constructing the questionnaire in such a manner that it would not induce negative emotions (to make teachers uneasy about being tested), but on the contrary, to make

them feel that they can improve a system that benefits them. All these measures were taken in order to increase the potential number of volunteers that would fill in the presented questionnaire thus decreasing the risk of volunteer bias.

There exists another possible risk related to the fact that the research relies on respondents' memories of witnessing incidents, their response, and their emotions rather than written data. Since there is no official statistical information about the number and type of incidents in schools this risk cannot be entirely eliminated. It could be significantly reduced by increasing the size of the sample. All the measures, mentioned above, taken in this regard lead to reducing this risk.

CONCLUSION

The conducted survey shows a discrepancy between the current level of preparedness of teachers to provide first aid and the frequency and severity of incidents with children at school premises. It raises not only the objective necessity of first aid training but also the need to increase the effectiveness of its current provision. The analysis also shows the discrepancies between the confidence and the decisiveness of teachers reported during the survey and the level of their training. On one hand, the conducted survey shows that teachers, in general, have high confidence in their abilities to provide first aid depending on the situation, but on the other, a significant percentage of them declare that they feel uneasy to provide first aid, which corresponds to the fact that they have received only limited training.

The majority of teachers would wish to improve their first aid skills, but results don't show clearly the factors influencing the lack of motivation for the rest of them. This shows the importance of introducing additional incentives for increasing the motivation of teachers to participate in such courses. In this context, it is necessary that further research on the ways to increase both the effectiveness of first aid training of teachers and their motivation be made.

ADDITIONAL FILE

The additional file for this article can be found as follows:

- **Supplemental A. QUESTIONNAIRE.** DOI: <https://doi.org/10.25894/ijfae.6.1.28.s1>

COMPETING INTERESTS

The author has no competing interests to declare.

PUBLISHER'S NOTE

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