REUFSM
REVISTA DE ENFERMAGEM DA UFSM

UFSM
Rev. Enferm. UFSM - REUFSM
Santa Maria, RS, v. 10, e70, p. 1-17, 2020
DOI: 10.5902/2179769236507
ISSN 2179-7692

Original Article Submission: 01/23/2019 Acceptance: 03/13/2020 Publication: 13/08/2020

Educational intervention in first aid for basic education students

Intervenção educativa em primeiros socorros para escolares da educação básica

Intervención educativa en primeros auxilios para estudiantes de educación básica

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Resumo: Objetivo: comparar o conhecimento de escolares do ensino básico sobre primeiros socorros antes e após uma intervenção educativa sobre o tema. **Método:** estudo quase experimental, realizado com 67 estudantes do oitavo ano do ensino fundamental de uma escola pública, durante o ano de 2015, em um município de Minas Gerais. Foram aplicados instrumentos de pré e pós-testes para a coleta de dados que, posteriormente, foram compilados no software Epi Info™ versão 7 e analisados pelo programa *Statistical Package for the Social Sciences* (SPSS) versão 20. **Resultados:** houve melhoria estatisticamente significativa (P <0,05) no conhecimento dos participantes após a intervenção educativa para a maioria dos temas abordados. **Conclusão:** a intervenção educativa em primeiros socorros para escolares foi efetiva e demonstrou a emergente necessidade de implementar disciplinas que abordem estes conteúdos no currículo do ensino básico.

Descritores: Enfermagem; Emergências; Primeiros socorros; Educação em saúde; Estudantes

Abstract: Objective: to compare the knowledge of basic education students about first aid before and after an educational intervention on the subject. **Method:** quasi-experimental study, conducted with 67 eighth-grade students of a public school, during 2015, in a city of Minas Gerais. Pre- and post-test instruments were applied for data collection, which were later compiled in Epi Info™ software version 7 and analyzed by Statistical Package for

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the Social Sciences (SPSS) version 20. **Results:** there was a statistically significant improvement (P<0.05) in the participants' knowledge after the educational intervention for most of the topics addressed. **Conclusion:** the educational intervention in first aid for schoolchildren was effective and demonstrated the emerging need to implement subjects that address these contents in the basic education curriculum.
Descriptors: Nursing; Emergencies; First aid; Health education; Students

Resumen: **Objetivo:** comparar los conocimientos de los estudiantes de la educación básica sobre primeros auxilios antes y después de una intervención educativa sobre el tema. **Método:** estudio casi experimental, realizado con 67 estudiantes del octavo grado de una escuela pública, durante 2015, en un municipio de Minas Gerais. Se aplicaron instrumentos de prueba previa y posterior para la recopilación de datos, que posteriormente se compilaron en la versión 7 del software Epi Info™ y se analizaron en el *Statistical Package for the Social Sciences* (SPSS) versión 20. **Resultados:** hubo una mejora estadísticamente significativa (P<0.05) en el conocimiento de los participantes después de la intervención educativa para la mayoría de los temas abordados. **Conclusión:** la intervención educativa en primeros auxilios para los escolares fue eficaz y demostró la necesidad emergente de implementar disciplinas que aborden estos contenidos en el currículo de educación básica. **Descriptores:** Enfermería; Urgencias médicas; Primeros auxilios; Educación en salud; Estudiantes

Introduction

Urgency is defined as an unforeseen occurrence of health damage, in which there is no risk of death, while the emergency implies an imminent risk of death.[1] In urgent and emergency situations, the evaluation of the victim and his/her care must be effective, allowing the reduction of sequelae and increased survival.[2]

First aid (FA) constitutes immediate care that must be provided with agility to a person, victim of accident or sudden illness, whose physical state endangers his/her life, being carried out prior to the care to be provided by a health professional. Its objective is to maintain vital functions and avoid worsening the conditions of the victim, using measures and procedures, most often simple, such as assessing the place where the victim is, his/her physical state, requesting help, until the arrival of qualified assistance. Any person can provide first aid as long as he/she is trained, and must always be conducted with serenity, understanding, and trust.[3-5]

Even with its relevance and considering that health problems occur on a large scale, daily, in traffic, in homes, in the workplace and in other places, in Brazil, education in the

context of FA is little widespread, with lack of knowledge prevailing on the subject.[5] Health education is a strategy of the public authorities to ensure the development of actions to control and prevent diseases or complications, among the marginalized sectors of the population.[6] FA teaching should be made available and democratized for all, but currently, its learning is a privilege for few groups.[5] The access to this knowledge must be democratized and disseminated to the whole society, allowing users to take better care of their health and become less vulnerable.

Basic education (BE) is referred to as the basis for permanent learning and human development, since its space, by excellence, is the teaching. The school institution currently represents the main means to promote BE outside the family sphere and constitutes the space in which children and adolescents spend about a third of their time, thus becoming a favorable environment for the occurrence of urgent and emergency situations.[5,7] Thus, the school can be considered the ideal space for learning FA, since this place provides for diffusion of knowledge. This makes children and adolescents enthusiastically and unpretentiously develop the ability and ease to learn and teach the content acquired to others, whether family, friends or the community where they are inserted.[8]

In countries such as the United States, FA teaching is already part of basic education, and in Norway, Basic Life Support (BLS) has been taught to school-age children since the 1960s.[9-10] It is believed that a society well trained since the BE becomes prepared to act quickly and resourcefulness in life-threatening situations, avoiding or minimizing possible tragic outcomes. It is worth remembering that urgent and emergency situations can occur anywhere and that the FA can be provided by anyone.

Considering the aspects mentioned, the question is: how is the knowledge of basic education students of a public school about FA before and after an educational intervention on the subject? In view of the above, this study aimed to compare the knowledge of basic education students about FA before and after an educational intervention on the subject.

Method

This is a quasi-experimental, interventionist study, of the before-after type, whose intervention used was training in first aid performed with basic education students, from a public school in Minas Gerais from September to December 2015.

The study included all students regularly registered in the eighth grade of the elementary education of the school (n = 67). Those who did not participate in all educational activities performed and/or who did not adequately complete the data collection instruments (n = 08) were excluded.

The educational activity was carried out following the stages: presentation of the training proposal to the school management that analyzed it, approved it and indicated a class for the application of the action. The researchers and the school board came to an agreement that the topics addressed in the training (FA) would be part of the content worked in the chair of natural sciences for elementary school.

The main goal was, through the school meeting held with parents or guardians of the students and the principal of the school, to present the objectives of the research and to inform the benefits that the training would bring to the students, their families and the community as a whole. It is noteworthy that all students included in this study agreed to participate voluntarily in the research after an invitation made in the classroom by the authors, where there was an explanation of the themes that would be addressed and their practical application. The minimum risks that the project involved and the documents necessary to carry out their participation were also presented.

The qualifications were developed using dynamic methodology, with theoretical-practical approach in 15 meetings, which lasted an average of 60 minutes. All meetings were held in the classroom and the interval between each qualification was one week. The topics covered in the instructions were: cardiorespiratory arrest (CRA), cardiopulmonary resuscitation (CPR), convulsive crisis, hemorrhage, epistaxis, fracture, dislocation and sprain.

In the practical approach of the themes taught, the realistic simulation was used to teach the participants the measures that could be adopted for the identification, control, care and prevention of the situations worked. For this, improvised materials were used, such as: plastic bag, cloths, backpacks, books, magazines, broom and cardboard cables, since, in cases where there are no specific and proper materials, all interventions pertinent to certain situations can be performed with quality.

Data collection was performed through the application of a pre- and post-test instrument developed by the researchers of the study, and the post-test evaluation was performed at the end of each training. The instrument applied was self-evaluating, that is, the participants, by their own judgment, informed whether or not they had knowledge about the topics addressed before and after the educational intervention.

The data were compiled in Epi Info™ software version 7 and analyzed by the Statistical Package for the Social Sciences (SPSS) version 20 for Windows. To compare the knowledge before and after the activity, the McNemar test was applied, considering significance level of 0.05%. The McNemar test is a nonparametric statistical test used to compare changes in the pre and post-test of dichotomous variables (yes or no).[11]

This study is part of a larger research and respected the ethical and legal precepts of Resolution n. 466/12 of the National Health Council, being conducted after approval by the Human Research Ethics Committee at the Federal University of Viçosa, which issued a favorable opinion on 11/13/2014, under protocol number 870,833. All activities were carried out by presenting and approving the proposal to parents or guardians of the students, after a school meeting attended by the school principal, with the subsequent signing of the Informed Consent Form and the Assent Form.

Results

Of the 75 students regularly registered in the eighth grade of the public school, 67 (89.3%) participated in the study, aged between 12 and 17 years and mostly males 35 (52.2%). Regarding the participants' previous knowledge about basic notions of FA, there was total unawareness of the subject in 35 (52.2%), absence of training or activity related to the topic in 66 (98.5%) and theme considered important in 64 (95.5%).

The participants' knowledge about the subject of CRA and CPR in the pre-test was poor, however, after the educational intervention, the results of the post-test were better, observing a statistically significant difference ($P < 0.05$) for almost all variables analyzed. Only the variable referring to the knowledge of the number of emergency medical services used in the city did not present statistically significant difference (Table 1). Therefore, the educational intervention was considered effective.

Table 1 - Distribution of the variables analyzed concerning the participants' knowledge about the CPA/CPR theme in the pre- and post-test. Viçosa, MG, Brazil, 2015

Variables	Pre-test		Post-test		*p* value
	Yes n(%)	No n(%)	Yes n(%)	No n(%)	
Do you know what a cardiopulmonary arrest is?	34(50.7)	33(49.3)	53(78.8)	14(21.2)	0.001*
Do you know what happens to a person who has a cardiac arrest?	22(32.8)	45(67.2)	48(71.2)	19(28.8)	<0.001*
Can you identify a cardiorespiratory arrest?	11(16.4)	56(83.6)	40(60.6)	27(39.4)	<0.001*
After identifying a cardiorespiratory arrest, do you know exactly what to do?	8(11.9)	59(88.1)	36(53.0)	31(47.0)	<0.001*
Do you know how to provide first aid to a person with cardiorespiratory arrest?	7(10.4)	60(89.6)	36(53.0)	31(47.0)	<0.001*
Do you know how to do cardiac massage?	18(26.9)	49(73.1)	42(63.6)	25(36.4)	<0.001*
Do you know how many cardiac massages you should do per minute?	6(9.0)	61(91.0)	30(45.5)	37(54.5)	<0.001*

Do you know the number of the emergency medical service used in the city?	34(50.7)	33(49.3)	44(66.7)	23(33.3)	0.089*

Source: Created by the authors based on the research data collection, 2015.

* McNemar Test

A statistically significant improvement was also found (P <0.05) in the participants' knowledge about the themes hemorrhage/epistaxis and convulsive crisis after the educational intervention (Table 2).

Table 2 - Distribution of the variables analyzed concerning the participants' knowledge about the hemorrhage/epistaxis and convulsive crisis themes in the pre- and post-test. Viçosa, MG, Brazil, 2015

Variables	Pre-test		Post-test		*p* value
	Yes n(%)	No n(%)	Yes n(%)	No n(%)	
Hemorrhage/Epistaxis					
Can you identify a hemorrhage?	17(25.4)	50(74.6)	48(71.2)	19(28.8)	<0.001*
Do you know the different types of hemorrhage?	9(13.4)	58(86.6)	36(53.0)	31(47.0)	<0.001*
After identifying a hemorrhage, do you know what to do?	12(17.9)	55(82.1)	42(63.6)	25(36.4)	<0.001*
Do you know what to do if you have a nosebleed (epistaxis)?	14(20.9)	53(79.1)	37(56.1)	30(43.9)	<0.001*
Do you know how to control bleeding?	29(43.3)	38(56.7)	51(75.8)	16(24.2)	<0.001*
Do you know what a tourniquet is?	8(11.9)	59(88.1)	40(59.1)	27(40.9)	<0.001*
Do you know how to make a tourniquet?	8(11.9)	59(88.1)	33(50.0)	34(50.0)	<0.001*
Do you know in which situation the tourniquet can be used?	5(7.5)	62(92.5)	34(50.0)	33(50.0)	<0.001*
Do you know which care should be taken when trying to control (stop) bleeding?	22(32.8)	45(67.2)	48(71.2)	19(28.8)	<0.001*
Convulsive crisis					
Can you identify a convulsive crisis?	22(32.8)	45(67.2)	52(77.3)	15(22.7)	<0.001*
Do you know the average duration of a convulsive crisis?	5(7.5)	62(92.5)	42(62.1)	25(37.9)	<0.001*
After identifying a convulsive crisis, do you know what to do?	5(7.5)	62(92.5)	43(63.6)	24(36.4)	<0.001*
Do you know how you should act when the convulsion is over?	7(10.4)	60(89.6)	40(60.6)	27(39.4)	<0.001*

Source: Created by the authors based on the research data collection, 2015.

* McNemar Test

On the themes fracture, dislocation and sprain there was also a statistically significant improvement (P<0.05) in the participants' knowledge after the intervention. However, some variables analyzed ("Do you know what a fracture is?" and "Can you identify a fracture?") did not present statistically significant improvements (P >0.05), since the theme already had a higher percentage of previous knowledge than the other themes addressed (Table 3).

Table 3 - Distribution of the variables analyzed concerning the participants' knowledge about the fracture, dislocation and sprain themes in the pre- and post-test. Viçosa, MG, Brazil, 2015

Variables	Pre-test		Post-test		*p* value
	Yes n(%)	No n(%)	Yes n(%)	No n(%)	
Fracture					
Do you know what a fracture is?	46(68.7)	21(31.3)	52(77.3)	15(22.7)	0.189*
Can you identify a fracture?	39(58.2)	28(41.8)	48(71.2)	19(28.8)	0.093*
Do you know what to do after identifying a fracture?	12(17.9)	55(82.1)	41(62.1)	26(37.9)	<0.001*
Do you know how to properly immobilize the affected limb?	7(10.4)	60(89.6)	37(56.1)	30(43.9)	<0.001*
Dislocation					
Do you know what dislocation is?	6(9.0)	61(91.0)	42(62.1)	25(37.9)	<0.001*
Can you identify a dislocation?	4(6.0)	63(94.0)	35(53.0)	32(47.0)	<0.001*
Do you know what to do after identifying a dislocation?	5(7.5)	62(92.5)	33(48.5)	34(51.5)	<0.001*
Do you know how to properly immobilize the affected limb?	6(9.0)	61(91.0)	33(50.0)	34(50.0)	<0.001*
Sprain					
Do you know what a sprain is?	5(7.5)	62(92.5)	34(50.0)	33(50.0)	<0.001*
Can you identify a sprain?	4(6.0)	63(94.0)	31(45.5)	36(54.5)	<0.001*
Do you know what to do after identifying a sprain?	1(01.5)	66(98.5)	29(43.9)	38(56.1)	<0.001*
Do you know how to properly immobilize the affected limb?	5(7.5)	62(92.5)	27(40.9)	40(59.1)	<0.001*

Source: Created by the authors based on the research data collection, 2015.

* McNemar Test

Discussion

The present investigation showed that most students had never attended any course or training in FA and had little or no knowledge about the subject, which corroborates the

findings of another research, whose objective was to investigate the need for including the FA subject in BE from scientific productions.[12] It is known that accidents can occur in any environment and students need to have knowledge and know how to act before these events. In addition, more than 50% of accident cases are witnessed by adolescents or children, without an adult nearby, requiring the immediate intervention of professionals with knowledge in the area of first aid.[12]

Similarly, another study developed in the city of Cuité, in Paraíba's Curimataú, with students aged 13 to 15 years, also demonstrated that the level of knowledge about FA was considered unsatisfactory to allow them to act in urgent and emergency situations, justifying the need to institute this subject in the syllabus of all schools.[13] This assertion is strongly reinforced by the implementation of the joint statement "Kids Save Lives" (KSL), developed by the European Resuscitation Council (ERC), the "European Resuscitation Council" (ERC), "European Patient Safety Foundation" (EPSF), "International Liaison Committee on Resuscitation" (ILCOR), "World Federation of Societies of Anaesthesiologists" (WFSA), and subsequently supported by the "World Health Organization" (WHO) in January 2015. This declaration is an attempt to implement first aid training courses in the school environment for the whole world.[14]

In this sense, the school environment stands out as the main environment for developing cognitive functions of children, adolescents and young people. The school is a place where the systematized teaching-learning process occurs for the formation of an individual, complementing the family education received by the same.[13]

Thus, other studies have also highlighted the importance of teaching FA to children and adolescents[9,15], since every individual has a role and responsibility towards society, being a transforming agent of different scenarios outside the school environment.[16] Thus, teaching FA to children and adolescents aims to train more prepared, conscious and safe adults, considering

that the process of formation of ideas, feelings, habits and traits of their personality occurs during childhood and adolescence, which will directly influence the social context in which they live.[15] It is worth reinforcing that urgent and emergency situations do not choose the victim nor the place to happen. Therefore, everyone needs to be prepared to provide the FA to the victims.

An exploratory, field study, developed with the objective of evaluating students' knowledge about the basics of FA, confirms that accidents due to external causes occur at all times, in an unexpected and unintentional way, which reinforces the idea that it is indispensable to carry out a training of the population as a whole regarding the basics of FA. A well-oriented and trained society is able to act in urgent and emergency situations to save lives and prevent sequelae.[13]

One study highlights the need to include the FA subject in basic education, when the adult individual is able to act in situations where there is an imminent risk of sequelae and irreversible damage.[12] In this perspective, the government created the School Health Program (SHP) that aims at the integration and permanent articulation of education and health, providing improvement in the quality of life of students, through actions to promote health, prevent diseases and complications and health care, with a view to coping with vulnerabilities.[17] The SHP allowed for integrating health education into the curriculum of Brazilian basic education. Thus, nurses, as part of the health team, become responsible for spreading knowledge in schools, making the partnership between the Education sector and the Health sector and thus collaborating for the training of this public, from the teaching of FA in these places. Therefore, the nurse can be a facilitator and driver of knowledge in the presence of the SHP.

In general, most studies approach students' knowledge about the themes of FA. However, some studies addressed the specific theme of CRA and CPR were found.[9,12,15,18-23] Regarding previous knowledge about CRA, most participants did not know how to identify it or how to proceed after its identification. Cardiovascular diseases represent the main cause of mortality in

Brazil and in the world, as well as the main cause of disabilities. Approximately 330,000 CRA occur annually in an extra-hospital scope such as homes, malls, airports, stadiums, gyms and other spaces in the United States of America (USA), associated with tragic outcome. As in the USA, CRA leads the causes of death in Europe and affects between 350,000 and 700,000 individuals per year, representing about 30% of the population.[18] In this sense, it is important that everyone be prepared to recognize and assist victims in this situation by providing the BLS.

A study carried out in cities in Midwestern Santa Catarina emphasized that CPR can be performed by anyone and, when well-performed, can result in the maintenance of circulation to vital organs until the arrival of a specialized care. Moreover, the training of lay people is a strategy that can save many lives in these situations.[19] Other studies also prove the research, such as that developed in a private educational institution in the city of Londrina/Paraná, in which the rapid identification of the victim by the layperson who watches a CRA and calls the specialized help and immediately initiates CPR maneuvers, favors a good prognosis and prevents myocardial deterioration and possible neurological sequelae.[15] This premise was also highlighted in another similar study.[19]

Another research developed in two schools in the city of Maceió/Alagoas reinforced the need to train students to provide BLS with CPR teaching, based on the inclusion of this theme in the school curriculum. Thus, the earlier the education and training of lay individuals in BLS, the greater the chance of having, in the future, a broad base of adults that contribute to reducing sequelae and deaths resulting from external causes. Furthermore, it reiterates that children and adolescents are predisposed to comment and discuss the content learned and trained with parents, siblings, friends and other family and community members, which would expand the dissemination of this knowledge.[9]

In view of the above, it is worth mentioning that ongoing education is a process of construction that requires time, dedication and continuity, requiring more periodic execution so

that doubts and possible failures can be remedied. As demonstrated by an investigation conducted at Ghent University Hospital with third-year medical students, in which the results for the performance of students while executing CPR maneuvers were lower and deficient than the proposed methodology used, requiring additional training, which was subsequently highly effective for improving these compression and ventilation skills.[20]

In the meantime, the adoption of periodic updates can provide and benefit the grasp of knowledge and skills in BLS by individuals to be trained. And this stresses the need to promote a more frequent evaluation and recycling, as stated by the ERC guideline, which shows that CPR skills decline within three to six months after initial training.[21]

Another study with nurses working in the clinical, surgical and intensive units of adult patients showed the need to institute frequent and systematic training through ongoing education, in order to preserve and maintain a good performance of the individual who will provide assistance to the victim in CRA.[22] This makes important and fundamental the permanent education of individuals who receive training in FA, as is the case of BLS that is updated every five years.[23] Similarly, the contribution of the qualification of the lay population to the direct and indirect reduction of mortality was reinforced in another study, as well as the severity of sequelae resulting from sudden complications, occurred in out-of-hospital environments.[24]

Final thoughts

The present study demonstrated that the educational intervention in first aid for students of a public school was effective for most of the subjects addressed, but some topics still need to be further worked on. In view of the above, there is need to implement subjects applied to these contents in their curriculum so that they can improve knowledge in the aforementioned area.

This study had as limitations some difficulties faced by researchers in performing the educational intervention in a short time, thus hampering the practice of all topics addressed, and the fact that it was developed in only one school. There was insufficiency of a longer period of time to work on these topics and to discuss them with the students, in order to better consolidate the knowledge. This difficulty reinforces the convenience of including the theme in schools.

Thus, the curricular models of Brazilian schools about the teaching of FA for school-age children and adolescents should be reviewed, with the inclusion of this theme in a subject belonging to the syllabus, as well as the development of other researches in different educational institutions, aiming to disseminate this knowledge to other students.

The research contributed to support the innovation of educational interventions and reflections on the importance of promoting a permanent education on the theme of FA for the lay population, especially at school age, since the school allows for a mutual exchange of knowledge and the learning of new contents, thus generating a consolidated knowledge and the formation of individuals capable of transforming the social context in which they are inserted.

Therefore, it is essential to democratize and disseminate the access to this knowledge for the society as a whole, allowing users to take better care of their health and become less vulnerable. Thus contributing directly to the reduction of the number of victims who die due to lack of knowledge, unpreparedness and the delay in receiving pre-hospital care in distant places without the availability of the Mobile Emergency Care Service (SAMU).

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How to cite this article

Santana MMR, Toledo LV, Moreira TR, Alves KR, Ribeiro L, Sá Diaz FBB. Educational intervention in first aid for basic education students. Rev. Enferm. UFSM. 2020 [Cited: Year Month Day]; vol.10 e70: 1-17. DOI: https://doi.org/10.5902/2179769236507