

Impact of training in first aid on the knowledge of educators and school agents

Impacto da capacitação em primeiros socorros sobre o conhecimento de educadores e agentes escolares

Impacto de la formación en primeros auxilios en el conocimiento de los educadores y agentes escolares

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REVISA

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RESUMO

Objetivo: avaliar o efeito da capacitação em primeiros socorros sobre o conhecimento dos professores e agentes de uma unidade escolar. **Método:** pesquisa quantitativa com delineamento quase-experimental do tipo pré e pós-teste. A população foi constituída por professores e agentes escolares de uma instituição de ensino no interior do Estado de São Paulo. A coleta de dados foi entre os meses de março e abril de 2022, aplicando-se dois instrumentos: Caracterização sociodemográfica/laboral e questionário de avaliação do conhecimento sobre primeiros socorros. Para analisar os dados empregou-se estatística descritiva, teste de Shapiro Wilk e de Wilcoxon. **Resultados:** Predominou o gênero feminino (66,7%), média de idade de 43 anos e 66,7% eram casados. 88,9% não participaram de disciplinas em primeiros socorros na formação e 94,5% afirmaram ter presenciado situações acidentadas na unidade escolar. Houve aumento no número de acertos das questões relativas a primeiros socorros e melhora em relação aos conceitos (excelente, bom, regular e ruim), com aumento na pontuação do pré-teste para o pós-teste em 3,51 pontos e com a comparação significativa ($p < 0,001$). **Conclusão:** Os achados mostram que após a aplicação da capacitação em primeiros socorros com professores e os agentes escolares houve aumento de conhecimento, competências e habilidades para atuação na unidade escolar estudada.

Descritores: Primeiros Socorros; Instituições acadêmicas; Serviços médicos de emergência; Enfermagem.

ABSTRACT

Objective: to evaluate the effect of training in first aid on the knowledge of teachers and agents of a school unit. **Method:** quantitative research with a quasi-experimental design of the pre- and post-test type. The population consisted of teachers and school agents from an educational institution in the interior of the State of São Paulo. Data collection took place between March and April 2022, applying two instruments: Sociodemographic/labor characterization and a questionnaire to assess knowledge about first aid. Descriptive statistics, Shapiro Wilk and Wilcoxon tests were used to analyze the data. **Results:** The female gender predominated (66.7%), mean age was 43 years and 66.7% were married. 88.9% did not participate in first aid courses in training and 94.5% said they had witnessed accident situations at the school unit. There was an increase in the number of correct answers in the questions related to first aid and an improvement in relation to the concepts (excellent, good, fair and bad), with an increase in the pre-test to the post-test by 3.51 points and with the comparison significant ($p < 0.001$). **Conclusion:** The findings show that after the application of training in first aid with teachers and school agents, there was an increase in knowledge, skills and abilities to work in the school unit studied.

Descriptors: First aid; Academic institutions; emergency medical services; Nursing.

RESUMEN

Objetivo: evaluar el efecto de la formación en primeros auxilios en el conocimiento de docentes y agentes de una unidad escolar. **Método:** investigación cuantitativa con un diseño cuasi-experimental del tipo pre y post test. La población estuvo compuesta por docentes y agentes escolares de una institución educativa del interior del Estado de São Paulo. La recolección de datos ocurrió entre marzo y abril de 2022, aplicándose dos instrumentos: Caracterización sociodemográfica/laboral y un cuestionario para evaluar conocimientos sobre primeros auxilios. Se utilizó estadística descriptiva, pruebas de Shapiro Wilk y Wilcoxon para analizar los datos. **Resultados:** Predominó el sexo femenino (66,7%), la edad media fue de 43 años y el 66,7% estaban casados. El 88,9% no participó de cursos de primeros auxilios en formación y el 94,5% dijo haber presenciado situaciones de accidentes en la unidad escolar. Hubo un aumento en el número de respuestas correctas para las preguntas relacionadas con primeros auxilios y una mejora en relación a los conceptos (excelente, bueno, regular y malo), con un aumento en el puntaje del pre-test para el post-test en 3.51 puntos y con la comparación significativa ($p < 0,001$). **Conclusión:** Los hallazgos muestran que luego de la aplicación de la formación en primeros auxilios con los docentes y agentes escolares, hubo un incremento en los conocimientos y habilidades y destrezas para el trabajo en la unidad escolar estudiada.

Descriptores: Primeros auxilios; Instituciones académicas; servicios médicos de emergencia; Enfermería.

Introduction

Children and adolescents of school age are more vulnerable to suffering such health problems, due to their own physical, behavioral and developmental characteristics.¹

In the school environment, several activities are carried out, including teaching, research, recreation and socialization, becoming a favorable place for incidents and accidents. Thus, it is not uncommon for teachers to report situations at school that result in cuts, bleeding, sprains and fractures of the upper and lower limbs.²

In this sense, authors point out that, in 2017, the number of deaths from external causes (accidents and violence), in the age group from 0 to 19 years old, was 21,559 nationwide; and reflect that many could have been avoided or even minimized.³

Other data also indicate that, in Brazil, accidents in the school environment occur more frequently between the age group from 0 to 6 years, reflecting in avoidable epidemiological data from the Ministry of Health, which highlight 158,657 deaths from external causes in childhood in 2017.⁴

In addition to the factors previously presented, school environments have diversified physical structures that can generate accidents, making it difficult to monitor, control and monitor children and adolescents, especially during physical and recreational activities.

The school may have falls-prone locations, such as walls and fences, open culverts and ditches, windows and ramps without railings or protective screens, ladders without railings, and large trees.⁵ In this context, it is necessary for teachers and staff to have knowledge to help and assist their student body in situations that require initial care, until the arrival of the specialized health team.⁶

Authors mention that education professionals should receive formal and continued training to face the urgent situations that can happen within the school environment and act providing first aid care.⁷

From this perspective, first aid is considered the immediate assistance provided to an unforeseen individual of health aggravation with or without risk of life, thus aiming to preserve life, relieve suffering, prevent or minimize injuries and promote recovery. This action can be initiated by anyone.⁸

However, due to education-focused training, teachers have incipient knowledge and skills to provide this type of care.⁹

Considering that, in this period of life children and adolescents spend most of their time in school, one should be alert to the possibility of accidents, and above all, it is of fundamental importance the existence of people trained to help.^{10,11}

According to the Ministry of Health, while children and adolescents remain in school, it becomes a responsibility of local managers to promote health, develop actions for disease prevention, strengthen protection factors and train their team to act if necessary.¹²

In 2018, Law No. 13,722 was sanctioned, thus making it mandatory throughout the national territory, the training of teachers and employees of basic

education and child recreation with regard to the basic scum of first aid, whether in public or private educational establishments.¹³

The statute of children and adolescents, implemented by Law No. 8,069 of 1990, records that these individuals should "receive protection and help in any circumstances", also guaranteeing him the "right to protection of life and health".¹⁴

In view of the above, the objective of this study is to evaluate the effect of training in first aid on the knowledge of teachers and agents of a school unit.

Method

This is a quantitative research with a near-experimental design. According to Polit and Beck these studies involve an intervention, however it does not include randomization, not even group-control. It is characterized by the implementation of an intervention and the use of pre- and post-test, with the purpose of comparing before and after the application.¹⁵

The research was carried out in a public elementary and high school of a municipality located in the interior of the state of São Paulo.

The participants of the research were the teachers and agents of the school active in this educational institution. The inclusion criterion was to be a teacher or school agent and to participate in the two stages of data collection (before and after intervention). The exclusion criteria were to be away for vacation, leave or any other nature during the period of data collection or to be absent in any of the stages of the study (pre-test, educational action, post-test).

The sampling was non-probabilistic and for convenience. According to the criteria listed, of the total of 20 (100%) who comprised the staff, they met the criteria 18, thus constituting the sample of this research.

Data were collected between March and April 2022, in three moments. In the first, the pre-test was used (diagnosis of reality); in the second application of training in first aid (intervention in the face of the demands emerged in the previous stage); and in the latter, the post-test was performed (evaluating knowledge acquisition). All stages occurred in the school environment itself, after scheduling dates with the research participants.

A collection instrument was used divided into two parts: the first containing sociodemographic and work data of professionals and the second consisting of the questionnaire for evaluating the knowledge of teachers and school agents about first aid, elaborated and validated by Cabral and Oliveira.¹⁶

This questionnaire contains multiple choice questions combined with open questions on the topic of first aid, being: burn, cut, orthopedic trauma, choking/asphyxia, convulsion, intoxication, dental trauma, prickby venomous animals, fainting, cardiorespiratory arrest, electric shock, injury caused by sharp object, hemorrhages, biting and specialized help contact numbers.¹⁶

The educational action was carried out by applying the problem-based learning methodology, which consists of a "learning method that works with problem situations, previously elaborated by a team of educators, in order to stimulate cognitive processes in relation to a given subject. The problems are carefully planned by a committee with the purpose of integrating theoretical and

practical content, with increasing degrees of complexity." And also, from the demands that will arise after the pre-test.¹⁷

The data were organized in spreadsheets in Excel and transported to the Real Statistics Data Analysis Tools software, where they were analyzed using statistical techniques.

Initially, the distribution of data was verified by the Shapiro Wilk test, so parametric and non-parametric tests were used depending on the distribution presented by the data. Summary measures (mean and median and standard deviation) were used for descriptive data analysis. In the inferential analysis to compare the effects of pre- and post-test training in the same group of educators and school agents, the Wilcoxon test was used for data with non-symmetric distribution. The level of significance adopted was 5%.

To compare the results of the pre- and post-test, concepts were elaborated according to the number of correct answers of each participant, which were: excellent \geq to 9 correct answers; good, from 7 to 9 hits; from 4 to 7 hits; bad, \leq to 4 hits. The goal was set for participants to achieve a minimum of 70% of correct answers in each question in the post-test.

The study was conducted in accordance with Resolutions No. 466 of 2012 of the National Health Council of the Ministry of Health - CNS/MS.18 Once the consent of the institution has been obtained, the project was registered in the Brazil Platform, and submitted for consideration by the Research Ethics Committee, and after obtaining the favorable opinion no. 5,307,727 on March 23, 2022 and CAAE 56356322.9.0000.5431, data collection began.

Results

The findings involved 18 professionals who worked in the research scenario. The response rate corresponded to 100%, both before and after the test.

Regarding the sociodemographic and work characteristics of teachers and school agents, it was found that the mean age was 43 years (SD=24.9), median of 41.5 years, ranging from 38 to 54 years; most were female (12 - 66.7%), 66.7% were married, 94.4% of the professionals completed higher education and 44.4% had graduate degrees. Regarding the time of formation, the mean was 18 years (SD=8.27), ranging from 3 to 33 years.

Regarding work characteristics, it was found that, regarding the position/function, 11 (61%) acted as teachers and 7 (39%) as school agents).

Regarding the experience of working in teaching modalities, 11.1% of the participants taught in early childhood education, 22.2% in elementary school I, 77.8% in elementary school II, 50% in high school and 38.9% in other levels of education (higher education, technical education, youth and adult education, and special education).

Regarding the availability and participation of first aid discipline during the training period, 50% reported not having attended, 11.1% participated in a discipline on the subject in undergraduate studies and 5.6% in graduate school.

Equivalent to extracurricular training in first aid, 88.9% did not perform and 11.1% took a course on the subject. It is also emphasized that 33.3% attended lectures on the subject in the work environment.

Regarding having witnessed some first aid situation in the school unit, 94.5% of the professionals stated that they had seen this occurrence. Regarding the type of urgency witnessed, in which it required action in this context, figure 1 shows.

Figure 1 - Distribution of the frequencies of responses of teachers and school agents, about the type of emergency situation experienced in the school unit, São Paulo, 2022.

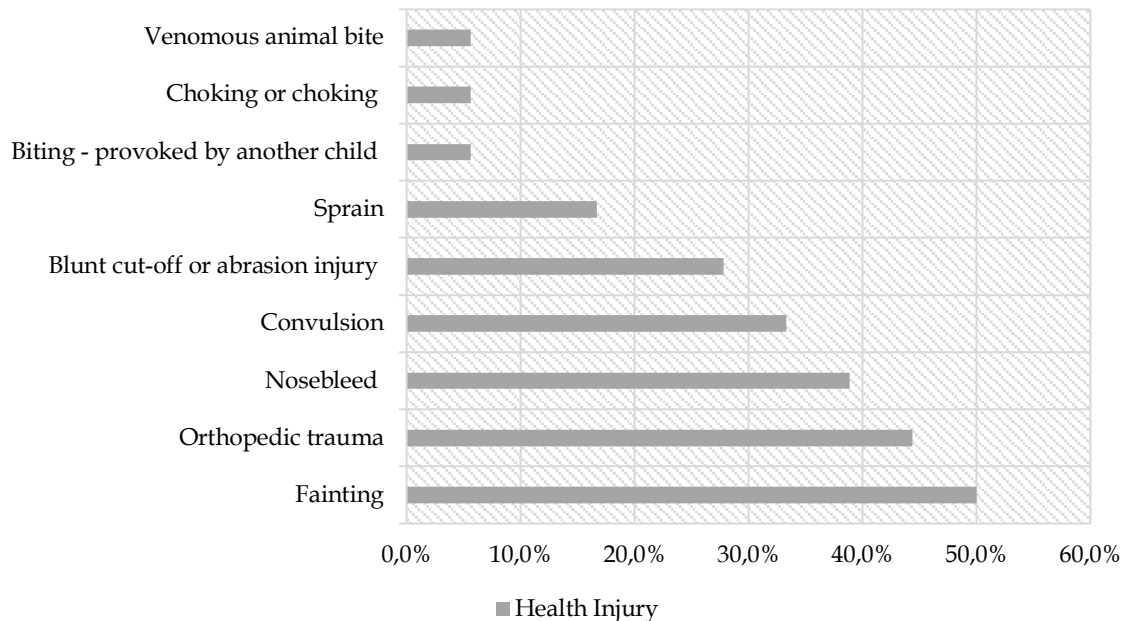


Figure 1 shows that, the most common experiences in the school unit were: fainting (50%), orthopedic trauma (44.4%), nasal bleeding (38.9%), convulsion (33.3%), blunt cut injury or abrasion (27.8%), sprain (16.7%), biting - caused by another child (5.6%), choking or choking (5.6%), and venomous animal bite (5.6%).

When analyzing the pre-test responses, it can be verified that 100% of the participants recognized the importance of performing training on first aid performance in the school environment.

Table 1 shows the findings regarding the application of the pre- and post-test training with teachers and school agents about first aid care.

Table 1 - Distribution of the percentage of correct answers of teachers and school agents, according to pre- and post-test in a school unit. São Paulo, 2022.

Concept	Pretest		Post-test	
	Correct answers		Correct answers	
	N	%	N	%
Excellent	2	11,1%	7	38,8%
Good	4	22,2%	11	61,1%
Regular	11	61,1%	0	0
Poor	1	5,5%	0	0

There was improvement in relation to the concepts, since in the post-test the good and excellent concepts presented a percentage increase and the regular and bad concepts had zero percentage.

Table 2 shows the distribution of the percentage of correct answers for each thematic question in first aid.

Table 2 - Distribution of the percentage of correct answers related to the statements in the pre- and post-test of teachers and school agents of a primary and middle education unit. São Paulo, 2022.

Statement	Theme of statement	Pretest		Post-test	
		Correct answers		Correct answers	
		N	%	N	%
Q1	Burn	17	94,4%	18	100%
Q2	Blunt cut injury or abrasion	15	83,3%	18	100%
Q3	Orthopedic trauma	6	33,3%	17	94,4%
Q4	Choking or choking	11	61,1%	18	100%
Q5	Nosebleed	5	27,8%	15	83,3%
Q6	Seizure	13	72,2%	18	100%
Q7	Intoxication	14	77,8%	18	100%
Q8	Dental trauma	13	72,2%	15	83,3%
Q9	Venomous animal bite	11	61,1%	17	94,4%
Q10	CPR	14	77,8%	17	94,4%

When analyzing the results of table 2, in the pre-test it was possible to verify that the questions with the highest number of correct answers were about burns (94.4%) and cut injury or abrasion (83.3%). The statements concerning orthopedic trauma (33.3%) and nasal bleeding (27.8%) presented a lower percentage.

There was an increase in the number of correct answers after the application of training in first aid care, with emphasis on nasal bleeding obtaining reach of 83.3%, orthopedic trauma 94.4%, choking or asphyxia 100% and prick ing of venomous animal 94.4%.

As for the results of the test applied to compare the effects of pre- and post-test training in the studied group, table 3 is described.

Table 3 - Wilcoxon test results. Sao Paulo, 2022.

Statistical test	N	Z	p
Post-test - Pretest	18	3,51	0,001

We observed from the results of table 3 that there was an increase in the score from pre to post-test by 3.51 points and the comparison of sums was significant with $p < 0.001$.

Discussion

This research had an expressive participation of the participants, comprising 100%. We highlight the engagement and involvement of the professionals of this service, regarding the proposal of this study.

Regarding sociodemographic variables, the presence of adult professionals was found (mean of 43 years; $SD=24.9$) ranging from 38 to 54 years and the majority represented by women (66.7%). The findings of this research are analogous to those found in the studies carried out in school units in the states of São Paulo and Rio Grande do Sul, with prevalence of the female population.^{2,3,19}

Alusive to feminization among education professionals, this evidence corroborates the historical and cultural aspects of society that recognizes women as born educators, associating with their maternal role. They also add that, currently the presence of male professionals in educational institutions remains low - practically non-existent - in relation to the number of women.²⁰

Regarding age, it is observed that the studies showed that most professionals had a mean age between 35 and 45 years.^{2,3,19}

Regarding education, the majority had completed higher education (94.4%), however, 8 (44.4%) had specialization in the area. Similar results were found when observing that, of the 63 (100%) education professionals of two schools in Belo Horizonte, Minas Gerais, 77% had graduate degrees.²¹

Regarding the work characteristics, it is noted that, time of experience in the school unit obtained an average of 18 years ($SD=8.27$). On the other hand, the qualitative study conducted in a school in a municipality of Rio Grande do Sul identified that professionals had an average of 8.5 years of work experience.²²

In this same study, stratified by the professional categories investigated, the school managers were in the current function between five months and 4 years, all of which had previous experience as a teacher. Teachers had more time in different schools. The most recreational and monitoring professionals were the categories with the longest time in the unit, corresponding between 6 and 10 years.²²

In this research, it was observed that 50% of the participants did not attend any first aid course during graduation, 94.5% said they had witnessed first aid situations in school and 100% recognized the importance of training in this theme.

These findings are similar to those found in a national study involving education professionals. The authors reveal that 77.8% of the participants

reported not having had a course on the subject, 71.1% reported having witnessed accidents in the school unit that required relief actions.¹⁹

Authors developed a survey of 52 professionals in an educational center in João Pessoa, Paraíba, most of the interviewees reported not knowing exactly how to proceed in the face of some types of accidents, because they did not have any specific training and adequate to care for the victim²⁰.

Another investigation, conducted by Cabral and Oliveira, of the 31 participants, 22 stated that they had already experienced situations of accidents at school that required knowledge about the subject and 71% experienced a situation that required immediate action.²³

In the curriculum of undergraduate courses, with few exceptions, there is no present discipline that teaches basic first aid procedures; consequently, teachers do not know how to act in situations that compromise the child's health, generating risk to the vital state of the school.⁵

Regarding the types of occurrences seen in the school environment, teachers and school agents showed fainting (50%), orthopedic trauma (44.4%), nasal bleeding (38.9%) and convulsion (33.3%), as the most frequent injuries.

In this respect, a research identified that the most recurrent injuries pointed out by the participants were allergic crisis, viral symptoms, bites and scratches, choking, falls, abrasions, traumas, bruising, injuries, blunt cuts and nasal bleeding.²²

However, the other study revealed that teachers feel unprepared to attend to simple situations, have doubts about the severity of injuries, not feeling able to provide care, presenting unsafe attitudes and fear of performing care, without knowing how to identify the best conduct to be taken.⁵

Regarding the results of the pre-test, it was found that the highest percentage of correct answers was related to burns, blunt injury or abrasion and intoxication. In agreement with the studies, which identified a higher percentage of correct answers in these same injuries.^{16,19,3}

Considering the application of the training and the results of the post-test, there was an increase of 3.51 points of correct answers after intervention, evidencing that the activities of health education provided the participants with a significant learning with the acquisition of new knowledge.

The near-experimental investigation, carried out in a school unit in the north of the state of Rio Grande do Sul, found that, after the first aid training intervention, the professionals had an average of 11.13% to 19.45% increase in the correct answers of the questions.³

Another study applying this same type of methodology showed that there was an increase in the number of correct answers in the statements of 5.17 points, with emphasis on those related to nasal bleeding (from 48.9 in the pre-test to 91.1% in the post-test), hemorrhages (from 51.1 in the pre-test to 88.9% in the post-test), cardiorespiratory arrest (from 13.3 in the pre-test to 51.1% in the post-test) and cut-off or skinning injury (from 53.3% to 86.7%).¹⁹

Another study also obtained positive results in teaching first aid to teachers, and 37.26% of the interviewees before training were unaware of the actions they could perform or performed incorrect procedures²⁴. After training,

there was an increase to 83.31% regarding the acquisition of knowledge and application of the correct approach.

Training on the theme is presented as a coping strategy to contribute to its safety and make teachers trained/trained. It is pertinent to highlight that this empowerment in first aid in the school context should go beyond the transmission of information about the correct conducts, should include the identification of the risks of accidents and the prevention of these accidents, as well as issues related to the family structure, social roles of parents that are factors that influence the education and risk behavior of schoolchildren.⁸

Authors point out that educational strategies with teachers favor the group to clarify doubts and mitigate the insecurity in providing inadequate care with consequent worsening of the victim's condition. However, it is recognized that in addition to educational interventions, accident prevention and safety at school must necessarily consider the adequacy of the physical structure.⁵

Conclusion

This study allowed evaluating the effect of training in first aid on the knowledge of teachers and agents of a school unit in the state of São Paulo.

It was found that most of the participants in the pre-test had insufficient knowledge about the performance in first aid, especially in the diseases related to nasal bleeding, convulsion, orthopedic trauma, venomous animal bite, blunt cut and excoriation and PCR.

After the application of training in first aid, it was noticed that there was an increase in knowledge between teachers and school agents, with significant percentages.

Therefore, the importance of health education is observed, especially in school environments. Emphasizing that, educational actions in first aid should be planned and carried out annually according to the provisions of Law No. 13,722 of 2018.

Thus, it is necessary to encourage the partnership between education and health professionals in order to perform actions in the educational environment, helping to build new knowledge, strategies, skills and skills in to act in first aid situations.

The limitations of this study lie in the sample size, however, it is worth noting the high percentage of participation; realization only in a school unit.

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