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Artigo Original

# Aptitude, knowledge and attitude of early childhood education professionals about first aid*

Aptidão, conhecimento e atitude de profissionais da educação infantil sobre primeiros socorros*

Aptitud, conocimiento y actitud de los profesionales de la educación infantil sobre los primeros auxilios

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## Abstract

**Objective:** to analyze the aptitude, knowledge and attitude of early childhood education professionals who participated or not in first aid training. **Method:** cross-sectional study, developed with 132 professionals in early childhood education in the municipality of Três Lagoas, Mato Grosso do Sul, Brazil, using a questionnaire on Google Forms. The Chi-square or Fisher's Exact tests were applied. **Results:** of the 132 professionals, 67 reported that they had not previously participated in first aid training. Most feel able to provide care in situations of fever, wounds and bleeding. Those who had participated in training had more answers regarding knowledge of the concepts of fever, seizure, fainting, trauma, cardiorespiratory arrest and accidents caused by poisonous animals; and regarding attitudes towards seizure, fainting, choking, fall/trauma and cardiorespiratory arrest. **Conclusion:** having participated in training provided professionals with greater knowledge and assertiveness regarding the attitude to be taken in emergency situations.

**Descriptors:** Health Education; Emergencies; First Aid; Child Rearing; Health Promotion

## Resumo

**Objetivo:** analisar a aptidão, o conhecimento e a atitude de profissionais da educação infantil que participaram ou não de capacitação em primeiros socorros. **Método:** estudo transversal, desenvolvido com 132 profissionais da educação infantil do município de Três Lagoas, Mato

Grosso do Sul, Brasil, por meio de questionário no *Google Forms.* Aplicaram-se os testes qui-quadrado ou Exato de Fisher. **Resultados:** dos 132 profissionais, 67 relataram não ter participado anteriormente de capacitação em primeiros socorros. A maioria sente-se apta a prestar atendimento nas situações de febre, ferimentos e sangramentos. Aqueles que já participaram de capacitação acertaram mais respostas referentes ao conhecimento dos conceitos de febre, convulsão, desmaio, trauma, parada cardiorrespiratória e acidente por animal peçonhento; e referente às atitudes para convulsão, desmaio, engasgo, queda/trauma e parada cardiorrespiratória. **Conclusão:** ter participado de capacitação proporcionou aos profissionais maior conhecimento e assertividade referente à atitude a ser tomada nas situações de emergência.
**Descritores:** Educação em Saúde; Emergências; Primeiros Socorros; Educação Infantil; Promoção da Saúde

## Resumen

**Objetivo:** analizar la aptitud, los conocimientos y la actitud de los profesionales de la educación infantil que participaron o no en la formación en primeros auxilios. **Método:** estudio transversal, desarrollado con 132 profesionales de la educación infantil del ayuntamiento de Três Lagoas, Mato Grosso do Sul, Brasil, mediante preguntas en *Google Forms*. Se aplicaron las pruebas de Chi-cuadrado o Exacta de Fisher. **Resultados:** de los 132 profesionales, 67 declararon no haber participado previamente en la formación de primeros auxilios. La mayoría de ellos se sienten capaces de brindar atención en situaciones de fiebre, heridas y hemorragias. Los que habían participado en la formación tenían más respuestas correctas en cuanto al conocimiento de los conceptos de fiebre, convulsión, desmayo, trauma, parada cardiorrespiratoria y accidentes con animales venenosos; y en cuanto a las actitudes hacia la convulsión, el desmayo, el atragantamiento, la caída/el trauma y la parada cardiorrespiratoria. **Conclusión:** haber participado en la capacitación proporcionó a los profesionales un mayor conocimiento y asertividad en relación con la actitud a tomar en las situaciones de emergencia.
**Descriptores:** Educacion en Salud; Emergencias; Primeros Auxilios; Crianza del Niño; Promoción de la Salud

## Introduction

First aid consists of immediate care for a sick or injured individual, and has two objectives: to avoid worsening the victim's condition and keep him/her alive until specialized care can be provided. This initial care can be conducted by any previously trained person, not restricted to health professionals.[1] The situations that require this fast and efficient approach are countless and, in many cases, involve children, who are more vulnerable due to specific characteristics of their physical and behavioral development and deserve special attention.[2]

Accidents are the leading cause of death in children around the world.[2] In this context, the school environment, where children spend most of their day, is an important place where prevention and first aid to accident victims must be worked on, since situations that require first aid are frequently reported in schools.[2]

Early childhood education covers the teaching of children from four months to five years of age, contemplating several phases of child development, where there is a lot of curiosity and discoveries, leading to a greater susceptibility of these individuals to suffer accidents. Schools are places with great potential for accidents, due to the time children spend in the same space, the activities and games carried out, associated with the reduced number of professionals to supervise the children.[3]

Circumstances requiring medical attention are common in schools, and teachers are often the first individuals to witness medical emergencies with children in the school environment.[4] In addition to their educational and pedagogical commitment, school personnel have the responsibility of caring for the children's safety, dedicating themselves to their education and well-being.[5] This second function is sometimes neglected, and when faced with urgent and emergency situations, they do not know what action to take.[6]

In this context, it is expected that the professionals who work in these institutions are periodically trained in their knowledge and skills, so that they feel able to act in urgent and emergency situations that may occur with the students.[6] Nonetheless, it is observed that there is a lack of knowledge about these issues by the professionals,[7] and that, despite their relevance, there are few studies that evaluate the knowledge, attitude and practice in first aid of early childhood education teachers.[8] The evaluation of these competencies is essential to provide educational and health authorities with a picture of the reality, so they can plan and organize training on the theme in order to improve the knowledge, skills and attitudes of these professionals.[9]

Health education practices are extremely important in disease prevention and health promotion, since the possession of knowledge enables greater critical reasoning, instrumentalizes the lay person and facilitates the incorporation of measures beneficial to health that meet his/her real needs. When it comes to first aid, health education plays a primordial role, as it is the biggest premise for the prevention of injuries and even collaborating with the saving of lives. However, the ignorance of adequate practices can compromise even more the victim's health.[1]

It is believed that first aid training increases the knowledge of participants, improving their confidence in attending to emergency situations. Thus, the objective of

this study was to analyze the aptitude, knowledge and attitude of early childhood education professionals who did or did not participate in first aid training.

## Method

This is a cross-sectional study, developed in the Early Childhood Education Centers (CEIs, as per its Portuguese acronym) in the municipality of Três Lagoas, Mato Grosso do Sul (MS). Currently, the Três Lagoas Municipal Education Network has 19 CEIs with a total of 701 employees, including teachers, childcare workers, trainees, school assistants, directors, coordinators, among others.

The selection of the CEIs for the study was by convenience, considering those that presented a greater need for health education on first aid, according to the suggestion of the Secretary of Education of the city, the interest of the employees and the ease of access to the Internet to participate in the research. Five CEIs were selected to participate in the study, which corresponds to a total of 195 employees. The contact details of the participants were provided by the school management.

The inclusion criteria were: being over 18 years old and being a professional who works directly with children at the CEIs. Employees who were on medical leave, vacation or day off were excluded, since it was not possible to contact them during the study period.

Data collection took place online, with the help of the Google Forms application in the period from September 20 to 30, 2020. The link to the questionnaires was sent to the instant messaging application WhatsApp and/or e-mail of the participants. A total of 195 people were invited to participate in the study; however, after applying the inclusion and exclusion criteria, the sample resulted in n=132 participants (response rate of 67.7%).

The questionnaire included sociodemographic data, experience and specific knowledge about first aid. Since there was no questionnaire available in Portuguese at the time of the study, two nurses with specialty and experience in urgency and emergency were in charge of preparing the questions, based on the literature. Firstly, a literature review was performed to verify which questions would be relevant to include in the instrument. The questions regarding the knowledge and attitudes of professionals

about first aid were prepared according to the Basic Life Support Protocol of the Mobile Emergency Care Service (SAMU, as per its Portuguese acronym),[10] the American Heart Association Guidelines and other studies with similar themes.[11-13] The questionnaire was composed of objective and subjective questions. The subjective questions were related to the professionals' knowledge and attitude about urgent and emergency situations, and the answers were categorized to allow a quantitative data analysis. Finally, the adequacy of the instrument was done through a pilot test with the participation of 10 employees who work in schools, asking for their opinion about the content and clarity of the questionnaire.

The questionnaire was divided as follows:

- Sociodemographic variables: gender, age, marital status, number of children, position at the CEI, education.

- Experience with first aid: Have you participated in any first aid training? How long ago was the training? Do you feel the need to know more about first aid? Does the unit where you work have a first aid kit?

- Variables related to the feeling of aptitude: Do you feel apt to provide care in situations of bleeding, fever, wound, burn, seizure, fainting, choking, fall/trauma, cardiorespiratory arrest, allergic reaction, electric shock, accident by a poisonous animal?

- Specific knowledge: Open questions were asked about the knowledge of first aid related concepts (What is a fever/burn/seizure/fainting/choking/trauma/ cardiorespiratory arrest/accident caused by a poisonous animal?).

- Variables related to attitude: open questions were elaborated about the attitude when facing urgent and emergency situations that require first aid (What do you do when facing a fever/bleeding wound/nasal bleeding/burn/seizure/fainting/ choking/fall or trauma/cardiorespiratory arrest/accident caused by a poisonous animal?).

The essay questions (specific knowledge and variables related to attitude) were thoroughly analyzed, based on the SAMU Basic Life Support Protocol[10] and the American Heart Association Guidelines,[11] and categorized as: correct, partially correct, incorrect, and do not know. The analysis was conducted by two researchers separately, and divergent results were discussed together to avoid biased results. The researchers who

conducted the analysis are nurses with expertise and experience in the field of first aid and specialists in urgency and emergency.

Descriptive analyses of data were performed with absolute and relative frequencies. After that, the Chi-square or Fisher's Exact tests were applied to analyze the associations between the answers and the groups (with or without participation in first aid training). All analyses were performed using the R program and with a significance level of 5% ($p \leq 0.05$).

The project was approved by the Ethics Committee for Research with Human Beings of the Federal University of Mato Grosso do Sul (CAAE 20536919.5.0000.0021). The study was carried out according to the terms of Resolution nº 466/2012, which regulates the guidelines and standards for research with human beings. Data collection took place after reading the Free and Informed Consent Form (FICF). After reading about the research and agreeing to answer the questionnaire, the participant could download the FICF.

## Results

A total of 132 professionals working in CEIs participated in this study. Most of the participants were women (97.0%), with a mean age of 38.5 years (±9.81), lived with a partner (59.1%) and had one or two children (31.1% each). As for the position held in the CEI, there was a predominance of teachers (45.5%), followed by childcare workers (21.2%), and most had already completed postgraduate studies (45.5%). More than half of the participants (50.8%) had not participated in first aid training, and among those who had participated, most had done so more than five years ago (16.7%). It is noteworthy that all reported feeling the need to know more about first aid, and 56.1% said the CEI they work at has a first aid kit (Table 1).

**Table 1 -** Sociodemographic characteristics of early childhood education professionals (n=132). Três Lagoas, MS, Brazil, 2020.

| Variables | Frequency (%) |
|---|---|
| **Gender** | |
| Female | 128 (97.0) |
| Male | 4 (3.0) |

| Variables | Frequency (%) |
|---|---|
| **Age (years, mean±standard deviation)** | 38.5 (±9.81) |
| 19 to 29 | 25 (18.9) |
| 30 to 39 | 46 (34.8) |
| 40 to 49 | 41 (31.1) |
| 50 to 59 | 17 (12.9) |
| 60 to 67 | 3 (2.3) |
| **Marital status** | |
| With partner | 78 (59.1) |
| Without partner | 54 (40.9) |
| **Number of children** | |
| 0 | 28 (21.2) |
| 1 | 41 (31.1) |
| 2 | 41 (31.1) |
| 3 | 14 (10.6) |
| 4 or more | 8 (6.1) |
| **Function at the Early Childhood Education Center** | |
| Director | 3 (2.3) |
| Coordinator | 5 (3.8) |
| Teacher | 60 (45.5) |
| Early Childhood Education attendant | 28 (21.2) |
| School assistant | 7 (5.3) |
| Trainee | 23 (17.4) |
| Other | 6 (4.5) |
| **Education** | |
| Incomplete elementary school | 1 (0.8) |
| Complete elementary school | 1 (0.8) |
| Incomplete high school | 3 (2.3) |
| Complete high school | 10 (7.6) |
| Incomplete higher education | 32 (24.2) |
| Complete higher education | 25 (18.9) |
| Graduate studies | 60 (45.5) |
| **Participated in previous first aid training** | |
| Yes | 65 (49.2) |
| No | 67 (50.8) |
| **How long ago was the training?** | |
| Less than 1 year | 7 (5.3) |
| Between 1 and 3 years | 19 (14.4) |
| Between 3 and 5 years | 17 (12.9) |
| More than 5 years | 22 (16.7) |
| Unanswered | 67 (50.8) |
| Feel the need to know more about first aid | |
| Yes | 132 (100.0) |
| **Does the unit where you work have a first aid kit?** | |
| Yes | 74 (56.1) |
| No | 58 (43.9) |

For the feeling of aptitude (Table 2), the situations in which most participants felt apt to provide care were fever (87.1%), injuries (62.1%) and bleeding (58.3%). For the other situations, a large percentage of professionals did not feel able, highlighting the cases of electric shock (84.8%), cardiorespiratory arrest (82.6%), fall/trauma (75.0%), poisonous animal (75.0%), allergic reaction (72.7%) and seizure (71.2%). There was a significant association for the variable on bleeding (p=0.0124). Among the professionals who participated in training, 69.2% feel able to provide care in cases of bleeding, while in the group that did not participate, this percentage is 47.8%. The variable on choking presented a p-value close to the threshold (p=0.0560), and 56.9% and 40.3% of the professionals with and without training, respectively, feel able to provide care in cases of choking.

**Table 2** - Feeling of aptitude in providing care in urgent and emergency situations in early childhood education professionals who did or did not participate in a first aid training (n=132). Três Lagoas, MS, Brazil, 2020.

| Variables | Total | Participated in first aid training | | p-value* |
|---|---|---|---|---|
| | | Yes | No | |
| | n (%) | n (%) | | |
| **Bleedings** | | | | |
| Yes | 77 (58.3) | 45 (69.2) | 32 (47.8) | 0.0124 |
| No | 55 (41.7) | 20 (30.8) | 35 (52.2) | |
| **Fever** | | | | |
| Yes | 115 (87.1) | 57 (87.7) | 58 (86.6) | 0.8470 |
| No | 17 (12.9) | 8 (12.3) | 9 (13.4) | |
| **Wounds** | | | | |
| Yes | 82 (62.1) | 40 (61.5) | 42 (62.7) | 0.8919 |
| No | 50 (37.9) | 25 (38.5) | 25 (37.3) | |
| **Burns** | | | | |
| Yes | 45 (34.1) | 22 (33.8) | 23 (34.3) | 0.9534 |
| No | 87 (65.9) | 43 (66.2) | 44 (65.7) | |
| **Seizure** | | | | |
| Yes | 38 (28.8) | 22 (33.8) | 16 (23.9) | 0.2061 |
| No | 94 (71.2) | 43 (66.2) | 51 (76.1) | |
| **Fainting** | | | | |
| Yes | 44 (33.3) | 24 (36.9) | 20 (29.9) | 0.3888 |
| No | 88 (66.7) | 41 (63.1) | 47 (70.1) | |
| **Choking** | | | | |
| Yes | 64 (48.5) | 37 (56.9) | 27 (40.3) | 0.0560 |
| No | 68 (51.5) | 28 (43.1) | 40 (59.7) | |

| Variables | Total | Participated in first aid training | | p-value* |
|---|---|---|---|---|
| | | Yes | No | |
| | n (%) | n (%) | | |
| **Fall/trauma** | | | | |
| Yes | 33 (25.0) | 18 (27.7) | 15 (22.4) | 0.4817 |
| No | 99 (75.0) | 47 (72.3) | 52 (77.6) | |
| **Cardiorespiratory arrest** | | | | |
| Yes | 23 (17.4) | 12 (18.5) | 11 (16.4) | 0.7570 |
| No | 109 (82.6) | 53 (81.5) | 56 (83.6) | |
| **Allergic reaction** | | | | |
| Yes | 36 (27.3) | 18 (27.7) | 18 (26.9) | 0.9151 |
| No | 96 (72.7) | 47 (72.3) | 49 (73.1) | |
| **Electric shock** | | | | |
| Yes | 20 (15.2) | 10 (15.4) | 10 (14.9) | 0.9414 |
| No | 112 (84.8) | 55 (84.6) | 57 (85.1) | |
| **Poisonous animal** | | | | |
| Yes | 33 (25.0) | 18 (27.7) | 15 (22.4) | 0.4817 |
| No | 99 (75.0) | 47 (72.3) | 52 (77.6) | |

*Chi-square test.

As for knowledge of the concepts of situations related to first aid (Table 3), the highest percentage of totally correct answers was found for accidents caused by poisonous animals (69.7%), fainting (68.9%) and choking (67.4%). The highest proportions of incorrect answers were for fever (22.7%) and cardiorespiratory arrest (22.0%). There is a significant association for situations of fever, seizure, fainting, trauma, cardiorespiratory arrest and accidents caused by poisonous animals, with lower percentages of correct answers in the group that did not participate in training.

**Table 3** – Knowledge about the concepts of situations related to first aid among professionals who have or have not participated in first aid training (n=132). Três Lagoas, MS, Brazil, 2020.

| Variables | Total | Participated in first aid training | | p-value |
|---|---|---|---|---|
| | | Yes | No | |
| | n (%) | n (%) | | |
| **Fever** | | | | |
| Correct | 62 (47.0) | 38 (58.5) | 24 (35.8) | *0.0076 |
| Partially correct | 40 (30.3) | 19 (29.2) | 21 (31.3) | |
| Incorrect | 30 (22.7) | 8 (12.3) | 22 (32.8) | |

| Variables | Total | Participated in first aid training | | p-value |
|---|---|---|---|---|
| | | Yes | No | |
| | n (%) | n (%) | | |
| **Burn** | | | | |
| Correct | 50 (37.9) | 28 (43.1) | 22 (32.8) | †0.1205 |
| Partially correct | 71 (53.8) | 35 (53.8) | 36 (53.7) | |
| Incorrect | 1 (0.8) | 0 (0.0) | 1 (1.5) | |
| Do not know | 10 (7.6) | 2 (3.1) | 8 (11.9) | |
| **Seizure** | | | | |
| Correct | 28 (21.2) | 19 (29.2) | 9 (13.4) | *0.0328 |
| Partially correct | 55 (41.7) | 27 (41.5) | 28 (41.8) | |
| Incorrect | 21 (15.9) | 11 (16.9) | 10 (14.9) | |
| Do not know | 28 (21.2) | 8 (12.3) | 20 (29.9) | |
| **Fainting** | | | | |
| Correct | 91 (68.9) | 52 (80.0) | 39 (58.2) | †0.0067 |
| Partially correct | 28 (21.2) | 10 (15.4) | 18 (26.9) | |
| Incorrect | 3 (2.3) | 2 (3.1) | 1 (1.5) | |
| Do not know | 10 (7.6) | 1 (1.5) | 9 (13.4) | |
| **Choking** | | | | |
| Correct | 89 (67.4) | 46 (70.8) | 43 (64.2) | †0.4327 |
| Partially correct | 25 (18.9) | 13 (20.0) | 12 (17.9) | |
| Incorrect | 9 (6.8) | 4 (6.2) | 5 (7.5) | |
| Do not know | 9 (6.8) | 2 (3.1) | 7 (10.4) | |
| **Trauma** | | | | |
| Correct | 34 (25.8) | 26 (40.0) | 8 (11.9) | *<0.0001 |
| Partially correct | 60 (45.5) | 29 (44.6) | 31 (46.3) | |
| Incorrect | 13 (9.8) | 6 (9.2) | 7 (10.4) | |
| Do not know | 25 (18.9) | 4 (6.2) | 21 (31.3) | |
| **Cardiorespiratory arrest** | | | | |
| Correct | 47 (35.6) | 26 (40.0) | 21 (31.3) | *0.0217 |
| Partially correct | 32 (24.2) | 17 (26.2) | 15 (22.4) | |
| Incorrect | 29 (22.0) | 17 (26.2) | 12 (17.9) | |
| Do not know | 24 (18.2) | 5 (7.7) | 19 (28.4) | |
| **Accident caused by poisonous animal** | | | | |
| Correct | 92 (69.7) | 51 (78.5) | 41 (61.2) | †0.0385 |
| Partially correct | 31 (23.5) | 12 (18.5) | 19 (28.4) | |
| Incorrect | 4 (3.0) | 2 (3.1) | 2 (3.0) | |
| Do not know | 5 (3.8) | 0 (0.0) | 5 (7.5) | |

* Chi-square test; †Fisher's Exact Test.

The answers of the professionals from both groups were also analyzed regarding the attitudes they would take when facing situations that require first aid (Table 4). The situations with more correct attitudes were fever and bleeding wound (51.5% each). The

situations with the highest proportion of incorrect attitudes were nasal bleeding (51.5%) and choking (20.5%). The answers regarding seizure, fainting, choking, fall/trauma and cardiorespiratory arrest were significantly associated, with a lower percentage of correct answers among the professionals who did not participate in training. For cardiorespiratory arrest, although the percentage of correct answers was significantly lower in the group without training (6.0%), it was also lower in the group with training (10,8%).

**Table 4** – Attitude of professionals when faced with urgent and emergency situations that require first aid among those who did or did not participate in first aid training (n=132). Três Lagoas, MS, Brazil, 2020.

| Variables | Total | Participated in first aid training | | p-value |
|---|---|---|---|---|
| | | Yes | No | |
| | n (%) | n (%) | | |
| **Fever** | | | | |
| Correct | 68 (51.5) | 39 (60.0) | 29 (43.3) | †0.1676 |
| Partially correct | 39 (29.5) | 17 (26.2) | 22 (32.8) | |
| Incorrect | 6 (4.5) | 1 (1.5) | 5 (7.5) | |
| Do not know | 19 (14.4) | 8 (12.3) | 11 (16.4) | |
| **Bleeding wound** | | | | |
| Correct | 68 (51.5) | 37 (56.9) | 31 (46.3) | †0.6076 |
| Partially correct | 45 (34.1) | 20 (30.8) | 25 (37.3) | |
| Incorrect | 8 (6.1) | 4 (6.2) | 4 (6.0) | |
| Do not know | 11 (8.3) | 4 (6.2) | 7 (10.4) | |
| **Nasal bleeding** | | | | |
| Correct | 16 (12.1) | 9 (13.8) | 7 (10.4) | *0.4243 |
| Partially correct | 37 (28.0) | 20 (30.8) | 17 (25.4) | |
| Incorrect | 68 (51.5) | 33 (50.8) | 35 (52.2) | |
| Do not know | 11 (8.3) | 3 (4.6) | 8 (11.9) | |
| **Burn** | | | | |
| Correct | 50 (37.9) | 26 (40.0) | 24 (35.8) | *0.7174 |
| Partially correct | 25 (18.9) | 14 (21.5) | 11 (16.4) | |
| Incorrect | 24 (18.2) | 10 (15.4) | 14 (20.9) | |
| Do not know | 33 (25.0) | 15 (23.1) | 18 (26.9) | |
| **Seizure** | | | | |
| Correct | 63 (47.7) | 40 (61.5) | 23 (34.3) | *0.0079 |
| Partially correct | 13 (9.8) | 7 (10.8) | 6 (9.0) | |
| Incorrect | 17 (12.9) | 5 (7.7) | 12 (17.9) | |
| Do not know | 39 (29.5) | 13 (20.0) | 26 (38.8) | |
| **Fainting** | | | | |
| Correct | 40 (30.3) | 28 (43.1) | 12 (17.9) | *0.0045 |
| Partially correct | 30 (22.7) | 16 (24.6) | 14 (20.9) | |

| Variables | Total | Participated in first aid training | | p-value |
|---|---|---|---|---|
| | | Yes | No | |
| | n (%) | n (%) | | |
| Incorrect | 19 (14.4) | 7 (10.8) | 12 (17.9) | |
| Do not know | 43 (32.6) | 14 (21.5) | 29 (43.3) | |
| **Choking** | | | | |
| Correct | 40 (30.3) | 29 (44.6) | 11 (16.4) | *0.0024 |
| Partially correct | 35 (26.5) | 17 (26.2) | 18 (26.9) | |
| Incorrect | 27 (20.5) | 9 (13.8) | 18 (26.9) | |
| Do not know | 30 (22.7) | 10 (15.4) | 20 (29.9) | |
| **Fall/Trauma** | | | | |
| Correct | 26 (19.7) | 18 (27.7) | 8 (11.9) | *0.0257 |
| Partially correct | 45 (34.1) | 25 (38.5) | 20 (29.9) | |
| Incorrect | 10 (7.6) | 3 (4.6) | 7 (10.4) | |
| Do not know | 51 (38.6) | 19 (29.2) | 32 (47.8) | |
| **Cardiorespiratory arrest** | | | | |
| Correct | 11 (8.3) | 7 (10.8) | 4 (6.0) | †0.0038 |
| Partially correct | 54 (40.9) | 34 (52.3) | 20 (29.9) | |
| Incorrect | 4 (3.0) | 3 (4.6) | 1 (1.5) | |
| Do not know | 63 (47.7) | 21 (32.3) | 42 (62.7) | |
| **Accident caused by poisonous animal** | | | | |
| Correct | 22 (16.7) | 12 (18.5) | 10 (14.9) | *0.6640 |
| Partially correct | 32 (24.2) | 17 (26.2) | 15 (22.4) | |
| Incorrect | 12 (9.1) | 7 (10.8) | 5 (7.5) | |
| Do not know | 66 (50.0) | 29 (44.6) | 37 (55.2) | |

*Chi-square test; †Fisher's Exact Test.

## Discussion

A total of 132 professionals working in CEIs participated in this study, and it was found that most participants were female, which is a characteristic observed in the Brazilian scenario, as observed in another study with early childhood education professionals in the country.[14]

Health education has proven to be effective in the training of lay people in first aid, through different methodologies, with emphasis on training courses, taught mainly by health professionals and firefighters, which show a significant improvement in the correct answers after the intervention.[1] Only 49.2% of the participants in this study reported having already participated in some first aid training, and among those who did, most of them did it more than 5 years ago. A survey carried out in Brazil shows a

similar reality, where 56.8% of the education professionals had no training on the theme, and 68.5% of those who had been trained were more than two years ago.[13] An investigation in Ethiopia with kindergarten teachers found that about one-third of the respondents had previous first aid training, a figure lower than that found in the present work.[8]

On the other hand, in developed countries, access to first aid training is greater than in developing countries.[8] In Norway, in a telephone survey, the results were more satisfactory, which can be justified because first aid training is part of the school curriculum and is also a requirement for obtaining a driver's license. In the study, participants were 15 years of age or older, and most reported having at least some first aid training (90%), with this training having been done within the last five years (54%).[15] The findings of the current investigation and others in developing countries confirm the lack of attention by authorities to the need to plan and implement first aid training programs for all teachers and school personnel.[6,8]

In school accidents, teachers are usually the ones who provide the initial care to children, so it is essential that they feel able to perform an appropriate intervention. A study conducted with 331 teachers in Turkey showed that they had information on first aid, but did not trust themselves to practice it.[16] The theoretical knowledge does not always reflect the practical skills,[15] reinforcing the need for the training to involve both theoretical and practical content, in order to develop the skills required in these situations..

In this study, the percentage of professionals who did not feel able to provide care in several situations that required first aid was high. In other investigations, a large part of the teachers also stated that they did not feel able to provide first aid. Teachers' level of confidence in administering first aid was associated with having participated in previous training. Accordingly, it is important to ensure that first aid training is ongoing to ensure that the information given, as well as the skills developed for application, are constantly recalled and updated.[6,16]

Teachers' insufficient knowledge of first aid may reduce the chance of providing adequate and timely care in urgent and emergency situations, which may increase the risk of complications following any accident in the school environment. Cross-sectional

studies developed in Ethiopia (n=194) and India (n=146) that had as one of their objectives to investigate teachers' knowledge about first aid found that knowledge was significantly higher among those who had received prior training,[6,8] a result similar to our findings. In the present study, all respondents felt a need to know more about first aid, which reflects the need to provide teachers with more training opportunities in this theme.

Since children in early childhood education have their psychomotricity in early development, it is important to consider that they are more exposed to falls and cuts.[17] Regarding bleeding, which generally comes from these accidents, it was possible to observe that the percentage of professionals who feel able to provide care to control bleeding wounds was higher in the group that participated in previous first aid training (69.2%) than in the group that did not participate (47.8%), highlighting the importance of the practical orientations given in these meetings.

The results showed that the employees who had participated in first aid training had better knowledge regarding the content of fever (p=0.0076). It is essential to demystify some negative beliefs and misconceptions, so that professionals who work in early childhood education know how to act in the assistance to a feverish child, seeking medical care only when necessary.

Participants in this study showed low prior knowledge about the concept of seizure and about adequate seizure rescue, both with statistical significance. This finding is similar to that of a quasi-experimental study carried out in Cuiabá, Mato Grosso, with 162 professionals from the multidisciplinary team of specialized teaching schools, where only 21.6% had correct prior knowledge on what to do when facing a child with a seizure.[13] A cross-sectional study in Thailand of 1,040 schoolchildren between the ages of 9 and 14 suggests that educational materials should include basic knowledge about simple seizure pathogenesis, seizure types and characteristics, and explain the correct procedure for people with a seizure.[18]

Loss of consciousness is often observed in children, but potential caregivers (parents and teachers) usually do not know how to act. A European multicenter study that evaluated the potential effect of the recovery position in children with loss of consciousness found that parents often perform inadequate maneuvers when a child

becomes unconscious, and that proper management can impact on reducing hospital admission rates. The authors also observed that other frequent conducts were shaking, putting water on the face, slapping and blowing on the face, some of which were considered potentially dangerous by the pediatricians.[19] In the present study, the knowledge and attitude of the professionals when facing a fainting situation were more satisfactory among those who had participated in some training. Such findings reinforce the need to promote actions aimed at increasing adults' knowledge and skills to provide safe first aid to children with loss of consciousness.

As for the choking situation, when analyzing the answers of the professionals with and without participation in training, it was observed that there was a significant difference for knowledge and attitudes. Those who had participated in some training had better results, but it is noteworthy that approximately half of the evaluated teachers did not know how to act correctly when facing this situation, which could result in the death of the child in a few minutes. Other studies conducted in Brazil and India found little knowledge among teachers about airway clearance maneuvers in infants and older children/adolescents.[6,13] Foreign body aspiration (FBA) remains a common problem that can have serious consequences, as it can result in acute and chronic health problems.[20] It is necessary that school personnel know how to perform the Heimlich maneuver correctly, because in case of a foreign body or choking in the school environment, they will be the first to be able to provide assistance.[13]

Falling from a high level is an important cause of morbimortality in childhood, and is considered a theme of individual and social relevance. In this situation, when first aid practices are not performed properly, they can cause spinal cord injuries or cause an incomplete cut to become a complete cut. This event can cause permanent neurological damage, psychological and social problems, impacting the change in lifestyle. In a study conducted in Turkey, it was found that only 20.9% of the teachers knew how to properly immobilize a child who fell from a high level[21], corroborating the results that showed that 19.7% of the participants knew how to act correctly when faced with a fall/trauma situation. Accordingly, the training of teachers and other school employees is essential for them to know how to perform the first care, avoiding sequelae and even death.

The theme of cardiorespiratory arrest is also noteworthy, where there was insufficient knowledge about the concept and most participants did not know how to act when facing this emergency situation, which corroborates another study that shows a deficit of knowledge on the theme by education professionals.[13] In a Spanish investigation, conducted with parents and teachers of preschool and elementary school children, despite the majority of the participants having first aid training, they did not correctly answer the questions regarding basic life support and cardiopulmonary resuscitation.[22] Cardiopulmonary arrest is an emergency situation in which there is absence of breathing and heartbeat, and it requires fast and efficient care to increase the survival of victims. For this reason, the training of lay people to perform cardiopulmonary resuscitation maneuvers is increasingly encouraged.[11]

In accidents caused by poisonous animals, most of the used popular traditional methods, such as making incisions, sucking out the poison and applying tight tourniquets, are useless or even harmful.[23] In the present study, half of the participants reported not knowing how to act when faced with an accident caused by a poisonous animal. Offering health education actions on first aid can contribute to the reduction of complications for those who suffer accidents caused by poisonous animals.[23]

According to the results, and in line with several articles that deal with this theme, the participants in their entirety understand the relevance and need to learn about first aid.[3,6,8,13,22] Nevertheless, the lack of knowledge is significant and directly impacts the outcomes, since there is no training and capacity building as there should be. In this context, it would be opportune if the Ministry of Education included the first aid course in the training of kindergarten teachers, since there is already Law nº 13,722, approved on October 4, 2018, known as the Lucas Law, which requires all professionals working in public and private education networks to be trained in basics of first aid.[24]

The results of the present study should be interpreted in light of some limitations. First, although the questionnaire was designed according to the SAMU Basic Life Support Protocol[10] and the American Heart Association Guidelines[11] and has been previously tested, it has not been validated, which makes it difficult to compare the results with those of other similar studies. This is not a study with a representative sample, so it is not possible to extrapolate the results. Accordingly, broader and

multicenter studies are recommended to investigate the first aid knowledge of professionals working in early childhood education throughout the country, aiming at the implementation of educational programs directed to the needs. Despite these limitations, the results provide evidence on the specific educational needs of these professionals regarding first aid.

Thus, fostering the establishment of partnerships between education and health professionals is a promising strategy in planning and discussions in the field of health and its approach in the educational environment, helping to build new methods, strategies and ways of thinking.[12] In this context, nursing stands out as being responsible for most of the health education work in schools, as they are trained in health promotion activities. In some places, these professionals are inserted in the school environment, working not only in health education but also in monitoring the children.[10]

## Conclusion

The professionals who participated in first aid training feel more capable of providing care only in situations of bleeding. Having participated in some training also gave the professionals a better knowledge about the evaluated concepts and a higher number of correct answers regarding the attitude that should be taken in urgent and emergency situations that require first aid.

The trainings contributed positively to the knowledge and attitude of education professionals regarding most of the first aid themes. These findings highlight the importance of training, which is a responsibility of health professionals together with educators and caregivers, in order to promote greater safety in the performance of professionals facing possible health problems in children's school environment, qualifying the care given in order to ensure healthy growth and development and minimize risks and injuries.

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