

Knowledge and attitude of community health workers about first aid

Conhecimento e atitude de agentes comunitários de saúde em relação à primeiros socorros

Conocimiento y actitud de los agentes comunitarios de salud en relación a los primeros auxilios

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RESUMO

Objetivo: analisar o conhecimento e a atitude de Agentes Comunitários de Saúde sobre os primeiros socorros antes e depois de intervenção educativa. **Método:** pesquisa quase-experimental realizada com 93 Agentes Comunitários de Saúde. A coleta de dados ocorreu em três etapas: pré-teste, intervenção educativa e pós-teste. O instrumento de coleta de dados abordou as questões sociodemográficas, questões sobre o conhecimento e sobre as atitudes dos agentes em relação aos primeiros socorros. A análise foi realizada por meio de estatísticas descritivas e teste de Wilcoxon.

Resultados: o conhecimento e a atitude dos Agentes Comunitários de Saúde sobre os primeiros socorros antes da intervenção educativa oscilaram de ruim a regular, passando para o conceito bom, após essa ação. O teste estatístico mostrou que a intervenção educativa foi eficiente para a melhoria destes conceitos, como ficou evidenciado pelo aumento significativo no número de acertos no pós-teste em relação ao pré-teste. **Conclusão:** a prestação dos primeiros socorros pelos Agentes Comunitários de Saúde de forma apropriada é capaz tanto de ampliar a confiança da população no sistema de saúde, quanto de aumentar as chances de sobrevivência das vítimas que necessitam do atendimento imediato, a fim de contribuir para a redução da morbimortalidade.

Descritores: Primeiros Socorros; Educação em Saúde; Agentes Comunitários de Saúde; Enfermagem; Educação Continuada.

ABSTRACT

Objective: to analyze the knowledge and attitude of Community Health Workers about first aid before and after an educational intervention. **Method:** a quasi-experimental study was carried out with 93 Community Health Workers. Data was collected in three stages: pre-test, educational intervention, and post-test. The data collection instrument covered sociodemographic questions, and questions about the workers' knowledge and attitudes towards first aid. The analysis was carried out using descriptive statistics and the Wilcoxon test. **Results:** the knowledge and attitudes of the Community Health Workers about first aid before the educational intervention ranged from poor to fair, moving to good after the intervention. The statistical test showed that the educational intervention was effective in improving these concepts, as evidenced by the significant increase in the number of correct answers in the post-test compared to the pre-test. **Conclusion:** the provision of first aid by Community Health Workers in an appropriate manner can increase the population's confidence in the health system and increase the chances of survival of victims who need immediate care, contributing to reducing morbidity and mortality.

Descriptors: First Aid; Health Education; Community Health Workers; Nursing; Continuing Education.

RESUMEN

Objetivo: analizar el conocimiento y la actitud de los Agentes Comunitarios de Salud sobre primeros auxilios antes y después de una intervención educativa. **Método:** investigación cuasi-experimental realizada con 93 Agentes Comunitarios de Salud. La recolección de datos se llevó a cabo en tres etapas: pretest, intervención educativa y postest. El instrumento de recolección abordó cuestiones sociodemográficas, conocimiento y actitudes de los agentes en relación con los primeros auxilios. El análisis se realizó mediante estadísticas descriptivas y la prueba de Wilcoxon. **Resultados:** el conocimiento y la actitud de los Agentes Comunitarios de Salud sobre primeros auxilios, antes de la intervención educativa, variaron de niveles bajos a regulares, mejorando a un nivel bueno después de la intervención. La prueba estadística demostró que la intervención educativa fue eficaz para mejorar estos conceptos, como lo evidenció el aumento significativo en el número de respuestas correctas en el postest en comparación con el pretest. **Conclusión:** la prestación adecuada de primeros auxilios por parte de los Agentes Comunitarios de Salud puede aumentar tanto la confianza de la población en el sistema de salud como las probabilidades de supervivencia de las víctimas que requieren atención inmediata, contribuyendo a la reducción de la morbimortalidad.

Descriptores: Primeros Auxilios; Educación en Salud; Agentes Comunitarios de Salud; Enfermería; Educación Continua.

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Introduction

First Aid (FA) is defined as providing immediate care to victims of accidents or sudden illness in life-threatening situations. Thus, this care must be carried out by the person closest to the victim, to maintain their vital functions and prevent their state of health from worsening until specialized assistance arrives.¹ It is therefore understood that any and all people need to be able to provide FA since emergencies happen without time or place.

The Community Health Worker (CHW) is a professional who is part of the Family Health Strategy (FHS) team and, in the universe of Primary Health Care (PHC), they play a multifaceted role and establish a vital bridge between the community and the health service. However, the effectiveness of their work goes beyond collecting information about the families and community in their area of responsibility and also includes the ability to deal with unforeseen situations, such as urgencies and emergencies.²

Among the situations that require immediate action in the out-of-hospital environment are sudden death, choking, poisoning, and seizures, among others. Data on the incidence of these events is scarce, however, it is estimated that in Brazil there are more than 200,000 cardiorespiratory arrests a year, and, of these, around 180,000 occur outside of a hospital, with an estimate that four out of five arrests occurred in the home environment.³ As for choking in particular, the number of deaths in the country between 2009 and 2019 reached 2,148 cases in the age group up to nine years old, with cases of airway obstruction due to food ingestion, mainly in homes and schools.⁴

However, despite the high incidence of these events in the community, it has been observed that in many regions there are gaps in the knowledge and practice of CHWs concerning FA.³ In this sense, it is emphasized that in the context of community health, the interaction of CHWs with the population is not limited to the transmission of information, but involves building bonds of trust. Therefore, investing in continuing training for CHWs regarding FA not only improves their technical skills but also strengthens the relationship of trust with the community.⁵

Given the importance of training CHWs in FA, as a fundamental strategy to strengthen the primary healthcare network and the rapid response to adverse incidents, this study aimed to analyze the knowledge and attitude of CHWs regarding FA before and after an educational intervention.

Method

This is a study with a quasi-experimental design, characterized by intervention in a single group, with pre- and post-intervention evaluations.

The research took place in the municipality of Teresina (PI). The municipality has approximately 868,000 inhabitants and 264 FHS teams, which cover 95.7% of the population. These teams are distributed among the four regional health centers: South, North, East, and Southeast.⁶

Due to accessibility criteria, we chose to collect data from CHWs linked to the North health region, which has 43 FHS teams and a total of approximately 196 CHWs. By calculating the sample size for finite populations, with a margin of error of 5% and a 95% confidence level, the estimated sample was 110 participants. Of this total, 17 participants had their data collection instruments excluded due to incomplete answers, so the final sample consisted of 93 CHWs. In addition, the inclusion criterion was CHWs who were in the course of their duties. Those on leave, on vacation, or away for any other reason were excluded.

After authorization from the coordinators of the northern regional health office, contact was made with the CHWs via a Google Forms® link, which was distributed through the area supervisors of this regional health office. Access to the link provided directed the CHWs to a form that presented the aim of the study, the data collection method, the dates and times of the FA educational intervention, and the invitation to take part in the study. It was emphasized that participation was voluntary and without financial compensation. Professionals who agreed to take part in the study had to fill in the registration form on the same form.

The data was collected in three stages. In the first, a pre-test (data collection instrument) was applied to previously assess the CHWs' knowledge and attitude towards FA. In the second, an educational intervention on FA was carried out. In the third stage, the same instrument from the first stage was reapplied as a post-test to assess the knowledge and attitudes acquired after the educational intervention.

The data collection instrument was designed specifically for the study. The procedure consisted of questions about the participants' sociodemographic and occupational characteristics (age, gender, self-reported skin color, schooling, family income, marital status, length of time working as a CHW), knowledge about FA, and attitudes towards urgent and emergencies. The last two questions mentioned had ten questions each, based on the protocol of the American Heart Association⁷ and the European Resuscitation Council.⁸

The questions on knowledge had "true", "false" and "don't know" as alternative answers. For the investigation into attitude, the last characteristic addressed in the data collection instrument, a Likert scale with five levels of answers was used: "strongly agree", "agree", "disagree", "strongly disagree" and "no opinion".

The FA educational intervention was carried out in an auditorium geographically located in the central area of the northern health region, in the form of a face-to-face extension course registered with the Pro-Rector for Extension and Culture at the Federal University of Piauí, with a total class load of 10 hours, divided into two shifts. To allow CHWs to participate in the planned activity, two classes were offered on different dates.

The methodology used was a theoretical-practical approach, with the use of mannequins and simulation equipment, as well as other materials such as gauze, bandages, immobilization splints, a pocket face mask for ventilation, and the reproduction of slides and videos. The topics covered included basic life support, choking, seizures, burns, bleeding, musculoskeletal injuries, fainting, and fever. To carry out the practical part of the activity in each of the shifts, the participants were divided into four groups, which rotated through practical stations, each with different themes. Each station had the guidance of a monitor previously trained in FA techniques.

To compare the pre- and post-intervention results, criteria were used based on the number of correct answers each participant got. These criteria were defined as follows: good, for those who got eight or more correct; fair, for those who got five to seven correct; and poor, for those who got four or fewer correct. The objective was to get a minimum of 70% right in the post-intervention period.⁹⁻¹⁰

To analyze the data regarding the students' knowledge of the subject, "adequate question" was considered for correct answers and "not adequate" for wrong answers or when marked as "don't know". As for attitude, the question was considered to be appropriate when the correct answer was marked "strongly agree" or "agree", and the question was considered to be "not appropriate" when the incorrect answer was marked "strongly disagree" or "disagree".

The data was organized in Microsoft Office Excel® spreadsheets and exported to the Statistical Package for the Social Sciences (SPSS Statistics), version 21.0. The analysis was carried out using descriptive statistics, with frequencies, measures of central tendency, and dispersion. Data normality was checked using the Kolmogorov-Smirnov test and the relationship between pre- and post-intervention correct answers was analyzed using the Wilcoxon test; the significance level was set at 5%.

The study was submitted to the Ethics Committee of the Municipal Health Foundation and to the Research Ethics Committee (REC) of the Federal University of Piauí (UFPI), approved under Opinion No. 6.709.607. It is worth mentioning that this study met all the requirements of Resolution No. 466/2012 of the National Health Council (NHC).¹¹

Results

This study analyzes the knowledge and attitudes of CHWs before and after an educational intervention on FA. Table 1 shows that the majority of CHWs are aged between 41 and 50 (40.9%), are female (71.0%), self-declare as brown (71.0%) and black (19.4%) and are married or in a stable union (58.1%).

As for education, 50.5% of these professionals have completed secondary school and 49.5% have completed higher education. The length of time they have worked as CHWs shows that the majority have between 11 and 20 years' experience (49.5%), or more than 21 years (46.2%). In terms of family income, most families earn between three and five minimum wages (59.1%), followed by those earning between one and two minimum wages (34.4%).

Table 1 - Distribution of the sample according to sociodemographic variables. Teresina (PI), Brazil, 2024.

Variables	n	%
Age		
31 to 40	13	14.0
41 to 50	38	40.9
51 to 60	35	37.6
> 60	7	7.5
Sex		
Male	20	21.5
Female	66	71.0
No answer	7	7.5
Self-reported skin color		
White	9	9.7
Brown	66	71.0
Black	18	19.4
Marital status		
Married/stable union	54	58.1
Single/divorced/widowed	39	41.9
Education		

High school	47	50.5
Higher education	46	49.5
Time working as a CHW		
< 5 years	1	1.1
5 to 10 years	3	3.2
11 to 20 years	46	49.5
≥ 21 years	43	46.2
Family income		
< 1 MW	1	1.1
1 to 2 MW	32	34.4
3 to 5 MW	55	59.1
> 5 MW	5	5.4

Table 2 shows the distribution of correct answers in the pre- and post-test. It can be seen that in the post-test, compared to the pre-test, there was an increase in the number of correct answers, both in the questions relating to knowledge and in the questions relating to attitudes.

In terms of CHWs' knowledge of FA, the pre-test showed that the questions with the lowest percentage of correct answers were about the unconscious victim (23.7%) and the influence of comorbidities on the prognosis of burns (32.3%). The questions with the highest percentage of correct answers were about choking in babies (88.2%) and the possibility of transmitting seizures (78.5%). Regarding the questions on attitude, in the pre-test, the questions with the lowest percentage of correct answers were on how to deal with cardiorespiratory arrest in drowning (5.4%) and on how to deal with fever in children (19.4%).

As for the post-test, the lowest percentages of correct answers to the knowledge questions were about the use of homemade products for burns (60.2%) and the influence of comorbidities on the prognosis of burns (61.3%). The questions with the most correct answers were about choking in adults and choking in babies, both with 97.8%. As for attitude, the fewest correct answers were on how to deal with cardiorespiratory arrest in drowning (52.7%) and how to deal with a victim who is unconscious (67.7%).

Table 2 - Distribution of correct answers in the pre- and post-test. Teresina (PI), Brazil, 2024.

Question		Question summary	Pre-test		Post-test	
			Correct answers		Correct answers	
Questions about knowledge			n	%	n	%
Q1	Unconscious victim		22	23.7	70	75.3
Q2	Adult choking		37	39.8	91	97.8
Q3	Baby choking		82	88.2	91	97.8
Q4	Introduction of objects into victim's mouth during seizure		39	41.9	84	90.3
Q5	Transmission of seizures		73	78.5	88	94.6
Q6	Influence of comorbidities on burn prognosis		30	32.3	57	61.3
Q7	The relationship between compression and ventilation during cardiopulmonary resuscitation		37	39.8	60	64.5
Q8	Depth of chest compression in babies during cardiopulmonary resuscitation		32	34.4	88	94.6
Q9	Use of home-made products for burns		44	47.3	56	60.2
Q10	Fainting due to exposure to high temperatures		63	67.7	83	89.2
Questions about attitude						
Q 1	Non-pharmacological management of fever in children		18	19.4	76	81.7
Q 2	Management of choking in infants		38	40.9	73	78.5
Q3	Management of a victim with a convulsive seizure		50	53.8	79	84.9
Q4	Management of a fracture with bone misalignment		74	79.6	85	91.4
Q5	Management of bruises resulting from trauma		48	51.6	68	73.1
Q6	Management of a victim with severe bleeding		69	74.2	88	94.6
Q7	Management of blisters from burns		69	74.2	87	93.5
Q8	Management of cardiopulmonary arrest in drowning		5	5.4	49	52.7
Q9	Management of an unconscious victim		39	41.9	63	67.7
Q10	Management of a victim in an unsafe place for the rescuer		41	44.1	69	74.2

Table 3 shows that before the educational intervention, the majority of CHWs got a fair score (64.5%) for knowledge, and in the post-test, the majority got a good score (78.5%). As for the questions on attitude, most of them were fair (50.5%) in the pre-test and good (63.4%) in the post-test.

Table 3 - Distribution of the sample according to the classification based on the number of correct answers to the questions on knowledge and attitude. Teresina (PI), Brazil, 2024.

Ranking based on correct answers	Pre-intervention		Post-intervention	
	n	%	n	%
Questions about knowledge				
Good	4	4.3	73	78.5
Average	60	64.5	18	19.4
Poor	29	31.2	2	2.2
Questions about attitude				
Good	6	6.5	59	63.4
Average	47	50.5	29	31.2
Poor	40	43.0	5	5.4

The Wilcoxon test, shown in Table 4, revealed a statistically significant increase in the number of correct answers to questions on knowledge ($Z = -8.111$; $p = 0.001$) and attitude ($Z = -8.007$; $p = 0.001$) when faced with situations involving the provision of FA, before and after an educational intervention on the subject. This table also shows that the average number of correct answers related to knowledge went from 4.94 to 8.26; the median went from five to eight questions, and the number of CHWs who answered 70% of the questions or more went from nine to 89. As for the questions on attitude, before and after the educational intervention, the average varied from 4.84 to 8.01, the median from five to eight, and the number of correct answers greater than or equal to 70% went from 14 to 83.

Table 4 - Descriptive statistics of correct answers on FA knowledge and attitude pre- and post-educational intervention. Teresina (PI), Brazil, 2024.

Descriptive statistics	Correct answers on knowledge		Correct answers on attitude	
	Before	After	Antes	Depois
Mean	4.94	8.26	4.84	8.01
Median	5.0	8.0	5.0	8.0

Standard deviation	1.480	1.151	1.702	1.448
Minimum	1	4	0	4
Maximum	9	10	8	10
≥ 70% correct	9	89	14	83
Wilcoxon test	Z= -8.111; <i>p</i> = 0.001		Z= -8.007; <i>p</i> = 0.001	

Discussion

CHWs in Brazil's Unified Health System (UHS) play a fundamental role as community providers, often residing in the areas where they work, which gives them intimate knowledge of local lifestyles, traditions, and culture. In addition, these workers can develop essential communication, service coordination, teaching, advocacy, and interpersonal skills, positively impacting the health of the communities in which they work.¹²

The profile of CHWs found in this study is similar to that of other studies¹³⁻¹⁴ and shows that the majority of these professionals are aged between 41 and 50 and have been working in the profession for more than 10 years. This indicates the existence of a mature and experienced workforce, possibly as a result of the fact that they are hired through public tenders, which gives them greater job stability and a reduction in turnover.¹⁵⁻¹⁶ In terms of gender, women are predominant in this profession, which may be a reflection of the female image as the caregiver, as well as being an occupation in which the professional does not need to move away from the community in which she lives, a factor that allows her to enter the job market with fewer implications for domestic activities and childcare since most of them are married or live in a stable union.^{15,17}

Other sociodemographic aspects presented by the majority of CHWs in this and other studies^{15,18} refer to the higher prevalence of brown skin color, complete high school, and family income of three to five minimum wages. The 2022 Census¹⁹ showed that most Brazilians consider themselves to be brown, a reality that coincides with the results of these studies. To be hired as a CHW, some municipalities require a minimum level of secondary education,²⁰ which justifies the results found here. It is worth noting, however, that almost half of CHWs have completed higher education, which can facilitate the acquisition of new knowledge, better performance of their duties, and a greater increase in family income.¹⁵

The preparation of CHWs to provide emergency care to a victim in urgencies and emergencies can be decisive in saving lives.²¹ The analysis of the correct answers to the questions before the educational intervention, in terms of both knowledge and attitude

towards providing emergency care, oscillated in large numbers from poor to fair. After the intervention, the concept was considered good. Similar results were also found in a study carried out in Juazeiro do Norte (CE),²² which shows that periodic training for these professionals leads to an improvement in knowledge of the area, which contributes to a reduction in morbidity and mortality in the community.²³

Knowledge of topics related to unconscious victims, with burns, as well as attitudes towards cardiopulmonary arrest in drowning and fever in children, had the lowest percentage of correct answers before the educational intervention. This is similar to a study carried out in Belo Horizonte (MG), which also showed low knowledge among CHWs on these topics.²⁴ This reality raises a concern, as the timely identification of unconsciousness, the rapid activation of the emergency service, and the immediate initiation of appropriate maneuvers for each case can be decisive for the victim's recovery.²⁵

Analysis of the questions after the educational intervention showed a significant increase in the number of correct answers; however, regarding knowledge, the questions on the subject of burns maintained, as in the pre-test, lower percentages of correct answers. It is noteworthy that burns are a very common accident in the home and that most people have had some experience of them and often cling to empirical knowledge and practices that are not scientifically recommended. Aspects such as these indicate resistance to changing attitudes towards burns,³ which may justify the results found here.

Drowning, the leading cause of death among children between the ages of one and four, requires appropriate assistance. When the victim is in cardiorespiratory arrest due to this cause, immediate and specific actions are essential, such as a greater number of ventilations when compared to cardiorespiratory arrest caused by other events.²⁶ These precautions are often unknown to most people, who may be resistant to change when faced with new information.²⁷ This objection may explain the lower percentage of correct answers to the questions on attitude, both in the pre- and post-tests.

One of the topics with the highest percentage of correct answers in the post-test was choking, both in children and adults. This percentage is extremely important, as choking is a common and potentially fatal accident, especially in homes and schools.⁴ Improving CHWs' ability to deal with this situation can significantly reduce the associated mortality and morbidity, as well as their confidence at the time of action. A solid understanding of FA by CHWs not only promotes safety in communities but also increases the quality of care provided, parameters that contribute to mitigating damage and preserving lives.²

The post-test carried out after the educational intervention showed an increase in the number of correct answers to all questions. The average number of correct answers almost

doubled in some questions when compared to the pre-test. The Wilcoxon test showed a statistically significant difference between the number of correct answers before and after the educational intervention, which demonstrates the effectiveness of this activity in improving CHWs' knowledge and attitude towards FA. It should also be noted that the positive changes in the number of correct answers in the post-test have also been shown in other studies, in which the participants also showed an increase in the number of correct answers to the questions after the educational action.^{10,28}

However, although the educational intervention carried out in this study was effective, there are still challenges and gaps in certain topics. On the other hand, the results presented here suggest that the interventions not only improve CHWs' technical knowledge but also strengthen their confidence and ability to make correct decisions in emergencies.²⁹ Therefore, it is worth emphasizing that continuing education and pedagogical adaptations are necessary to maintain and improve CHWs' professional skills over time, to provide more effective and safer emergency care when necessary, given their relevance in the context of community health.³⁰

Therefore, the importance of FA training for CHWs is undeniable, especially considering the crucial role these professionals play in the community. As they are often the first to arrive at the scene of an accident or emergency, CHWs have the opportunity to provide immediate assistance to the victim, which can be decisive for the outcome of the incident. In this context, investing in CHW training is fundamental to strengthening the primary healthcare network and ensuring a rapid and effective response to adverse incidents.²³

Conclusion

The CHWs' knowledge and attitude about FA before the educational intervention ranged from poor to fair; after the intervention, the concept was rated as good. The statistical test showed that the educational intervention was effective in improving the concepts, given the significant increase in the number of correct answers in the post-test compared to the pre-test.

Regularly training CHWs in FA enables them to acquire solid knowledge and appropriate skills to act, when necessary, in urgent emergencies in the community they assist. In this way, CHWs providing help in an appropriate way can both increase the population's confidence in the health system and increase the chances of survival for victims who need immediate care, thus contributing to a reduction in morbidity and mortality.

Authors Contributions

Study design: Cassia Vitória De Oliveira Santos, Vitória Araújo De Sousa Macêdo, Rosana dos Santos Costa, Fabio Rodrigues Trindade, Adelianna de Castro Costa. **Data collection:** Cassia Vitória De Oliveira Santos, Vitória Araújo De Sousa Macêdo, Rosana dos Santos Costa, Fabio Rodrigues Trindade, Adelianna de Castro Costa. **Analysis and interpretation of data:** Cassia Vitória De Oliveira Santos, Vitória Araújo De Sousa Macêdo, Rosana dos Santos Costa, Fabio Rodrigues Trindade, Adelianna de Castro Costa. **Manuscript writing:** Cassia Vitória De Oliveira Santos, Vitória Araújo De Sousa Macêdo, Rosana dos Santos Costa, Fabio Rodrigues Trindade, Adelianna de Castro Costa. **Critical review of the manuscript:** Cassia Vitória De Oliveira Santos, Vitória Araújo De Sousa Macêdo, Rosana dos Santos Costa, Fabio Rodrigues Trindade, Adelianna de Castro Costa. **Approval of the final version of the text:** Cassia Vitória De Oliveira Santos, Vitória Araújo De Sousa Macêdo, Rosana dos Santos Costa, Fabio Rodrigues Trindade, Adelianna de Castro Costa.

Conflict of interest

The authors have declared that there is no conflict of interest.

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