

First aid training for lay people and health professionals: learning apprenticeship

Treinamento de primeiros socorros para leigos e profissionais de saúde: avaliação de aprendizagem

Formación de primeros auxilios para laicos y profesionales de la salud: evaluación del aprendizaje

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RESUMO

Objetivo: Aplicar um pré-teste e um pós-teste para avaliar a absorção de conhecimento através de capacitação de Primeiros Socorros. **Método:** Trata-se de uma pesquisa experimental do tipo antes e depois com um grupo único de comparação. **Resultados:** Foram 100 participantes incluídos neste estudo (43 profissionais de saúde e 57 leigos), constatando-se que o treinamento foi eficaz para melhora do aprendizado em ambos os públicos, com o aumento do rendimento ao comparar-se o pré-teste e pós-teste. **Conclusão:** O aprendizado contínuo em primeiros socorros, através de atualizações e educação continuada, é essencial para um atendimento seguro, eficaz e de qualidade.

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ABSTRACT

Objective: To apply a pre-test and a post-test to evaluate the absorption of knowledge through First Aid training. **Method:** This is an experimental before-and-after research with a single comparison group. **Results:** 100 people participated in the research (43 health professionals and 57 lay people), and it was found that the training was effective in improving learning in both audiences, with an increase in performance when comparing the pre-test and post-test. **Conclusion:** Continuous learning in first aid through updates and continuing education is essential for safe, effective, and quality care.

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First Aid, Training, Simulation Training, Health Education

RESUMEN

Objetivo: Aplicar un pre-test y un post-test para evaluar la absorción de conocimientos a través de Primeros Auxilios. **Método:** Se trata de una investigación experimental de antes y después con un único grupo de comparación. **Resultados:** Un total de 100 personas (43 profesionales de la salud y 57 legos) participaron en la investigación, y se encontró que la capacitación fue efectiva para mejorar el aprendizaje en ambos públicos, con un aumento en el rendimiento al comparar el pre-test y el post-test. **Conclusión:** El aprendizaje continuo en primeros auxilios a través de la actualización y la educación continua es esencial para una atención segura, eficaz y de calidad.

DESCRIPTORES:

Primeros Auxilios, Capacitación, Entrenamiento por Simulación, Educación en Salud

INTRODUCTION

First aid (FA) is defined as immediate care that must be provided to a person, victim of accidents or sudden illness, whose physical condition endangers his life. This care is intended to maintain vital functions and avoid worsening conditions, applying measures and procedures until the arrival of qualified assistance. Any trained person will be able to provide FA by conducting themselves with serenity, understanding and confidence¹.

In Brazil, there are impressive numbers of accidents every year, exceeding the one million mark, with about 40 thousand people killed and more than 370 thousand injured². Among these, 95% are hospitalized due to some trauma. "Concomitantly, according to the Brazilian Society of Cardiology (BSC) (2021) 20 deaths are recorded daily by cardiac arrest, which means one death every one and a half minutes or 259 thousand a year"³

When it comes to choking, the number of deaths reported between 2009 and 2019 in children aged 0-9 years old was 2,148. More than 50% of aspirations occur in children under 4 and more than 94% before the age of 7. Prior knowledge is essential to increase the survival of those effects^{4,5}.

Another important incident to be punctuated are accidents involving burning. According to the Ministry of Health 1 million people are affected, with about 150 thousand hospitalizations and children represent 30% of those affected. It is important to emphasize that 70% of accidents occur in a domestic environment⁶.

In all cases reported above there is a need for care as early as possible. The correct performance of pre-hospital care avoids complications and the performance of the professional or lay rescuer, in the prevention of these diseases, maintains life until the arrival of advanced support for the continuation of care⁷.

The training of first responders is extremely important, since, every five years, updates are made, requiring frequent training so that quality assistance can be performed. Even a trained person must undergo updates and continuing education to improve the effectiveness of care provided, emotional stability and dominance in care⁸.

Health education and the use of active methodologies are essential in the process of maintaining learning, since the lack of knowledge of the rescuer can lead to several problems, such as the incorrect manipulation of the victims, the unnecessary activation of specialized assistance and the delay in the beginning of basic support to the person, which can lead to complications and/or death⁹.

This study aimed to apply a pre-test and a post-test to evaluate the absorption of knowledge through First Aid training.

METHODOLOGY

Types of study

This is an experimental research, of the type before and after, with a single comparison⁷ group that was performed with laypersons or health professionals who expressed interest in first aid care, either to learn, update and/ or train themselves.

Survey Participants

The participants of the research were lay people and/or health professionals who registered to participate in the training/updating in First Aid. The selection occurred randomly according to the registration. The selected lay people did not have contact with the subject previously and the health professionals (nurses, nursing technicians, pharmacists, psychologists) already knew the subject and received an update.

The training took place in the realistic simulation laboratory of the Dynamic Faculty of the Piranga Valley. Dummies were used for simulation of first aid and practical theoretical training. The scenario was assembled according to the themes presented in the training. Each theme was made the theoretical approach and soon after the practical approach. The scenes created simulated the various emergency/emergency situations.

The training sessions were focused on basic emergency and emergency care, with a workload of five (5) hours. The briefing occurred with the construction of the project where an informative slide was elaborated with the important points about urgency and emergency in situations of cardiorespiratory arrest, choking, burns, fainting, injury and/or fracture. The past information was taken from the Brazilian Society of Cardiology and American Heart Association. The training rooms were separated into lay public and health professionals so that the absorption of knowledge was homogeneous.

Realistic simulation to assist teaching-learning is an effective resource, improving scientific technical skills, clinical reasoning, and the importance of skills development. Debriefing occurred after and during the realistic simulation scenario where it was observed the development of knowledge, skills and attitudes performed by the public of the study¹⁰.

Data collection

The research was subdivided into four stages: 1) Selection of Participants; 2) Pre-test; 3) Educational intervention; 4) Post-test.

On the day of the course, participants who signed the ICF were given a questionnaire (pre-test) to assess prior knowledge. The pre-tests applied are extremely important since they can evaluate the degree of mastery that the participant has before the training and in the future, when organizing the data, evaluate the quality of the methodological procedure used¹¹.

The pre-test of the research consisted in the application of a form, prepared by the researcher, which contains five (5) open questions. This questionnaire was used to obtain data on the main doubts, insecurities, knowledge, and updates in first aid care. The pre-test was submitted to the participants before starting the training.

After, a training was performed, where the professionals had theoretical knowledge about cardiorespiratory arrest, choking, burns, fainting, injury and/or fracture. Then, the practical training was conducted, when realistic simulations of each case were elaborated and used the training dolls of the Dynamic Faculty. Procedures on how to act in an emergency were demonstrated to increase the chance of survival of the injured person. At all times, the professionals were observed and guided how to perform the service correctly, avoiding accidents during activities.

After the training, another questionnaire (post-test) was delivered with the same questions to evaluate the use and absorption of what was studied. In the post-test, another question was added for the participants to evaluate the training and the degree of learning. The post-test aimed to compare previous knowledge, those acquired with the educational intervention and to analyze whether the training was able to complete its objective, which is to transmit first aid techniques so that everyone learned¹¹.

The pre-test and post-test stages had in the header sociodemographic information of the participant, with questions about age, sex, profession, and if he participated in any course around first aid (if yes, which) and if he has some training in the area (if yes, which).

The inclusion criteria were people who signed the ICF, were more than 18 , accept to participate in the research and have participated in the training completely. The exclusion criteria were people who refused to answer the questionnaires, refused to participate in the course because it was a survey or did not participate in the training until the end.

Data analysis

After the research, the data were organized following the three stages of discourse analysis: 1st pre-analysis; 2nd analytical description; 3rd inferential interpretation¹². In the pre-analysis phase, the test responses were read in full and separated between pre and post-test. In the analytical description phase, the material was analyzed comparing the pre-test and post-test of the participants. In the third and final phase, the data were divided into categories based on the questions asked to the participants. Subsequently, the data were processed from raw to organized, so that they become significant to cause inferences in the interpretations through the objectives and /or unexpected findings.

In compliance with Resolution N 466, of December 12, 2012, of the National Health Council, the Ethics Committee of the Dynamic Faculty of Vale approved this research do Piranga CAAE 60210022.6.0000.8063, and all participants received the ICF for the beginning of the research.

RESULTS AND DISCUSSION

One hundred people participated in the research, including lay people and health professionals. Of these, 43% are health professionals and 57% are lay, 61% are between 18 and 45 and 34% are between 46 and 70, 5% did not want to inform age, 76% are female and 24% male. Regarding the question for health professionals regarding having some course or training in the area, it was possible to observe that 32% have and 62% do not.

After collecting the data, the pre-test was applied to identify the knowledge related to first aid. The method is important because it evaluates the individual's prior knowledge. Subsequently, the interventional action (theoretical-practical training) was performed and, to finish, the post-test was applied to calculate the knowledge that the participant acquired during the training.

In the application of the pre-test were performed five open questions related to first aid experiences. And in the post-test the same questions were applied to verify the absorbed knowledge. The sixth question of the post-test was related to the training recommendation if it considers the applied teaching relevant and if it is prepared to meet an urgency after the training.

To analyze the data from the questionnaires, categories were created to facilitate interpretation: the pre-test was named as A and the post-test as B. During the transcription, all the sheets were enumerated, starting the analysis with the health professionals, identified with P and the number of the questionnaire; following, the lay professionals, who were identified with L and the number. The categories were divided as follows:

Category 1 - Knowledge of cardiorespiratory arrest care

In this category, it was addressed if the individual knows how to act in case of cardiorespiratory arrest and was asked, if so, to describe how he would perform.

When faced with cardiac arrest or the suspicion of one (whether lay or professional), the first step is to check the scene to see if it is safe, ascertain the responsiveness of the victim, calling it aloud and performing a tactile-painful stimulus¹³. Non-response leads to carotid pulse verification and its absence confirms CRP. When confirming the CRP, one should, at first, call the specialized help and start the cardiopulmonary compressions, maintaining rhythm and strength until the arrival of the help. Below will be presented the most relevant statements of the respondents:

A-1 Heart Massage plus Mouth to Mouth/Ventilation Ambu (P-05).

B-1 Yes. Identify CRP+ check pulse+ ask for help + initiate chest compressions (P-05).

A-1 Transport the patient safely as soon as possible (P-35).

B-1 Check safe place, look pulse, do chest massage and when the victim returns to pulse do transport to hospital (P-35).

The participant P-05 brings in questionnaire A, the technique of mouth-to-mouth breathing, which has been extinguished from the protocol since 2010 and no longer appears in current protocols. In questionnaire B, after training, he brings the correct answer. The participant P35 reports in the questionnaire To be indicated to take the victim safely the fastest to the hospital, but does not transport the victim to the same return from PCR14, after passing the training, correctly answers in questionnaire B.

Already the speech in the participant P43, health professional, it is possible to note that it has knowledge, including before training, as described below:

A-1 Call the patient, check CRP signals, start maneuvers and call for help (P-43).

B-1 Call the person, check pulse, stimulate pain, call help and then and start maneuver (P-43).

With the lay participants, the findings are similar: many stated that they did not have knowledge in questionnaire A. However, after training, they described a sequence of care, included when answering questionnaire B. Below is the speech of two participants:

A-1 Yes, heart massage -(L49).

B-1 Look safe scene, look like the patient is, pulse, breath, call help and start heart massage -(L49).

A-1 I know I must do the massage, but I do not remember how it does now - (L 91).

B-1 Look local that is safe for the patient and for me, after that call the person by name, press the collarbone, to make pain stimuli, check pulse and from the absence of signs, start heart massage being 120 per minute preferably two people to change. It is also important to be on the surface.

Knowing how to recognize risk situations and call for specialized help is already one of the principles of relief, a well-trained population will contribute to the reduction of morbidity and mortality¹⁵.

Category 2 - Knowledge of choking care

In this second category, it was approached if the individual knows how to act in case of choking, being the guiding question: "In case of choking, do you know how to act? Describe".

In category 2, the percentage of hits was good in both categories, presenting excellent performance in post-tests (B), as follows:

A-2 Position closed hand with thumb engages on the epigastric region movement in J- (P-20).

B-2 Stimulate expel object, cough talk, if you can see the object, take with the finger in a pinch, if you cannot, then perform the Heimlich maneuver, always positioning behind the patient. In case of baby roll over 5 times in the back, turn and do 5 cardiac compressions, so until release (P-20).

Participant P 20 is a health professional and already in the pre-test can detail how the disengagement maneuver is done (Heimlich) and, in the post-test, reinforces this knowledge in detail.

Below are examples of participants' learning progress.

A-2 No (L-56).

B-2 Position behind the victim, put one leg in the middle of the victim's legs, make the Heimlich maneuvering movement (adult). In the child, put her on her stomach, do five compressions on the back, then turn over and do cinc9 chest compressions with two fingers (L-56).

A-2 I am not clear about this act, but I imagine it is putting the child upside down holding his feet and shaking - (L 99).

B-2 Yes, adult turn the person on his back to you, hug him, take the dominant hand, and make movement of Jota, pushing on the stomach. Children, support the child on the thigh of the stomach and make the movement in the back plugging five times later turn and do compressions on the chest five times and repeat the movement until release (compressions on the scapula and compressions on the chest) - (L 99).

Both participants are laypeople. The participant L 56 brings in questionnaire A who does not know what to do in case of choking, but in questionnaire B, after participating in the training, can already

describe minimum actions that save life. The participant L99 brings in questionnaire A wrong answer; in questionnaire B can answer the question correctly and clearly.

In cases of choking in a baby, place it on its stomach on top of the arm and make five compressions, with the palm, making a convex movement between the shoulder blades. After, turn the baby from dorsal decubitus and perform five more compressions with the index and middle fingers on the sternum, at the height of the nipples. The procedures are valid only if the victim is conscious¹⁶.

In episodes of choking with a foreign object, in adults, one must perform the Heimlich maneuver. Stand behind the victim (if it is a child, kneel), place the wrist of the dominant hand on the upper abdomen, hold this hand with the non-dominant hand, push hard and quickly, from the bottom up, making a "J" move¹⁷.

Category 3 - Knowledge of care in fainting

In the third category, it was approached if the participant knows how to act in case of fainting, being necessary to describe the conduct.

Below is the respondent's line (P3)

A-3 Put the patient's legs up (P-3).

B-3 Elevation of lower limbs favors circulation. Observe if has pulse, offer nothing (P-3).

The participant P3 is a health professional and, like most of the respondents in the same group, answered the basic relief actions correctly.

Below are some examples of speaking by lay participants:

A-3 No (L-48).

B-3 Looking at the pulse, if you do not have a pulse is a stop there makes the maneuver, if you have a fainting, then raise the MMII above the heart, thus favoring blood circulation (L-48).

The participant L-48 brings in questionnaire A who does not know how to act in the situation of fainting; in B describes the correct technique, demonstrating the importance of training.

A-3 Yes, look for pulse, call the emergency room and do heart massage (L 55).

B-3 Yes, look at the pulse of the victim, if you have a pulse lift the lower limbs to improve blood circulation. (L 55).

The participant L-55 brings in the questionnaire A that, in addition to looking at pulse and calling the emergency room, one should start cardiac massage, however, cardiac massage is indicated for cases of cardiorespiratory arrest, when there is no pulse, then unnecessary for fainting¹³. After training, the participant changes the conduct of his response.

A-3 Lay the person on the floor, lift the legs (L-92).

B-3 Observe if you have a heartbeat to lay the person elevate the lower limbs offer nothing (L-92).

The participant L-92 comes with similar and correct answers of questionnaire A and B, updating the knowledge he already had.

Fainting is a defense of the body, and can be of various causes, such as hypotension to more serious causes. For care, the victim should be placed in dorsal decubitus, elevating the lower limbs, enabling venous return, increased cerebral flow, improved oxygenation, and reestablishment of the senses¹³.

Category 4 - Knowledge of burn care

In the fourth category it was approached if the individual knows how to act in case of burns and the description of the care to be provided.

For the treatment of burns it is recommended to wash the burned place with running water for five or ten minutes (or even cool the place), depending on the severity and extent of the injury. It is important to note that it is extremely contraindicated to use product or substance in the lesion other than burn ointments. You should not seal the burn with materials that adhere to the skin, and it is not recommended to burst bubbles¹⁸.

For this category, the guiding question was: "In case of burns, do you know how to act, what should and what should not be done? Describe".

Below will be presented the most relevant statements of the respondents:

A-4 Yes, Local Watering with Cold Water to Cool, Not Cover Burn with Materials Sticking(P-16).

B-4 Do not cover the burn with materials that stick do not remove the clothes to avoid bursting bubbles, cool local with cold water if it is under the clothes, even wet until help arrives (P-16).

A-4 Wash the place with water or saline, should not put toothpaste or coffee powder (P-19).

B-4 Yes burn Cleaning running water, do not burst bubbles, and humidify clothing if you have it, so it does not stick to the patient(P-19).

The above statements refer to participants P-16 and P-19, both health professionals. It is possible to notice that in questionnaire A they already had previous knowledge and in questionnaire B they detailed the service better.

Below are addressed the speeches of participants L-88 and L-70, both lay:

A-4 Do not wash the place (L-88).

B-4 Wash the place with soap and water, do not use medicines and do not cover the place (L-88).

A-4 Washing under running water(L-70).

B-4 Direct chemical burn to hospital normal burn wash with running water and use specific ointments with prescription(L-70).

In the statements above we note the evolution of both in training

The objectives of rapid pre-hospital care are to preserve life, prevent sequelae or deterioration of the health status of the victim and promote recovery, including procedures that require or not the minimum use of materials or equipment¹⁹.

Category 5 - Knowledge of care in injury/fractures

In the fifth category, thinking about accidents that happen more easily daily, participants were asked to answer if they know how to act in case of accident with injury/fracture and, if positive, proceed to the description.

In cases of injury, it is recommended to avoid movement of the affected region, apply cold compresses, elevate the injured region to reduce edema, immobilize the region, and refer to a health service, the same thing in fracture, highlighting the importance of not moving the fractured limb and calling emergency²⁰.

Below are the speeches of participants P-44 (health professional) and L-97 (layperson):

A-5 Depends on injury, wash, immobilize... go to emergency (P-44)

B-5 Immobilize, compress, forward to emergency (P-44).

A-5 Refer to health unit (L-97).

B-5 Avoid moving affected region, apply cold compresses, elevate affected region, immobilize affected limb, call emergency for correct removal (L-97).

The participant L-44 brings a correct answer in both questionnaire A and B. The participant L-97 brings as answer in questionnaire A, which is extremely important, because if you do not know what to do to help, should refer to hospital treatment and not leave the victim without help. In questionnaire B, learning is already notorious, because it already knows how to provide first aid in injury.

The understanding of what to do, or how to call for specialized help should be passed on to the entire population, since it is something that can determine the chances of survival of the victim¹⁵.

Category 6 – Importance of Training

Category six was present only in questionnaire B and came so that participants could assess their degree of learning and preparation to meet an urgency.

It is important to qualify health professionals and laity, regarding first aid care since emergency care saved life²¹.

A simplified training with the use of active learning methods such as problematization and simulation, from problem situations, brings significant increase in knowledge in all aborted themes, the importance of theory combined with practical knowledge²².

The guiding question for this category was: "Do you, as a participant, recommend this First Aid training to others? Do you think this teaching is relevant? Do you feel more prepared to meet an urgency after training? Write about".

Of the research participants, 100% recommend the training, and 72% recommend or approve the training. Another 28% gave more detailed answers,, below in table 1 some of the lines:

Chart 1. Participants' reports

Participant	Story
01	Yes knowledge is everything. If now you do not feel safe at least I know how to proceed to call help know how to make you accurate is essential.
05	Yes sure yes, of great importance p/ ensure the survival cycle more
06	stability of the patient until arriving hospital
10	Yes would indicate, was helpful had several doubts is important for day-to-day
14	Both in traffic and at work
23	I indicate the training and other protocols that passed on to be trained, daily practice is fundamental and even have the necessary equipment.
34	Yes, I recommend a lot, I learned a lot that I believe will help me act correctly in an emergency
40	Yes, particularly useful course, very well explained and within the necessary practice
45	It is of great importance the training for all people, today I feel prepared after the realization of this training. Should have every year so we can update. Thank you!
47	Yes, particularly good, great, in an emergency I think now I can try to help to help, thank you for the teachings
55	Yes, I recommend it is extremely relevant, I feel more prepared to help a patient because I learned a lot in the course.
56	Yes, it is important that each person knows the basic principles of first aid, because at any time may need to feel much more prepared not confident, but I am aware of what should be done

59	Yes, it was very well explained I had the opportunity to gain experience in practice and even not being a professional in the area I can already provide first aid until waiting for the arrival of an ambulance minutes can save a life
60	Yes is the second time I do it is important to remember to go through a training because over time we forget the correct way to help know how to do essential
66	Yes, I think all people who are opportunity should do because we never know what can happen and with this course we can save lives and always good learning for our journey
71	Certainly, a lot, as much as we know, it is important to prepare ourselves always getting more prepared
73	Yes for feeling more prepared with more appropriate techniques
81	Yes because through this teaching we can perform the procedure with the person who is next to us and begins to get sick
90	Yes recommend it is worth acquiring this knowledge do not know if I feel more prepared, but I certainly learned the basics
94	Yes important especially in case of choking children
97	Yes, these are situations that can happen in our daily lives. A correct intervention makes all the difference to save a life and avoid future elections for sure I am already able to do

Source: Study data, 2022

Chart 1 shows the reports of the participants (health professionals and lay people). The numbering used in the table is the same numbering that the participants received according to the answer sheet. Participants at no time were coerced as to what they should respond and should express their opinion about the training and the evaluation of their degree of learning and evaluate the training in which they participated. It emphasizes the importance of permanent training, crossing theory and practice of *odo* to seek to know and improve skills.

Simulating is an effective way of teaching learning, taking place the absorption of knowledge in an active way, where the application of real scenarios provides active, reflective participation, being composed of preparation, participation and debriefing¹⁰.

By observing the speeches of the participants health professionals, it was possible to realize that, despite already having a previous knowledge, the training brought new learning and updates. In the lay participants, some express concern that family members have already researched on the subject, valuing the importance of always being in learning and being able to perform simulations.

Studies refer to be indispensable knowledge in the face of first aid for different areas, given that the occurrences of emergency situations occur in various places, so the importance of permanent training, crossing theory and practice to seek to know and improve skills^{21,22}.

After training, participants can perform primary care or care to ensure the survival of victims, since accidents can happen anywhere and often do not have a specialized health professional around to do the service, so the importance of conducting training for all interested audiences, since it has no limitations on who should participate.

Limitations of the study

The study presented as limitation sample size and application time. Due to time delimitation the sample was reduced, and questionnaires answered blank, or incomplete were discarded. The importance of replicating the study with a more significant and representative sample of the population allows greater external validity of the content.

Contributions to the field of nursing, health, or public policy

Given the importance of rapid and effective first aid care to ensure the survival recovery of those involved, the study contributed to demonstrate the relevance of training for lay people and training/updates for health professionals, thus reducing errors in care and increasing the chance of survival of patients. In addition, it is highlighted the nursing with a role of paramount importance and responsibility to act in the assistance to serious victims, manage the team and inputs beyond education to the population regarding first aid.

FINAL THOUGHTS

It was evidenced that the training of first aid, brought a significant increase in the level of learning in both publics. Lay people and health professionals showed improvement in care, greater safety, and better ability to conduct. The statement occurs after pre-test analysis and post-test applied.

First aid situations are common in many places and training helps in the best conduct. Therefore, training people is essential to increase survival and studies such as this should be replicated even outside the academic and health institutions to reach the largest portion of the population and improve emergency/emergency management.

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