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EVALUATION OF THE MANAGEMENT OF THE COLD CHAIN BY THE NURSING STAFF IN THE VACCINATION AREA OF TYPE C HEALTH CENTER LAS PALMAS 2019

EVALUACIÓN DE LA GESTIÓN DE LA CADENA DE FRÍO POR EL PERSONAL DE ENFERMERÍA DEL ÁREA DE VACUNACIÓN DEL CENTRO DE SALUD TIPO C LAS PALMAS 2019

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ABSTRACT

This study was carried out in the city of Esmeraldas, in the province of the same name, and it was intended to develop the evaluation of cold chain management by nursing personnel in the vaccination area of Type C Health Center Las Palmas, to reduce the mishandling of the cold chain and the lack of knowledge about its importance. A methodological framework based on the quantitative-qualitative mixed research modality was developed, which led to the elaboration of analysis and interpretation of the results that allowed diagnosing the current situation. For which the analytical and cross-sectional descriptive methodology was used as well as the synthetic analytical, logical historical methods, which contributed to a better understanding of the current situation of the problem that served as the basis for the elaboration of the proposal, developing a training program which yielded positive results in the post-survey since the majority of the members of the study population demonstrated that they know the subject, they cleared up their doubts, and they also contributed to the training of the nursing staff.

Keywords: Evaluation, cold chain, management, vaccination, survey, results.

RESUMEN

Este estudio se realizó en la ciudad de Esmeraldas, en la provincia del mismo nombre, y tuvo como objetivo desarrollar la evaluación del manejo de la cadena de frío por parte del personal de enfermería en el área de vacunación del Centro de Salud Tipo C Las Palmas, para reducir el mal manejo de la cadena de frío y el desconocimiento de su importancia. Se desarrolló un marco metodológico basado en la modalidad de investigación mixta cuantitativo-cualitativo, que condujo a la elaboración de análisis e interpretación de los resultados que permitieron diagnosticar la situación actual. Para lo cual se utilizó la metodología analítica y descriptiva transversal, así como los métodos históricos lógicos, analíticos sintéticos, que contribuyeron a una mejor comprensión de la situación actual del problema que sirvió de base para la elaboración de la propuesta, desarrollando un programa de formación que arrojó resultados positivos en la pos-encuesta ya que la mayoría de los miembros de la población de estudio demostraron conocer el tema, aclararon sus dudas y también contribuyeron a la formación del personal de enfermería.

Palabras clave: Evaluación, cadena de frío, manejo, vacunación, encuesta, resultados.

INTRODUCTION

In the National Plan of Development for a Lifetime, in its objective 1, to guarantee a dignified life with equal opportunities for all people, one of the foundations in which it is stated that health is a primary component of a dignified life since this affects both the individual and the collective level, and its absence may have inter-generational effects (Herrera & Guzmán, 2012).

Making a relationship of the research work with the foundation of the National Plan for the Development for a Lifetime, the nursing staff who are in the vaccination area is in charge of preventing and protecting health in order to have timely and quality care. In the provision of health services is of vital importance to adopt an approach of territorial equity and cultural relevance through a land-use planning that ensures the same conditions of access for all, without discrimination or distinction of any kind (Vega Intriago et al., 2019), (Torres Esperón & Urbina Laza, 2006).

The Development Plan and territorial ordering of the canton Esmeraldas 2012-2022 in the field of health currently has detected some problems such as limited hours of attention, there is not enough health personnel to offer quick care, inadequate physical infrastructure in first-level health units, insufficient quality of health care and poor management of health care (Ramírez Pérez et al., 2016).

In the policies of the Development Plan and territorial ordering, they do not focus on the importance of continuous maintenance of the refrigeration equipment for good management of the cold chain, as well as the lack of training for nursing staff to provide high-quality care.

In an investigation carried out in Peru in 2018, it emerged as a product of the problems existing in reality, when it was shown that despite being a topic widely known by professionals who work with vaccines, some inconveniences still arise in the handling, transport, and manipulation of vaccines. This is evident in some health professionals who work in the establishments of the jurisdiction of the North Pacific Health Network, which is reflected in the low maintenance of cold chain equipment, shortage of supplies for the maintenance of equipment, there is no own mobility, inoperative generator equipment, little logistical support, inadequate management of the cold chain by personnel of some health facilities (Suárez-Serrano et al., 2019), (Cornelio et al., 2019).

In other countries, there are also shortcomings in the management of the cold chain where it implies having the skills to be able to transport, handle and apply biological safely. It is necessary to train staff and have proper

maintenance of all equipment and to meet cold chain preservation process standards (Tuells et al., 2009).

In Ecuador, Guamangallo conducted an investigation in which through an observational datasheet it was evidenced that there are several shortcomings in the management of the cold chain, both by nursing professionals with few years of experience as well as those who have more than 11 years of work experience. Taking into account that refrigeration equipment is the main element of the cold chain, we consider that this equipment must have the appropriate characteristics for the storage and conservation of vaccines since most of the Health Centers have refrigerators for domestic use. One of the representative problems was the storage of medicines and medical supplies together with vaccines, which would cause alterations in the mechanism of action of each of them (Guamangallo Moreano & Flores Quilambaca, 2017).

For the maintenance of the vaccines, adequate equipment and suitable and constant training of the nursing professionals must be counted on in each of the Health Centers. (Reyes & Perales, 2009), (Constans Aubert et al., 2008). According to the research that has been carried out in Ecuador, it is necessary to increase the refrigeration equipment to manage the cold chain since only domestic refrigerators have been used which are used to store other medicines which would cause an alteration in the biological.

This research has as its essential purpose, the application of the evaluation that will be implemented in the Type C Las Palmas Health Center of the City of Esmeraldas, allowing the correct management of the cold chain, what is sought is to change the thinking of the nursing staff on the importance of complying with the proper conservation rules for biological so that their temperature is not altered and can guarantee their immunity.

If the cold chain is affected and a temperature excursion occurs, be it hot or cold, the impact it causes can affect public health. And it is that that excursion of temperature can deteriorate the biological one physically, if this happens, in the best of cases the biological one can lose its effectiveness; in the worst case, it can become a toxic product (Llasat Botija, 1987).

If the process indicated for the management of the cold chain is not followed, the biological product can be lost and this can cause a shortage of it in the event of an emergency, so regular maintenance of the equipment must be carried out and the chain of cold properly (Hernández et al., 2021), (Arias et al., 2021), (Gómez et al., 2019).

In some studies carried out, they evidenced the mismanagement of the cold chain because the refrigerators in some cases do not have an alarm of failure or electrical cut, an open door alarm, an external thermometer, automatic defrosting, internal temperature sensors without connection to emergency circuits, the temperature graph is not recorded daily (Fernández et al., 2017); therefore, the heat-sensitive nature of vaccines can compromise their effectiveness if errors occur during transport, storage, and handling. (Ortega Molina et al., 2007), (Ramírez et al., 2016), (Carracedo, 2020).

All refrigeration equipment must have its sensors in good condition since not knowing the appropriate temperature can cause a failure when taking the data and looking at the real temperature to determine the optimization of the biological and these be administered when they are necessary (Ivailova et al., 2020).

This research project that has not been carried out before in the Las Palmas Type C Health Center, arouses interest and relevance of a novel nature, which seeks to promote an interest in nursing staff, for a correct management of the chain of cold. It is intended to provide all the information that is available and accessible to everyone (Cepeda et al., 2021).

Based on the above elements, it is identified as a research problem: How will compliance with the cold chain be improved at the Las Palmas Type C Health Center in the province of Esmeraldas?

The General objective of the research is: develop the evaluation of the management of the cold chain by the nursing staff in the vaccination area of the Type C Las Palmas 2019 Health Center. Specific objectives are set out:

- Theoretically based on cold chain, National Immunization Strategy, and evaluation of cold chain management.
- Diagnose the current situation regarding compliance with the regulations for the management of the cold chain by the nursing staff at the Type C Health Center Las Palmas.
- Design a training program on cold chain management for nursing staff.
- Validate the proposal by obtaining results.

DEVELOPMENT

For the development of this research, theoretical and empirical methods were used. Within the theoretical methods, the Historical-Logical, Analytical - Synthetic, Inductive - Deductive, and Systemic Approach were used. The Historical - Logical method helped this research to

analyze its origin, background of the research object, and its evolution, it was present throughout the project since there is the analysis of the historical evolution of the management of the cold chain.

The Analytical - Synthetic method involves analysis, this is the separation of a whole into its parts. It is based on the fact that to know a phenomenon it is necessary to break it down into its parts. The synthesis implies, the logical union of the elements to form a whole.

The Inductive - Deductive method helped to infer certain properties from particular facts, that is, it expressed the movement of information from the general to the particular and vice versa; in addition to determining the causes for which mismanagement of the cold chain is carried out, directing the evaluation for its correction.

The Systemic Approach method was based on the organization of the components as well as the general objective, problematic situation, and idea to defend that will always be related, which allowed to carry out all the development of the investigation in an orderly and logical way, relating facts that were isolated, managing to formulate a theory that unites the different elements and allows their integration.

Among the empirical methods used are Scientific Observation and Validation by analysis of results.

Scientific observation made it possible to directly examine the problem, where it was possible to visualize and analyze the various causes and factors that lead to the existing shortcomings in the management of the cold chain of the Health Center.

Validation by results analysis consists of collecting the data that allow us to know the state of the situation, periodically, analyzing with surveys all the data in question and the result obtained (Gomez et al., 2020; Palacios et al., 2021).

The technique used was the Survey, which consisted of a set of questions specially designed and thought to be directed to a certain population, in this case, it is applied to the Nursing staff of the Type C Las Palmas Health Center.

The instrument used was the questionnaire that contains the formulation of appropriate closed questions to obtain the required information and thus determining measurable results.

The population studied consists of 15 nursing professionals from the vaccination area. Given that the size of the population is small, the selected sample was analyzed as a whole. Five questions were formulated for the development of the survey.

Question 1 consisted of determining if: Are the vaccine thermoses labeled? Figure 1 shows a representation of the responses.

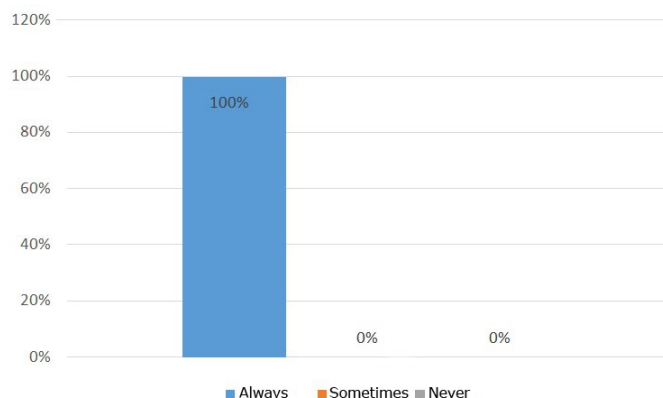


Figure 1. Frequency with which vaccine thermoses are labeled.

Interpretation. In the previous survey, 47% of the Nursing professionals never labeled the thermos, but at present 100% of the respondents do so, thus reinforcing the knowledge and maintaining the criteria regarding the need to label the thermos, avoiding confusion to differentiate where viral and bacterial vaccines are found.

Question 2 consisted of determining: How long does it take to defrost cold packs? Figure 2 shows a representation of the responses.

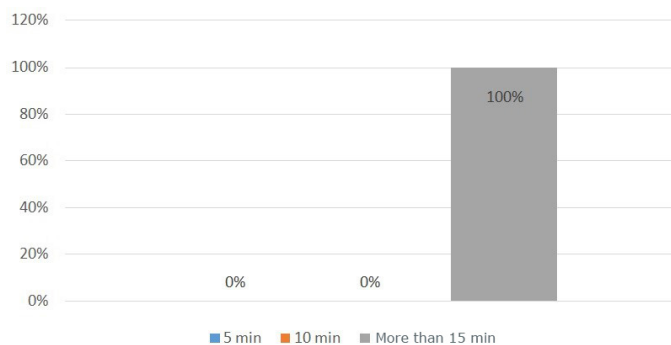


Figure 2. Time taken to defrost cold packs.

Interpretation. This is important since these need to rest so that a thin layer of ice called frost is produced in this way it can easily dry and thus place them in the thermos.

Question 3 consisted of determining whether: Once the thermos is prepared, is the biological placed? Figure 3 shows a representation of the responses.

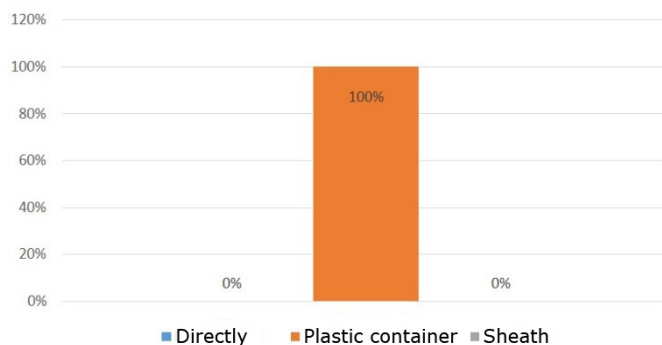


Figure 3. Method for placing the biological.

Interpretation. 67% said that the biological should be placed in sheaths, which was wrong. The training served to clarify criteria and achieve the stated result.

Question 4 was to determine: How often do you check for expired vaccines? Figure 4 shows a representation of the responses.

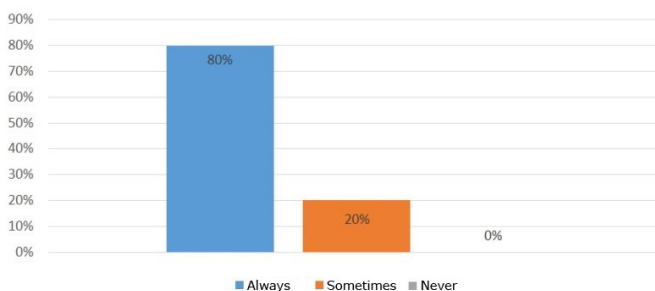


Figure 4. Frequency of verification of expired vaccines.

Interpretation. Initially, there was a 67% ignorance after having applied the proposal, 80% of the people said they had increased their knowledge considerably at the time of reviewing the refrigerators and verifying that the biological preparations are in optimal conditions to be administered and thus comply with the purpose for which they were created.

Question 5 consisted of determining whether it is verified if there is any broken biological or diluent container inside the refrigerator? Figure 5 shows a representation of the responses.

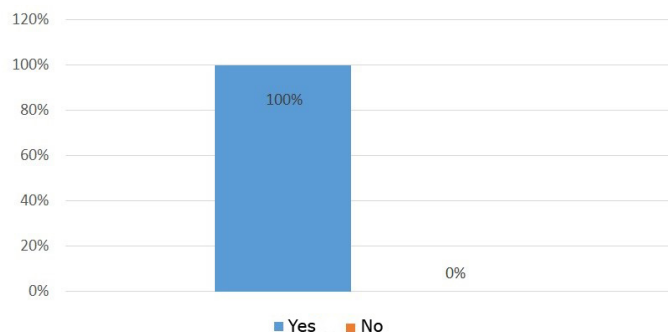


Figure 5. Verification of breakdown of the biological or diluent inside the refrigerator.

Interpretation. This contributes to the preservation of the other vaccines, guaranteeing the good condition of the containers of each one. To ensure their maintenance it must be carefully reviewed from the moment it arrives at the Health Center until the moment of its application to the patients who come daily.

The management of cold chains is very important when knowing the techniques, theories, and applications for the benefit of the products until they reach the service of people. However, these characteristics only remain in theories, which have to be transmitted to the health professionals through targeted and ongoing programs as proposed on this occasion.

CONCLUSIONS

Within the theoretical foundation, various bibliographic sources have been studied and investigated. It allowed us to carry out a broad study of the inappropriate management of the cold chain, which is an important problem within the Health Centers of our country. At the same time, it allowed for more information on the subject using content approved by the Ministry of Public Health.

In the methodological part of the research, various methods, techniques, and instruments have been used that allowed a diagnostic and in-depth study to be carried out in Type C Health Center Las Palmas, achieving evidence of the deficient information they have regarding the importance of the correct management of the cold chain, which made it possible to put forward the proposal to help strengthen knowledge.

With the design and application of the evaluation of the management of the cold chain, it was sought to strengthen the knowledge of the nursing staff, emphasizing the importance of the labeling of the thermos, technical management of refrigeration equipment, temperature monitoring, and to promote awareness about the proper conservation of the cold chain.

The results obtained through the post-survey applied after the evaluation of the cold chain management had positive viability. They allowed verifying the quality, effectiveness, and perspective of the proposal since as a result, we obtained a good development of activities and the acceptance by the study population, achieving promptly the strengthening of the knowledge of the nursing staff and, above all, putting into practice the manual of the Ministry of Public Health to avoid errors in the management of the cold chain.

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