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The mapping of processes in the quality management of a hospital lactary center

O mapeamento de processos na gestão da qualidade de um lactário hospitalar

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ABSTRACT

Introduction: Infant formulas can be an adjuvant or therapeutic measure for the recovery of hospitalized children when breastfeeding is impossible or contraindicated. Thus, the activities in the lactary room should be performed under strict aseptic techniques, aiming to provide the child with food with less risk of contamination. Knowledge and control of the processes involved in the preparation of infant formulas are essential for effective monitoring of the quality of the product produced and indispensable for improving the quality management of a hospital lactation center. Tools can support the quality management, being the mapping of the processes one of them. To collect information from the processes to be mapped, the SIPOC Matrix, used worldwide, appears as an alternative, as it allows the visualization of all the interrelationships within a process. **Objective:** To map processes identified in the manipulation of infant formulas packed in baby bottles and propose opportunities for improvement to the lactation center of a National Institute of Health. **Method:** To identify the processes involved in the manipulation of infant formulas, observation was performed for 2 days. For the mapping of the processes, the SIPOC Matrix was produced; then, processes were designed using the Bizagi® software. **Results:** 27 processes were identified in the handling of infant formulas. With the mapping, 04 opportunities for improvement were perceived: contingency plan for lack of water; contingency plan for cooling; use of sterile bottles and development of meeting schedule with multiprofessional teams. **Conclusions:** Certainly, the mapping of processes using the Bizagi® tool was a challenge faced in this work, because it is new in the field of Nutrition. The main contribution of this study was to show that the mapping enabled the detailed observation of the processes involved in the handling of infant formulas, allowing for the identification of opportunities for improvement, highlighting that this methodology can be perfectly used in other care and production services.

KEYWORDS: Infant Formulas; Lactation Center; Quality Management; Process Mapping

RESUMO

Introdução: Fórmulas infantis podem ser coadjuvantes ou medida terapêutica para recuperação das crianças hospitalizadas, quandoa amamentação está impossibilitada ou contraindicada. Assim, asatividades no lactário devem ser realizadas sobre rigorosas técnicas assépticas, objetivando oferecer à criança alimentação com menor risco de contaminação. Conhecimento e controle dos processos desenvolvidos no preparo das fórmulas infantis são fundamentais para um monitoramento eficaz da qualidade do produto produzido e imprescindíveis para a melhoria na gestão da qualidade de um lactário hospitalar. Ferramentas podem apoiar a gestão da qualidade, sendo o mapeamento dos processos uma delas. Para a coleta de informações dos processos a serem mapeados, a matriz SIPOC, utilizada mundialmente, surge como uma alternativa, pois permite a visualização de todas as inter-relações dentro de um processo. **Objetivo:** Mapear processos identificados na manipulação de fórmulas infantis acondicionadas em mamadeiras e propor oportunidades de melhorias ao lactário de um Instituto Nacional de

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Saúde. **Método:** Para identificação dos processos envolvidos na manipulação das fórmulas infantis foi realizada observação durante dois dias. Para o mapeamento dos processos foi produzida a matriz SIPOC, em seguida, os processos foram desenhados utilizando o *software* Bizagi®. **Resultados:** Foram identificados 27 processos na manipulação das fórmulas infantis. Com o mapeamento, foram percebidas quatro oportunidades de melhorias: plano de contingência para falta de água, para o resfriamento, utilização de mamadeiras estéreis e desenvolvimento de cronograma de reuniões com equipes multiprofissionais. **Conclusões:** Decerto o mapeamento dos processos, utilizando a ferramenta Bizagi®, foi um desafio enfrentado neste trabalho, pois se constituiu uma novidade no âmbito da Nutrição. A principal contribuição deste estudo foi mostrar que o mapeamento possibilitou a observação detalhada dos processos envolvidos na manipulação das fórmulas infantis, permitindo a identificação das oportunidades de melhorias, destacando que esta metodologia pode perfeitamente ser utilizada em outros serviços assistenciais e produtivos.

PALAVRAS-CHAVE: Fórmulas Infantis; Lactário; Gestão da Qualidade; Mapeamento de Processos

INTRODUCTION

Breastfeeding is undoubtedly an unparalleled way of providing optimal nutrition for the healthy development and growth of newborn babies[1]. For this reason, the World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life and its continuation with complementary feeding until two years of age or older.[2,3]

However, even though breastfeeding is the most natural, economically viable and sustainable way of providing countless benefits to mother and baby, there are circumstances in which it is impossible or even contraindicated, such as in the case of mothers infected with the human immunodeficiency virus (HIV)[4,1]. Faced with the impossibility of breastfeeding, health units specializing in infant care use infant formulas as a safe alternative to meet the child's nutritional needs[5].

It is in this scenario that the lactary, characterized as the sector directly linked to the hospital's nutrition and dietetics service responsible for preparing, portioning, filling, storing, and distributing infant formulas to newborns and infants[6].

It should be noted that the formulas produced in the lactary are, in many cases, the main therapeutic measure used in the treatment of pediatric patients, making it essential to guarantee the supply of nutrients to the patient and thus preserve or recover their nutritional status[7,8,9,10]. For this reason, infant formulas must be processed in a controlled manner, aiming for microbiological safety, otherwise they can become a source of disease[11]. This is because microbial contamination of infant formula can occur at various stages of the production process, with the handling stage being particularly critical, which involves various factors, such as: contaminated raw materials, use of contaminated water, unprepared food handlers, poor hygiene habits and inadequate operationalization of the production process.[12,13,8]

Therefore, it is up to the hospital lactary service to carry out its activities under the strictest asepsis techniques, with the main objective of providing the child with adequate nutrition, with less risk of contamination, thus ensuring the safety of the food they will receive[14]. In this context, good handling practices deserve to be highlighted, as they help to ensure that the food is free from contamination[6].

In view of this, knowledge and control of the stages of the processes carried out in the preparation of infant formulas are fundamental for effective monitoring of the quality of the diet produced and essential for improving the management of a hospital lactary service.

There are various tools to support the quality management of a service, and the process approach is one of them. This approach is one of the seven quality management principles highlighted in ISO 9000:2015. This principle states that a desired result is more efficiently achieved when activities and related resources are managed in the form of a process. In this way, understanding and managing interrelated processes as a system contributes to the effectiveness and efficiency of the service in achieving its intended results[15]. Regarding food safety, the ISO 22.000 standard guides the process approach in the development and implementation of a food safety management system, with the aim of preventing undesirable outcomes.[16]

In this sense, Marshall Junior et al.[17] stated that those responsible for processes need to know them well so that they can better manage them. To this end, it is necessary to represent these processes, providing a comprehensive view of the activities carried out, so that they can be understood by everyone. It is from this perspective that process mapping (PM) emerges as an important control and monitoring tool[17].

PM, especially of those processes considered to be key processes, is very important for analyzing critical factors and ensuring process improvement[18]. Called the identification phase, mapping can also be understood as the phase in which the process is represented exactly as it is in reality, trying as far as possible not to resort to any kind of reduction or simplification[19]. In this way, PM allows for an integrated view of the work process, visualizing critical details and identifying interactions between sub-processes[20]. For effective mapping, the process information gathering stage is crucial. In this context, a tool for gathering information that is widely used around the world is the SIPOC[22] matrix. This term is an acronym for the words suppliers, input, process, output, and customers[23].

In practice, the SIPOC matrix is a systematic table that, when drawn up, allows reflection on the process under study,

identifying what results (or products) it generates and to whom they are directed. In addition, it identifies which inputs are needed to generate its results and who the suppliers of these inputs are. One of its advantages is that it shows all the interrelationships within a process, representing it as it really is and not as it should be[24].

Thus, with the data from the SIPOC matrix, the processes can be represented. The Bizagi Process Modeler® software, version 3.2.6.094, is used to carry out this representation. It uses the business process management (BPM) methodology, made up of symbols that support the visualization of conducts and actions in relation to the process stage, helping to observe, based on the drawing, inputs, outputs, visualization of failures, and possible adjustments to activities in the processes diagnosed in the SIPOC matrix[26].

Therefore, in the lactary, as it is a place where a set of processes involving the handling of infant formulas takes place, it is understood that quality management not only encompasses the quality of the final product but also the quality of the processes carried out, so that the final product offered to the patient is of high quality.

It is important to note that, unlike enteral diets, which have Collegiate Board Resolution (RDC) No. 503 of May 27, 2021[21] as specific legislation, the handling of infant formulas packaged in bottles does not have a technical regulation guiding the processes involved in this handling, making them vulnerable. With this in mind, the aim of the study was to map the processes involved in handling infant formula packaged in bottles and, with the mapping, to propose opportunities for improving the mapped processes, helping with quality management in the lactary of a National Health Institute.

METHOD

The research was carried out at the Hospital lactary Service of the National Institute of Women, Children and Adolescents Health Fernandes Figueira (IFF), which is one of the hospital units of the Oswaldo Cruz Foundation (Fiocruz).

The research method used was a case study, through which we sought an extensive understanding of the processes observed in the handling of infant formula packaged in bottles.

The IFF is an assistance, teaching, research, and technological development unit of Fiocruzand is characterized as a reference hospital for high-risk fetal pregnancies. It has 116 active beds for patients from the Unified Health System (SUS), of which 58 are pediatric beds and 40 beds are available for rooming-in, the neonatal intensive care unit (ICU) and the neonatal intermediate unit.

The IFF's lactary service is run by an outsourced company, contracted through a tendering process, and overseen by the IFF's nutrition service. The service encompasses the technical, operational, and administrative activities of preparing, handling, and distributing infant formulas and enteral diets, as well as handling and distributing milked and pasteurized human milk (LHOP). Every month, the IFF's lactary handles an average of 1,500 liters of diets, 40% of which are infant formulas packaged in bottles.

Methodological path

The methodological approach began with a literature review, which consisted of a survey of materials related to the topic, such as books, academic articles, dissertations, theses, and websites, in order to provide the theoretical basis needed to develop the practical part of the work.

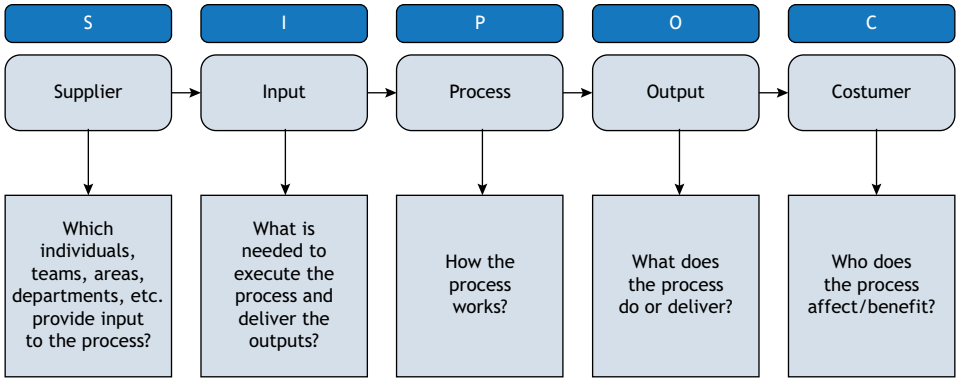
The bibliographic survey took place between July 2019 and July 2020, through the database of the Brazilian National Health Surveillance Agency (Anvisa) website (current legislation) and studies in Portuguese, English, and Spanish from the Latin American and Caribbean Literature in Health Sciences (LILACS), Medical Literature Analysis and Retrieval System Online (MEDLINE), Scientific Electronic Library Online(SciELO), and the State University of Campinas (Unicamp) library system. Publications from the last twenty years were considered. The descriptors used were: lactary, infant formulae, quality management, and process mapping.

In parallel with the theoretical review, the methodological process took place in three stages. The first stage consisted of surveying, through on-siteobservation, all the processes involved in handling infant formula packaged in bottles, from requesting the formula for the patient through the dietary prescription to the moment it is distributed to the patient. The observation took place over two consecutive days, in order to see how the processes were carried out on different shifts. There was no need to observe the process on weekends, as the routine is exactly the same, since it is carried out continuously by two teams taking turns on duty.

Once the processes had been identified, we moved on to the second stage, which consisted of mapping the processes. Initially, the SIPOC matrix was produced, the data for which was collected during direct observation of each process by the researcher. The model proposed by Cajuela and Galina[25] was used to construct the SIPOC matrix (Figure 1).

Next, with the information from the SIPOC matrix regarding the processes and their activities, the design of these processes was carried out, i.e., the mapping of the processes themselves.

For this activity, Bizagi Process Modeler® software, version 3.2.6.094, was used as a design tool. The mapping was carried out with the help of an expert in the tool. In order to gain a better understanding of the important details of each process and keep a faithful record of the activities, the following service documents were collected: good practice manual (GPM), standard operating procedures (SOP), control sheets, production tracking sheets, and conference reports.



Source: Cajuela and Galina25.

Figure 1. Supplier-Input-Process-Output-Customer (SIPOC) model.

With the help of the PM, it was possible to carry out the 3rd stage of the research, which was characterized by proposing opportunities for improvement in the processes, with the aim of ensuring the quality and safety of the processes.

In accordance with Resolution No. 466 of December 12, 2012, issued by the National Health Council, the research was submitted to the IFF Research Ethics Committee. The committee dispensed with analyzing the project, considering that it does not have a research subject, only the handling of existing documents in the IFF lactary service and approved it for execution.

RESULTS AND DISCUSSION

Identifying processes

A total of 27 processes were identified in the handling of infant formulas packaged in bottles, which take place from the moment they are requested by the clinic nutritionists to the moment they are distributed. The processes identified are described in Chart 1.

There are many processes carried out in a lactary of a hospital which can vary according to the physical structure, human and financial resources, equipment and materials, quantity of diets and distribution systems[6], which means that the number of processes varies between the different hospital lactary services.

However, even though there may be differences between dairies, the number of processes identified in this study was close to that observed by Smidh[27], who, in a study carried out in a lactary at a hospital in Santa Maria, Rio Grande do Sul, identified 22 processes involved in the production of infant formula, from medical prescription to distribution, through direct observation.

During the on-siteobservation of the processes involved in handling infant formula packaged in bottles, it was possible to see that the teams from both shifts carried out the same procedures, from printing the labels and reports produced by the nutritionists to the moment of distribution, which made it easier to identify the 27 processes.

Chart 1. Processes identified in the handling of infant formulas in the hospital lactary service of the Fernandes Figueira Institute.

	Processname
1	Generatelabelsandreports
2	Draw up a production map
3	Ordersupplies for stock
4	Separate inputs
5	Dress and sanitize handlers' hands
6	Sanitizetheenvironment
7	Sanitizeequipment
8	Sanitizesupplies
9	Sanitize utensils
10	Fetch sterilized utensils from the Sterile Material Center
11	Inspect baby bottles
12	Controlwaterquality
13	Boilthewater
14	Prepare formulawithcooking
15	Prepare formulawithoutcooking
16	Portion, fill, and identify diets
17	Draw up a production session trace
18	Identify and store surplus raw materials
19	Check the diet (by the nutritionist)
20	Cool down diets
21	Store underrefrigeration
22	Warmup diets
23	Check the diet (by the kiychen-maid)
24	Distribute diets
25	Collect bottles from the wards
26	Pack material to send to the Sterile Material Center
27	Dispose of non-reusable containers

Source: Prepared by the authors, 2023.

It should be noted that the constant supervision of the nutritionist, the low turnover of the team and the routine training of the employees of the service in question may have influenced the isonomy of the procedures and the formation of a specialized team. This fact was corroborated by Souza et al.[28], who pointed out that the training and supervision of employees is extremely important for hygienic and sanitary control of the production process, showing a direct relationship between food contamination and the training of handlers. In the same vein, Carneiro et al.[29] drew attention to the need for quality control and staff training programs, with the aim of reducing the risk that infant formulas could represent a vehicle for the dissemination of opportunistic pathogens. In another study which evaluated food handling procedures in general hospitals in public health institutions in Mexico, the importance of establishing quality controls in the handling and preparation of food in hospitals was also highlighted[30].

At this stage, it could be inferred that, in order to carry out the process of handling infant formulas, not only processes linked to the food itself are involved but also administrative processes, such as the process of generating labels and reports.

Production of the SIPOC matrix

Before drawing up the processes (mapping), the SIPOC matrix was constructed, with all the processes identified in the handling of infant formula. As an illustration, Figure 2 shows the SIPOC matrix for the bottle inspection process.

Understanding how processes work is fundamental to determining how they can be managed in order toobtain maximum results. After all, each type of process has specific characteristics and must be managed in a specific way, requiring continuous improvement of all the activities involved in that process. In view of this, we highlight the importance of the SIPOC matrix at this stage, which made it possible to collect a wealth of data, contributing to more efficient mapping. This statement is shared by Araújo[26], who pointed out that collecting information is one of the main elements in process mapping. González González and Escobar Prado[31] pointed out that the SIPOC matrix, in addition to its use in bringing together process activities in an orderly fashion, enables the continuous management of these activities.

It should be noted that our work used various sources of existing data in the service in question, such as the GPM and the SOPs, which allowed for a better and greater understanding of the processes being studied.

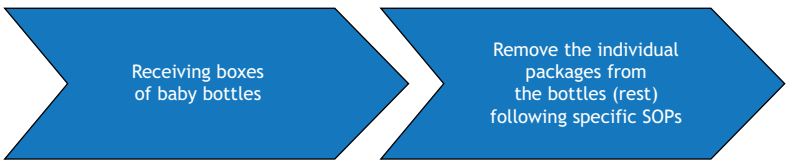
Process mapping

Using the data from the SIPOC matrix, the 27 processes identified were drawn through mapping and, with this, we were able to understand them more deeply. To illustrate, Figure 3 shows the mapping of the “inspecting bottles” process.

The transformation of the SIPOC data into a visual representation, i.e., the mapping itself, provided a detailed and clear view of the current processes, which made it possible to understand exactly how the processes are carried out, locating faults and opportunities for improvement. With the PM using the flowchart, it was possible to observe the interrelationships between the processes. According to Peinado et al.[32], flowcharts help to synthesize information, which provides an uncomplicated understanding by allowing an immediate visualization of the process as a whole. For Paper et al.[33] and Besseris and Kousouris[34], flowchart-based process mapping is a well-known tool for modeling any system or subsystem and helping to handle and control the information collected.

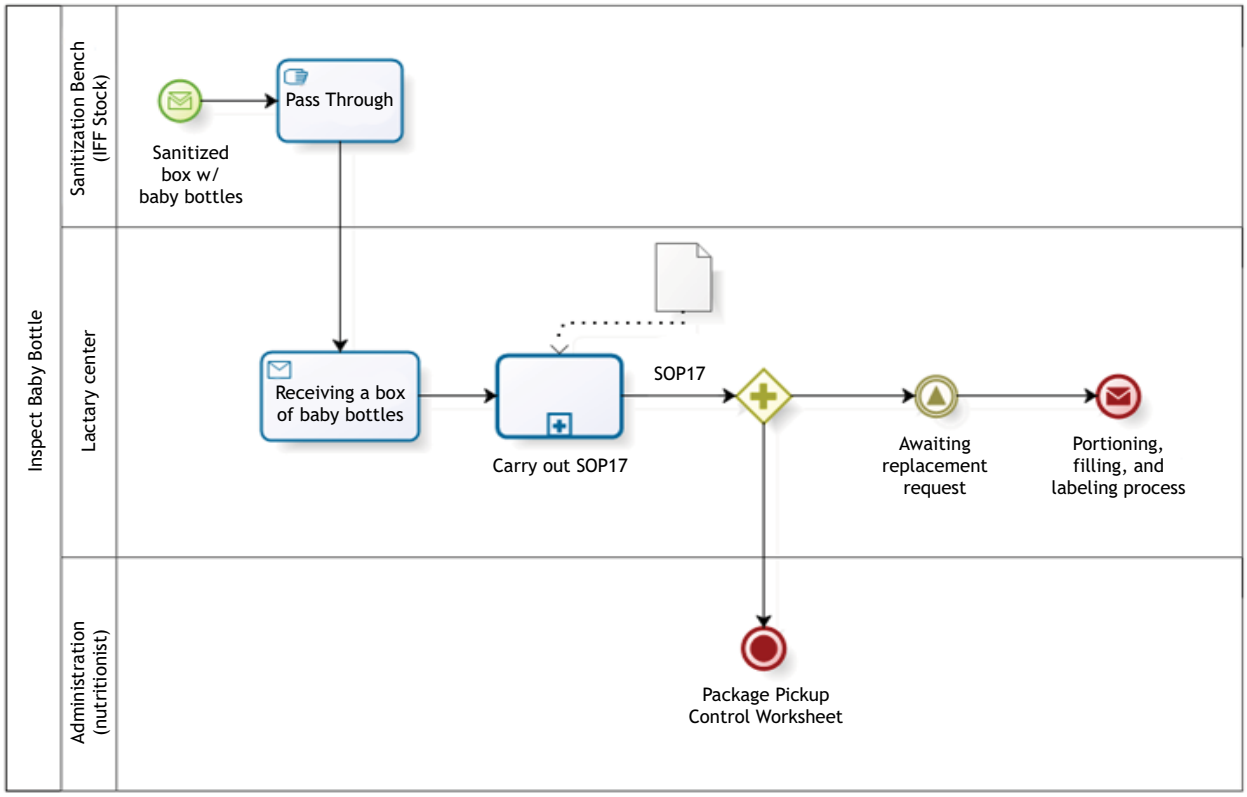
The importance of PM was highlighted by Smidt[27], who, in their research, analyzed and monitored the processes involved in handling infant formulas produced in the lactary of a hospital in Santa Maria-RS, with the aim of applying process management to minimize microbiological contamination of the formulas. The author concluded that, based on knowledge of the production processes, using the process mapping tool, it was possible to

Supplier	Input	Process	Output	Costumer
Where does it come from?	What comes in?	What do you do?	What comes out?	Where is it going?
Process of sanitizing supplies (box with baby bottles)	Sanitized box with baby bottles	Bottle inspection	1. baby bottle inspected 2. package removal control sheet	1. process of providing, filling, and identifying 2. out sourced management



Source: Prepared by the authors, 2023.

Figure 2. SIPOC matrix of the process of inspecting baby bottles in the Hospital lactary Service of the Fernandes Figueira Institute.



Source: Prepared by the authors, 2023.

Figure 3. Visual representation of the process of inspecting baby bottles in the hospital lactary service of the Fernandes Figueira Institute using the Bizagi Process Modeler® software.

detect flaws and draw up strategies to minimize microbiological contamination of the formulas produced.

Rodrigues[35] also emphasized that drawing up process maps is a fundamental stage in achieving the objective of this study, which was to analyze the implementation of the Leanmethodology in order to propose improvements in the performance of the enteral diets, infant formulas and food supplements preparation sector.

Therefore, it can be seen that this stage of the research has its relevance, as evidenced by the aforementioned authors.

Opportunities for improvement

Through mapping, it was possible to identify strengths and flaws in each process, which led to suggestions for improvement, with the aim of producing positive effects and maintaining the quality of the service in question. Chart 2 lists the four opportunities for improvement identified, followed by the relevant discussions.

In Brazil, infant formulas are marketed in powder form and packaged in cans. They are prepared by adding measures of the product to water, a stage known as reconstitution. In order to reduce the risk of contamination of the prepared formulas, it is essential to maintain the safety of the water used in this stage, which means that the quality of the water used in the preparation of infant formulas deserves special attention[28,6].It should be noted that the water used in the lactary, which is a service located in a hospital environment, can be a potential source of microbiological contamination, since its quality is vulnerable to the environmental conditions to which it is exposed[36]. This was observed by Cardoso et al.[7], who evaluated a lactary in the city of Sorocaba-SP and identified, through microbiological analysis, the presence of contaminants in the water used for handling. Based on this principle, the water used to prepare infant formula must meet drinking water standards for human consumption.

The lactary service in question uses drinking water from the Rio de Janeiro State Water and Sewage Company (Cedae) to prepare infant formulas, as well as the sanitizing process. However, in the event of a water shortage or the occurrence of a sensory alteration in the water, as was the case with the presence of domestic sewage and industrial pollution in Cedae's water at the beginning of 2020, it was observed that the service did not have a contingency plan described in the terms of reference of the contract with the outsourced company, so that this problem could be reversed, without prejudice to the service. It was therefore recommended that the terms of reference include the requirement to purchase mineral water to cater for these cases, observing the microbiological standards required by RDC No. 331 of December 23, 2019[37].

Chart 2. Opportunities for improvement identified through process mapping.

Opportunity for improvement
Contingency plan for water shortages
Contingencyplan for cooling
Use of sterile baby bottles
Establish a schedule of regular meetings with the multi-professional teams

Source: Prepared by the authors, 2023.

As part of the safe handling of infant formulas, the cooling process should be highlighted as a way of minimizing the risk of cross-contamination and keeping infant formulas at temperatures that favor microbial multiplication. This process is necessary for storing infant formula under refrigeration, as it is handled using water at a minimum temperature of 70°C[3,6].

The service in question uses chilling equipment to carry out rapid cooling, with the monitoring of the time x temperature binomial already validated by the service. However, a contingency plan is recommended in the event of equipment failure, with the creation of a SOP for safe cooling, so that the prepared food reaches a temperature of up to 10°C, for subsequent refrigeration at up to 4°C. For this process, in the absence of a cooler, immersion in containers with ice or dry ice with alcohol, a freezer or refrigerator is recommended. It should be emphasized that the implementation of a contingency plan consists of the adoption of procedures to be employed when a certain occurrence or unexpected event may compromise the continuity or quality of the service provided[6].

Another opportunity for improvement identified relates to the purchase of sterile baby bottles. As previously mentioned, the 100 mL and 240 mL bottles in the department in question are disposable, but not sterile. They are made from polypropylene plastic, a non-toxic, odorless, and Bisphenol A-free material. These baby bottles are purchased through an electronic auction and follow the description provided by the nutrition service. The description states that the bottles must be disposable but there is no requirement that they be sterile. A consultation with the company that currently supplies the IFF with disposable baby bottles showed that the cost of purchasing sterile baby bottles is around 30% more expensive than non-sterile baby bottles, which is good value for money. It should be noted that this type of plastic (polypropylene) cannot be sterilized at the IFF, as the method used by the institution's Sterile Material Center (CME) is through the autoclave system. These bottles melt when subjected to this method. According to the disposable bottle manufacturer's specifications, only ethylene oxide or electron beam sterilization is possible to obtain a sterile polypropylene bottle without compromising its integrity.

It should be noted that, in the "Inspect bottle" process, one of the steps of the specific SOP corresponds to visual observation of the presence of any physical contaminant in the bottles, however, the absence of a biological hazard cannot be guaranteed. This statement was corroborated by Lisanti's study[38], which pointed out that the stage of visually inspecting baby bottles is a critical control point (CCP). As an opportunity for improvement, it is suggested that the word "sterile" be added to the description for the purchase of the bottles, thus ensuring that the bottles arrive free of contaminants and ready for use, providing further control over the quality of the product.

In general, hospital lactary services use disposable or autoclavable baby bottles. However, it should be noted that the bottle sanitizing stage is considered critical by several authors[6,11,39]. Therefore, the use of disposable and sterile bottles is an alternative in order to reduce the risk of diet contamination. It is important to note that the IFF is concerned about sustainability, and the plastic from these bottles is sent for recycling.

Still regarding the care offered to patients, it is notorious that during the "Distribute" process, it is difficult for the cooks to get the nursing staff to check the diets that are being distributed at that time, as well as to collect the staff member's signature on the report. This is because the nursing team is often understaffed and has a lot of work to do, so checking the diets takes a back seat.

However, it must be made very clear to all the professionals involved that this stage is another opportunity to check the identification of the diets, which is essential to ensure that no patient is left without food and that there is no disagreement between the prescription and the diet delivered. This procedure was also recommended by Galego et al.[6], who recommended the application of a receiving protocol to be signed by the nursing team when the diets are distributed.

It is therefore suggested that a schedule of periodic meetings be agreed with the nursing teams, highlighting the importance of the process, as well as the responsibility of the team member in patient care, who is perceived as an agent in the care process. It is correct to say that, in healthcare establishments, the adoption of staff awareness and education strategies has been indicated as an important tool in the process of implementing patient safety, as long as the new practices are implemented in a collaborative and constructive manner[40]. However, this sensitization becomes a major challenge when it comes to checking diets when the nursing team receives infant formula.

There is no doubt that process mapping, using the Bizagi® tool, was a challenge faced in this work because, although this management practice and, in particular, this software, are widely used by business administration professionals, it is a real novelty in the field of nutrition. With the study in question, it was observed that the PM made it possible to observe in detail the various processes involved in handling infant formula, which allowed opportunities for improvement to be identified.

It is important to note that the PM is of significant importance because of its function as a record and historical documentation for the lactary service in the study. Once the opportunities for

improvement identified have been consolidated, it will be possible to redesign the processes.

CONCLUSIONS

In this research, during the bibliographical survey on the subject, it was possible to see that health organizations in general, whether public or private, have become increasingly concerned about the quality of the services they provide. To this end, it was found that managers use mechanisms to help them in their quest for quality, including PM. In this regard, there has been a lack of studies that specifically refer to the use of PM by a hospital lactary service and that show how the data is collected and processed.

With the study in question, it can be concluded that, in order to propose opportunities for improvement in the processes identified, the PM was a fundamental stage, as it enabled detailed observation of the various processes involved in handling infant formula. In addition, with the opportunities for improvement proposed in the study, it can be concluded that the development of contingency plans is an indispensable part of improving the lactary service covered by the study.

In conclusion, the lack of available data shows the relevance of this work, not only for the service in question but above all for many other hospital lactary services. There is also the possibility of applying the methodology used in this work to other care and production services.

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Authors' Contribution

Azevedo SPF - Conception, planning (study design), acquisition, analysis, data interpretation, and writing of the work. Gomes MM, Garcia SRMC - Planning (study design), acquisition, and analysis. All the authors approved the final version of the work.

Conflict of Interest

The authors inform that there is no potential conflict of interest with peers and institutions, political or financial, in this study.