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ERGONOMIC APPROACH IN THE EVIDENCE-BASED PROJECT (EBP) OF A HOSPITAL PHARMACY: CUTTING OUT IN THE ORGANIZATION OF FLOWS

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Summary

This article aims to present part of the studies for the process of designing the renovation of a Hospital Pharmacy inserted in a Health Care Establishment (EAS), highlighting the research techniques used and applied. In this process, some conditions stand out that supported the ergonomic solutions used to resolve existing problems, mainly based on the Evidence-Based Project (PBE) to intervene in the flows carried out in the Unit in question, involving people and activities, medicines and materials several. It constitutes a case study, with its investigation aided by research techniques, such as documentary and bibliographical survey in secondary sources, semi-structured interviews, observations and on-site survey of the situation found. The article seeks to present some solutions for reorganizing the flows of the unit in question and meeting the current demand, observing the principles of ergonomics and determinations of current legislation. This article aims to contribute to supporting other researchers or professionals interested in and involved in the design of similar hospital units, highlighting important information for the spatial solutions that cover Pharmacy Units inserted in EAS, as it compares the legal determinations for these projects and a real situation, depending on new demands, including solutions for existing inadequacies.

Keywords: Ergonomics. Hospital Pharmacy Project. Evidence-Based Design.

1. Introduction

Health Care Establishments (EAS) form a network of services with varying complexities, inserted in buildings designed “to provide health care to the population, which requires access by patients, whether hospitalized or not, whatever their status. level of complexity” (BRASIL, 2002, p. 137). Inserted in this network, hospitals reflect, in their spatial configuration, the care proposal that must be aligned with the users they aim to serve and the services and technologies they intend to offer. The hospital is considered a complex and dynamic institution (MIQUELIN, 1992), in which planning the physical space requires addressing issues related to comfort, usability, accessibility and functionality of its users, combined with good practices by professionals. who work there, aiming to control hospital infections. Despite the complexity of the process by which hospital spaces are planned, designed, built and evaluated, certain authors report that little has been explored in this sense (KASPER et al, 2009, KASPER and PEREIRA, 2012), with research involving studies of cases that deal with such contexts.

The physical-functional programming of the EAS must reflect the actions that will be carried out and the desired objectives, as well as defining the tasks that will be developed and the technologies that will be adopted. Technologies, in turn, consist of the “set of equipment, medicines, inputs and procedures used in the provision of health services, as well as the infrastructure techniques for these services and their organization” (BRASIL, 2010, p. 02). The Units that make up the EAS sometimes undergo interventions to harmonize with new technologies and comply with current legislation, aligning themselves with ergonomic and architectural precepts and demands to meet their needs. In view of the above, this article emphasizes the process and the supporting studies for the design of a hospital Pharmacy, located in a hospital in the greater Florianópolis, Santa Catarina, Brazil. In this process, the various conditions and restrictions of the project are highlighted, as well as ergonomic solutions, mainly to organize flows and meet design demands, given the scopes of ergonomics and hospital architecture.

2. Objectives

This article aims to present some technical solutions for reorganizing the flows of a Pharmacy Unit located in a large hospital, seeking to improve the performance of its activities, observing the principles of ergonomics and the determinations of current legislation and the Project Based on Evidence (PBE). In this section, we intend to contribute to supporting other researchers or professionals interested and involved in the design of hospital pharmacy units, highlighting important information, comparing the legal determinations for these projects and a real situation. Regarding the ergonomics approach, the article focuses on production and work system projects, seeking solutions to general issues involving production activity, as a way of optimizing the processes involved (KASPER et al, 2009; KASPER AND PEREIRA , 2012). Regarding the perspective of ergonomic practice, the scope of this work focuses on the intervention of the existing Pharmacy Unit generated by a demand, that is, due to spatial inadequacies in its operation. Its purpose is also to correct and make the necessary adjustments to comply with the standards and determinations of current legislation, in general, demonstrating an outline of this study, in relation to the reorganization of the flows of this unit, following, in this case, the guidance of Vidal (2003).

3. Theoretical Framework;

Royas et al (2002) describe hospitals as places that contain different risk agents, such as physical, chemical, biological and mechanical which, when not controlled, can be harmful. Added to these are conditions that do not consider the physical-cognitive specificities of users and patients, as well as those related to ergonomics precepts for different jobs. In this broad context, in building projects intended for health care activities, conditions of economic viability must be considered, observing important project criteria, such as expandability and flexibility (BINS ELY et al., 2006; TOLEDO, 2006 ; MARTINS, 2008); and more subjective issues, such as those that cover users' perceptive capabilities and those aimed at humanization (SANTOS, 2004; KASPER, 2013).

When considering the 08 responsibilities of hospitals (ANVISA RDC 50, 2002), those that support their functioning stand out, such as those that provide Technical Support, specifically, to provide pharmaceutical assistance to EAS users, in this case, the Pharmacy Unit, focus of this article. The World Health Organization (WHO) emphasizes that demographic and epidemiological changes and the development of medicines determine new demands that require adaptation of the health system (FERREIRA, 2013) and, consequently, of the physical facilities of Pharmacies, including hospitals. “Pharmaceutical assistance, as a component of health care strategies, aims to promote the rational use of medicine and

therapeutic education” (ALVES, ALVES and PARTATA, 2010, p. 05). To this end, the physical space of the hospital Pharmacy must accommodate the carrying out of activities and promote the provision of assistance emphasized by the authors.

In relation to flows, it is important that the project solutions include those already mentioned that involve work, covering inputs and medicines in general, equipment that, at times, must be moved to carry out maintenance and other flows of Units close to that one. designed, which may interfere with your physical planning. In general, EAS flows are treated by ANVISA RDC 50 (BRASIL, 2002) in relation to the functionality of the building. In this case, possible flows already in the project are considered, as a way of avoiding harmful interference, and future operating problems as a way of obtaining control of possible contaminations in the planned units and in the EAS in general. When seeking to avoid inadequate flows and possible contamination within the hospital Pharmacy, good practices (procedures) are adopted by employees in receiving, storing and handling inputs and medicines, in the cleaning conditions of the Unit in general and in segregation, packaging and transportation of waste, in addition to other actions (KASPER and PEREIRA, 2012).

In turn, Taylor and Keller (2010) indicate, in the physical planning of hospital pharmacies, the Evidence-Based Project (EBP). This is defined, according to the authors, as one that bases its decisions about the design of the built environment on research considered valid and relevant, seeking to achieve the best possible results in design (TAYLOR and KELLER, 2010). To this end, it considers cooperation between designers, end users, health professionals and researchers to gather and evaluate available knowledge, seeking to develop consistent design strategies (HAMILTON and WATKINS, 2009; TAYLOR and KELLER, 2010). The authors emphasize that such a strategy can favor general safety and quality conditions in work processes. In the case of this study, such a strategy was adopted.

The PBE proposes a process that employs the conscious use of the best possible evidence, based on theoretical research and professional practice, to make decisions about the design solutions relevant to each situation, which must be taken with the knowledge of the stakeholders, considering the characteristics of each context (project and users involved) (HAMILTON and WATKINS, 2009; KASPER, 2013). In the health unit project, the EBP can provide solutions that increase patient safety (avoiding or minimizing errors in medication prediction), worker safety, including those related to the healthy work process (avoiding injuries and generating satisfaction). It is also aligned with the prediction of environmental conditions that can generate comfort, focused on sustainability (reducing energy use, minimizing noise in the environment, improving air quality and providing adequate lighting), encouraging the quality of service to users (generating greater satisfaction and reduced waiting time) (HAMILTON and WATKINS, 2009; TAYLOR and KELLER, 2010; KASPER 2013).

From the perspective of ergonomics, the hospital Pharmacy Unit can be treated according to Paschoarelli and Menezes (2009, p.152), considering it as a system that provides the necessary conditions for interaction with workers, allowing them to develop their activities with “increased safety, comfort and efficiency of the system and quality of life”. In the case of hospital pharmacies, the conditions mentioned can be favored by the flows adopted, translated by the spatial arrangement, considering their facilities, availability of equipment, logical sectorization of the unit and the coherent Lay Out of workstations and the unit as a whole. It is relevant, on the other hand, that such conditions are based on the demands of the task to be performed, the psychophysiological characteristics of the workers and the context addressed, considering the EAS, the Pharmacy that will undergo the intervention and the demands of the workers, the patients, their management, the occupational safety sector, the Hospital Infection Control Commission (CCIH), health surveillance, etc.

Work extensions involve “cognitive, affective and relational dimensions that are inseparably linked during the development of their work activity” (HAYASHI and FARIA, 2009, p. 122), and are the object of action by ergonomists. This is perceived because planning, design and evaluation of products, environments and systems are involved in this field of application, which seek their compatibility with people's needs, abilities and limitations. This orientation applied in hospital pharmacy projects favors the expansion of workers' interaction with the workspace, and between them and the other elements present in this system. When readjusting these units, problems can be treated according to the guidance of Vidal (2003), who reports that the scope of ergonomics is broad, a fact that allows different ways to meet the needs and requirements of identified demands, which “differentiate regarding the way of attacking problems, or approach, regarding the way of forwarding solutions, or perspectives and regarding the way of acting in an effective reality, or purpose, itself”.

Based on this author's guidelines regarding the ergonomics approach, this work is focused on production, considering the work system and the general issues of production activity, seeking to optimize such processes. In relation to the perspective of ergonomic practice, there is a focus on intervening in an existing situation, with the purpose of correcting and framing it to meet legal requirements and improving the general conditions of an existing Pharmacy, through the reorganization of flows. Ergonomic intervention is treated as described by Vidal (2003, p. 31), consisting of the response to a certain existing demand that will determine new solutions to solve the problems, although keeping “many aspects in common with the current situation” (VIDAL, 2003, p. 31).

4. Methodological Fundamentals

To approach the Pharmacy Unit, the descriptive method was adopted, which allowed us to outline the context addressed, considering issues that involve the description, recording, analysis and interpretation of existing phenomena (GIL, 2008; SILVA E MENEZES, 2005, PACHECO JÚNIOR, PEREIRA AND PEREIRA FILHO, 2007; CERVO,

BERVIAN and DA SILVA, 2007). By adopting this method, knowledge about the elements involving the investigated object was expanded, as well as their possible interrelationships. Exploratory research allowed increasing familiarity with the object studied, using systematic procedures to achieve quantitative and qualitative descriptions (PACHECO JÚNIOR, PEREIRA and PEREIRA FILHO, 2007; MARCONI and

LAKATOS, 2008), in order to obtain concise descriptions of the situation and uncover the relationships between the components involved (CERVO, BERVIAN and DA SILVA, 2007).

The qualitative and quantitative nature of the research sought, in the first case, the analysis of complex or strictly specific situations (RICHARDSON, 2008), such as the current flows carried out on site and verification of positive and negative situations of the current conditions and configuration, in response to the needs identified by demand. Regarding the quantitative nature, we sought to know the frequency of certain situations in the researched unit, as well as the existence or not of environments required by legislation, their current configuration and dimension. As for depth and breadth, it is classified as a case study (MATTAR, 1997), as it seeks to understand particular situations that surround hospital Pharmacy, mainly in relation to existing flows, in addition to the other issues mentioned previously, capable of influencing these .

Other research techniques used were documentary and bibliographic research in secondary sources and observation as indicated by Richardson (2008), Silva (2005) and Pacheco Júnior, Pereira and Pereira Filho (2007) as: systematic observation, with prior planning than will be observed; non-participant observation, in which the event was witnessed, but did not participate in it; and, individual observation. There were interviews

with the health team, defined by Gil (2008) as a technique that proposes the investigator to present himself to the individual being investigated to ask him questions, with the aim of obtaining important information for the investigation. Semi-structured interviews were carried out using open questions focused on the object investigated, that is, the organization of the work situation presented. To process and discuss the information, content analysis was used, allowing the identification of the most relevant project guidelines, including flows, which were schematized. The steps for applying the technique followed the pre-exploration phase, the selection phase of the units of analysis and the categorization and referential interpretation of these units (of analysis), seeking to extract the most relevant information and their meanings, aiming to meeting demands, as recommended by Campos (2004).

5. Results

After applying the research techniques, a diagnosis of the situation presented was obtained, mainly generated by the unplanned modifications in the physical space of the pharmacy, the lack of maintenance of the existing facilities and the outdatedness of the Unit in view of the current demands of the EAS, citing- integration of new technologies to carry out activities and meet the hospital's current needs. Furthermore, the unit was found to be out of date with current legislation regarding the quality and quantity of required environments. Given these conditions, the flows of activities (work), materials, inputs and waste underwent similar changes without due planning, resulting in the need to correct them in the unit's design. Faced with this situation, for the unit design process, based on the studies, a scheme was constructed (sectorized environments and possible flows adopted) to support the planning of the Unit in question. The established scheme was based on information obtained during the application of the research techniques mentioned in item 04, which can be seen in Figure 01.

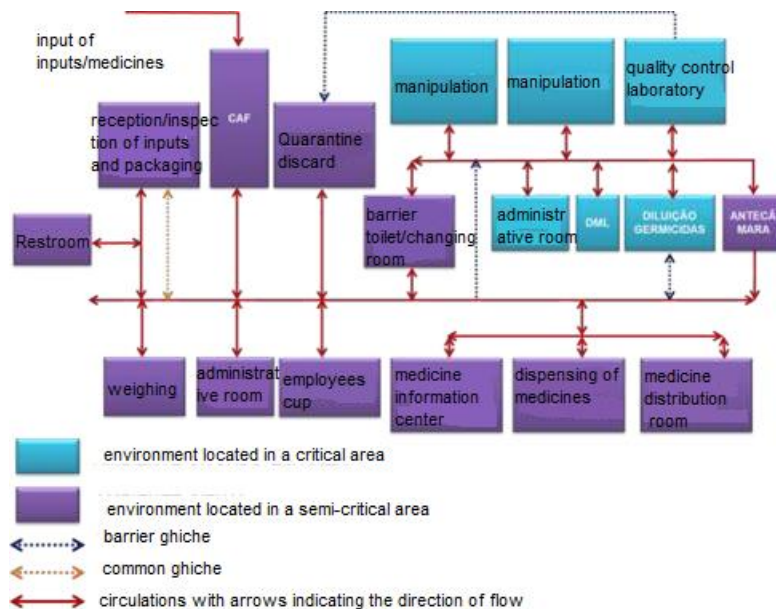


Figure 01. Organization of Hospital Pharmacy flows based on the PBE proposal.
Source: Own authorship (2015).

The constructed construct considered the needs and specificities of the context in question (the EAS and its respective Assistance Proposal, the size and its demands) and the need to configure the environments of the Pharmacy Unit, its sectorization and interdependencies, considering the activities carried out in each local. The nomenclature used is that adopted in the resolutions of the National Health Surveillance Agency (ANVISA). ANVISA RDC 50 (BRASIL, 2002) lists the main activity of this Unit, which is

“provide pharmaceutical assistance”. The following sub-activities can support hospital pharmacy projects (BRASIL, 2002; BRASIL, 2007): “receiving and inspecting pharmaceutical products”; “store and control pharmaceutical products”; “to distribute pharmaceutical products”; “dispensing medications”; “manipulate, divide and reconstitute medicines”; “prepare and store intravenous mixtures (medicines)”; “dilute germicides”; “perform quality control”; “provide information about products

pharmacists.” It should be noted that the activities mentioned were raised to support the project, the focus of this article, combined with the other support activities of the Unit in question.

ANVISA RDC 67 (BRASIL, 2007, p. 03)¹ which “provides for Good Practices for Handling Magisterial and Official Preparations for Human Use in pharmacies” defines the “Private Care Pharmacy in a Hospital Unit” as the “clinical unit of technical and administrative assistance, directed by a pharmacist, functionally and hierarchically integrated into hospital activities”. To carry out these activities, it is necessary to predict the environments and coherently plan the sectorization of the unit and the flows of the various components involved in all actions, involving inputs, people, carts, equipment, waste generated in the work process, between others. It is important that the Pharmacy project is focused on solutions that contain the necessary characteristics of the environments to carry out activities, in addition to the comfort, usability and functionality conditions, the specificities of users and environments that must be considered in physical projects.

The information in the Flowchart was compared with the current needs of the Pharmacy under study in meetings held with the Unit's team of professionals and the Santa Catarina State Health Surveillance inspection team. Such action was necessary to make the necessary adjustments and obtain a reliable basis to support the Unit's project, currently under preparation. Given the diagnosis of flows and other demands presented previously, the project solutions aimed to solve multiple problems. The absence of certain environments or their undersizing was verified, in addition to inadequate flows, covering elements involved in carrying out activities, such as inputs, workers, carts, utensils, equipment, waste generated in the work process, among others. In this case, the forecast of the environments necessary to compose the Unit and the coherent planning of its sectorization, sought to contribute to avoiding unwanted flows, involving the elements previously mentioned. Architectural solutions, involving appropriate installations, work in an interconnected way with good practices, and these two dimensions can and should work harmoniously and interdependently to prevent undesirable situations, favoring the control of possible contamination.

6. Conclusion

Supported by ergonomic and architectural precepts, the information presented was intended to support the organization of flows in a hospital Pharmacy, seeking to extrapolate the usual reductionist way of complying with the determinations of current legislation for EAS projects. In this study, we sought not only to meet the minimum requirements of the legislation, but also to provide a basis for a project that includes adequate comfort and safety

conditions in the operation of the unit, aiming, initially, at design quality, such as that defended by the Evidence-Based Design (EBP). In this sense, we sought to base design decisions on relevant research to achieve the best possible results, contemplating cooperation, mainly, between designers and health professionals to develop strategies and apply them to the project in question. It is believed that such guidelines tend to increase the quality of projects, presenting a final product that meets an acceptable level in fulfilling the explicit and implicit needs of the tasks, users and the approach context and its specificities.

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