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ERGONOMICS AND PATIENT SAFETY: A LITERATURE REVIEW OF NURSING IN THE OPERATING ROOM

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Abstract: Concern about Patient Safety (SP) gained prominence after the report from the Institute of Medicine (IOM) in the United States in 2000, which revealed high rates of Adverse Events (AE) in hospitals, triggering a worldwide movement. The World Health Organization (WHO) led efforts in this regard, promoting campaigns such as "Hand Hygiene" and "Safe Life-Saving Surgery". AEs associated with surgical care are little studied, justifying the need for research, especially on the role of nursing professionals. The WHO has established guidelines to promote safety during surgery, emphasizing the importance of an ergonomic approach. The study in question aims to analyze the literature on incidents, AEs and contributing factors in surgical care, using a systematic literature review. 19 articles were selected that highlight problems of communication, coordination, leadership, task management and security protocols, as well as issues related to equipment and service structure. The review highlights the importance of understanding these factors to improve the quality of care and patient safety in surgical procedures, reinforcing the need for improvement plans.

Keywords: Ergonomics; patient safety; Adverse events; nursing; surgery room.

Introduction

Concern about patient safety (SP) spread worldwide in the early 2000s with the publication of the United States (USA) Institute of Medicine (IOM) report on errors related to healthcare “To err is human: building a safer health system” (KOHN et al., 2000), which pointed out a high occurrence of Adverse Events (AE) in hospitals, with 44,000 to 98,000 preventable deaths per year in the USA, and being a milestone for mobilizing the movement worldwide on SP, which had healthcare-related infections as its first global challenge.

Within the scope of the World Health Organization (WHO), a program aimed at PS was created and consolidated, which favored several initiatives in the educational and

research areas, in the development of an appropriate conceptualization and in the dissemination of campaigns at global and regional level, such as “Hand hygiene” and “Safe life-saving surgery” (BROWN et al., 2008; RUNCIMAN et al., 2009). SP has been a widely discussed topic in recent decades (AMALBERTI et al., 2018), as AEs related to health services have become frequent, expanding the view of this topic as a fundamental component of quality improvement of health care, considering that the absence of SP constitutes a serious global public health problem (REIS et al., 2013).

Several important concepts related to SP were established by the WHO (WHO, 2009a), including the definition of the term incidents, considered an event or circumstance that could have resulted, or resulted, in unnecessary harm to the patient, and the term adverse events, defined as incidents which result in harm to the patient, which can increase hospital stay or cause disability (BRASIL, 2014). In short, they represent unpleasant outcomes caused by a series of contributing factors (such as situations, actions or omissions that play an important role in the origin, development or increase of risk of events) during the provision of care (BRASIL, 2014; WHO, 2009a)

Although AEs are a potential driver of morbidity and economic cost, especially those associated with surgical care, they remain understudied. From this perspective, the WHO (WHO, 2009b), in one of its SP initiatives, established guidelines to promote safety during surgeries, defining steps and responsibilities of the entire multidisciplinary team, with the purpose of ensuring that the correct procedure is carried out. in the right patient, in the right location, with all the necessary resources available. To achieve this, according to the organization, there is a set of actions to be carried out, from surgical scheduling to the post-operative period.

The research is justified by the fact that there are few studies on nursing professionals working in surgical procedures, given the uniqueness of the activity; the issue of difficulty in accessing surgical centers; and because the research investigated other professional classes in performing surgeries.

Furthermore, the use of a methodological approach in Ergonomics of analysis and observation of the work of nursing professionals, during their activity in the operating room, could contribute to further clarification and fill this existing gap.

According to the WHO (WHO, 2019), one of the WHO's strategic objectives for SP over the next 10 years is the construction of high-reliability health services and health

organizations that protect patients from preventable harm, with one of the lines of action the contribution of human factors/Ergonomics to the resilience of health systems. Recognizing the importance of Ergonomics as a method of analysis, diagnosis and problem solving, and the incipience of the SP theme in the global and national context, the objective of the present study is to analyze the qualified literature for studies that deal with incidents, adverse events and its contributing factors in the provision of surgical care.

Method

This study is a literature review with a systematic search, with a database analysis being carried out in the information sources MEDLINE via PubMed, Scopus via the Journal Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES). The choice of these bases is due to the wide coverage of studies in the area of health at national and international levels, with public access or available through a library.

The search terms were selected after an exploratory reading of the topic, initially combining just two terms “Ergonomics” or “Human factors” with the descriptors “patient safety”, “nursing” and “operating room”. In the searches, a greater number of publications were observed in the “Scopus” and “Pubmed” databases with the term “Ergonomics” in combination with the term “nursing”, as well as the descriptor “Human factors” combined with the term “ patient safety”.

Next, a combination of three descriptors was carried out, using the main keywords found in table 1 plus two variations of the terms “patient safety” and “nursing”, which are “adverse event” and “nursing staff”.

This was carried out with the purpose of verifying the existence or not of a greater number of publications. In the searches, there were no changes in the number of publications, with a greater number being observed in the databases selected with the terms “Ergonomics” or “Human factors” with the delimiters “patient safety” and “nursing”.

Finally, the two search terms most interconnected to the research topic “Ergonomics” or “Human factors” were combined with the other two words with the largest number of publications, evidenced in previous searches, plus the keyword “operating room” and its variations “surgery room” and “surgery”.

This composition was carried out to increase the research design, in an attempt to locate scientific studies most closely related to the theme and objective of the study in question. The descriptors with the highest number of publications were: “Human factors”, “patient safety”,

“nursing” and “surgery” in the Scopus database; and “Human factors”, “patient safety”, “nursing” and “surgery” in the Pubmed database.

For a more detailed study of the review, articles resulting from the search in the Scopus and Pubmed databases were selected with the search terms "Ergonomics", "Human Factors", "Patient safety", "Nursing" and "Operating room". The terms were chosen based on the degree of specificity of the content related to the research. The use of these terms in both databases, searching as follows: “TITLE-ABS-KEY ("human factors" OR ergonomics) AND "patient safety" AND "nursing" AND "operating room", resulted in 478 scientific articles, 432 documents found in Scopus and 46 in Pubmed.

From the creation of a spreadsheet in the Microsoft Excel software with all the studies selected in the databases, for greater detailing of the research, duplicate articles were excluded and a refinement was carried out, including only articles that involved the areas of nursing and engineering, resulting in 118 scientific articles, 100 documents found in Scopus and 18 in Pubmed.

After this stage, the following exclusion criteria were applied: review articles, opinions, editorials, letters, interviews, books and book chapters, theses, monographs, dissertations and course conclusion works, and gray literature.

Next, the titles, abstracts and keywords of the studies were read in order to assess compatibility with the research content. Therefore, priority was given to articles resulting from studies related to the topic with different methodological approaches, published in scientific journals.

Results and discussions

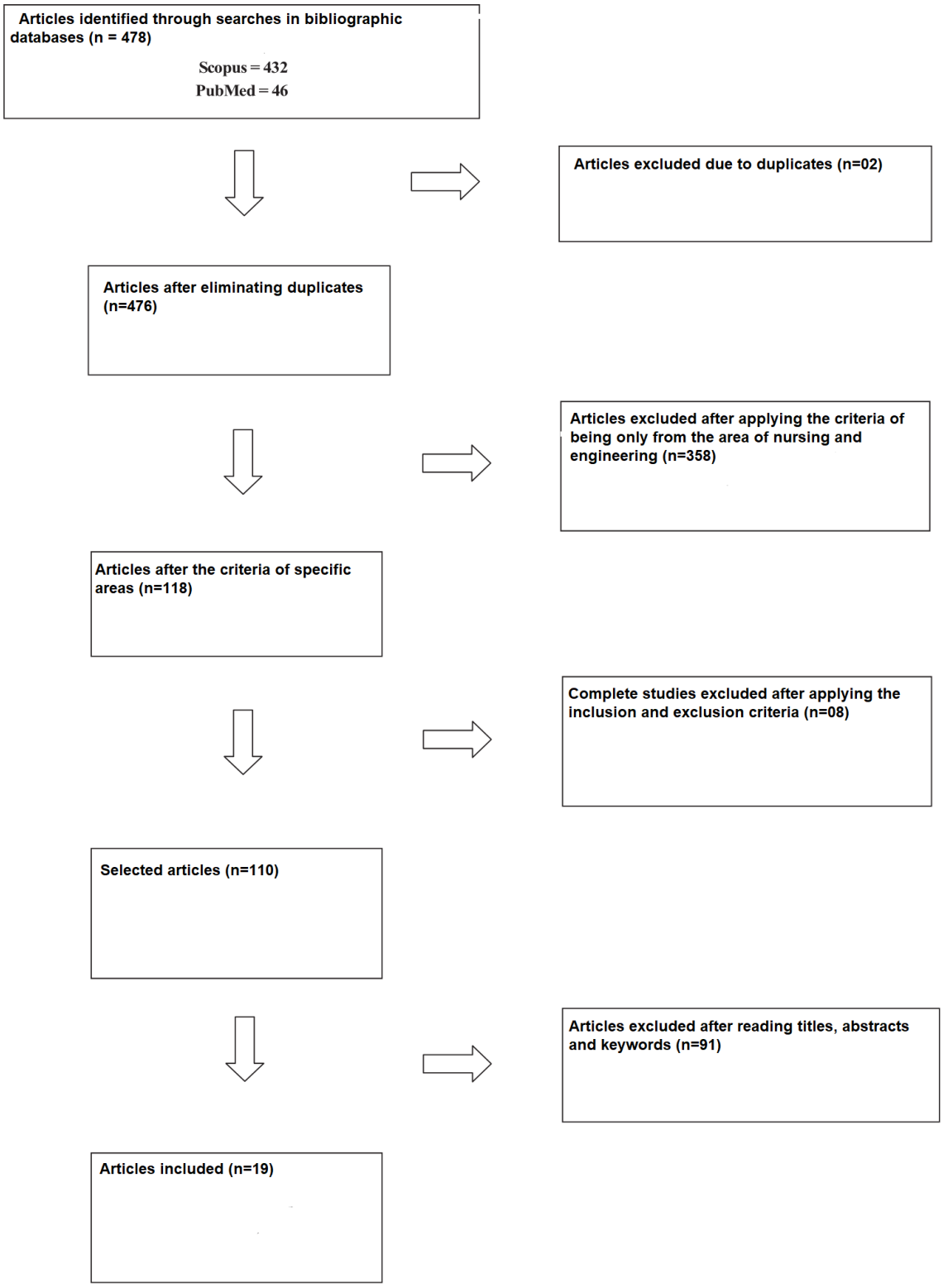
Figure 1 presents the flowchart for selecting scientific studies, following all the methodological procedures previously described, with 19 articles being selected considering the research theme.

The included studies had full text, made available and accessed through a library, in the English language, regardless of the methodological approaches (quantitative or qualitative) and study designs, published between January 2010 and July 2022.

The studies were read in full and the content related to these thematic categories was extracted. The methods and results were observed, which were highlighted, analyzed and interpreted in light of the theoretical and conceptual literature in the area of Patient Safety

and Ergonomics.

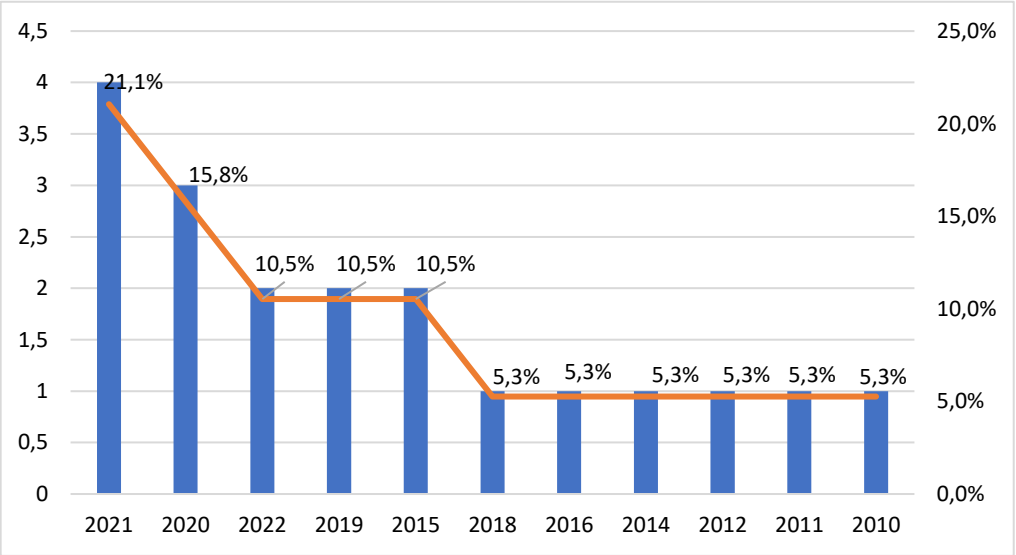
Figure 1: Study selection flowchart for literature review, 2022.



Source: Author (2022)

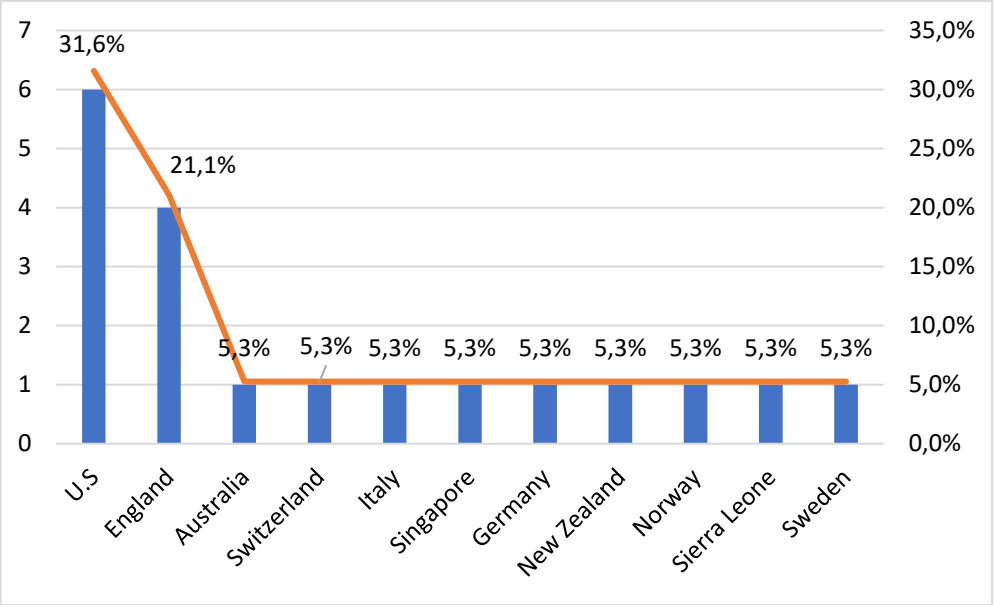
Among the 19 articles selected, the last 5 years corresponded to 63.2% of publications with the themes analyzed, where 21.1% were published in 2021, 15.8% in 2020, 10.5% in 2022, 2019 and 2015. In the other years, only one publication was identified, making up 5.3% for each year (graph 1). The United States was the country with the largest number of works (31.6%), followed by England (21.1%), corresponding to 52.6% of total publications. The other countries presented the same proportion of publications with 5.3% (graph 2).

Graph 1: Percentage of articles by year of publication



Source: Author (2022)

Graph 2: Percentage of articles by country of publication

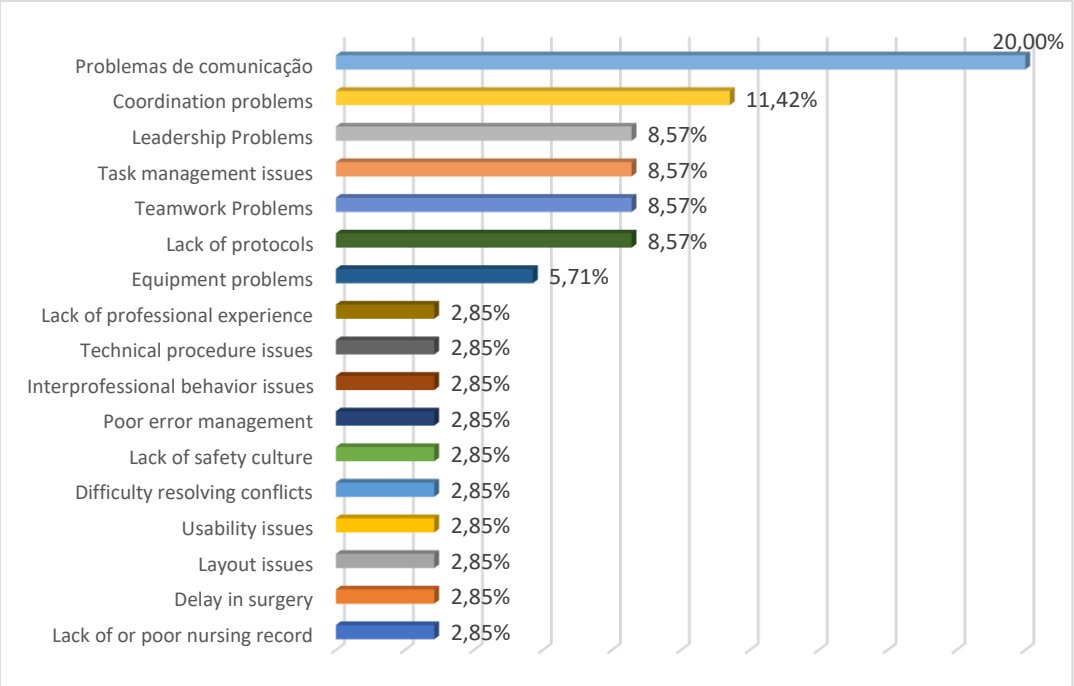


Source: Author (2022)

Regarding the design of the studies, it was observed that the majority (58.6%) used qualitative methods and the same proportion (20.7%) adopted quantitative and mixed approaches. There was variation in the type and sample size, expressing a quantitative and/or qualitative design, as well as various forms of investigation using the aforementioned methods, such as application of questionnaires, use of ergonomic tools or specialized methods aimed at quantitative and qualitative analyses, among others.

Among the studies analyzed, it was observed that the majority highlighted that adverse events occur or may occur more frequently due to communication problems between the surgical team (20%) followed by coordination problems (11.42%). Soon after, with the same proportion (8.57%), due to leadership problems, task management problems, teamwork problems and lack of protocols. Problems with equipment accounted for 5.71% of the causal factors. The other factors presented the same proportion (2.85%), as seen in graph 3.

Graph 3: Percentage of articles by causal factors of Adverse Events



Source: Author (2022)

Conclusions

This work carried out a review of the literature on nursing performance and its relationship with the occurrence of adverse events and concerns about patient safety in the operating room, presenting the differences and convergences between the different methods and discussing the main results. In this review, problems related to communication between professionals and coordination stood out as the most recurrent reports. Organizational factors were also reported, such as: leadership and teamwork problems; lack of patient safety protocols; difficulty for the team in managing the tasks to be performed in the operating room; and related to the environment and structure of services, such as equipment problems. All of these factors contribute to poor service delivery and health care, which can lead to undesirable events for the patient.

This review stands out in relation to the previous ones for bringing English-language studies into the debate, using two well-known databases that cover a large number of articles focused on the subject of Patient Safety, in addition to expanding the range of countries and their respective cultural contexts. Finally, the importance of knowing the incidents, adverse events and contributing factors reported by researchers in their studies is highlighted again, so that, together with those identified by professionals working in the operating room, they contribute to the development of a plan to improve the quality of care. and, consequently, improve the safety of patients undergoing surgical procedures.

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