

AHI EVRAN

4. International Congress on on Scientific Research

26-28 April 2024

Kirsehir Ahi Evran University, Kirsehir, Türkiye



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Editors

Prof. Dr. Ahmet KAZANKAYA

Assist. Prof. Dr. Mevlüde Alev ATEŞ

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SHARPS INJURIES AMONG NURSES: CHALLENGES AND IMPLICATIONS IN PRACTICE

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ABSTRACT

Nurses are essential healthcare workers for the delivery of quality care. Therefore, these professionals must feel secure in the workplace. However, nursing is among the professions that suffer the most from workplace accidents. The most common occurrences involve sharps injuries. The objectives of this review were to explore and discuss aspects related to sharps injuries among nurses based on information available in the literature. This is an integrative review. The search for original articles of primary research was conducted in the first week of January 2024, in the Web of Science (WoS) Core Collection database. The review was framed around the following question: “What is the literature’s perspective on sharps injuries among nurses?” A total of 12 articles were found, of which seven were included. The selected articles were evaluated using the critical appraisal tool for cross-sectional analytical studies from the Joanna Briggs Institute. It was identified that the occurrence of sharps injuries among nurses is correlated with both organizational characteristics and specific individual factors of the nurses, such as scarcity of material and personnel resources, lack of knowledge and training, stress, and emotional exhaustion. The most common accidents involve needles, ampoules, and catheters. Effective measures to prevent sharps injuries among nurses should be taken. The implementation of efficient notification systems where nurses can report accidents is a measure that should be developed and properly monitored in healthcare institutions. It is understood, therefore, that nurse managers and healthcare administrators play fundamental roles in the development of better working conditions, with an emphasis on creating safe environments and implementing continuing education programs that enable nurses to learn and update information on prevention measures and safe use of materials and equipment.

Keywords: accidents, health management, nurse administrators, nursing, occupational risks, working conditions

INTRODUCTION

Accidents involving sharp objects are common among nurses. Despite the extensive coverage of the subject in scientific literature and the offering of various strategies to prevent such accidents, the occurrence of sharps injuries in the nursing field still presents a significant challenge to the healthcare sector (Getie et al., 2020; Ismara et al., 2019; Motaarefi et al., 2016). Sharps injuries can affect nurses’ health across various dimensions, potentially causing physical, psychological, and social harm. Preserving health and occupational safety in nursing is fundamental, as in unhealthy environments, not only are professionals affected, but the quality of care they provide is also negatively impacted (Charpe & Joshua, 2020).

A significant number of workplace accidents involving healthcare workers are related to needlestick and sharps injuries. In a literature review conducted by Motaarefi et al. (2016), data indicated that the highest incidence of needlestick and sharps injuries among healthcare workers was observed in nurses and that elevated rates of incidents primarily occurred during instrument preparation, administering injections, and recapping of used needles. There is a high prevalence of sharps injuries among nurses worldwide, with the number of occurrences being higher in developing countries compared to developed ones. A large number of sharps injuries have been identified in nurses working in Southeast Asian countries, while lower rates have been reported in the United States of America (Abdelmalik et al., 2023).

The topic should be addressed to promote a safe work environment where information on the subject circulates and measures are taken to prevent accidents. The role of healthcare institution administrators and nurse managers is crucial for developing continuing education programs and establishing procedures and strategies that empower and protect nurses in the workplace (Charpe & Joshua, 2020; Ismara et al., 2019; Motaarefi et al., 2016). Working conditions that promote a culture of safety, where the number of adequately trained nurses to meet patient demand is sufficient, where work schedules are less exhausting, and where support programs are available for healthcare workers experiencing high levels of stress or emotional exhaustion, are crucial to reducing the number of workplace accidents among nurses (Abdelmalik et al., 2023; Ismara et al., 2019; Motaarefi et al., 2016). Given the relevance of the topic, the objectives of the review were to explore and discuss aspects related to sharps injuries among nurses based on the information available in the literature.

MATERIALS AND METHODS

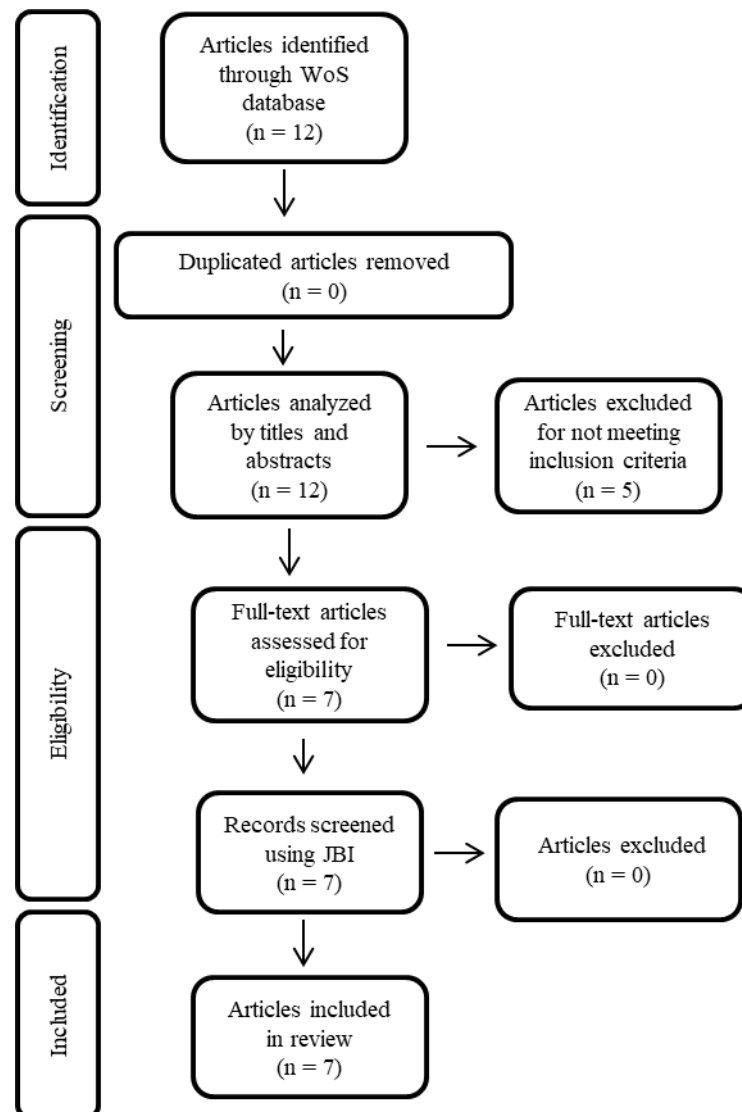
This is an integrative review developed according to the five phases proposed by Whittemore and Knafl (2005). In the first stage, the research problem was formulated. Subsequently, searches were conducted to access relevant literature. After this phase, the information found was analyzed and evaluated in detail, in the last phase, the data were reported.

The review was based on the question: “What is the literature’s perspective on sharps injuries among nurses?” The search for articles took place in the first week of January 2024, in the Web of Science (WoS) Core Collection database. The search was conducted by article titles. The descriptors used were: nurs* AND “sharp injuries”. Original research articles carried out with nurses, published in scientific journals, with full texts available online, that met the review’s objectives were included. The search was not limited by publication date or language.

Twelve articles were found. Subsequently, three articles were excluded as they were conducted with other healthcare professionals in addition to nurses or with nursing students. Another article was discarded for not being an original research article, and one last article for not being published in a scientific journal. After these exclusions, seven articles remained, which then underwent methodological evaluation using the critical appraisal tool for cross-sectional analytical studies from the Joanna Briggs Institute (JBI). This tool is used to assess cross-sectional studies through eight main questions. These questions cover participant inclusion criteria, description of subjects and setting, objectives and standardization of exposure, exposure measurement method, identification and strategies to deal with confounding factors, validity and reliability of measurement, and statistical analysis (JBI, 2017). The questions were assessed on a scale where “yes” was assigned 2 points, “unclear” 1 point, and “no” 0 points. Thus, the higher the score, the better the methodological assessment of the article. The included articles obtained scores ranging from 11 to 16 points. None of the articles were excluded after methodological evaluation; however, limitations such as the absence of inclusion and exclusion criteria for participants, use of non-validated data collection instruments, and deficiencies in dealing with confounding factors were identified in some articles. The research flowchart is given in Figure 1. Important characteristics of the articles and the results of the methodological evaluation are presented in Table 1. After the methodological analysis, the collected information was organized and interpreted, allowing for critical considerations on the researched topic.

Regarding ethical standards, the principles of the truthfulness of the information and proper attribution of authorship to the consulted studies were respected. Studies were cited and referenced according to the stipulated guidelines.

Figure 1. Research flowchart



FINDINGS AND DISCUSSION

All seven articles are cross-sectional studies published in seven different journals. The number of participants ranged from 150 to 3079 nurses. Two articles were conducted in Ethiopia, another two in Iran, one in Egypt, one in South Korea, and one in Poland. In all studies, the majority of participants were female. The seven studies were published in English.

Studies have linked the occurrence of sharps injuries among nurses with the presence of stress in these healthcare workers. While Asfour et al. (2021) identified a significant relationship between sharps injury occurrence and nurses' stress scores, the study by Aytenuw et al. (2023) emphasized that work-related stress can trigger risks of sharps injuries in the nursing field. Additionally, two studies found that high emotional exhaustion significantly increased the risk of sharps injuries among nurses (Cho et al., 2013; Garus-Pakowska et al., 2022). It is important to note that work-related stress and emotional exhaustion can cause various harms to nurses, leading to job dissatisfaction and intentions to leave. These factors not only impact the professionals themselves but also negatively influence patient safety and consequently the quality of care provided in healthcare institutions (Babapour et al., 2022; Martin et al., 2023).

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Table 1. Characteristics of the included articles

References	Country	Design/ sample	Main results	Methodological assessment
Asfour et al. (2021)	Egypt	Cross-sectional study/ 150 nurses	A significant relationship was identified between the occurrence of sharp object injuries and the presence of stress	13/16
Aytenew et al. (2023)	Ethiopia	Cross-sectional study/ 376 nurses	Length of service, lack of training, stress, and the presence of contaminated material in the working area were associated with exposure to sharp object injuries	16/16
Cho et al. (2013)	South Korea	Cross-sectional study/ 3079 nurses	Risks of accidents were associated with little experience, lack of staff and material, and emotional exhaustion	12/16
Ehsani et al. (2013)	Iran	Cross-sectional study/ 328 nurses	Most accidents were caused by needles. Needle recapping was the main cause of accidents	12/16
Garus-Pakowska et al. (2022)	Poland	Cross-sectional study/ 280 nurses	A significant difference was identified in the risk of needlestick injuries with the use or not of safety devices, central catheters, and ampoules	12/16
Ghasemi et al. (2017)	Iran	Cross-sectional study/ 278 nurses	Visual impairment showed a significant association with sharp object injuries	11/16
Liyew et al. (2020)	Ethiopia	Cross-sectional study/ 268 nurses	Factors such as the presence of contaminated material in the working area, needle recapping, working in the pediatric ward, and being female were associated with injuries from sharp objects	13/16

Various other factors associated with the risks of sharps injuries among nurses were highlighted in the studies included in this review. While in the study by Aytenew et al. (2013), having more professional experience represented a higher likelihood of sharps injuries occurrence, in the studies by Cho et al. (2013), Ehsani et al. (2013), and Garus-Pakowska et al. (2022), less work experience indicated a higher risk of sharps injuries among nurses.

The lack of training (Aytenew et al., 2023), staff and resource shortages (Cho et al., 2013), higher educational level (Garus-Pakowska et al., 2022), visual impairment (Ghasemi et al., 2017), presence of contaminated needles and/or sharp materials in the working area (Asfour et al., 2021; Liyew et al., 2020), and needle recapping (Ehsani et al., 2013; Liyew et al., 2020) are also among the factors associated with a higher likelihood of sharps injuries occurrence identified in the included studies. It was observed that issues directly related to healthcare institution management can be identified among the causes and

factors that increase the risk of sharps injuries among nurses, as lack of training, failure to retain experienced nurses in institutions and deficiencies in material management are considered managerial failures (Silva et al., 2016; Sousa et al., 2018).

Additionally, according to the literature included in this review, nurses who work in perioperative units (Cho et al., 2013), emergency rooms (Ehsani et al., 2013), and pediatric services (Liyew et al., 2020) have a higher risk for such injuries, while those working in intensive care units, psychiatry, and obstetrics have a lower risk compared to those allocated in medical-surgical units (Cho et al., 2013). A study conducted with healthcare workers identified that sectors with higher demands, where nurses handle a greater quantity of sharp objects and are in closer contact with contaminated substances, deserve greater attention from nurse managers and healthcare administrators (Elawady et al., 2019).

Regarding the type of materials, needles (Ehsani et al., 2013; Garus-Pakowska et al., 2022), ampoules (Garus-Pakowska et al., 2022), and catheters (Ehsani et al., 2013) were the most cited among nurses who suffered injuries. Despite the majority of injuries being caused by contaminated instruments (Asfour et al., 2021), many nurses do not report the occurrence of accidents (Ehsani et al., 2013). Studies addressing other subjects, such as errors during nursing practice, also identified shortcomings in reporting systems, as nurses fear reporting incidents that happen to them or are witnessed by them. This is a major challenge for the field because detailed recording of incidents should be done to create strategies to prevent similar events from happening (Alrabadi et al., 2020; Najafpour et al., 2021).

The studies included in the review emphasized that nurses should practice the use of safety containers for disposing of sharps to prevent accidents in the workplace (Aytenew et al., 2023; Cho et al., 2013). It is also important to ensure access to medical devices with secure protection mechanisms and limit the use of sharp instruments whenever possible (Garus-Pakowska et al., 2022). Additionally, healthcare institution managers should consult nurses about the choice of safe devices and implement training programs on the proper use of such devices (Garus-Pakowska et al., 2022).

Studies have emphasized that nurses' safety is intrinsically associated with their ability to identify and control various occupational risks specific to the profession. In this regard, implementing safety precautions according to the work unit, proper disposal of needles and sharp objects, and promoting a safe working environment (Cho et al., 2013; Liyew et al., 2020) significantly contribute to improving nurses' safety practices, resulting in reduced incidence of sharps injuries. It would be prudent to create specific organizational strategies for units with a higher risk of sharp object injuries (Cho et al., 2013) and psychological rehabilitation units to assist nurses working in acute care environments in coping with the stressful challenges arising from sharp object injuries (Asfour et al., 2021). Additionally, it is imperative to establish effective monitoring systems for sharp object injuries at the hospital level, as well as national reporting systems (Cho et al., 2013), as the common occurrence of needlestick injuries among nurses, often unreported, underscores the pressing need for enhanced standard infection control precautions policies and notification strategies (Ehsani et al., 2013).

Several measures can be taken to prevent sharps injuries among nurses. Education on nursing occupational safety should begin in undergraduate programs and continue in educational and healthcare institutions through postgraduate courses and continuing education programs, where nurses can be constantly updated and introduced to new devices and measures to prevent workplace accidents (Elawady et al., 2019; Motaarefi et al., 2016; Talas & Kocaöz, 2015).

This integrative literature review provides an overview of sharps injuries involving nurses. However, it has some limitations, such as the use of only one database and searches conducted only by article titles.

CONCLUSION

This review aimed to explore and discuss aspects related to sharps injuries among nurses based on available literature. It was identified that the occurrence of sharps injuries among nurses is correlated not only with organizational characteristics but also with the use of protective equipment and specific individual factors of the nurses. In this context, it is imperative to implement continuous education programs in the workplace and promote the creation of safe environments where nurses can use devices with protection mechanisms. Additionally, establishing reliable notification systems for reporting accidents is also an important measure that should be taken in healthcare institutions. Conducting

detailed investigations to identify the causes of these incidents will facilitate the development of effective preventive strategies. Furthermore, nurses' working conditions should be improved, as in stressful environments with a lack of equipment and qualified personnel, the risk of workplace accidents is higher. Preserving nurses' health is crucial not only to ensure their well-being and job satisfaction but also to guarantee that they can provide care effectively and efficiently.

It is recommended that future research address nurses' experiences regarding sharps injuries, using diverse methodologies. Broader integrative and systematic reviews can be conducted. There also appears to be a potential gap in the scientific literature, as this integrative review identified a lack of qualitative research on the topic. Therefore, more in-depth and diversified studies are needed to better understand the nuances of these accidents and develop more effective interventions.

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