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Emergency Department Nurses' Experiences with Needlestick Injury: A Phenomenological Study

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ABSTRACT

Needlestick injury (NSI) poses a significant occupational hazard for healthcare workers, particularly nurses, due to the risk of exposure to bloodborne pathogens. Emergency department nurses are especially vulnerable because they frequently perform invasive procedures under time pressure and in unpredictable clinical situations. This study aimed to explore the experiences of emergency department nurses in managing needlestick injuries and to identify the challenges and preventive practices associated with these incidents. A descriptive phenomenological approach was applied with nine nurses who were purposively selected based on their experience with needlestick injuries. Data were collected through in-depth interviews and analyzed thematically to identify patterns and meanings within participants' experiences. The findings revealed that needlestick injuries commonly occurred during high-pressure emergency procedures, particularly when nurses had to work rapidly and manage patients with unpredictable movements. Following an incident, nurses experienced emotional responses including fear, anxiety, worry about bloodborne infection, and psychological trauma. Participants emphasized the importance of strict adherence to Standard Operating Procedures (SOPs), consistent use of Personal Protective Equipment (PPE), safe handling and disposal of sharps, and prompt reporting of occupational incidents. The findings also highlighted the need for accessible post-exposure support and clear institutional procedures. The study concludes that comprehensive hospital support, including technical training, stress management, occupational health services, and effective incident-reporting systems, is crucial for strengthening preventive practices, reducing the psychological impact of needlestick injuries, and improving nurses' occupational safety.

Keywords *: Needlestick injury; nurse experience; emergency department; occupational safety; phenomenology*

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INTRODUCTION

Needlestick Injury is an injury caused by sharp objects that accidentally puncture the skin. According to the National Surveillance System for Healthcare Workers (NaSH), needlestick injury is defined as any percutaneous injury caused by a needle or other sharp object previously exposed to blood, tissue, or other body fluids. The National Institute for Occupational Safety and Health (NIOSH), USA, further specifies that needlestick injury can result from devices such as syringes, blood collection needles, cannulas, and infusion system needles.(1,2)

Globally, an estimated three million healthcare workers experience needlestick injury annually, with nurses accounting for about 50% of cases.(3) A systematic review across 31 countries reported that the prevalence of needlestick injury in the past 12 months ranged widely, underscoring its global burden.(4) In Indonesia, the incidence remains high, with studies showing rates between 38% and 73% among nurses, and 70 cases reported in 2015 alone.(5) Specific data regarding the prevalence of needlestick injury in West Sulawesi Province is not currently available at the provincial level. As a point of comparison within the Sulawesi region, a study conducted at Dr. Wahidin Sudirohusodo Central General Hospital in Makassar, South Sulawesi Province, recorded 35 cases of needle-stick injuries among workers in 2014; the figure dropped to 26 cases in 2015, then rose to 30 cases in 2016 and 37 cases in 2017. The highest number of cases by service unit was found in the Emergency Department (ED), with 4 cases.(6) At Majene Regional General Hospital, hospital records documented four cases of needlestick injury between 2022 and 2024, all involving needle-stick incidents. These data were obtained from secondary sources, namely the hospital's existing records of occupational incidents or needlestick injury reports, and were used to provide an initial overview of the occurrence of needlestick injury at the study site.

The causes of needlestick injury can generally be classified into human and occupational factors. Human factors include lack of knowledge and skills, poor teamwork,

and fatigue, while occupational factors involve heavy workloads, unclear work standards, and substandard equipment.(7) As the largest group of healthcare providers, nurses are at particularly high risk of bloodborne infections such as HBV, HCV, and HIV following needlestick injury exposure.(8,9) Beyond physical health risks, needlestick injury can also negatively impact mental health, leading to anxiety, depression, and even post-traumatic stress disorder (PTSD).(10)

Despite existing preventive measures such as Personal Protective Equipment (PPE), sharps containers, universal precautions, and improved working conditions, needlestick injuries continue to occur—over 90% of related infections are reported in developing countries. Underreporting remains another major challenge, often driven by fear, inadequate reporting systems, and misconceptions about risk levels. (10)

Importantly, needlestick injury is not only a matter of epidemiological data but also of subjective experiences. Nurses' lived experiences encompass perceptions of causes, emotional responses, coping strategies, reporting practices, and preventive measures. For some, needlestick injury may be perceived as an unavoidable occupational accident, while for others, it may cause significant trauma and affect professional performance. These experiences also reflect expectations toward the hospital, including safer facilities, continuous training, and psychosocial support.(11)

Phenomenology, which seeks to understand the meaning of lived experiences, offers a suitable approach to exploring nurses' experiences in dealing with needlestick injury.(12) By examining how nurses perceive, interpret, and cope with these incidents, this study aims to provide deeper insights into the multidimensional impact of needlestick injury.

This study is not intended merely to measure the prevalence of needlestick injury or to identify statistically associated risk factors. Rather, it seeks to explore and understand the lived experiences of nurses in the Emergency Department (ED) when facing needlestick injury in the context of their daily clinical practice. The qualitative phenomenological approach allows the study to examine how nurses perceive and interpret the occurrence of needlestick injury, including the circumstances surrounding the incident, their immediate

responses, and the meaning they attach to the experience. Thus, the study focuses not only on whether needlestick injury occurs or what factors are statistically associated with its occurrence, but also on how the incident is experienced and understood by the nurses themselves.

METHODS

This qualitative study employed a descriptive phenomenological design to explore the experiences of nurses who had experienced needlestick injury (NSI) in the Emergency Department (ED) of Majene Regional General Hospital, West Sulawesi, Indonesia. Data were collected from June to July 2025. Participants were selected purposively based on their relevance to the research objectives. Nine participants were recruited, comprising six ED nurses, one head of the Infection Prevention and Control (IPC) unit, one head of the ED, and one head of the Outpatient Care Section responsible for ED and outpatient services. ED nurses were selected based on their direct experience with NSI, while key and supporting informants were selected based on their managerial and institutional roles in NSI prevention, management, reporting, and support.

The researcher served as the primary instrument, supported by a semi-structured interview guide, audio recorder, camera, and field notes. The interview guide was developed based on the research objectives and covered participants' experiences of NSI, circumstances surrounding the injury, immediate responses, emotional and physical impacts, reporting, prevention practices, SOP adherence, PPE use, and institutional support. The guide was used flexibly to allow probing questions for clarification and deeper exploration. Face-to-face in-depth interviews were conducted in a private and quiet area of the hospital and lasted approximately 30–60 minutes. With participants' consent, interviews were audio-recorded and supplemented with field notes. Recordings were transcribed verbatim and checked against the original recordings for accuracy.

Data were analyzed using Colaizzi's method, which involves seven steps: reading all transcripts thoroughly, identifying significant statements, formulating meanings, clustering

meanings into themes, developing an exhaustive description, identifying the essential structure of the experience, and validating the findings with participants. To ensure credibility and trustworthiness, this study employed source triangulation, member checking, and an audit trail consisting of field notes, transcripts, and systematically documented theme analysis tables.

Table 1
Colaizzi's Data Analysis

Significant quotation	Formulated meaning	Category	Emergent theme
"The first experience of being pricked by a needle caused fear because I was worried about the patient's disease and the risk of transmission." (MU)	Needlestick injury creates fear because of concern about disease transmission from the patient.	Fear of infection	Emotional responses to needlestick injury
"My first experience of needlestick injury caused panic, followed by initial wound cleansing and washing…" (MI)	Needlestick injury triggers panic and leads to immediate wound cleansing as an initial response.	Panic and immediate response	Emotional responses to needlestick injury
" Needlestick injury often occurs in the ED when handling critical patients, where I sometimes neglect safety because of the urgency." (AW)	Emergency conditions can cause nurses to overlook safety practices.	Urgency and reduced safety attention	Situations leading to needlestick injury
" Needlestick injury occurred while inserting an IV in an unconscious, struggling patient." (FU)	Patient movement and difficult procedures increase the risk of accidental injury.	Complex patient conditions	Situations leading to needlestick injury
"Immediately after needlestick injury , I felt afraid of contracting diseases from the patient and felt pain	Needlestick injury produces both fear of infection and physical pain.	Psychological and physical impact	Immediate psychological and physical responses

from the puncture." (MU)

Source : Primary Data, 2025

RESULTS

Characteristics of Informants

This study involved nine informants, consisting of the Head of Disease and Infection Control at Majene Regional General Hospital as the key informant, Emergency Department (ED) nurses as primary informants, and the Head of Outpatient Services (ED & Polyclinic) and the Head of the ED as supporting informants.

First Experience of Needlestick Injury

The first experience of needlestick injury among ED nurses at Majene Regional General Hospital evoked strong emotional reactions, particularly fear and panic rooted in uncertainty about the patient's health status and the risk of transmission of blood-borne infectious diseases. This fear reflected the psychological tension arising at the onset of the incident, which could affect the nurses' mental state and their readiness to follow post needlestick injury procedures. As informant MU stated:

> "*The first experience of being pricked by a needle caused fear because I was worried about the patient's disease and the risk of transmission*." (MU, ED Nurse, 39 years old, July 13, 2025)

The initial response to needlestick injury generally involved wound cleansing, such as washing the puncture site, as part of the protocol to reduce infection risk. However, in situations where patient care was prioritized, some nurses chose to complete clinical tasks before reporting the incident to colleagues or supervisors, reflecting the work pressure and prioritization of patients over self-care. As informant MI explained:

> "*My first experience of needlestick injury caused panic, followed by initial wound cleansing and washing, but I only proceeded with further management after finishing patient care and then informed my colleagues*." (MI, ED Nurse, 39 years old, July 13, 2025)

Needlestick injury incidents occurred in various work contexts, ranging from patient injections under physician instruction where accidents happened during injection preparation penetrating protective gloves and injuring the skin despite the use of PPE. Reporting of needlestick injury incidents, as done by AR, highlighted awareness of the importance of documentation as part of risk management and occupational accident prevention. As AW shared:

> "*My first experience of needlestick injury occurred during patient injection under doctor's instruction, when the needle accidentally pricked my finger after opening the syringe, although it wasn't too deep*." (AW, ED Nurse, 40 years old, July 13, 2025)

In addition, needlestick injury experiences also occurred during infusion procedures, when a dropped needle mandrin struck a nurse's body, causing injury. Another incident occurred during drug compounding, a task that involved manipulating needles and chemicals, making it a vulnerable moment for needlestick injury. These varied contexts illustrate the broad range of needlestick injury risks faced by ED nurses, beyond direct injection. As FU and AN noted:

> "*My first needlestick injury happened while infusing a patient, when the mandrin fell and struck my foot*." (FU, ED Nurse, 38 years old, July 13, 2025)

> "*I once experienced needlestick injury during drug compounding*." (AN, ED Nurse, 33 years old, July 13, 2025)

Overall, the first needlestick injury experiences among ED nurses at Majene Regional General Hospital showed that, beyond physical risks, there were psychological burdens of fear and panic affecting how they responded. Quick wound cleansing was an important immediate response, but the need to balance patient care and incident reporting reflected the complex work environment of the ED. This highlights the importance of training, psychosocial support, and responsive reporting systems to equip nurses with both technical and mental readiness in facing needlestick injury risks.

Situations Leading to Needlestick Injury

Most needlestick injury incidents among ED nurses at Majene Regional General Hospital occurred in the context of high work pressure and emergency patient conditions. Nurses were often required to perform medical procedures such as injections and infusions under time-critical and demanding circumstances. These conditions led them to work at a fast pace, sometimes hastily, thereby increasing the risk of occupational accidents, including needlestick injury. As MU, MI, and AR explained:

> "*Needlestick injury often happens in emergency patient care when nurses rush to give injections, resulting in accidental needle pricks*." (MU, ED Nurse, 39 years old, July 13, 2025)

> "*Needlestick injury happened while administering medication*." (MI, ED Nurse, 39 years old, July 13, 2025)

> "*Needlestick injury occurred in a high-pressure work situation requiring me to administer medication quickly, so I was rushed and ended up having an accident*." (AR, ED Nurse, 41 years old, July 13, 2025)

Emergency situations in the ED forced nurses to prioritize saving patients, but such pressure often led to lapses in safety procedures when handling sharp instruments such as syringes. Informant AW admitted that patient emergencies sometimes caused lapses that contributed to needlestick injury, while AR emphasized that high pressure and time demands often made accidents inevitable. As AW and AR shared:

> "*Needlestick injury often occurs in the ED when handling critical patients, where I sometimes neglect safety because of the urgency*." (AW, ED Nurse, 40 years old, July 13, 2025)

> "*Needlestick injury occurred under high-pressure conditions requiring me to administer drugs quickly, which made me rush and eventually caused the accident*." (AR, ED Nurse, 41 years old, July 13, 2025)

Beyond speed and pressure, some needlestick injury incidents arose in physically difficult situations, such as inserting an IV in unconscious, struggling patients, which complicated procedures and heightened the risk of accidental needle sticks. Ampoule

handling was also identified as a vulnerable activity, even though it is routine, as sharp glass shards and needles posed risks. As FU explained:

> "*Needlestick injury occurred while inserting an IV in an unconscious, struggling patient*." (FU, ED Nurse, 38 years old, July 13, 2025)

These experiences suggest that needlestick injury was not triggered by a single factor, but by the interaction of high work pressure, complex patient conditions, and procedural vulnerabilities requiring extra caution. Together, these factors created a work environment prone to needle injuries, highlighting the need for comprehensive strategies, including technical training, stress and time management, and adequate provision of PPE to minimize needlestick injury risks in the ED.

Immediate Feelings After Experiencing Needlestick Injury

The experiences of ED nurses at Majene Regional General Hospital revealed that needlestick injury incidents elicited strong and varied emotional responses, depending on the circumstances. Most nurses reported feelings of fear, panic, anxiety, and even trauma, particularly when the needle or sharp instrument had already been used on a patient.

Fear emerged as a spontaneous reaction to the possibility of contracting serious infectious diseases, as MU described, coupled with pain at the puncture site. This reflected the combined psychological and physical burden of needlestick injury.

> "*Immediately after needlestick injury, I felt afraid of contracting diseases from the patient and felt pain from the puncture*." (MU, ED Nurse, 39 years old, July 13, 2025)

MI recounted feelings of panic and stress, especially after performing medical procedures on a patient. This highlighted the intensified psychological burden when the needle had already contacted the patient, as the risk of infection felt more real and threatening.

> "*Immediately after needlestick injury, I felt panicked, especially when it happened after treating a patient, and I experienced stress due to fear of possible disease transmission*." (MI, ED Nurse, 39 years old, July 13, 2025)

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AW emphasized the sense of trauma and the wish to avoid recurrence, especially when the needle had been used on a patient. This trauma reflected short-term impacts that could affect motivation and vigilance at work.

> "*Immediately after needlestick injury, I felt traumatized and hoped it would not happen again, particularly if the needle had been used on a patient*." (AW, ED Nurse, 40 years old, July 13, 2025)

Some nurses also described panic as an instinctive reaction, as noted by AR:

> "*Immediately after being pricked by a needle, I felt panicked*." (AR, ED Nurse, 41 years old, July 13, 2025)

Others, like FU, responded with both anxiety and quick preventive action, by cleaning the wound and monitoring it. This indicated awareness of the need for immediate measures despite lingering anxiety.

> "*Immediately after being pricked, I felt panicked and anxious, then I immediately cleaned the wound and monitored it over the following days*." (FU, ED Nurse, 38 years old, July 13, 2025)

Interestingly, AN expressed indifference, as the incident occurred before the needle was used on a patient. This showed how risk perception strongly influenced the level of anxiety experienced.

> "*Immediately after being pricked, I felt indifferent because it happened before the needle was used on a patient*." (AN, ED Nurse, 33 years old, July 13, 2025)

The perspectives of supporting informants indicated that emergency department (ED) nurses generally experienced emotional responses such as fear, anxiety, and panic immediately after experiencing a needlestick injury. particularly when the needle had been used or contaminated with the patient's blood. MY explained that nurses commonly experienced anxiety and fear when the needle originated from a patient. As stated by MY:

> *"Usually, I see nurses feeling anxious or afraid, especially when the needle comes from a patient."* (MY, Head of ED, 45 years, July 14, 2025).

Similarly, RA observed that nurses could experience panic and anxiety, particularly when the needle had been contaminated with the patient's blood due to concerns about contracting an infectious disease. RA stated:

> *"I see that staff may panic and feel anxious, especially when the needle has been contaminated with the patient's blood; they are worried about contracting an infectious disease."* (RA, Head of Outpatient Services, 40 years, July 14, 2025).

These perspectives from the supporting informants were consistent with the experiences reported by ED nurses, indicating that the condition of the needle and the perceived risk of disease transmission influenced the intensity of emotional responses following an needlestick injury.

Overall, the experiences of ED nurses at Majene Regional General Hospital demonstrated that emotional responses immediately after needlestick injury were highly situational, influenced by whether or not the needle had been used on a patient. The responses ranged from fear, panic, anxiety, stress, and trauma, to indifference. These findings underline that needlestick injury impacts extend beyond the physical puncture wound to impose significant psychological burdens on nurses.

DISCUSSION

The findings reveal that the first experience of needlestick injury triggered strong psychological reactions such as fear, panic, anxiety, and even trauma, particularly when the needle had been used on a patient. For some nurses, this fear stemmed from uncertainty about the patient's health status and the potential for disease transmission. These emotional responses are consistent with Matsubara et al., who reported that nurses experiencing needlestick injury showed significantly higher anxiety scores compared to those who had not.(10) Similarly, Widiani et al. found that psychological responses included fear, sadness, guilt, shame, and vigilance.(13) This suggests that beyond physical injury, needlestick injury imposes a significant psychological burden.

Participants emphasized that needlestick injury often occurred in emergency situations, under high work pressure, or during complex procedures such as inserting IV lines in struggling patients. Nurses frequently prioritized patient care over their own safety, sometimes delaying incident reporting or wound management. This reflects the tension between professional responsibility and personal protection. Comparable findings were noted by Alejbreen et al., who highlighted that work fatigue, shift pressure, and high-speed procedures increase the risk of needlestick injury among healthcare workers.(14) Such results suggest that environmental and organizational factors contribute substantially to occupational injuries in the ED.(15)

Despite the initial shock, many participants described their needlestick injury experience as a turning point for reinforcing safety practices. Nurses became more vigilant, adhered more strictly to Standard Operating Procedures (SOPs), and recognized the importance of using PPE and reporting incidents. These reflections demonstrate that needlestick injury, while traumatic, also provides opportunities for professional growth. Alejbreen et al. found that 84% of workers involved in needlestick injury incidents were already using PPE, yet accidents still occurred, underscoring the need for both technical skill and mental readiness.(14) Similarly, Alfulayw et al. emphasized preventive programs such as training, sharps disposal systems, and immunization as essential measures to reduce risks.(16)

The study also highlights the need for institutional support. Some participants delayed reporting needlestick injury, reflecting barriers such as workload and prioritization of patient safety. Underreporting is a well-documented challenge, often linked to fear, stigma, or perceptions of low risk.(17,18) Effective communication, supervision, and a non-punitive reporting culture are therefore crucial to ensure that incidents are documented and managed appropriately.(19) Organizational strategies, such as improving working conditions, stress management, and participatory prevention programs, have been shown to reduce needlestick injury in high-pressure settings.(20)

Overall, the lived experiences of ED nurses show that needlestick injury is not only a physical injury but also a psychologically and socially complex event. High-pressure work conditions and patient emergencies exacerbate risks, while personal experiences shape vigilance and preventive behaviors. To address this multidimensional issue, hospitals should strengthen technical training, provide psychosocial support, and implement effective reporting systems to safeguard nurses' physical and mental well-being.

CONCLUSIONS AND RECOMMENDATIONS

This study shows that the experiences of Emergency Department (ED) nurses at Majene Regional General Hospital in dealing with needlestick injury are understood not only as physical incidents caused by sharp objects, but also as events with significant psychological impacts. Feelings of fear, anxiety, panic, and stress emerged as emotional responses stemming from concerns about contracting infectious diseases from patients. The fast-paced, high-pressure ED work environment, along with the demand for immediate action in emergency situations, serves as a major trigger for needlestick injury, further exacerbated by fatigue, shift work, and lack of vigilance. Nevertheless, these experiences also became valuable reflections for nurses to be more disciplined in adhering to standard procedures, enhancing vigilance, using personal protective equipment (PPE), and consistently reporting incidents. Therefore, the findings highlight the need for technical training, stress management, psychosocial support, and responsive reporting systems to strengthen healthcare worker protection and improve occupational safety standards in hospitals.

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