**Original Research Article**

**Prevalence and Burden of Needlestick Injuries Among Healthcare Workers in a Catholic Hospital, Ghana: A Mixed-Methods Study.**

**Abstract**

**Background:** Needlestick injuries (NSIs) represent a significant occupational risk for healthcare workers (HCWs) globally, particularly in resource-limited settings such as Ghana. These injuries not only expose HCWs to serious blood-borne infections like HIV, Hepatitis B, and C but also contribute to substantial psychological distress and economic burdens. Despite existing preventive measures, underreporting and inadequate management of NSIs remain persistent challenges that hinder effective occupational health interventions.

**Objective:** This study aimed to determine the prevalence of needlestick injuries among healthcare workers at Catholic Hospital, Battor, identify key occupational and organizational contributors and evaluate the associated psychological and economic burdens.

**Methods:** A mixed-methods cross-sectional study was conducted among 203 HCWs involved in direct patient care. Quantitative data were collected via structured questionnaires and analyzed using STATA 14, while qualitative data were obtained through in-depth interviews with eight (8) HCWs who had experienced NSIs and were analyzed thematically.

**Results:** The prevalence of NSIs among participants was 34.16%, with nurses and midwives constituting the majority (75.36%) of affected individuals. No variable showed a statistically significant association with NSI occurrence. Formal reporting of NSIs was low, with only 42.55% of cases documented. Economic burdens primarily arose from increased nutritional demands during post-exposure prophylaxis (PEP), incurring costs ranging from 50 to 100 US dollars, often unaffordable for affected workers. Psychologically, respondents reported fear of infection, anxiety, insomnia, and emotional distress, with some contemplating resignation due to repeated injuries. Qualitative narratives highlighted feelings of trauma, stigma, and inadequate institutional support, further exacerbated underreporting and compromised mental well-being.

**Conclusion:** NSIs remain a prevalent yet underreported occupational hazard among healthcare workers in Catholic Hospital, Battor, contributing to significant psychological and economic consequences. To mitigate these challenges, comprehensive strategies including strengthening workplace safety, fostering supportive reporting cultures, and enhancing post-exposure support services, are urgently needed. These interventions are critical to safeguarding healthcare workers’ well-being and ensuring sustainable healthcare delivery in Ghana.

**Keywords:** Needlestick injuries, healthcare workers, psychological impact, economic burden, post-exposure prophylaxis

**1. Introduction**

Needlestick injuries (NSIs) are a frequent and significant occupational risk encountered by healthcare workers globally. NSIs are defined as penetrating stab wounds from needles or other sharp objects that may result in exposure to blood or other potentially infectious material (Bharti et al., 2022; Shenoy M et al., 2025). NSIs are common accidents in the healthcare environment and are harmful as they facilitate the transmission of blood-borne diseases.

Globally, over 2 million occupational exposures to sharp injuries occur annually among 35 million healthcare workers (HCWs) (Aliyo et al., 2024). These exposures contribute significantly to the transmission of blood-borne diseases like Human Immunodeficiency Virus (HIV), Hepatitis B and C infections, especially in sub-Saharan Africa where occupational health systems are often inadequate (Debelu et al., 2023). In a study by (Bharti et al., 2022; Li et al., 2024a), healthcare workers (HCWs) face significant risks from percutaneous occupational exposure, with 37% of hepatitis B (HBV), 39% of hepatitis C (HCV), and 4.4% of HIV infections attributed to such exposure. In developing countries, 40–60% of HBV infections among HCWs are linked to occupational hazards while the proportion is less than 10% in developed countries, largely due to widespread vaccination coverage, strict compliance with infection‐prevention protocols, and robust screening and treatment initiatives (Department of Health & Services, n.d.; Hosseinipalangi et al., 2022). The effects of these injuries extend beyond physical harm, significantly affecting the psychological well-being of healthcare workers. This can negatively influence their job performance. Today, most healthcare facilities recognize the significance of needlestick injuries and view them as key indicators for enhancing Infection Prevention and Control (IPC) practices. As a result, standard operating procedures have been established to help prevent the occurrence of such injuries (Alfulayw et al., 2021a; Bouya et al., 2020a; Negash et al., 2024). Despite this effort, there are incidents of these injuries reported from India and various countries(Bharti et al., 2022; Shenoy M et al., 2025). A study conducted in Saudi Arabia estimated an annual rate of 3.2 sharps injuries per 100 occupied beds across 52 Ministry of Health hospitals(Abalkhail et al., 2022). Center for Disease Control and Prevention (CDC) estimates that nearly 385,000 needles and sharps-related injuries occur every year to HCWs in the United States (Hosseinipalangi et al., 2022).

In Ghana, a study by (Tawiah et al., 2024b, 2024c), which aims to determine the prevalence and predisposing factors of NSIs among healthcare support staff in the Greater Accra region found a higher prevalence than other regions. Similarly, (Kumah et al., 2020), conducted a study on the prevalence and risk factors associated with needlestick injuries (NSIs) among nurses at the Accident and Emergency Department of Komfo Anokye Teaching Hospital in Kumasi, Ghana, reported a 47% prevalence of needlestick and sharps injuries. Of these, 33.6% were specifically due to needlestick injuries. A leading causative factor of NSIs include high workload, mental stress, fatigue due to prolonged work hours, lack of supervision, and a casual attitude of senior staff ( Aliyo et al., 2024).

In Ghana, data on needlestick and sharps injuries are scarce, with underreporting and poor documentation posing significant challenges(Obirikorang et al., 2019; Tawiah et al., 2024a). This lack of reliable data makes it difficult for authorities to assess the true impact of these occupational exposures and develop effective policy responses. When incidents go undocumented, the issue is easily overlooked, potentially becoming a silent yet serious health hazard.

Despite the availability of post-exposure prophylaxis (PEP) and training in infection prevention and control (IPC), NSIs persist due to factors such as high workloads, poor staffing, inadequate safety protocols, and underreporting. In Ghana, there is a dearth of reliable data on the prevalence of NSIs, making it difficult to inform policy and protect HCWs effectively. This study measured how common needlestick injuries are among all staff at Catholic Hospital, Battor, and identified key contributors like heavy workloads, fatigue, supervision gaps, and training deficits; to those injuries. It also examined the psychological toll (anxiety, stress, fear of infection) and the direct costs workers incur for post-exposure care.

**2. Methods**

**2.1 Study design and setting:** This cross-sectional study was conducted at Catholic Hospital, Battor. The Catholic Hospital, located at Battor, in the Volta Region, Ghana, was established in September 1956 by Bishop Joseph Oliver Bowers and Dr. Hildegard Birkhahn, following a 1953 appeal by the paramount chief, Torgbe Dzekley I, for a facility to serve his community’s health needs. Initially authorized as a wound-dressing station and maternity clinic, it began full operations in 1957 when four Dominican missionary sisters arrived to nurse and build the fledgling hospital. Over the decades, it has grown into a 245-bed regional referral center, offering a wide range of services—including surgery, outpatient care, ophthalmology, Ear, Nose and Throat, dentistry, psychiatry, nutrition, and emergency services, drawing patients from across Ghana and neighboring countries.

**2.2 Study Population:** The study targeted HCWs engaged in direct patient care, including nurses, midwives, doctors, physician assistants, laboratory technicians, and ward assistants. The total study population comprised 250 healthcare workers out of which 203 were eligible to participate in the study. The breakdown by professional category was as follows:

Nurses (n = 112): Registered general nurses working on the wards, in outpatient clinics and theatre recovery, responsible for administering medications, monitoring vital signs, and performing invasive procedures (e.g. cannulation, injections).

Midwives (n = 50): Specialist nurses in the maternity unit and labour ward, providing antenatal, intrapartum and postpartum care—including deliveries, episiotomy repairs and newborn assessments.

Doctors (n = 10): This group included medical officers, resident doctors, interns and specialists across departments (Medicine, Surgery, Paediatrics, Obstetrics & Gynaecology) who perform needle‐based procedures (e.g. phlebotomy, lumbar punctures, IV line insertions).

Physician Assistants (n = 5): Clinical officers and physician assistants who conduct patient assessments, suturing, minor surgical procedures and some emergency interventions under doctor supervision.

Laboratory Technicians (n = 8): Staff in the haematology, microbiology and biochemistry labs who routinely handle blood collection, specimen processing and sharps disposal.

Ward Assistants (n = 18): Support staff (orderlies, health aides) helping with bed‐making, patient transport, clearing used sharps containers and assisting with basic nursing tasks.

**2.3 Sampling and Sample Size:** A total of 250 HCWs were eligible, of which 203 participated, yielding a response rate of 81.2%. Census sampling was chosen to include all eligible healthcare workers within the study setting to ensure comprehensive data collection and maximize the representativeness of the findings. This approach is particularly appropriate when the target population is relatively small and accessible, as it eliminates sampling error and provides a complete overview of the population’s characteristics(Kumar, 2024). Given the total population of 250 healthcare workers, census sampling enhances the study’s validity by capturing data from the entire group rather than a subset.

**2.4 Data Collection:** A structured, pretested questionnaire collected data on demographics, NSI history, reporting practices, and associated risk factors. Qualitative data were collected through semi-structured interviews with eight HCWs who had experienced NSIs.

**2.5 Data Analysis:** Quantitative data were entered into Excel and analyzed using STATA 14. Chi-square tests were used to identify associations between NSIs and demographic or workplace factors. Binary logistic regression was employed to assess the association between needlestick-injury status (yes/no) and each sociodemographic factor. Results are presented as odds ratios (ORs) with corresponding 95 % confidence intervals, and statistical significance was defined as p < 0.05. Qualitative data were transcribed and analyzed thematically.

**2.**6. **Inclusion and exclusion criteria**: The study included all healthcare workers who were directly involved in patient care at Catholic Hospital, Battor, such as nurses, midwives, physicians, physician assistants, laboratory technicians, and ward assistants, who had been employed on a full-time or contract basis for at least six months, were aged 18 years or older, and were willing to provide written informed consent. Staff who were not engaged in clinical patient care (for example, administrative personnel, housekeeping, or security), those who were on extended leave (maternity, sick, or annual leave) throughout the data-collection period, temporary visitors or trainees with less than six month’s tenure at the hospital, and anyone who declined to participate or did not provide consent were excluded from the study.

### **2.6** **Ethical Consideration**

Ethical approval for the study was obtained from the Ensign College of Public Health Ethics Review Board. Additional permission was secured from the heads of the healthcare facilities. Informed assent was obtained from all participants after the study’s purpose was explained. Those who consented indicated their agreement by ticking a designated box. Participation was entirely voluntary, and respondents were informed of their right to withdraw from the study at any point without any consequences. No financial or material incentives were provided to avoid introducing response bias.

**3. Results**

**3.1 Demographics:** Participants had a mean age of 31.2 years; 68% were female. Nurses and midwives formed the largest group (70.8%). Most had received IPC training (92.5%) and had less than 10 years of work experience.

**Table 1: Socio Demographic Characteristics of Respondents, N=203**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Characteristics** | **Frequency** | **Percentage**  | **Mean** | **Min** | **Max** |
| **Age**  |  |  | 31.2 | 19 | 59 |
| **Years of work experience**  |  |  | 6 | 1 | 39 |
| **>10yrs** **11-20yrs****>20yrs**  | 1751311 | 87.946.535.53 |  |  |  |
| **Hours of work daily**  |  |  | 7.7 | 1 | 12 |
| **Gender:**  Male  Female  | 65138 | 3268 |  |  |  |
| **Education**Middle/JHS/Sec Undergraduate Postgraduate | 521428 | 25.7470.33.93 |  |  |  |
| **Work Category** Doctors/Dentist/PANurses & Midwives Laboratory Technicians Ward Assistants  | 9143743 | 4.4670.793.4721.29 |  |  |  |
| **IPC**Trained Not Trained  | 18615 | 92.547.46 |  |  |  |

**3.2** **Prevalence of NSIs:** During the study, healthcare workers reported various occupational injuries. Cuts (50%) and blood splashes (53.2%) were the most common incidents. Other injuries included bruises (11.33%), abrasions (3.45%), and sharps-related wounds (5.43%). About 37.44% experienced glove tears while handling sharps. Needlestick injuries were reported by 34.16% of respondents, with varying frequencies, but only 42.55% of these cases were formally reported.

**3.3** **Risk Factors:** The table below shows a relationship between risk factors and their association with NSIs. None of the examined predictors showed statistically significant associations with needlestick injury at the 0.05 level, as all confidence intervals include 1. Females had nearly identical odds of injury compared with males (OR=1.0). Compared with Doctors/Dentists/PAs, other work categories displayed lower ORs, but precision was limited by small counts. Staff with 11–20 years’ experience showed ~1.7‑fold higher odds relative to <10 years, although this was not significant.

Table 2: **Risk Factors for NSIs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Predictor | Comparison | Odds Ratio | 95% CI Lower | 95% CI Upper |
| Gender | Female vs Male | 0.99 | 0.53 | 1.84 |
| Work Category | Nurses vs Doctors | 0.46 | 0.12 | 1.80 |
| Work Category | Lab vs Doctors | 0.32 | 0.04 | 2.62 |
| Work Category | Ward vs Doctors | 0.24 | 0.05 | 1.08 |
| Work Experience | 11-20 yrs vs <10 yrs | 1.67 | 0.54 | 5.20 |
| Work Experience | >20 yrs vs <10 yrs | 1.11 | 0.31 | 3.96 |

**3.4 Economic Burden:** Respondents expressed different views about the cost of management of post exposure prophylaxis. One respondent said taking care of themselves after the incident was not expensive. A 36-year-old midwife with 16 years of working experience said “*It did not cost me so much even though I was craving for more milo beverages*”. ( P2 midwife, 36 years with 16 years working experience).

 However, several interviewees expressed high cost when taking the prophylaxis. Some were able to estimate the cost incurred during the treatment. Most of this high cost of living was spent on food:

 “*It cost me a lot because I have to eat much. I sometimes wake up at dawn to eat. I used to eat twice a day but now I have to eat three or four times a day. I spent over GHC500.00 during the period of taking the drugs”* (P5 Nurse, 25 years, and 3 years working experience).

 “*I spent over GHC 600.00 on food items. This is because I couldn’t prepare food for myself*” said (P3, a female nurse, 25 years old with 5 years working experience.) A male orderly, (P8 40 years old with 4 years’ work experience) also said “*I spent over GHC 1000.00 due to the additional food items”*.

**3.5 Psychological Impact:** Respondents expressed varied forms of feelings whiles on the post exposure prophylaxis. Some of them expressed fear during the period.

 *“I taught I will be infected with the HIV and cried the whole day thinking my “world” was over because the patient was HIV positive. Because of the way I was frightened, next time I will quite the job anytime I get another prick”* was what a (P3, female nurse, aged 25 with 5 years working experience expressed).

*“I was afraid initially but have to accept it. The drug made me sexually weak”,* (P8, orderlies, 40-year-old)

Besides, some of the respondents also experienced anxiety as expressed by a respondent, “*I was not comfortable most especially in the first instance. Because I did not know the status of the patient. Even though the person was later negative, I was still not happy within myself. This was because the condition has a window period”* (P2 Midwife 36 years old)

*“I was traumatized and threw my gloves away without continuing serving the medications to the rest of the patients*” (P4, Nurse 26 years old with 5 years working experience)

**3.4: Thematic Analysis**: On the interview excerpts on economic burden and psychological impact, two overarching themes and associated sub-themes emerged:

**3.4.1. Economic Burden**: This theme captures how, despite free PEP medications, many healthcare workers incurred heavy indirect costs—often between GHC 500 and GHC 1,000—mainly for extra meals and convenient food options needed to manage drug side-effects, turning what should have been a covered treatment into a significant financial strain.

**Sub-theme 1.1: Varied Perceptions of Financial Impact:** A participant perceived the additional expenses associated with post-exposure prophylaxis (PEP) as inconsequential. These participants noted that out-of-pocket costs largely related to supplemental nutritional needs, were easily absorbed within their routine budgets and did not disrupt their finances

*“It did not cost me so much even though I was craving for more milo beverages.”* (P2, midwife, 36 years)

While some staffs considered PEP costs negligible, many others faced substantial indirect expenses spending between GHC 500 and over GHC 1,000 primarily on increased meals and convenience foods required to tolerate the medication highlighting how nutritional and lifestyle adjustments can impose a significant financial burden despite treatment itself being covered.

 *“I spent over GHC 500.00 during the period of taking the drugs.”* (P5, nurse, 25 years)

*“I spent over GHC 600.00 on food items. I couldn’t prepare food for myself.”* (P3, nurse, 25 years)

*“I spent over GHC 1000.00 due to the additional food items.”* (P8, orderly, 40 years)

Across the board, increased food intake during prophylaxis emerged as the major hidden cost, reflecting both physiological side-effects and logistical challenges in meal preparation.

3.4.2. **Psychological Impact:** Participants described profound emotional and mental distress following needlestick injuries, which coalesced into three key subthemes:

**Sub-theme 2.1: Acute Fear of Infection**: Upon sustaining a needlestick injury, virtually all participants described an overwhelming and immediate terror centered on the possibility of contracting HIV. This acute fear often manifested physically—racing heart, sweating, and trembling—and emotionally, with many recounting moments of panic or outright despair.

“*I thought I would be infected with HIV and cried the whole day… next time I will quit the job*.” (P3, nurse, 25 years)

**Sub-theme 2.2: Anxiety and Uncertainty**: Worry persisted throughout the prophylaxis period, driven by the “window period” of HIV testing and uncertainty about the source patient’s status. Even when subsequent tests proved negative, participants reported lingering unease and hypervigilance around sharps.

“*I was not comfortable… even though the person was later negative, I was still not happy.”* (P2, midwife, 36 years).

**Sub-theme 2.3: Physical and Emotional Trauma**: Beyond fear and anxiety, respondents recounted side-effects of the medication (e.g., profound fatigue, weakness) that compounded their distress. Some described behaviors; like abruptly discarding gloves or avoiding patient contact, that reflected the depth of their psychological shock. Some participants had this to say

“*The drug made me sexually weak.”* (P8, orderly, 40 years)

*“I was traumatized and threw my gloves away without continuing….”* (P4, nurse, 26 years)

While a minority perceived PEP costs as trivial, the majority experienced pronounced financial strain driven almost entirely by increased nutritional needs.

Psychological Impact: NSIs triggered immediate fear and longer-term anxiety, compounded by drug side-effects and traumatic reactions that, in some cases, disrupted routine patient care.

These themes highlight the dual toll—both financial and emotional—that NSIs exact on HCWs. Interventions should therefore address not only the direct medical management of exposures but also subsidize associated living costs and offer targeted psychological support.

**4. Discussion**

This study confirms that needlestick injuries (NSIs) are both common and of significant concern among healthcare workers at Catholic Hospital, Battor, with one-third of participants reported sustaining injury. This rate is broadly in line with prevalence estimates from other sub‐Saharan African settings ranging from roughly 30% to 50% in Nigeria, Ethiopia, and South Africa but remains lower than those documented in several Asian and European studies, where rates as high as 45–60% have been reported(Alfulayw et al., 2021c; Aliyo et al., 2024; Tsegaye Amlak et al., 2023). Even within Ghana, a higher prevalence of 47% was observed among Accident and Emergency nurses at Komfo Anokye Teaching Hospital in Kumasi (Kumah et al., 2020), suggesting that local context and departmental workload may play important roles in NSI risk. From a public-health standpoint, these regional differences underscore how resource availability, training emphasis, and procedural workloads shape sharps-safety risks, and signal the need for context-tailored prevention strategies.

The study found no statistically significant predictor of needlestick injury (NSI) among staff, yet the direction of the odds ratios echoed patterns seen in larger studies and provides useful context for occupational safety. Gender differences were negligible: females and males showed virtually identical odds of sustaining an NSI (OR ≈ 1.0). This aligns with research demonstrating that once job role is accounted for, apparent sex disparities in NSI rates largely disappear, suggesting task distribution rather than biology explains most observed differences (Ji et al., 2025; Tonghui et al., 2023).

Professional group patterns were inconclusive. Although nurses, laboratory staff and ward assistants displayed lower odds of NSI than doctors, the corresponding confidence intervals were wide because each subgroup contained few events. In contrast, multicentre cohorts typically identify nurses as bearing the greatest absolute burden of injuries, reflecting their frequent engagement in needle-related procedures(Bouya et al., 2020b; Saadeh et al., 2020; Singh et al., 2024). Consequently, the “protective” trend in our data is more plausibly an artefact of low power or under-reporting than a genuine reversal of risk.

Years of experience also showed a non-significant signal: staff with 11–20 years of service had roughly 1.7-fold higher odds of NSI compared with those in service for less than 10 years. The broader literature paints a complex picture—some studies reveal a U-shaped risk curve with mid-career lows, while others report the highest incidence among early-career staff (Bouya et al., 2020b; Mohamud et al., 2023). These mixed findings indicate that technical proficiency, workload intensity, complacency, and the frequency of refresher training all interact to shape exposure risk.

Moreover, while institutional protocols and post‐exposure prophylaxis (PEP) services are in place, fewer than half of incidents of NSIs in this study were formally documented, which further compounds the problem by limiting opportunities for targeted interventions and system‐level learning. Similar underreporting has been noted elsewhere in Ghana and beyond, often driven by fear of blame, perceived stigma, or a belief that minor incidents do not warrant formal notification(Aliyo et al., 2024; Bharti et al., 2022). This underreporting mirrors a 31.9% figure reported by (Kumah et al., 2020) and is echoed globally. Studies in Ethiopia and India have attributed underreporting to fears of stigma, perceived insignificance of minor injuries, and lack of knowledge regarding reporting protocols (Aliyo et al., 2024; Bharti et al., 2022; Hs, 2022; Shenoy M et al., 2025). A recent study in Ghana by (Tawiah et al., 2025) emphasized that many HCWs were unaware of formal reporting systems or lacked access to standardized documentation procedures. Taken together, these findings underscore the need for multifaceted strategies that address not only individual practices but also organizational factors: optimizing staffing levels, enforcing non‐punitive reporting systems, and embedding regular, scenario‐based training that reinforces safe sharps handling under real‐world pressures. Only through such comprehensive measures can the burden of NSIs and their attendant physical, psychological, and economic consequences be meaningfully reduced in high‐demand clinical settings like Catholic Hospital, Battor.

The economic burden faced by HCWs post-injury was primarily due to increased dietary demands necessitated by antiretroviral therapy (ART) and the disruption of regular routines. The cost of PEP imposed a heavy financial burden on staff, often equating to a sizeable portion of a healthcare worker’s monthly income. These findings are consistent with those from Poku et al., (2025a), who found that occupational injuries impose financial strain not only through direct medical costs but also through increased food consumption and loss of productivity. Although medication costs were absorbed by the hospital, the indirect costs were borne solely by the affected HCWs, compounding their economic vulnerability. If left unaddressed, these out‐of‐pocket expenses may discourage healthcare workers from seeking or completing PEP, thus jeopardizing their own safety and weakening facility‐wide infection control. Therefore, institutions should step in to subsidize meal allowances and compensate for routine disruptions to ensure timely prophylaxis adherence.

Beyond economics, psychological impact was profound and multifaceted. HCWs reported fear of HIV infection, anxiety over patient status, insomnia, and trauma. This aligns with the work of Hosseinipalangi et al. (2022), who noted that the psychological effects of NSIs can persist for months and contribute to job dissatisfaction and burnout. The fear of HIV seroconversion, particularly when patient status is unknown or within the window period, creates sustained emotional distress (Li et al., 2024b). Furthermore, some respondents reported contemplating job resignation, a phenomenon reported in a similar context by Bouya et al. (2020), who found that repeated exposures to NSIs can significantly reduce job commitment and morale. Alfulayw et al. (2021c) highlighted that failure to address these psychological effects can lead to long-term workforce attrition, especially among nurses and junior staff.

Another emerging concern is institutional culture and response. Studies suggest that institutional apathy toward NSIs exacerbates the problem. A lack of feedback on reported cases, absence of psychological counseling, and punitive environments contribute to silence and fear among HCWs (Negash et al., 2024). Developing a non-punitive, supportive reporting environment has been recommended by CDC and WHO best practice guidelines, yet implementation remains slow in many LMICs including Ghana.

Infection Prevention and Control (IPC) training, although received by almost all respondents in this study, appears insufficient in translating knowledge into consistent practice. This points to a potential gap between training and behavior, likely influenced by systemic stressors such as understaffing, inadequate supervision, and time constraints. This observation is supported by Bharti et al. (2022) and Shenoy et al. (2025), who called for more practical, context-specific IPC drills and routine refreshers to foster muscle memory and reinforce safe practices. This highlights that theoretical IPC instruction alone won’t stick under real‐world pressures; facilities must build in hands‐on simulations, mentor‐led bedside coaching, and protected time for regular refreshers to ensure that safe practices become second nature.

5.0 **Study limitation**

The focus on a single hospital restricts the ability to apply the findings broadly across other healthcare facilities in Ghana. Information obtained through self-reporting may be influenced by memory lapses or intentional omission. Furthermore, the small number of participants in the qualitative interviews may have constrained the richness of insights. Lastly, the absence of observational techniques means that the accuracy of reported behaviors could not be independently verified.

**6. Conclusion**

Needlestick injuries (NSIs) affect about one-third of frontline staff at Catholic Hospital, Battor—mirroring incidence across sub-Saharan Africa. Although no demographic variable reached statistical significance, the clustering of events among nurses and midwives and their link to heavy workloads point to procedural volume and organisational pressure, rather than individual traits, as the main drivers of risk. Under-reporting is pervasive: fewer than half of incidents are formally recorded, depriving the hospital of critical surveillance data and weakening its safety culture.

Beyond the immediate threat of blood-borne infection, NSIs exact a double toll on workers. Indirect economic costs—especially the extra food required while on post-exposure prophylaxis—consume a sizeable portion of monthly income, while psychological sequelae such as fear, anxiety, insomnia and trauma can linger for months, eroding morale and retention. These findings show that NSIs are not isolated clinical mishaps but catalysts for financial strain and mental-health distress. A piecemeal response will not suffice; effective mitigation demands an integrated strategy that couples improved staffing and workflow design with safety-engineered devices, hands-on IPC refreshers, non-punitive reporting mechanisms and robust economic and psychosocial support for exposed staff. Without such comprehensive action, NSIs will continue to undermine worker wellbeing and threaten the sustainability of high-quality patient care.

Consent for publication

Not applicable

Data Availability

Data used to support this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declared that they have no competing interests.

Disclaimer (Artificial intelligence)

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