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ORIGINAL ARTICLE

Understanding the injuries and environments of vulnerable healthcare workers in Liberia and Ghana: a qualitative study

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Abstract

Background: While sharps injuries are a hazard to healthcare workers globally, research has concentrated on high-income regions. West Africa, including Liberia and Ghana, has high rates of human immunodeficiency virus and hepatitis B virus infections, which can be transmitted via sharps injury. Use of safety-engineered devices is highly limited in this region.

***Objective*:** To explore factors contributing to frequent sharps injuries and underreporting among health care workers in Liberia and Ghana, and to recommend potential interventions.

Design: Semi-structured interviews were conducted via an Internet-enabled platform among nurses, midwives, physicians and physician assistants in Liberia and Ghana. Questions focused on injury history, sharps injury prevention, and work environment. Interview transcripts were analyzed deductively. Recruitment ended when data saturation was reached.

Results: Sixteen interviews were conducted among seven Liberian and nine Ghanaian healthcare workers. Unexpected patient movement and colleagues contributed to seven of 16 injuries. Prelicensure sharps injury prevention training was limited, though more accessible post licensure. Many participants desired more training. Most (n = 12) did not report their injuries. While many viewed their work environment as adequate, others noted specific issues, including inadequate sharps disposal containers and limited supplies.

Discussion: Training deficiencies and systemic gaps were key contributors to injury and underreporting. Respondents showed interest in enhanced training and clearer procedures.

Conclusion: The results of this study suggest ways to reduce sharps injuries in Ghana and Liberia, including additional training for workers and more accessible sharps disposal containers. Materials developed to train these workers have the potential to be useful to workers anywhere resources are constrained.

Keywords: *health personnel*; *needlestick injuries*; *Africa*; *Western*; *bloodborne infections*

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While sharps injuries are a major hazard facing healthcare workers worldwide, research on sharps injuries is concentrated in high-income countries (1, 2). West Africa, specifically, has little sharps injury research despite high rates of hepatitis B virus (HBV) and human immunodeficiency virus (HIV), both of which are bloodborne illnesses that can be transmitted via sharps injury (2, 3). Liberia, a country of five million people, has the region's second highest rate of HBV at 14.9%. Ghana, a larger country of about 33 million people, has an HBV rate of 8.6%, also constituting a significant danger to healthcare workers (3). Despite the prevalence of HBV, low rates of HBV vaccination (48.5–33.3%) have been reported among healthcare workers in West Africa (4). Low availability of personal protective equipment has also been observed (5), increasing healthcare workers' risk.

Background

Previous research among nurses in Ghana has indicated that there may be a highly vulnerable worker population that experiences sharps injuries frequently (6). These findings reported that of the 28.9% of nurses who reported any sharps injury in the past year, 36.3% reported four or more such injuries (6). However, it was unclear how generalizable this research was since it was conducted at a single facility and only among nurses.

To further explore the vulnerability of healthcare workers to sharp injuries, we conducted an electronic survey among different categories of healthcare workers (physicians, nurses, midwives, and physician assistants) throughout Liberia and Ghana. The survey link was disseminated to respondents via professional association platforms (e.g. Liberian Nurses Association, Graduate Physician Assistants Association of Ghana) from February to June 2022. Sharps injuries were defined as a 'wound caused by a needle or other sharp object (like a scalpel) that punctures the skin when you're working'. There were 509 responses with participation from 11 of the 15 counties in Liberia and all 16 regions of Ghana. Overall, 15.3% of participants reported three or more injuries in the last year (7). Analysis showed that these frequently injured workers were more likely to be Liberian than Ghanaian ($P < 0.01$), and that a larger proportion of them reported never receiving a training at work on sharps safety ($P = 0.01$) (7). However, in other ways, frequently injured workers were similar to workers who reported two or fewer injuries in the past year. The frequently injured group spanned all four professional groups ($P = 0.83$) to about the same degree: midwives were the highest percentage of frequently injured workers (17%), while physician assistants were the least (12.4%) (7). Frequently injured workers also performed similarly to other workers when answering knowledge-based sharps safety questions ($P = 0.45$), and they scored their workplaces similarly on Centers for Disease Control's STOP STICKS: Safety Climate survey ($P = 0.24$) (7).

Thus, further research on these workers was needed to understand what differentiated them from their less-frequently injured peers. The purpose of this qualitative study was to better understand high-risk worker groups, particularly frequently injured workers, and to identify opportunities for intervention and risk mitigation.

Methods

This qualitative study used semi-structured interviews with healthcare workers (physicians, nurses, midwives, and physician assistants) in Liberia and Ghana to better understand contributors to sharps injuries among high-risk worker groups. Participants who had completed the survey in 2022 ($n = 509$) detailed in the Background were invited to complete an interview if they indicated either: that they had three or more sharps injuries in the past year, or that they had not reported their most recent injury to their supervisor/manager. Many potential participants fell into both categories. Participants must also have previously consented to be contacted for a follow-up interview and provided a valid phone number.

Eligible participants were messaged via an encrypted platform to see if they were still willing to be interviewed. Interviews were conducted via an Internet-based encrypted platform (WhatsApp v2) that is widely used in both Liberia and Ghana. The interviewer was an experienced researcher based in the United States who had collected data in both Liberia and Ghana previously. Participants in Liberia gave verbal consent at the beginning of the interview as per the guidelines of the University of Liberia's Pacific Institute for Research and Evaluation's Institutional Review Board. Participants in Ghana were asked to provide signed written consent as per Ghana's Ethics Research Committee research guidelines. The consent form was provided via a secure document management platform that allowed the participants to review and sign using a smartphone.

The semi-structured interview guide (Appendix 1) was developed by researchers experienced in sharps injury research and in collecting data in Ghana and Liberia. Extant literature on sharps injuries, particularly the Centers for Disease Control's Workbook for Designing, Implementing, and Evaluating a Sharps Injury Prevention Program (8), were used to identify four research focus areas. This Workbook was selected for its applicability to a variety of healthcare settings and its emphasis on connecting data to sharps injury prevention activities. The four focus areas were captured in 10 questions: circumstances of injury (four questions), training in sharps injury prevention (one question), procedures for sharps injury reporting/follow-up (three questions), and work environment (two questions). Questions about the circumstances of injury asked about the specifics of the clinical care being provided at the time of the most recent injury. Questions on work environment asked the participant which aspects of their job contributed to injuries, and which protected against injuries. The guide was reviewed by a nurse practicing in Liberia prior to use. All interviews were conducted in English, the official language of both countries.

Interviews were recorded with participant permission. If the participant did not want their interview to be recorded, handwritten notes were taken and transcribed afterwards. Interview recordings were transcribed by a service that specializes in the transcription of research conducted outside the United States.

Transcripts were analyzed deductively using the focus areas as the coding framework, with each new answer considered a new code. These answers were tabulated by one investigator, and the resulting table was reviewed and confirmed by another investigator. Coding was conducted both by hand and using Microsoft Word 16.8.

Data saturation was determined to be reached when interviews no longer resulted in new answers to interview questions, consistent with prior definitions of 'data saturation' (9). Coding began while interviews were still being conducted to ensure saturation was reached prior to ending recruitment. Code saturation, defined by Hennick et al.

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as the point at which no new issues are identified in the data, using similar approaches, is typically reached around the 12th interview (10); our study team determined it had been reached at 16th interview.

This project was considered exempt by the Institutional Review Board of the University of Michigan and the University of Cincinnati. It was approved by the University of Liberia's Pacific Institute for Research and Evaluation's Institutional Review Board (Protocol #21-12-296) and the Ghana Health Services Ethics Research Committee (GHS ERC Number: 018/11/2021). Participants were compensated by sending approximately $3 USD to their mobile data accounts. Exact amounts varied due to fluctuations in local currency.

Results

In total, 16 healthcare workers were interviewed; nine in Ghana and seven in Liberia (response rate = 48.5%). Participants were contacted in small groups by order of survey response. Of the 17 survey respondents who were contacted but not interviewed, 12 did not respond to any messages, four initially replied but later stopped responding, and one declined to participate without offering a reason.

Ten participants were nurses, two were midwives, two were physician assistants, and two were physicians. See Table 1 for further demographics. The data from these interviews have been organized below according to the four focus areas from the CDC Workbook.

Circumstances of injury

Almost half of the interviewees [7] reported their most recent injury occurred when administering care to children: four during an injection, and one each during a blood draw, a surgical procedure, and an intravenous line insertion. The remaining nine interviewees were providing care to adults. Four were working in adult surgical settings. Five were providing care to adults in nonsurgical settings: maternity (two participants), emergency room, the ICU, and flex.

The circumstances of injury varied: four participants were injured due to unexpected movement of pediatric patients. As one Ghanaian nurse said: *I was trying to place the needle into the sharp box. Then the child accidentally pushed my, uh, my – my hand. And then the needle pricked my finger.*

Three participants reported being injured accidentally by a colleague. One Ghanaian nurse described a colleague injuring him while they performed a surgical procedure: *Mistakenly, he handed over the part with the needle mounted, and I got pricked.* A Liberian nurse reported being accidentally pricked by a colleague when a patient accidentally 'turned' while the colleague was placing a used needle in the sharps box.

Table 1. Participant demographics

Nationality	Totals
Liberian	7
Ghanaian	9
Total	**16**
Gender	
Man	7
Woman	9
Total	**16**
Healthcare worker type	
Nurse	10
Physician	2
Midwife	2
Physician assistant	2
Total	**16**
Years of experience	
Less than 1	0
1–3	4
4–8	4
9–15	7
16–25	1
>25	0
Total	**16**
Facility	
Public	11
Fee-based	1
NGO/FBO	3
Not specified	1
Total	**16**
Criteria for inclusion	
≥3 injuries in the last year	9
Didn't report most recent injury	4
Both	3
Total	**16**

Two participants were injured during surgical procedures – one while suturing. Two were injured by a sharp that was mixed in with other waste. A Liberian nurse stated that after assisting with a delivery: *I was asked to go and bring the instruments that we used, like the…the scissors, the sponge that were used…and the clamps. So in that process, uh, there was a needle in the towel, and I didn't know.*

One participant was injured while recapping a needle, and three injured themselves on unused needles while either drawing up medicines [2] or opening the packet that contained the syringe. Another Ghanaian nurse was injured when attempting to dispose of a used needle in the safety box: *So I was now forcing the other ones, the syringes, inside the safety box that was full. So in the process of pushing it, I got pricked by one of the needles inside.*

Training in sharps injury prevention

Overall, prelicensure instruction was limited. Seven of the participants reported that they received no sharps safety training during their prelicensure training. This group included one physician and one physician assistant, as well as five nurses.

Three others, a physician, a nurse, and a physician's assistant, reported receiving a few instructions during their prelicensure studies. The Ghanaian nurse reported:

Respondent: *Uh, actually, the time we were in school, the kind of education or training that was given to us that – it was that when you get pricked, you make sure you notify your supervisor. But you know…here, most of the things when they teach you in school, it's different from what you are doing in the field….*

Interviewer: Did they give you any other information besides recommending that you reported to your supervisor? Was there any other needle safety information?

Respondent: *No*.

The remaining six participants, that is, four nurses and two midwives, all reported more detailed prelicensure training. For these workers, this training included some (although in no cases all) of these topics: injection safety, drawing medication, proper positioning of the needle disposal container, avoiding recapping, and reporting all injuries.

A wider range of post licensure training was described, from none, to structured continuing education. Four participants reported there was no on-the-job training at their facilities, with one Ghanaian physician stating that the facility expects you to know sharps safety already.

Three others stated they had received a single training on sharps safety, often as part of a presentation on other infection prevention and control topics. As a nurse from Ghana stated: *It was once that we went for infection prevention training…And that one, they were just talking about [a picture], they just talk about it.* At times, these trainings were described as part of new employee orientation.

The seven participants who reported more than a single post licensure training often stated nongovernmental organizations, such as Doctors Without Borders or Operation Smile, provided the training. A Liberian midwife reported regular trainings offered by the government in collaboration with a nongovernmental organization: *More than three, four times I attend those workshops. I attended a workshop last – last year. It was just a refresher training. But I have been attending workshops about sharps safety.*

One participant, a nurse in Ghana, described ongoing facility-based training without a nongovernmental organization. *So this, you have a group of staff from each of the units. You come in. They remind you of, uh, sharp – proper disposal of sharps and all those things. So it's a – it's a continuous education that occurs in my facility.* This participant also described poster-style reminders about sharps safety topics displayed on the walls.

Procedures for sharps injury reporting/follow-up

The majority [12] of interviewees stated they did not report their most recent needle injury. In three cases, it was because the needle was unused at the time of injury. Two participants stated they did not report because they did not have an onsite supervisor to whom the injury could be reported. One Liberian nurse reported she did not inform her supervisor because she was afraid to take post-exposure prophylaxis. Another Liberian nurse stated she did not report because she was counseled not to do it by a co-worker. Two participants reported that they simply prefer not to report needlestick injuries. One stated: *So most of the things, when we are going to just get pricked, you don't notify your immediate supervisors, you just keep it to yourself….Because some of them they don't even pay attention to what you are telling them.*

The remaining three participants who did not report stated that while they did not report their most recent injury, they would have if they had believed it was serious. Two reported that they did not view injuries that did not bleed as serious. Another did not specify criteria for seriousness.

Four participants did report their injuries to a supervisor. One participant, a Ghanaian physician's assistant, specified he always reported every injury to his supervisor. One participant acknowledged that he was the exception and said many of his co-workers don't report for a few reasons: *Sometimes it's due to forgetfulness, and then also in the middle of trying to proceed to the next procedure or that – that's what – that's what I think because they forget or are rushing from task to task.*

A more common method of follow-up to injury than reporting the injury to a supervisor was assessing the source patient's laboratory test results. Ten participants reported ordering HIV and/or HBV tests or reviewing the source patient's chart for those test results. Another participant stated s/he tested for 'what I was afraid of'. One participant, a physician's assistant from Ghana, began post-exposure prophylaxis after the source patient tested positive for HIV.

Three participants tested themselves for HIV. One participant, a physician assistant, did so at the time of injury; another, a nurse, arranged for testing 6 months after her injury. Both confirmed at the time of injury that the source patient was HIV negative. Another participant, also a nurse, went for a test 2 weeks after the injury, and again a month after that. This nurse did not do any testing or chart review of the source patient.

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Work environment

Participants identified multiple aspects of their work environment that they felt protected them from sharps injuries or their effects. Two participants reported that their facilities offered a 1 month leave for workers who had to take post-exposure prophylaxis. Two participants noted their facilities provided post-exposure prophylaxis. Three participants noted adequate personal protective equipment and four described the presence of sharps containers. One nurse noted that their facility was careful to dispose of sharps boxes before they were filled beyond capacity. Lastly, another nurse noted that her facility's policy of separating waste enhanced safety: *…organic waste, the sharp waste, the domestic waste, and then the infectious or medical waste*.

When asked about aspects of the work environment that increased their risk, five participants generally denied hazards in the workplace. One Liberian midwife stated: *Our environment is okay. Yes, it is safe for us*.

Other participants did identify hazards. Inadequate supplies were mentioned several times. Three participants identified an inadequate number of sharps disposal containers as a hazard, while another stated the containers were made of insufficiently sturdy materials, and another that they are too small. One nurse stated inadequate supplies in general were a hazard; a midwife mentioned purchasing their own personal protective equipment and post-exposure prophylaxis. Two participants noted that post-exposure testing supplies sometimes ran out.

Staff issues were identified to a lesser degree. Staff nonadherence to sharps safety protocols was identified by two participants, and needing to rush was mentioned by one participant.

Other comments highlighted the issues of administering care to children. One participant mentioned the difficulty family members have restraining pediatric patients, and another mentioned aggressive parents and children.

Suggestions for how to improve safety varied. Four participants did not provide concrete suggestions. One interview ended early due to connectivity issues.

Seven participants suggested more training. A Ghanaian nurse was direct: *Yeah, the only thing that I have is that I would like to – to talk to you so that if you can come into our aid, like in a form of an NGO, to give education or training on the needle safety…Because for about 2 years now, there's no – we've not had a training on that, like that*. Another nurse suggested the training be recurring: *Do regular training, like in-services and regular training after maybe 6 months.* One participant, a nurse, said she wanted to see greater staff adherence to sharps policies promoted via direct monitoring and mentorship.

A few participants suggested engineering controls. One Liberian midwife recalled seeing needle-proof gloves used during maternity surgeries during the Ebola epidemic and wished they were still available now. One Ghanaian physician assistant expressed an interest in safety-engineered devices. Two participants suggested a greater quantity of sharps containers and another suggested sharps containers made of sturdier material: … *the needle can prick the box and still prick you. So I wish that maybe the safety boxes could have been metallic or rubber.*

Other suggestions included an increase in staffing, and greater clarity on where to get post-exposure prophylaxis, which was at times unavailable at the participant's facility.

Regarding injury documentation, only one participant, a physician assistant, was confident their facility had a written sharps safety policy or injury documentation system. The system was referred to as the 'incident book' where injuries were recorded. Five participants expressed certainty that their facility did not have a written policy or injury documentation, although one participant noted that while his facility did not record injuries, the facility to which he had been sent for post-exposure prophylaxis did.

Nine participants didn't specify whether their facility had a written policy, and one stated explicitly that she was unsure if the policy was written or not.

Discussion

These follow-up interviews added to our understanding of these at-risk workers, who were an important subset of the survey respondents due to their unusually frequent injuries or decision not to report their injuries. These interviews provided detailed and actionable insight into their experiences that the previously collected survey data did not. Conducting interviews via phone allowed us to access a geographically diverse, at times highly rural, group of participants. We believe this likely made our study more representative than if we have conducted interviews in a single area. Trends among the responses suggest promising avenues for future intervention.

This study contributes to the limited body of literature on sharps injuries in low- and middle-income countries. Including healthcare workers from a low-income country (Liberia) and a middle-income country (Ghana) helps fill a crucial evidence gap and offers context-specific perspectives from healthcare systems that are often overlooked.

Elimination and substitution controls were not mentioned by these participants. While there are theoretical opportunities to eliminate or reduce sharps use by prescribing oral medications instead of injectables, we suspect the reason participants did not suggest that approach is that the participants were aware either that the medication in question does not have an oral formulation, or that the oral formulation was unavailable.

Engineering controls were identified by participants. Engineering controls are often neglected in favor of administrative controls (i.e. work practice changes that limit hazard exposure) in the West African occupational

health literature (4), but they are a critical component of worker safety. Better provision of sturdy and numerous sharps disposal devices was identified frequently as potentially helpful, which echoes previous findings in West Africa that sharps disposal is often an injury hazard (11), and that sharps disposal devices were not present or not known to nursing staff (12, 13). Interestingly, safety-engineered sharps devices were only mentioned once.

Administrative controls, particularly additional training, were mentioned in a few contexts. Participants were generally interested in further training, and the data suggested a few approaches that are likely to be fruitful. Several participants reported injury due to unexpected pediatric patient movement. These injuries are not without risk: a recent meta-analysis found 1.6% of children in Ghana to be positive for hepatitis B surface antigen (14). Furthermore, a previous study in Ghana found that fewer than half of nurses had received hepatitis B vaccination (15). Several participants also reported injuries resulting from difficulties coordinating physically with colleagues while providing care to the same patient. Overall, these findings suggest workers may benefit from a simulation-based training, which has been shown to be more effective in training healthcare workers in infection prevention and control practices than traditional classroom learning (16). A simulation would allow participants themselves to address the psychomotor challenges of sharps safety, perhaps including a scenario in which multiple participants are working in close proximity. Ideally this would be paired with access to safety-engineered devices; a previous meta-analysis has shown that the combination of the two has the biggest impact (17). It was surprising that only one of the participants reported the injury occurring due to recapping; two studies in Nigeria found it to be a common hazard (18, 19), with Amira and Awobusuyi's finding that needle recapping was the behavior leading to 45% of needlestick injuries (19). We speculate that the difference is due to more widespread awareness of the dangers of recapping than existed 10 years ago. We also believe that training on post-exposure prophylaxis would be useful.

Implications for occupational health practice

Future training could be offered at either the pre-licensure or post-licensure levels. Both approaches have advantages. Offering prelicensure training would reduce the risk of healthcare workers practicing with literally no formal sharps safety training, as was the case with one participant, a physician who denied both pre- and post-licensure training. Offering post-licensure training would allow trainers to tailor instruction and practice to the learners' actual work setting.

Another promising intervention at the administrative control level might be partnering directly with facility-based healthcare administrators and infection prevention and control specialists to assist them in developing written policies and injury documentation systems. Injury documentation is critical to injury reduction by allowing auditors to identify worker types, work locations, and devices associated with injury and target them for intervention (8). Local policymakers, such as Ministries of Health, could work directly with healthcare facilities, or could facilitate connections between facilities seeking assistance and infection prevention and control experts with experience in this area.

The development of written policies might also provide a sustainable means of addressing some of the gaps in the knowledge of workers. Workers who were unaware of the importance of testing source patients or themselves for bloodborne infections would not need to think through their own next steps after a stressful injury; rather, they would be able to follow the steps established in the policy.

Lastly, issues regarding personal protective equipment were mentioned by several participants. Many described work settings in which these supplies were limited or in which they routinely purchased their own. This is consistent with the findings of other studies in sub-Saharan Africa (20). While personal protective equipment is considered the least effective means of protecting the worker, all healthcare workers deserve to have the appropriate personal protective equipment at their disposal, and funding should be allocated to purchase that equipment by the workers' facility, government, or the international community.

This study has implications for future research in addition to those for policy and practice. These data rely on participant recollection of injuries of a type that the participants have sustained many times. Some participants were unable to provide details about the circumstances of their most recent injuries, though they always had a general idea. While the interview data are valuable, we believe that direct observation of workers from this frequently injured group might yield even more useful data, particularly regarding the specific psychomotor skills (e.g. medication administration) that would benefit from further training.

By including participants from both a low-income country (Liberia) and a middle-income country (Ghana), this study offers unique insights into the realities of sharps injuries in these countries. Due to the relatively limited data, particularly in-depth qualitative data, on these injuries in LMICs, the findings can help guide the creation of training programs, safety protocols, and contribute to policy development suited to similar resource-constrained environments.

Limitations

In addition to the recall issues described above, there were two major limitations to this study. The first was that

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network connectivity was unpredictable, even over the course of a single interview. One interview ended prematurely due to a lost signal, and every interview had moments where the interviewer or interviewee struggled to hear due to signal lapse. This may have limited the amount of information obtained in each interview. That said, we believe obtaining as geographically diverse a sample as this one would have been virtually impossible using face-to-face interviews, and that the diversity of the sample contributed to the quality of the data. The second limitation is that our sample skewed strongly towards nurses, so it is perhaps the reason that some of these findings are not generalizable to other healthcare worker groups.

Conclusion

This study was an in-depth examination of factors contributing to sharps injuries in a worker population at high risk for the transmission of bloodborne illness. The research identified relevant topics for potential future trainings as well as participant interest in further training. Further research using direct observation may identify even more of these topics. This project also identified other possible avenues for sharp injury reduction, including: partnering with facilities to establish written policies and injury reporting systems, as well as specific engineering controls. This study investigated the experiences of healthcare workers in Liberia and Ghana regarding sharps injuries. The main purpose is to identify strategies for intervention and risk reduction. Results showed significant gaps in pre-licensure and post-licensure training, limited reporting of injuries, and challenges in the work environment, such as inadequate supplies and staff nonadherence to safety protocols.

Conflict of interest and funding

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Ethical considerations & disclosure(s)

This project received in-country approval from the University of Liberia's Institutional Review Board (Protocol #21-12-296) and the Ghana Health Services Ethics Research Committee (GHS ERC Number: 018/11/2021). It was deemed exempt by the Institutional Review Boards of the University of Michigan and the University of Cincinnati.

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Appendix 1

Sample semi-structured interview guide for healthcare workers with more than three sharps injuries in the last year

1. Thank you for participating in this survey. Before we get started, do you have any questions?
2. Tell me about your job as a nurse/physician/physician assistant/midwife. Where do you work? Are you satisfied with your job?
3. How many sharps injuries have you had in the last year?
4. When in your career did you get your first needlestick injury?
5. Can you describe the training you have gotten (before or after receiving your license) about needlestick injuries?
6. Was this year a normal working year for you or unusual in some way?
7. Can you describe the circumstances of the most recent injury? Was it similar or dissimilar to your other injuries? In what way?
8. Are there aspects of your practice environment that you think lead to more needlestick injuries for you?
9. Are there aspects of your practice environment that you think protect you from needlestick injuries?
10. Have you reported all of your injuries? Why or why not?
11. How does your supervisor react when people report needlestick injuries?
12. What did you do to handle the situation after your last needlestick? Was that typical for you?

Sample semi-structured interview guide for healthcare workers who have had needlestick injuries but did not report them

1. Thank you for participating in this survey. Before we get started, do you have any questions?
2. Tell me about your job as a nurse/physician/physician assistant/midwife. Where do you work? Are you satisfied with your job?
3. How many sharps injuries have you had in the last year?
4. When in your career did you get your first needlestick injury?
5. Can you describe the training you have gotten (before or after receiving your license) about needlestick injuries?
6. You mentioned that you did not report your most recent needlestick injury. Can you please explain why?
7. Do you think the reasons you were unable to report your needlestick injury apply to or affect your colleagues?
8. Have you reported needlestick injuries in the past? If so, can you please explain what has changed?
9. What do you think would happen if you did report a needlestick injury?
10. Are there things about your job that you think lead to more needlestick injuries for you?
11. Are there things about your job that you think protect you from needlestick injuries?
12. Were you able to obtain follow-up care for your needlestick injury even though you did not report it? How?
13. How do you feel about the fact you did not report your needlestick injury?