



Awareness and Attitude towards Management of Needle Prick Injuries among Medical Doctors in Port Harcourt Local Government Area of Rivers State, Nigeria

William Amebebari Mube^{1*}

¹Department of Obstetrics and Gynaecology, University of Port Harcourt Teaching Hospital, Rivers State, Nigeria.

Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Background: Needle Prick injury is a common occupational hazard to medical doctors, associated with transmission of blood borne infections like Human immunodeficiency virus, Hepatitis B/C and others. This research work is on the awareness and attitude towards the management of needle prick injuries among medical doctors in Port Harcourt Local Government Area of Rivers State.

Methods: Six research questions and six null hypotheses were formulated to achieve the essence of the study. A cross-sectional descriptive survey was adopted with a sample size of 324, using a purposive cluster sampling technique. A self-structured questionnaire that was validated by three Public Health lecturers at the Imo State University, Owerri was used to obtain the data. Data were collected, collated and analysed using statistical package for social science (SPSS) version 21.0.

Results: The study revealed a 100% (high) level of awareness and positive attitude towards

*Corresponding author: E-mail: mubeamebeaa@yahoo.com;
E-mail: asifamabia1@yahoo.com;

management of needle prick injuries among the study population. It also revealed that gender and age in practice has no influence or effect on the level of awareness and attitude of medical doctors in in the study area towards the management of needle prick injuries.

Conclusion: The participants have high level of awareness and positive attitude towards the management of needle prick injury, with age in practice and gender having no influence on their level of awareness and attitude towards management of needle prick injuries. Adherence to Universal precautionary measures, continuous re-training of healthcare workers on infectious disease control, proper management of needle prick injuries and safe work place practice remains the means of preventing infectious diseases in hospitals and the health sector at large.

Keywords: Needle prick injury; doctors; healthcare workers; Port Harcourt; infections.

1. INTRODUCTION

A needle is a thin cylindrical object often with a sharp pointed end, used in several fields of human endeavors, such as, crafting, botany, geography, music and medicine. The types used in medicine include, acupuncture, hypodermic, surgical and tuohy needles. Needle prick (stick) injuries are accidental punctures of the skin by a needle during a medical intervention or the penetration of the skin resulting from a needle which prior to the exposure was intact. Needle prick injuries (NPI) are common accidents among medical doctors and other healthcare workers, most frequently causing them serious occupational health hazards. The concept gained more recognition from the report on healthcare workers (HCW) infected with *human immunodeficiency virus* (HIV) due to needle prick [1]. World Health Organization [2] estimates that about three million needle pricks occur annually among thirty five (35) million healthcare workers globally, with about two million, in 2007 alone. Similar estimate [3], show that over 90% of NPIs occur in resource-constrained countries like Nigeria and Tanzania. While NPIs have the potential to transfer bacteria, protozoa, prion and viruses, the transmission of Hepatitis B, C and HIV are particularly of high concern [4]. Worldwide, occupational exposure to certain kinds of diseases following NPIs account for 2.5% of HIV incidences and 40% of Hepatitis B and C cases among healthcare workers. Occupational exposure, also accounts for about 1.7 million, 315,000 and 33,800 new cases of Hepatitis B, Hepatitis C and HIV/AIDS among HCWs [5]. These infections are preventable through infection control measures. Estimates of NPIs show that about half of the incidences are unreported [2], with several factors responsible for not reporting them.

Medical personnel, especially, in developing countries are particularly at increased risk of

infection from blood-borne pathogens due to the high prevalence of such pathogens in their community, poor safety attitude, as well as, lack of basic personnel protective equipment [6]. Accidental NPIs still occur even when the universal precautionary measures and good work safety attitude are adhered to. The commonest identified causes of these injuries occur due to recapping and unsafe disposal of used needles [7]. Most healthcare workers, including medical doctors, still recap used needles and dispose them unsafely [8]. Studies show reduced and non-uniform adherence to standard precautions by healthcare workers in developing or resource-constrained countries, when compared to their counterparts in developed countries [2]. Medical personnel, despite their wide knowledge, seem to have negative attitude towards the prevention and management of NPIs. Although the occurrence of HIV and Hepatitis B and C are of serious concern to occupational health experts, other blood-borne micro-organisms, such as, *Parvovirus* and *Yersinia*, can be transmitted via NPIs [9]. Transmission of infections through NPIs is more common in source patients like, homosexuals, intravenous drug users, multiple blood transfusion patients, people from developing countries, rape victims and rapist. It is obvious that medical doctors have higher chances of NPIs among healthcare workers [9], with nurses and laboratory personnel having their fair deal. In surgeons, most of the incidences occur while suturing muscle or fascia. Among the medical specialties, the occurrence of NPI is higher in surgery, anaesthesia, E.N.T, internal medicine and dermatology [9]. The complications of NPIs among medical doctors may be physical, biological or psychological. A comprehensive anti-NPI programme would include improved equipment design, effective disposal system, employee training and engineering control, elimination of hazards, administration control, work practice control and use of personal protective equipment (PPE). Medical doctors or

healthcare workers, upon sustaining NPIs, are encouraged to allow the wound to bleed under running water, wash the wound using running water and plenty of soap, do not scrub the wound while washing it, do not suck the wound, disinfect the wound with 70% alcohol, dry the wound and cover it with a dry plaster or dressing. Strict adherence to preventive measures and conducive working environment remains the conduit to prevent NPIs. Despite the risks and complications, medical doctors still do not strictly adhere to preventive measures and follow the steps of management of NPIs. Several studies have been conducted on the level of awareness of management of NPIs [10,11], just as those linked to the age-in-practice of the medical doctors in whom these occur [12,13,14,8,15]. This study is aimed at assessing the level of awareness and altitude towards management of NPIs among medical doctors in Port Harcourt L.G.A of Rivers State. The health promotion [16] and knowledge, attitude and practice [17] models were employed in this study.

2. METHODOLOGY

The study is a cross-sectional descriptive survey, which allows for data collection from members of the population with respect to one or more variables [11,18]. The study was conducted in Port Harcourt local government area of Rivers State, southern Nigeria. Three hundred and twenty four medical doctors participated in the study, using a purposive cluster sampling technique and self-developed, structured questionnaire, after the study has been validated by three Public health lecturers of the Imo State University and the reliability of the instrument to be used ascertained to be appropriate. Data was collected by presenting questionnaires to heads of private and public healthcare facilities in the area of study, of which 98% were returned and the data analyzed using Microsoft excel and statistical package for social science (SPSS) version 21.0, at a 0.05 level of significance. Non-medical doctors were excluded from the study. Ethical clearance was obtained from the department of Public Health, Imo state University and the Rivers State Primary Health Care Board, while participants' written consent was also obtained from them.

3. RESULTS

Table 1 presents the socio-demographic profile of the respondents. 193(60.7%) were males, while 125(39.3%) were females. 58(16.3%)

were in internal medicine, while surgery had 35(11.1%), obstetrics and gynecology 61(19.3%), Pediatrics 18(5.5%) and others 152(47.8%) respectively. Age in practice (years) had 40(12.6%), 96(30.2%), 117(36.8%) and 65(20.4%) for <1 year, 1-5 years, 6-10 years and > 10 years respectively.

Table 1. Respondents socio-demographic profile

Variables	Frequency	Percentage (%)
Sex		
Male	193	60.7%
Female	125	39.3%
Specialty		
Internal Medicine	52	16.3%
Surgery	35	11.1%
Obstetrics & Gynaecology	61	19.3%
Paediatrics	18	5.5%
Others	152	47.8%
Age in practice (years)		
< 1	40	12.6%
1-5	96	30.2%
6-10	117	36.8%
> 10	65	20.4%

Table 2 presents respondents level of awareness towards NPI management. All of them 318(100%) have high level of awareness to where NPIs most often occurs. Similar observations were made for body part most frequently affected and the management options available for NPI, where it can be managed, those in charge of managing NPIs, knowledge of the diseases that can be prevented if NPIs are properly managed, programs and policies aimed at managing NPIs and diseases for the source patient for which P.E.P is required. All the participants had high level of grading Okafor (1997).

Table 3 reveals that all the respondents (100%) had a positive attitude and that not recapping used needle prevents occurrence of NPIs. This observation was similar for disposal of used needles and sharps in sharps waste boxes, use of good light source during procedures involving needles, that Hepatitis B and C virus infections can be acquired due to needle prick, that HIV infection can be gotten through needle prick, these injuries occur commonly in the hospitals, first aid care should be given to victims, both source and victim should be investigated, PEP should be instituted, incidences should be

reported to the appropriate quarters, the injuries should be allowed to bleed under running water and be allowed to dry and covered, and HBsAg and HIV should be tested for. The same observations were made for hospital injection policy as a preventive measure, hospital committee on waste management and disease prevention programmes are preventive measures following needle prick injury occurrence should be instituted respectively. The participant's attitude was classified into positive and negative,

thus, strongly agree/agree= positive attitude, strongly disagree/disagree= negative attitude.

Fig. 1 shows that there were no statistically significant relationships between gender and respondent's level of awareness of management, gender and respondent's attitude to management, age in practice and their attitude towards management and age in practice and their level of awareness of management of needle prick injuries respectively.

Table 2. Respondents awareness level of management of N.P.I

Question	Awareness/Response		
	High level (%)	Moderate level (%)	Low level (%)
1. Where needle prick injuries occur often among medical doctors	318 (100)	0	0
2. How commonly needle prick injuries occur among medical doctors	318 (100)	0	0
3. What part of the body does needle prick injuries affect commonly	318 (100)	0	0
4. Management options for needle Prick injuries	318 (100)	0	0
5. Where needle prick injuries are Managed	318 (100)	0	0
6. Who manages needle prick injuries	318 (100)	0	0
7. Diseases preventable through proper Management of needle prick injuries	318 (100)	0	0
8. Preventive measures of occurrence of Needle prick injuries	318 (100)	0	0
9. Programmes and policies that would aid In management of needle prick injuries	318 (100)	0	0
10. Diseases in the source for which PEP Should be instituted following occurrence of a needle prick injury	318 (100)	0	0

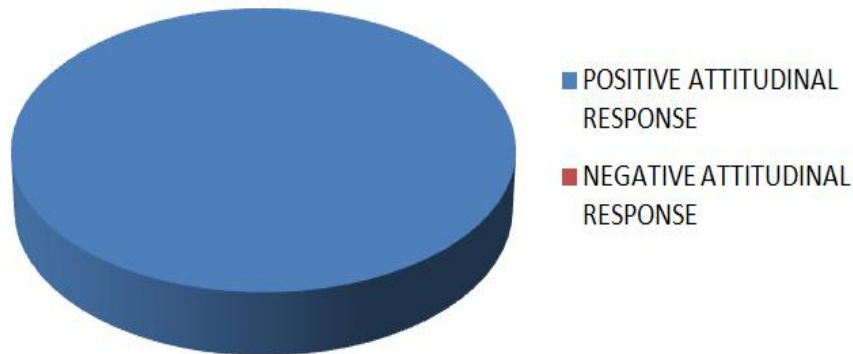


Fig. 1. Respondents' attitudinal response to management of needle prick injuries

Table 3. Respondents' attitudinal response to management of needle prick injuries

Management of needle prick injuries Question	Attitudinal response		
	Positive (%)	Negative (%)	Total (%)
1. Not recapping needles after use prevents occurrence of needle prick injuries	318 (100)	0 (0.0)	318 (100)
2. Discarding used needles and sharps in sharps waste boxes prevents occurrence of needle prick injuries	318 (100)	0 (0.0)	318 (100)
3. Proper disposal of sharps wastes prevents occurrence of needle prick injuries	318 (100)	0 (0.0)	318 (100)
4. Use of good light sources during procedures involving needles prevents occurrence of needle prick injuries	318 (100)	0 (0.0)	318 (100)
5. Hepatitis B virus infection can be acquired following needle prick injuries	318 (100)	0 (0.0)	318 (100)
6. Hepatitis C virus infection can be acquired following needle prick injuries	318 (100)	0 (0.0)	318 (100)
7. HIV infection could be acquired following Needle prick injuries	318 (100)	0 (0.0)	318 (100)
8. Needle prick injuries occur commonly in The hospital	318 (100)	0 (0.0)	318 (100)
9. First aid care should be given to victims of needle prick injuries	318 (100)	0 (0.0)	318 (100)
10. Both source and victim should be investigated following needle prick injuries	318 (100)	0 (0.0)	318 (100)
11. Post-exposure therapy (where indicated) should be instituted following needle prick injuries	318 (100)	0 (0.0)	318 (100)
12. Needle prick injuries should be reported to The appropriate quarters	318 (100)	0 (0.0)	318 (100)
13. Following a needle prick injury, wounds should be allowed to bleed under running water	318 (100)	0 (0.0)	318 (100)
14. Needle prick injury wounds should be allowed to dry and covered with	318 (100)	0 (0.0)	318 (100)
15. HBsAg should be tested for following a needle prick injury	318 (100)	0 (0.0)	318 (100)
16. HIV should be tested for following a needle Prick injury	318 (100)	0 (0.0)	318 (100)
17. Hospital injection policy would be Preventive of needle prick injuries occurrence	318 (100)	0 (0.0)	318 (100)
18. Hospital committee for waste management would be preventive of needle prick injuries occurrence	318 (100)	0 (0.0)	318 (100)
19. Infectious disease prevention programmes would prevent the occurrence of infections following needle prick injury	318 (100)	0 (0.0)	318 (100)
20. Hospital committee for PEP would prevent the occurrence of infections following needle prick injury	318 (100)	0 (0.0)	318 (100)
21. Appropriate management of needle prick injuries would prevent the occurrence of HBV infection	318 (100)	0 (0.0)	318 (100)
22. Appropriate management of needle prick injuries would prevent the occurrence of HCV infection	318 (100)	0 (0.0)	318 (100)
23. Appropriate management of needle prick injuries would prevent the occurrence of HIV infection	318 (100)	0 (0.0)	318 (100)
24. PEP is instituted (where indicated) in HIV infection of the source of a needle prick injury	318 (100)	0 (0.0)	318 (100)

PEP= Post-exposure prophylaxis, HBV= Hepatitis B virus, HCV= Hepatitis C virus,
HIV= Human immunodeficiency virus, HBsAg = Hepatitis B virus surface antigen

4. DISCUSSION

Modalities that will enhance the prevention of injuries and infections in hospitals and healthcare facilities are mostly put in place by the management boards and the institutions, with individuals guarding themselves against it. Institutions also put up disciplinary measures to ensure that these laid down rules are adhered to

by both employees (mainly) and management staff, with several forms of punitive measures attached to non-adherence. The demographic parameters showed 60.7% male and 39.3% female respondents. Their specialties were; internal medicine 16.3%, surgery 11.1% obstetrics and gynaecology 19.3%, paediatric 5.5% and others 47.8%. Their age in practice (number of years the respondent has put into

medical practice) was <1year 12.6%, 1 to 5years 30.2%, 6 to 10 years 36.8% and those >10 years 20.4%. This is a good representation and distribution of the relevant specialties and various age ranges in the medical work force. Following the grading level of awareness by [19], the study revealed that 100% of the respondents had high level of awareness, which supports the null hypothesis, which is similar to 91.55% and 81% level of awareness (high level of awareness) in the management of needle prick injuries obtained from another study [11]. This high level of awareness on management of NPIs among doctors is expected, as medical doctors are very medically informed personnel, following their broad academic exposure on infective diseases and its prevention. Recently, infections like Ebola virus, Lassa fever, HIV and their associated route of transmission and complications, had raised medical doctor's consciousness and awareness on preventive measures and management of these health hazards. The result of positive attitude towards NPIs reveals 100%, which supports the null hypothesis. The results in line with the knowledge, attitude and practice model which is based on the assumption that knowledge precedes attitude, suggests that the right information influences attitude significantly and thus change behaviour. Studies show that needle prick injuries have led to the acquisition of several kinds of infection, HIV inclusive [1], but the high level of awareness obtained in this study will be indicative that such infections due to this healthcare hazard will be reduced among the medical doctors in this area of study. The study revealed no statistically significant relationship between respondent's gender and level of awareness of management of NPIs, as the high level of awareness supports the null hypothesis. No statistically significant relationship also exists between genders and respondent's attitude, and is similar to what was obtained for the respondent's age in practice and their level of awareness of management of NPIs and their age in practice and their attitude towards management of NPIs.

5. CONCLUSION

Needle prick injury is a very common occupational hazard to medical doctors and other healthcare workers, with an associated rise in blood-borne diseases like Hepatitis B/C, HIV and others diseases. These diseases can be prevented by following adequate management/preventive measures. The entire respondent's had high level of awareness and positive

attitudes towards management of NPIs. The study also showed that age in practice and gender had no relationship with level of awareness and attitudes of the respondents. Thus, medical doctors in Port Harcourt Local Government Area of Rivers State have high level of awareness and positive attitude towards management of NPI, and the age in practice or gender has no influence on their level of awareness and attitudes towards management of these injuries.

6. IMPLICATIONS OF FINDINGS

This study provided evidence that medical doctors in Port Harcourt Local Government Area of Rivers state have high level of awareness and positive attitudes towards management of needle prick injury, with gender and age in practice having no relationship on the awareness and attitudes towards management of needle prick injury among them.

7. RECOMMENDATIONS

1. Compulsory infection control programme, including injection safety, in healthcare facilities.
2. Proper waste management committee in healthcare facilities.
3. Doctors should substitute injections with other routes of drug administration.
4. Use of sharps protection devices for all procedures.
5. Incident reporting and investigation for all needle prick injuries should be encouraged.
6. No recapping or resheating of used needle.

8. SUGGESTION FOR FURTHER STUDIES

A broader study involving more than one Local Government Area should be embarked on to verify the similarity with the results gotten.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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