

Injection safety practices among primary health care workers in Ilorin, kwara state of Nigeria

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ABSTRACT

Background: In developing countries the last half of the 20th century saw enormous increases in number of injections with insufficient care for sterile conditions and poor injection safety practices.

Aim: The main aim of the study was to assess the injection safety practices among Primary Health care Workers (PHCWs) in Ilorin, Nigeria.

Methods and Material: It was a descriptive cross-sectional study carried out among 336 PHCWs in the 3 Local Government Authorities in Ilorin metropolis using multi stage sampling techniques. The Research instruments used were pretested questionnaire and observational checklist. The data generated were analyzed using EPI-INFO software package. Level of significance was predetermined at p-value of less than 0.05.

Results: The study showed that though 320 (95.2%), of the respondents used safety boxes for immediate collection of used needles and syringe, 181 (53.9%) of them used burn and burial while 98 (29.2%) respondents, used local incineration for final disposal of used needles. Some of the PHCWs still used unsafe methods like burial 29 (8.6%), open dumping 11 (3.3%) and dumping in any pit 5 (1.5%). It was observed that there was recapping of needle in 26 (86.7%) health facilities after administration of injection. Used needles were also observed outside the safety box in 24 (80%) health facilities while needles were also sighted around the premises of 10 (33.3%) of health facilities visited.

Conclusion: It was concluded that there was high unsafe injection practices among PHCWs in Ilorin metropolis and recommended that there is need for training and supportive supervision for the PHCWs by Local government Authorities.

Key words: Safety, injection, practice, Ilorin, Nigeria.

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INTRODUCTION

Injection safety is defined by WHO as an injection that is administered using appropriate equipment, does no harm to the recipient, does not expose the provider to any avoidable risk and does not result in any waste that is dangerous to other people.^{1,2} Since invention of the syringe in 1848,³ a new channel for pathogens to pass from one person to another was opened and over time while health workers found more conditions to treat and more medications to inject. The awareness regarding blood borne pathogens and hygiene only came over 100 years after the invention.^{4,5} Injection therapy was first introduced to developing world population with the mass campaigns against Yaws and Kala-azar in 1920s,⁶ and became wide spread after second world war following the introduction of penicillin.⁶

Over the last 50 years, scientists have continued to discover new blood borne pathogens associated with unsafe injection use.^{7,8} In 1967, the Australian antigen, now known as Hepatitis B Virus surface antigen (HBsAg) was first linked to viral hepatitis. In 1983, human immunodeficiency virus (HIV) was found in blood. In 1989, the hepatitis C virus (HCV) and antibodies were identified.

Episodes of transmission of blood borne pathogens through injections are usually linked to the unsafe use of multi-dose vials or preparation of medications in areas potentially contaminated with blood or body fluids.⁶⁻⁸ After mid-century warnings about hepatitis from injections, Doctors progressively shifted to a sterile syringe and needle for each injection.^{6,8}

Injection safety practices has been generally improved upon in developed countries with adequate provision of injection equipment and administration of injection under sterile conditions and equipments.⁷ In developing countries however, the last half of the 20th century saw enormous increases in number of injections with insufficient care for sterile conditions.⁷ Today Injection is one of the most common health care procedures in both the formal and informal health care sector. Though in some developing countries and especially in tertiary health facilities^{10,11} injection safety practices are fair because of provision of injection equipment and training of health workers but in most of the developing countries injection use have exceeded the normal rate.¹²⁻¹⁵

Needle recapping which is an important cardinal indicator of unsafe injection practice among health workers is high in developing countries.¹ A cross country survey in Nigeria¹ showed 80% prevalent while Studies in Burkina Faso¹⁶, Oman¹⁷ and Swaziland¹⁸ showed 56%, 28% and 31% respectively. Local studies in Nigeria revealed high prevalence of needle recapping¹⁹ in PHC facilities but low prevalence in tertiary health facilities.²⁰ In Nigeria the incidence is placed at 45%¹ however variation occurs across the country and some state has been reported to be as high as 57.8% among health workers.¹⁰ A similar study in Lagos, Nigeria reported 72.9%¹¹, Swaziland study revealed more than 30% incidence among nurses,¹⁸ 17.9% in Oman,¹⁷ and 23.5% in Dominican Republic.²¹

In Nigeria the injection safety practices is poor according to cross sectional survey on injection safety in 2004 conducted by Federal Ministry of Health (FMoH) in partnership with John Snow Incorporated/ Making Medical Injection Safer in Nigeria (JSI/MMIS).¹ As far back as 2001 National Programme on Immunization (NPI) has introduced the use of auto-disable syringes and other injection safety equipment in immunization but national injection safety forum held later in 2005 resulted

in the production of National policy on injection safety and healthcare waste management in January 2007.^{20,22,23} This policy is still poorly implemented at all levels of health care delivery in Nigeria. This study assessed the injection safety practices among the Primary Health Care Workers (PHCWs) in Ilorin metropolis.

Methodology

This is a cross-sectional descriptive study carried out among PHCWs in the 3 LGAs in Ilorin metropolis, kwara state using multi stage sampling techniques. Ethical approval was obtained from Ethical Review Committee of University of Ilorin Teaching Hospital, Ilorin while informed consent was sort from the respondents before been recruited into the study. The 336 respondents were chosen using fitzers'formula²⁴ while multi-stage sampling techniques was used. This involved the use of simple random sampling using table of random numbers to select 10 Private and Public Primary Health Care (PHC) facilities per Local Government Authority (LGA) from the list of all PHC facilities. At the last stage equal probability systematic random sampling was used to choose the PHCWs with sample interval of between 3 and 4 at the Health facilities.

The study was carried out at the health facilities during the working hours of the week days. The Research instruments used were questionnaire and observational checklist. The questionnaire was semi structured, interviewer administered and pretested. It obtained quantitative data on socio-demography and injection safety practice. The observational checklist was administered in randomly selected health facilities in the 3 LGAs and it collected data on injection practice of health workers, disposal of needle and syringe and availability of injection equipment and supplies. The data generated from the study were manually checked for possible errors and inconsistencies before data entry using EPI-INFO software package. Level of significance was predetermined at p-value of less than 0.05.

Results

Three quarter, 252 (75%) of the PHCWs in Ilorin was within the age range 30 – 49 years while the remaining 84 (25%) were mainly below 30 years and over 50 years (Table1). Females predominate 312 (92.9%) while Community Health Extension Workers (CHEW) and the Nurses constitute 212 (63.1%) of the PHC work force (Table1). PHCWs with

over 10 years of work experience constitute more than half (57.4%) of the respondents while those of less than a year of work experience made up of 16 (4.8%) of the respondents. Majority of the injections are prescribed by the Doctors 143 (34.8%) and Nurses 96 (23.5%) while a quarter, 105 (25.6%) of the injections are prescribed by other PHCWs like pharmacist assistance and laboratory technicians (Table 2). Injection is administered mainly by Nurses 209 (44%) and CHEW 145 (30.5%). Injection is preferred in 197 (60%) of the patients attending the PHC facilities while 127 (37.8%) patients preferred Oral medications. Almost all the PHCWs, 325 (96.7%) used disposable needle and syringe (Table 2).

Three quarter 254 (75.5%) of the PHCWs recapped needle after given injection in their respective service units, 317 (93.4%) of them used safety box in their health facilities to collect used needle and 287 (90.5%) of them claimed that the safety box supply was adequate (Table 3). Almost all the respondents 283 (98.6%) that claimed adequacy of the safety box supply agreed that the supply was also regular. Three hundred and twenty (95.2%) of the respondents used safety box for immediate collection of used needles and syringe. One hundred

and eighty one (53.9%) of the PHCWs used burn and burial and 98 (29.2%) respondents used local incineration (Table 3). Some of the PHCWs still used unsafe methods like burial 29 (8.6%), open dumping 11 (3.3%) and dumping in any pit 5 (1.5%).

During observational checklist administration, there was needle recapping in 26 (86.7%) health facilities after administration of injection while hand washing practices before and after injection was observed in only 6 (20%) of the health facilities (Table 4). Used needles were observed outside the safety box in 24 (80%) of the health facilities and needles were seen around the health facilities in 10 (33.3%) health facilities. Twenty five (83.3%) health facilities had stock of safety box, only 3 (10%) health facilities had stock of needle and syringe and 7 (23.3%) health facilities had stock of disposable glove. Twelve (40%) health facilities used Burn and burial method for disposal of their wastes, 9 (30%) were seen using local incineration while another 9 (30%) used open dumping (Table 4).

Discussion

The respondents' age ranged between 20 to 59 years with more than half of respondents falling within 40 to 49 years and a mean age of 39 + 8 years. This

showed that majority of the PHCWs in the study area are older within productive age group as reported in a study in Nepal²⁵ and Ilorin.¹⁹ The female predominates among PHCWs in this study and this corroborated the actual situations of most PHC facilities in Nigeria where nursing professions and other nursing related professions like Community Health Officers (CHO) and Community health Extension Workers (CHEW) are predominantly women.²⁶ More than half, 193 (57.4%) of the PHCWs in the study area had more than 10 years working experience. This reflected that the health workforce in the PHC setting of the study area are made up of older workers who would be involved in administrative role. This implied that the PHC setting in the study area is made up of upper cadre staff and a reflection of inadequate staffing. It also showed a large group of workers that may be less likely involved in injection administrations.

The PHCWs in this study have preference for disposable syringes 325 (96.7%) while the small percentage 6 (1.8%) that used autodestruct was probably for the immunization services injection because of National Programme on Immunization (NPI) that is highly active in the country. There was high safety box usage 317 (94.3%) in this

study (Table 3). This could be adduced largely to availability of the injection safety box due to static and fixed immunization services that are rendered in almost all the health facilities and part of the bundling method strategies for immunization equipment logistics that make it mandatory for needle, syringe, injection safety box and other injection equipments to accompany vaccines to the health facilities.²⁷ This observation was also supported by the observational checklist that revealed up to 83.3% of the health facilities as having injection safety box (Table 4).

This study revealed that 197 (58%) of patients attending the health facilities requested for injection medications (Table 2). This is a major reinforcing factor for unsafe injection practices because of mutually reinforcement that existed between the patients who requested for injection because of cultural beliefs and ignorance and the health workers who prescribe injection for financial and other gains.²⁸ Although in this study Doctors 143 (34.8%) and Nurses 96 (23.5%) prescribed injection in more than half of the health facilities, quite many of injection prescription are still done by CHEW 28 (6.8%) and other technical staffs 105 (25.6%). Similar trends were also observed with

administration of injections where over 50% of the injections were administered by these cadres of health workers. This portends danger to safe injection practices in PHC in Nigeria since quite many injections are being prescribed by unqualified health workers who have little or no training on managements of medical conditions that would require injections.²⁶ The training curriculum of these cadres of health workers do not cover administration of therapeutic injection²⁶ thereby putting the health workers, the patients and the whole community at risk of unsafe injection.

It was established by this study that there was high level of needle recapping among PHCWs 254 (75.5%) in the study area (Table 3). This finding was corroborated by the observational checklist of the health facilities (Table 4) which saw 26 (86.7%) recapping in the health facilities. These findings were higher than the findings among tertiary health workers in Ilorin, Nigeria,¹⁰ and in other developing countries like Burkina Faso,¹⁶ Oman¹⁷ (28%) and Swaziland¹⁸ (31%). It was similar to Nigerian cross country survey of 80% needle recapping prevalence.¹ The difference observed with findings from Ilorin, Burkina Faso, Oman and Swaziland were probably because the study populations were

taken from a tertiary health institution where there is likely to be safer injection practices.^{10,11} However the similar finding with the cross country survey reported in Nigeria (80%) was because the survey involved all the levels of health care in the country. This finding was a reflection of poor injection safety practices that characterized health care practices in the study area and the developing countries in general.¹²⁻¹⁴ The implication of this is that the PHC which is the first point of call for over 70% of Nigeria could not guaranteed safe injection.

Despite the high usage 317 (94.3%) (Table 3), availability 25 (83.3%) (Table 4) and adequate supply 287 (90.5%) of injection safety box (Table 3), used needles were still seen in other places outside safety box in almost all the health facilities 24 (80%) observed in this study. This is similar to reports from Burkina Faso¹⁶ and Dominican Republic.²¹ This finding showed that availability of injection equipments does not necessarily result in proper usage of these equipments and this buttressed the need for supportive supervision for PHCWs. There were low stock of needles 3 (10%) and disposable gloves 7 (23.3%) in the health facilities (Table 4). This also showed the poor state of other conditions and equipment that could

have effect on safe injection practices in the health facilities.

The immediate collection of used needle and syringe was largely by injection safety box. This high level of safety box usage in this study is an opportunity for safe injection practices in the health facility. Contrarily, the final disposal of injection waste (Table 3) was predominantly “dig, burn and burry” 181 (53.9%) and local incineration 98 (29.2%) which was also corroborated by observations of health facilities (Table 4). The implication of this is that while “dig, burn and burying” is desirable for developing countries like Nigeria the use of local incineration and open dumping may not be appropriate^{27,28} because of other health hazards that could be associated with such practice.²⁹⁻³¹

Conclusion / Recommendation

Though there is high usage of safety box among PHCWs in Ilorin, there is however high unsafe injection practice among them as evident from high level of needle recapping and risky final waste disposal methods. It is recommended that there should be on the job training and supportive supervision of PHCWs on proper usage of available injection equipments by the health departments of the LGAs and provision of stocks of other injection equipments like needle

and syringe and gloves for therapeutic injection administration.

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ANNEX

Table 1: Sociodemographic characteristics of the Respondents (N = 336)

Variable	Frequency (%)
Age range (years)	
20 – 29	60 (17.8)
30 – 39	106 (31.5)
40 – 49	146 (43.5)
50 – 59	24 (7.2)
Sex distribution	
Female	312 (92.9)
Male	24 (7)
Cadre	
Community Health Extension Workers	112 (33.3)
Registered Nurse and Midwife	100 (29.8)
Community Health Officer	38 (11.3)
BSc.	28 (8.3)
Others	58 (17.3)
Work Experience (years)	
< 1	16 (4.8)
1 – 5	51 (15.2)
6 – 10	76 (22.6)
> 10	193 (57.4)

Table 2: Injection prescription pattern of the Respondents

Variable	Frequency (%)
Cadre of PHCWs that prescribe injection (N=410)	
Doctor	143 (34.8)
Nurses	96 (23.5)
CHO	31 (7.7)
CHEW	28 (6.8)
Pharmacist	7 (1.6)
Others	105 (25.6)
Cadre PHCWs that administer injection (N=475)	
Nurses	209 (44)
CHEW	145 (30.5)
CHO	7 (1.5)
Pharmacist	4 (0.9)
Doctor	3 (0.6)
Others	107 (22.5)
Type of medication prefer by patient (N=336)	
Injection	197 (58.6)
Oral	127 (37.8)

Don't know	12 (3.6)
Type of Needle and syringe use by respondents (N=336)	
Disposable	325 (96.7)
Autodestruct	6 (1.8)
Sterilizable	4 (1.5)

Table 3: Injection safety practices of the PHCWs (N=336)

Variable	Frequency (%)
Recapping of needle	
Yes	254 (75.5)
No	84 (24.5)
Safety box usage	
Use	317 (94.3)
Don't Use	19 (5.7)
Adequacy of safety box supply (N=317)	
Yes	287 (90.5)
No	30 (9.5)
Regularity of safety box supply (N=287)	
Yes	283 (98.6)
No	4 (1.4)
Immediate collection of used Needle and Syringe	
Safety box	320 (95.2)
Any container	16 (4.8)
Final Disposal of used needle and syringe	
Burn and Burial	181 (53.9)
Burial only	29 (8.6)
Local incineration	98 (29.2)
Dumping in secure pit	12 (3.5)
Open Dumping	11 (3.3)
Dumping in any pit	5 (1.5)

Table 4: Observation of injection safety practice at PHC facilities (N=30)

Variable	Yes (%)	No (%)	
Recapping of needle	26 (86.7)	4 (13.3)	
Hand washing	6 (20)	24 (80)	
Used needle outside safety box	24 (80)	6 (20)	
Needle seen around health facility	10 (33.3)	20 (66.7)	
Presence of needle & syringe stock	3 (10)	27 (90)	
Availability of safety box stock	25 (83.3)	5 (16.7)	
Availability of disposable glove stock	7 (23.3)	23 (76.7)	
	Burn and burial	Local incineration	Open dumping
Waste disposal method observed	12 (40)	9 (30)	9 (30)