



# Occupational hazards exposure and their resultant effects on hospital attendants in health facilities of a local government area in South-South, Nigeria

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## ABSTRACT

**Background:** Health attendants are constantly faced with the hazards inherent in their occupation. The objective of this study was to assess the occupational hazards exposures and their resultant effects on health attendants in health facilities in Warri South Local Government Area (LGA) of Delta state, Nigeria. **Methods:** This was a cross-sectional descriptive study of 199 health attendants selected from 37 hospitals within the LGA using Random Sampling Method. Data were collected by the interviewer and self-administered questionnaire and analyzed using the Statistical Package for the Social Sciences version 17 (SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.). Statistical analysis involved the use of the Chi-square ( $\chi^2$ ) and *t*-test among others as applicable. Statistical significance was set at  $P < 0.05$  for all analyses. **Results:** Female workers accounted for 95.5% of the respondents; 98.0% had secondary level education and below. About 79.9% have not attended training courses on safety in the workplace. Many respondents (92.0%) believed that the occupation is hazardous. Among those that ever had injuries (26.6%), cuts and bruises accounted for (66.0%); followed closely by needle pricks (64.2%) and skin irritation/allergy (22.6%). Only 18.1% of the respondents had received hepatitis B vaccination. Only 50.8% and 10.1% respondents always wear hand gloves and protective boots, respectively. A significant association ( $P < 0.05$ ) was found as those that have had training sustained fewer injuries than those who have not had training; also awareness about hazards is more among respondents with high educational status; those that have had training and those that have spent more years at work. **Conclusion:** Health attendants in this study are aware of the hazardous nature of their occupation, but still vulnerable to direct hazards exposure. We recommend that there should be mandatory standardized training and re-training of these hospital attendants on the potential hazards of their work and measures should be put in place to enforce the usage of personal protective equipment by this group of workers.

**KEY WORDS:** Hazard exposure, hazard prevention, health facilities, hospital attendants

## INTRODUCTION

Workplace-related health impairments, injuries and illnesses cause great human suffering and incur high costs, both for those affected and for society as a whole [1].

Occupational hazards also exist where health care is practiced [2] and health care workers are at occupational risk for an array of infections that cause substantial illnesses and deaths [3]. The vulnerability of health care workers

to occupationally acquired infectious diseases have been demonstrated [4], and the risk for potential exposure to blood and body fluids appears high among health care workers [5]. In the health care setting, blood-borne pathogen transmission occurs predominantly by percutaneous or mucosal exposure of workers to the blood or body fluids of infected patients. Occupational exposures that may result in transmission of such pathogens include needle-prick and other sharps injuries, direct inoculation of pathogen into cutaneous scratches, skin lesions, abrasions, or burns, as well as inoculation of the

organism onto mucosal surfaces of the eyes, nose, or mouth through accidental splashes [6].

Hospital attendants are group of workers in the hospital that help by supporting patients' personal hygiene and daily living needs. Their job descriptions come with different hazards and risks, which can be avoidable or reduced. Preventive practices seem to be an effective means for reducing or avoiding the hazards, but many of these cadre of hospital workers have poor basic knowledge of infection control [7,8].

In some countries, hospital attendants have to go through certain educational courses informing them of occupational hazards they may encounter during their job. Exposure to such courses is however not obligatory in all countries, and there are many health care centers where education of such group of workers is overlooked [8].

Most of the hazardous activities in the hospital have been reported to be carried out by nurses and attendants [2]. In spite of this, the attendants were found not to use personal protective equipment (PPE) such as gloves, facemasks and aprons as much as doctors do in the hospitals [9].

Occupational health problems found among hospital attendants were work-related stress, injuries and low back pain from lifting and transferring patients [9-12]. Other problems of hospital attendants include exposure to infectious diseases due to direct contact with patients and their body fluids, exposure to anesthetic gases, drugs, and radiation. Attendants use disinfecting and sterilizing agents for cleaning, which may cause damage to the skin, mucous membranes and the respiratory system; they may be injured by sharp objects (needles, blades, etc.); contact with hot surfaces or faulty electric equipment may cause skin burns and prolonged standing or walking may cause fatigue and leg problems. Hospital attendants while moving patients' beds and/or stretchers from place to place may slip and fall on slick surfaces, they may also suffer from injuries when colliding with the walls of narrow passages through which they move with the patients [13]. The list is endless.

There have been various studies on the occupational hazards of other cadres of health care workers such as doctors, nurses, and laboratory scientists [6,9,14-17]. Hospital attendants are not as skilled as these other medical personnel [8]; hence, they may not know how to prevent many of the hospital hazards. This group of workers should not be forgotten. The study therefore aimed to study the occupational hazards hospital attendants and the resultant health effects.

## METHODS

### Study Area

The study was conducted in Warri South Local Government Area (LGA) of Delta State in South-South region of Nigeria during the first quarter of year 2012. The LGA was made up

of 19 wards and had a total of 37 health facilities that were predominantly privately owned, only few were government owned health facilities.

### Study Design and Study Population

The study used descriptive cross-sectional survey and health attendants in the 37 health facilities in the LGA constituted the study population.

### Sample Size Calculation and Sampling Technique

A minimum sample size of 140 was obtained using the standard formula for calculating sample size when studying population <10,000. The total number of health attendants was collected from each health facility's staff database and that gave a total of 220. Since the minimum sample size for the study was 140, a total survey was carried out in order to get a larger sample size which will yield more accurate results; will compensate for non-response and to make the result of the study more qualitative and representative. At the end, a total of 199 respondents participated in the study.

### Instrument and Data Collection

The instrument for data collection was semi-structured questionnaires, which were both self-administered and interviewer administered. The semi-structured questionnaire had 4 sections: Socio-demographic data; level of awareness of hazards associated with the occupation; type and frequency of contact with hazards associated with the occupation and accessibility to and utilization of protective devices/preventive measures. Four (two males and two females) final year medical students of Delta State University, Oghara who had past experience in data collection were employed and adequately trained for data collection. The investigator closely monitored and supervised the data collection.

### Data Analysis

The questionnaires were screened for completeness by the researchers, coded and entered into the computer and analyzed using Statistical Package for Social Sciences (SPSS) version 17.0. Qualitative data were presented as percentages while continuous variables were expressed as means ( $\pm$  standard deviations). Chi-square ( $\chi^2$ ) test was used to compare proportions while *t*-test was used to compare means. Statistical significance was set at  $P < 0.05$  for all analyses.

### Ethical Consideration

Ethical clearance for the study was obtained from the Ethical Review Committee of Delta State University Teaching Hospital, Oghara before the commencement of this study. Permission was also gotten from the health facilities' authorities and verbal informed consent obtained from the respondents before the questionnaires were administered.

## Limitation of Study

There were problems with non-readiness to participate in the study, especially among the workers of the private health facilities. This was eventually solved by the repeated visits by the researcher and research assistants who took time out to explain the importance of the study to them and reassured them that the information given will not affect their job in any way.

## RESULTS

As shown in Table 1, the socio-demographic characteristics of respondents were shown. Majority of the were in the age group 31-40 years (50.8%), followed by those in the age group 21-30 years who were 24.6%. The age group <20 years make up just 1.0% of the respondents and 7.5% were in the age group >50 years. Females made up of 95.5% of the respondents, 114 (57.3%) had secondary education, 81 (40.7%) had primary education while only 2 (1.0%) each had tertiary education and no education.

Table 2 showed the occupational characteristics and workplace injuries/illnesses of respondents. 195 (98.0%) cleaned the hospital floors, other works done by respondents were washing of clothes 42 (21.1%) and disposal of waste 46 (23.1%). Only 19 (9.5%) respondents had formal training for the job they are doing; 90 (45.2%) respondents had worked for <5 years while

16 (8.0%) of them had worked for more than 16 years. Among the 199 respondents, 53 (26.6%) respondents had a history of workplace injuries and illnesses, injuries/illnesses sustained by these respondents were fractures/dislocation (3.8%), cuts and bruises (66.0%), skin allergy (22.6%), and needle prick injury (64.2%). Fall on the slippery floor (5.7%), cleaning (3.8%), and waste disposal (24.5%) among others were what led to the injuries.

Table 3 showed respondents' awareness of workplace hazards and PPE. One hundred and seventy-seven (88.9%) respondents know of hazards associated with their work; the hazards acknowledged are infection contraction 155 (87.6%), needle prick 130 (73.4%), fall 79 (44.6%), cuts 64 (36.2%), burns 55 (31.1%), and skin diseases 31 (17.5%). Personal protective equipments (PPE) were available to 174 (87.4%) respondents and 170 (97.7%) of them use it. The PPE available included face mask (33.2%), goggle (18.6%), boots (35.2%), hand gloves (6.0%), and protective clothing (30.2%).

As shown in Table 4, respondents' prevention practices were investigated. It reveals that 40 (20.1%) of them have ever attended any training/re-training sessions on hazards prevention,

**Table 1: Socio-demographic characteristics of respondents**

Variables	Frequency ( <i>n</i> =199)	Percentage
Age		
<20	2	1.0
21-30	49	24.6
31-40	101	50.8
41-50	32	16.1
>50	15	7.5
Sex		
Male	9	4.5
Female	190	95.5
Marital status		
Single	56	28.1
Married	113	56.8
Separated	15	7.5
Widowed	15	7.5
Religion		
Christianity	196	98.5
Traditional	3	1.5
Tribe		
Urhobo	98	49.2
Isoko	40	20.1
Ijaw	7	3.5
Itsekiri	45	22.6
Others	9	4.5
Highest level of education		
None	2	1.0
Primary	81	40.7
Secondary	114	57.3
Tertiary	2	1.0
Type of residence		
Flat	16	8.0
Single room abode	136	68.3
Semi-detached	47	23.6

**Table 2: Occupational characteristics and workplace injuries/illnesses of respondents**

Variable	Frequency ( <i>n</i> )	Percentage
Job descriptions ( <i>n</i> =199*)		
Floor cleaning	195	98.0
Clothes washing	42	21.1
Waste disposal	56	28.1
Others	46	23.1
Formal training for job ( <i>n</i> =199)		
Yes	19	9.5
No	180	90.5
Years of working ( <i>n</i> =199)		
≤5 years	90	45.2
6-10 years	78	39.2
11-15 years	15	7.5
≥16 years	16	8.0
History of workplace injury or illness ( <i>n</i> =199)		
Yes	53	26.6
No	146	73.4
Which injury/illness did you sustain? ( <i>n</i> =53*)		
Fractures/dislocation	2	3.8
Cut and bruises	35	66.0
Skin allergy	12	22.6
Needle prick	34	64.2
What led to the sustained injury/illness? ( <i>n</i> =53*)		
Fell on slippery ground	3	5.7
Sharp object scraped my hand	2	3.8
While cleaning	17	32.1
While disposing waste items	13	24.5
While emptying dustbin	3	5.7
Do you think the illness is preventable? ( <i>n</i> =53*)		
Yes	51	96.2
No	2	3.8
If you think it is preventable, how? ( <i>n</i> =51*)		
Wearing hand gloves	11	21.6
Proper waste disposal	18	35.3
Washing hands regularly	13	25.5

\*Multiple responses allowed

37 (18.6%) had hepatitis B vaccine (HBV vaccine). Ninety-seven percent of respondents said they wash their hands with soap always during and after work, 95.5% always use disinfectants

**Table 3: Awareness of workplace hazards and PPE by respondents**

Variables	Frequency (n)	Percentage
Awareness of any hazard associated with your work (n=199)		
Yes	177	88.9
No	22	11.1
If yes, which ones? (n=177*)		
Fall	79	44.6
Contracting infections	155	87.6
Contracting skin disease	55	31.1
Sustaining needle prick	130	73.4
Sustaining cuts	64	36.2
Sustaining burns	31	17.5
Availability of PPE to prevent hazards (n=199)		
Yes	174	87.4
No	25	12.6
What are the PPE? (n=174*)		
Facemask	58	33.3
Boots	61	35.1
Goggles	32	18.4
Hand gloves	168	96.6
Protective clothing	168	96.6
Do you use them? (n=174)		
Yes	170	97.7
No	4	2.3
Why do you think these PPE are not available (n=25*)		
Lack of funds	1	4.0
Not provided	25	100.0

\*Multiple responses allowed, PPE: Personal protective equipments

**Table 4: Prevention of workplace injuries and illness**

Variable	Frequency (n)	Percentage
Had training/re-training sessions on hazards prevention (n=199)		
Yes	40	20.1
No	159	79.9
Had hepatitis B vaccine (n=199)		
Yes	37	18.6
No	162	81.4
Preventive practices engaged in always (n=199*)		
Wash hands with soap	193	97.0
Use disinfectants while cleaning soiled surfaces	190	95.5
Use protective clothing/work uniform	99	49.7
Use of hand gloves	101	50.8
Wear protective boots	20	10.1
Use face mask/eye goggles	16	8.0
Observed usage of protective equipments (n=199*)		
Goggles	6	3.0
Protective clothing	172	86.4
Boots	31	15.6
Hand gloves	156	78.4
Eye inspection (color of sclera) (n=199)		
Normal	195	98.0
Yellow	4	2.0

\*Multiple usages allowed

while cleaning soiled surfaces, 50.8% used hand gloves always and 10.1% always used protective boots. Observed usages of PPE showed that 86.4% were using protective clothing during the observation, while only 3.0% used goggles, 15.6% and 78.4% used boots and hand gloves, respectively. Respondents' eyes were examined for yellowness of the sclera, which may signify jaundice, one of the symptoms of Hepatitis infection; 4 (2.0%) had yellowness of the sclera while the remaining do not. These four were referred to the specialist clinic for appropriate follow-up and management.

Some characteristics of respondents were cross tabulated with injuries experienced at the workplace and awareness about hazards in Tables 5 and 6. Those that have had training sustained

**Table 5: Relating some characteristics of respondents with the injuries sustained at workplace**

Variables	Injuries sustained at workplace n (%)			
	Fracture	Cut and bruises	Skin allergy	Needle prick
Years spent at work				
≤5	2 (2.2)	9 (10.0)	1 (1.1)	9 (10.0)
6-10	0 (0.0)	22 (28.2)	8 (10.3)	21 (26.9)
11-15	0 (0.0)	4 (26.7)	2 (13.3)	2 (13.3)
≥16	0 (0.0)	2 (12.5)	1 (6.3)	4 (25.0)
	$\chi^2=3.20$ $P=0.362$	$\chi^2=10.38$ $P=0.016$	$\chi^2=8.83$ $P=0.032$	$\chi^2=9.00$ $P=0.029$
Had training				
Yes	2 (5.0)	9 (22.5)	2 (5.0)	8 (20.0)
No	0 (0.0)	28 (17.6)	10 (6.3)	28 (1.6)
	$\chi^2=6.50$ $P=0.011$	$\chi^2=0.51$ $P=0.477$	$\chi^2=0.09$ $P=0.754$	$\chi^2=0.12$ $P=0.726$
Used PPE				
Yes	2 (1.2)	33 (19.3)	12 (7.0)	30 (17.5)
No	0 (0.0)	4 (14.3)	0 (0.0)	6 (21.4)
	$\chi^2=0.61$ $P=0.565$	$\chi^2=0.40$ $P=0.527$	$\chi^2=3.76$ $P=0.052$	$\chi^2=0.25$ $P=0.621$

PPE: Personal protective equipments

**Table 6: Relating some characteristics of respondents with hazard awareness**

Variables	Awareness about hazard		df	$\chi^2$	P value
	Yes	No			
Age (years)			4	8.139	0.087
<20	2 (100.0)	0 (0.0)			
21-30	43 (87.8)	6 (12.2)			
31-40	95 (94.1)	6 (5.9)			
41-50	26 (81.3)	6 (18.7)			
>50	11 (73.3)	4 (26.7)			
Educational status			3	32.423	<0.001
None	0 (0.0)	2 (100.0)			
Primary	63 (77.8)	18 (22.2)			
Secondary	112 (98.2)	2 (1.8)			
Tertiary	2 (100.0)	0 (0.0)			
Had training			1	4.336	0.037
Yes	17 (89.5)	2 (10.5)			
No	119 (66.1)	61 (33.9)			
Years spent at work			3	23.415	<0.001
5	60 (66.7)	30 (33.3)			
6-10	70 (89.7)	8 (10.3)			
11-15	14 (93.3)	1 (6.7)			
16	16 (100.0)	0 (0.0)			

fewer injuries than those who have not had training; in addition, more respondents with secondary and tertiary education had awareness about hazards than those with primary education. More of those that have had training and those that have spent more years at work also had awareness about hazards. These were statistically significant.

## DISCUSSION

In this study, three-quarter of the respondents were in the age group 20-39 years. Job descriptions of hospital attendants are quite demanding and require such age group who will be active enough to carry out the jobs. Previous studies have found the majority of health care workers to be in this age group because of work demands [2,6,18]. Hospital attendants are also usually females; a study carried out in hospitals in Tanzania had female workers as the majority of the respondents [2], this study is consistent with the Tanzanian study as more than nine out of every ten respondents were females.

Only two of our respondents had tertiary education, others had below this level of education, it is however not surprising as hospital attendants are usually among workers with lower level of education in a hospital [8]. There have been reports of inadequate or total lack of education/training for workers in the hospital, especially the hospital attendants [2,8]; this study shows agreement with these studies as about 90% of our respondents never had training about their jobs. Higher (secondary and tertiary) educational status and exposure to training was found to be significantly related to lesser injuries in this study, signifying that these group of respondents were more cautious in carrying out their duties.

Nine out of every ten respondent believe their work is associated with various hazards such as fall, needle prick injuries, skin infections, etc. This is in agreement with a previous study carried out to assess the risk perception of health care workers in Northern Nigeria about human immunodeficiency virus infection/acquired immunodeficiency syndrome (HIV/AIDS) where most of the respondents believed that they are at risk of being infected with HIV/AIDS as a result of occupational exposure [6]. Another study carried out among health care workers in Ile-Ife reported that all the health care workers were aware of the potential risk of HIV transmission through percutaneous injuries [19]. Almost all the respondents wash their hands with soap always during and after work, but only about half used protective clothing as well as gloves always. Previous study has also reported a lesser percentage of ward orderlies used safety precautions such as gloves, facemasks and aprons, but they all employed regular hand-washing after various procedures [9]. Percutaneous needle-stick injury is one of the most common injuries experienced by health care workers in hospitals [2,5,9,19]; this is also seen in our study as more than two-third of respondents who have ever had an injury have had needle-prick injury. Cuts and bruises, also from sharps is another very common injury experienced by respondents in this study. Chemicals used in hospitals for cleaning such as antiseptics and disinfectants may cause skin burns during handling and use [2,13], almost a quarter of respondents in

this study reported having skin allergy from using chemicals to clean. Those that reported not to have had training in this study were found to have sustained more injuries and have lesser awareness about injuries than those that had training. This supports previous studies that have pointed out the importance of appropriate training for workers on occupational health and safety practices [2,5,8].

## CONCLUSION AND RECOMMENDATIONS

This study concludes that the health attendants are aware of the hazardous nature of their occupation, they are also aware of the basic (universal) safety principles and measures to ensure protection against these hazards. However, the high level of awareness does not translate appropriately to the judicious use of the available safety devices that the management provides for them. Use of these safety devices would have further reduced the workers' exposure to hazards, thus decreasing injuries.

We therefore recommend that there should be mandatory standardized training and re-training of health care workers especially hospital attendants in order to create more awareness about potential hazards and how to reduce the risk of injuries at workplace. Measures should be put in place to enforce the usage of PPE by this group of workers.

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## REFERENCES

1. European Commission, Directorate-General for Employment, Social Affairs and Inclusion. Occupational Health and Safety Risks in the Healthcare Sector: Guide to Prevention and Good Practice. Luxembourg: Publications Office of the European Union; 2011.
2. Manyele SV, Ngonyani HA, Eliakimu E. The status of occupational safety among health service providers in hospitals in Tanzania. *Tanzan J Health Res* 2008;10: 159-65.
3. Nkonge Njagi A, Mayabi Oloo A, Kithinji J, Magambo Kithinji J. Knowledge, attitude and practice of health-care waste management and associated health risks in the two teaching and referral hospitals in Kenya. *J Community Health* 2012;37:1172-7.
4. Sepkowitz KA, Eisenberg L. Occupational deaths among healthcare workers. *Emerg Infect Dis* 2005;11:1003-8.
5. Zhang M, Wang H, Miao J, Du X, Li T, Wu Z. Occupational exposure to blood and body fluids among health care workers in a general hospital, China. *Am J Ind Med* 2009;52:89-98.
6. Amoran OE. Occupational exposure, risk perception and access to prophylaxis for HIV/AIDS infection among health care workers in Northern Nigeria. *Br J Med Med Res* 2013;3:275-87.
7. Hinkin J, Gammon J, Cutter J. Review of personal protection equipment used in practice. *Br J Community Nurs* 2008;13:14-9.
8. Wiwanitkit V. Hospital maid: A worker at risk of contracting swine flu. *Int J Occup Environ Med* 2010;1:144-5.
9. Orji EO, Fasubaa OB, Onwudiegwu U, Dare FO, Ogunniyi SO. Occupational health hazards among health care workers in an obstetrics and gynaecology unit of a Nigerian teaching hospital. *J Obstet Gynaecol* 2002;22:75-8.

10. European Agency for Safety and Health at Work. Managing Psychosocial Risks with Cleaning Workers. Safety And Health; p. 1-11.
11. Evanoff BA, Bohr PC, Wolf LD. Effects of a participatory ergonomics team among hospital orderlies. Am J Ind Med 1999;35:358-65.
12. Davis C, Lackovic M, Singleton C. Occupational Health Brief : Low Back Pain Disorders in Louisiana Workers. Safety And Health; 2011. p. 1-3.
13. Israel Institute for Occupational Safety and Hygiene. International Hazard Datasheets on Occupation: Orderly, Medical Services. Occupational Health; 2000. p. 1-3.
14. Ayatollahi J, Ayatollahi F, Ardekani AM, Bahrololoomi R, Ayatollahi J, Ayatollahi A, *et al.* Occupational hazards to dental staff. Dent Res J (Isfahan) 2012;9:2-7.
15. Shires DB. Health hazards in medical institutions. Family physicians' role in hospital occupational health. Can Fam Physician 1993;39:166-70.
16. Tan CC. Occupational health problems among nurses. Scand J Work Environ Health 1991;17:221-30.
17. Klein LW, Miller DL, Balter S, Laskey W, Haines D, Norbash A, *et al.* Occupational health hazards in the interventional laboratory: Time for a safer environment. Radiology 2009;250:538-44.
18. Verma DK, Demers C, Shaw D, Verma P, Kurtz L, Finkelstein M, des Tombe K, and Welton T. Occupational Health and Safety Issues in Ontario Sawmills and Veneer/Plywood Plants: A Pilot Study. Journal of Environmental and Public Health, vol. 2010.
19. Adegboye AA, Moss GB, Soyinka F, Kreiss JK. The epidemiology of needlestick and sharp instrument accidents in a Nigerian hospital. Infect Control Hosp Epidemiol 1994;15:27-31.

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