

**BJMHR**British Journal of Medical and Health Research
Journal home page: www.bjmhr.com

Perception and Practices of Healthcare Workers in South western Nigeria towards Healthcare Waste Management

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ABSTRACT

Healthcare wastes are of great importance due to its hazardous nature. Unfortunately, practical information on this important aspect of healthcare management is inadequate. This research work was therefore carried out to study the perception and practices of healthcare workers in south-western Nigeria towards healthcare waste management. This was a cross sectional study, carried out among healthcare workers in Osun State, Southwestern Nigeria. Multi-stage sampling technique was used to select respondents. Data were collected using pre-tested, self administered, semi-structured questionnaires. Data analysis was done using Statistical Package of Social Sciences (SPSS) version 16, with p-value set at less than 0.05. The mean age of the respondents was 33.1 ± 8.9 years, 76.4% were females and 73.8% were nurses. Most of the respondents (89.0%) knew that healthcare waste management was important but only 37.2% had heard of segregation of healthcare waste. Overall, only 45% had good knowledge, 45.5% had positive attitude while 54.5% had poor attitudes. Only 31.4% had been trained on healthcare waste management in the 12 months preceding the study. Open dumping was practiced by 35.6% followed by burning (23% and burial (19.9%). The current knowledge, attitude and practices of healthcare waste management healthcare workers in our study area are not satisfactory. Although only half of them had good knowledge and attitude, they had positive attitude and are willing to be trained. Regular training and update courses on healthcare waste management should be conducted in order to improve the current practices.

Key words: Perception, Practices, Healthcare Waste, Healthcare workers

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Received 19 July 2015, Accepted 18 August 2015

Please cite this article as: Sabageh AO *et al.*, Perception and Practices of Healthcare Workers in South western Nigeria towards Healthcare Waste Management. British Journal of Medical and Health Research.

INTRODUCTION

Waste is generated from anywhere such as the home, office, industry, agriculture, school, living things and healthcare establishments, of more concern is that of healthcare waste due to its hazardous nature and disease transmission characteristics of some of the wastes. Healthcare waste is a by-product of health-care that includes sharps, non-sharps, blood, body parts, chemicals, pharmaceuticals, medical devices and radioactive materials. Infectious wastes, particularly, have been responsible for most of the health problems reported in many findings that expose healthcare workers, patients, clients and the community to blood borne pathogens¹. Recently, there has been an increase in public concern about the risks associated with healthcare wastes on a global basis and many efforts have been directed to raise this awareness. Healthcare wastes are of great importance due to its hazardous nature. As World Health Organization (WHO) indicated, some healthcare wastes are considered the most hazardous and potentially dangerous to human health and pollute the environment²⁻⁵. Healthcare waste (HCW) includes all the wastes generated by medical activities. It embraces activities of diagnosis as well as preventive, curative and palliative treatments in the field of human and veterinary medicine. In other words, health-care wastes are all the wastes produced by a medical institution (public or private), a medical research facility or a laboratory. All individuals exposed to HCW are potentially at risk of being injured or infected. They include doctors, nurses, sanitary staff, in- and out-patients receiving treatment in health-care facilities as well as their visitors, laundry staff, waste handling and transportation staff, workers in waste disposal facilities, including scavengers, the general public and more specifically the children playing with the items they can find in the waste outside the health-care facilities when it is directly accessible to them⁴. Many studies indicated that infectious healthcare waste can transmit more than 30 dangerous blood-borne pathogens, but those of primary significance to healthcare workers are hepatitis B, hepatitis C and Human immune deficiency virus (HIV). WHO estimated that in the year 2000, injections with contaminated syringes caused 21 million hepatitis B, 2 million hepatitis C and 260,000 HIV infections⁶⁻⁸. A recent literature review came to the conclusion that over half the world's population is at risk from illness caused by healthcare waste and many poor waste treatment practices cause violation of fundamental human rights. Poor management of healthcare waste exposes health-care workers, waste handlers and the community to infections, toxic effects and injuries. Unfortunately, practical information on this important aspect of healthcare management is inadequate and research on the public health implications of inadequate management of healthcare wastes are few and limited in scope. This research

therefore aimed to identify the gaps in current perception and practice of healthcare waste management among healthcare workers in Osun State, Nigeria.

MATERIALS AND METHOD

This was a cross sectional study, carried out among healthcare workers in Osun State, Southwestern Nigeria. The multi-stage sampling technique was used to select 200 respondents from selected health facilities in Osun State, and data was collected with pre-tested, semi-structured questionnaires which were self-administered, but only 191 were returned properly filled. Questions were asked with regards to their knowledge, attitude and practice of HCW and HCWM. The questions about knowledge of HCW and HCWM were scored. A correct answer was scored 1 and a wrong answer was scored 0. The composite scores for individual respondents were then calculated, and the mean of all the scores was thereafter computed. The respondents who scored below the mean were regarded as having poor knowledge, while those who scored up to or above the mean were regarded as having good knowledge. Same was done for their attitude towards HCW and HCWM. The questionnaires were sorted out, entered into a computer and the obtained data were analyzed using Statistical Package for Social Sciences (SPSS) version 16. Frequency distribution tables were generated from variables while cross-tabulations using chi-square for bivariate analysis were done as applicable. Level of significance was set with p-value less than 0.05.

RESULTS AND DISCUSSION

A total of 200 questionnaires were administered, but only 191 were properly filled and returned, giving a response rate of 95.5%. The mean age of the respondents was 33.1 ± 8.9 years and majority of them were females (146, 76.4%), nurses (141, 73.8%), Christians (164, 85.9%) and of the Yoruba ethnic group (173, 90.6%). About a third (70.7%) had less than 10 years working experience with a mean of 8.1 ± 7.7 years (Table 1). The knowledge of the respondents is as shown on Table 2. Most of the respondents (170, 89.0%) knew that HCW management was important, but only 97 (50.8%) knew about colour coding for healthcare waste while only 71 (37.2%) had heard of segregation in healthcare waste management before. After scoring of outcome variables for knowledge and categorizing the composite knowledge scores, 86 (45.0%) had good knowledge about healthcare waste management. The attitude of the respondents towards healthcare waste management was assessed using the 3-point Likert scale as shown in table 3. Majority of the respondents (160, 83.8%) felt health care waste management was their concern, even though they were not primarily employed for that, but 71 (37.2%) felt healthcare waste management was the sole responsibility of orderlies and cleaners. After the scoring and categorization of attitude scores, 87 (45.5%) had positive attitude, while 104 (54.5%) had poor attitudes towards healthcare waste management.

Concerning the practices of the respondents as it relates to healthcare waste management (Table 4), 77 (40.3%) of the respondents practiced segregation of healthcare waste, 91 (47.6%) worked in centres with written policy on healthcare waste management and 60 (31.4%) had been trained on healthcare waste management in the 12 months preceding the study. Open dumping was practiced by 35.6% followed by burning (23% and burial (19.9%). On bivariate analysis (Table 5), the knowledge of respondents was found to be significantly associated with their gender ($p = 0.032$), work designation ($p = 0.046$), health facility ($p = 0.009$) and their training on healthcare waste management ($p = 0.006$); such that females, nurses, those working in general and teaching hospitals and those who had been trained were more likely to have good knowledge about healthcare waste management than the others. The unsafe disposal of health-care waste poses public health risks. Healthcare waste management has become very necessary mainly due to the associated hazards and as such requires increased attention and diligence to avoid the substantial disease burden associated with poor practice. Majority of the respondents were females and were between the age group 31-40years. This is not strange as the population and workforce in Nigeria stems from this age group. This is also similar to a study by Nagaraju et al⁹ whose respondents were also largely females and within that age group. Our study discovered that though health workers felt that HCW management was important, they had difficulty in identifying the various colour codes for HCW and worse still, a large number of them did not know about segregation of HCW. One would expect that health care workers would be conversant with segregation of HCW as well as the various colour codes for HCW. This only implies that HCW were not handled properly as such health care workers may be guilty of disposing HCW in the wrong receptor. It is even more hazardous when such workers do not know that HCW should be segregated. The outcome of such deficiency in knowledge and practice could have great implications for both the workers and the public at large. Many findings in developing countries on healthcare wastes management revealed that segregation, collection of waste using recommended color coding container and storage of waste in isolated area were not satisfactory^{10,11}. Howbeit, our findings were not in keeping with Nagaraju et al., study⁹ where the assessment of knowledge of health care providers regarding bio-medical waste management revealed that majority 79 (65%) had an overall average level of knowledge, while 29 (24%) respondents had a good knowledge. Reviewing the composite knowledge score in our study, only half of the respondents had good knowledge of HCWM. This has enormous connotation because poor HCWM knowledge and unsafe practices may result in exposure to infectious wastes and this could in turn create infection due to blood borne pathogens such as Hepatitis B and HIV.

More than half of our respondents agreed that HCWM was not just for cleaners and orderlies and many more felt that HCWM was of concern to them as health care workers. This has illustrated that from our study, the respondents demonstrated positive attitude towards HCWM. In fact, 90% were willing to attend voluntary programmes to upgrade their knowledge about HCW. However, only a third had received training on HCWM in the 12 months preceding our study. This is obviously better than the findings by Abah and Ohimain¹⁴ where only 11.5% had been trained. The challenges of our respondents can be linked to training and exposure, even though a quarter felt they were at risk of being infected due to poor HCWM and a quarter also reported that they had safety instructions about HCW, half of these respondents do not have access to the guideline document. Training and implementation can combat these shortcomings. With regards to practice, albeit majority of our respondents felt that safe management of HCW was important, their practice was poor. A few studies have also documented this^{12, 13}. Sadly, open dumping of HCW was the most practiced form of HCW disposal followed by burning. These forms of waste disposal are not sanitary for HCW and should not be practiced at all in health care settings. Laxity, lack of adequate knowledge on HCW and poor funding of the health system may account for this. This study also discovered that those working in general and teaching hospitals and those who had been trained were more likely to have good knowledge about healthcare waste management than the others.

Table 1: Socio-Demographic Characteristics of Respondents (N = 191)

Variables	Frequency (n)	Percentage (%)
Age groups (in years)		
Less than 30	84	44.0
30 – 39	64	33.5
40 – 49	25	13.1
50 and above	18	9.4
Mean	33.1 ± 8.7 years	
Gender		
Male	45	23.6
Female	146	76.4
Ethnicity		
Yoruba	435	90.1
Others	48	9.9
Work designation		
Doctors	30	15.7
Nursing	141	73.8
Others	20	10.5
Health facility		
Primary health center	15	7.9
General hospital	81	42.4
Teaching hospital	53	27.7

Private/Mission hospitals	42	22.0
Religion		
Christianity	164	85.9
Islam	27	14.1
Marital status		
Never married	75	39.3
Ever married	116	60.7
Years of experience		
< 10	135	70.7
10 and above	56	29.3
Mean	8.1 ± 7.7 years	

Table 2: Knowledge about Healthcare Waste Management among Respondents (N = 191)

Variables	Frequency (n)	Percentage (%)
HCW management is important		
Yes	170	89.0
No	5	2.6
Don't know	16	8.4
What you understand by HCW		
Correct response	143	74.9
Wrong response	2	1.0
Don't know	46	24.1
Health hazards associated with HCW		
Spread of diseases	132	69.1
Environmental hazard	2	1.0
Don't know	57	29.8
Know of colour coding for HCW		
Yes	97	50.8
No	94	49.2
Ever heard of segregation in HCW		
Yes	71	37.2
No	120	62.8
What do you understand by segregation in HCW (n = 71)		
Correct response	55	77.5
Wrong response	7	9.9
Don't know	9	12.6
Categorized knowledge		
Poor knowledge	105	55.0
Good knowledge	86	45.0

Table 3: The attitude of the respondents to healthcare waste management (N = 191)

Variables	Attitude (Percentage %)		
	Agree	Indifferent	Disagree
Safe management of HCW is not an issue at all	14 (7.3)	10 (5.2)	167 (87.4)
HCW management is the sole responsibility of orderlies and cleaners	71 (37.2)	7 (3.7)	113 (59.2)
I was not employed for HCW management, so it is not my concern	11 (5.8)	20 (10.5)	160 (83.8)

I am willing to attend voluntary programmes to upgrade my knowledge about HCW	172 (90.1)	7 (3.7)	12 (6.3)
An incinerator should be set up in the hospital for HCW management	171 (89.5)	7 (3.7)	13 (6.8)
I am at risk because of HCW	141 (73.8)	18 (9.4)	32 (16.8)

Table 4: Practices related to healthcare waste management (N = 191)

Variables	Frequency (n)	Percentage (%)
Practice HCW segregation		
Yes	77	40.3
No	114	59.7
Have safety instructions about HCW at the work place		
Yes	133	69.6
No	58	30.4
Have access to a guideline document on HCW		
Yes	91	47.6
No	100	52.4
Have written policy on HCW management in the workplace		
Yes	91	47.6
No	84	44.0
Don't know	16	8.4
Final disposal of HCW		
Open dumping	68	35.6
Burning	44	23.0
Burial	38	19.9
Don't know	41	21.5
Fully immunized against hepatitis B virus		
Yes	112	58.6
No	79	41.4
Had training on HCW management in the last 12 months		
Yes	60	31.4
No	131	68.6

Table 5: Relationship between the Respondents' Knowledge about Healthcare Waste Management and their Socio-Demographic Characteristics (N = 191)

Variables	Knowledge (%)		
	Poor	Good	Statistics
Age groups (in years)			
Less than 40	84 (56.8)	64 (43.2)	$X^2 = 0.84$ $p = 0.358$
40 and above	21 (48.8)	22 (51.2)	
Gender			
Male	31 (68.9)	14 (31.1)	$X^2 = 4.61$ $p = 0.032^*$
Female	74 (50.7)	72 (49.3)	
Work designation			
Doctors	21 (70.0)	9 (30.0)	$X^2 = 6.18$ $p = 0.046^*$
Nursing	70 (49.6)	71 (50.4)	
Others	14 (70.0)	6 (30.0)	
Health facility			

Primary health center	11 (73.3)	4 (26.7)	$X^2= 11.64$
General hospital	37 (45.7)	44 (54.3)	$p = 0.009^*$
Teaching hospital	26 (49.1)	27 (50.9)	
Private/Mission hospital	31 (73.8)	11 (26.2)	
Marital status			
Never married	37 (49.3)	38 (50.7)	$X^2= 1.59$
Ever married	68 (58.6)	48 (41.4)	$p = 208$
Years of experience			
Less than 10	76 (56.3)	59 (43.7)	$X^2= 0.33$
10 and above	29 (51.8)	27 (48.2)	$p = 0.568$
Training on HCW management			
Yes	24 (40.0)	36 (60.0)	$X^2= 7.69$
No	80 (61.5)	50 (38.5)	$p = 0.006^*$

* Statistically significant

CONCLUSION

The current knowledge, attitude and practices of HCWM among healthcare workers in our study area are not satisfactory. Even though only half of the respondents had good knowledge and attitude towards HCWM, the respondents had positive attitude and are willing to be trained, howbeit; their practice was poor as open dumping of healthcare waste was mostly practiced. Therefore there is an urgent need to take practical steps aimed at improving their current status with regards to HCWM. Regular training and update courses on healthcare waste management should be given to health care workers on the handling and disposal of HCW to improve the current practices. Segregation of waste should be taught and done at point of generation. Healthcare facilities and their workers should have access to healthcare waste management guidelines and written policy on HCWM should also be made available at the workplace. Our study examined various health care workers within selected health care facilities, comparative studies can be conducted within the various cadres of health care workers and even between private and public hospitals regarding HCWM.

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