Texila International Journal of Nursing
Volume 2, Issue 2, Dec 2016

Is Knowledge and Uptake of Hepatitis B Post Exposure Management Among Health Care Personnel Influenced by the Cadre of Work Place?

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Abstract

Hepatitis B virus is recognized as important occupational risk to health care personnel. This descriptive cross-sectional study was conducted among health care personnel (HCP) in different health care facilities in Osogbo, Osun State, Nigeria to determine coverage of HBV vaccination and determine if coverage and taking of post exposure treatment was dependent on category of work place. Mean knowledge of transmission, vaccination schedules and post exposure management was good (55.8%), HCP working at teaching hospital tend to have better knowledge followed by those in primary health centre than those working in general and private hospitals. About half of the HCP (48.7%) who participated in this study felt they were at risk of exposure to HBV by virtue of their job description. Workers in primary care centers followed by those in teaching hospitals are likely to receive booster HB vaccine following exposure than workers in other health facility setting.

Keywords: *Hepatitis B virus, Vaccination, Immunization, Post-exposure*

Abbreviations: *Health Care Personnel–HCP, Hepatitis B-HB, Hepatitis B Virus- HBV, World Health Organization- WHO, Health care workers- HCWs*

Introduction

Hepatitis B is one of the causative agents of viral hepatitis and recognized to be an important occupational risk to health care personnel (HCP) worldwide making incidence of hepatitis B infection to be higher among HCP compared to the general population (GP). It was ten times commoner in USA and two times commoner in Nigeria when HCP was compared to GP. The World Health Organization (WHO) estimates that about two million health care workers (HCWs) face occupational exposure to HBV each year and that 90% of the infections that result from these exposures are in low-income countries, especially those in sub-Saharan Africa.

Incidence of hepatitis B (HB) transmission is declining gradually with the advent of Hepatitis B vaccine especially in countries where coverage of vaccination at birth with catch-up adolescence vaccination is very high. Despite this decline the HCP face persistent risk of exposure to hepatitis B from chronic hepatitis B carriers defined as persons in which hepatitis B surface antigen is persistently found in the blood for six months or more. Acute and chronic HBV infections are rare among HCP who respond to HB vaccination, but HCP who do not respond to vaccination are thought to remain susceptible thus the need to perform test for antibody against hepatitis B surface antigen (anti-HBs) two months after completing the three HB vaccination schedule or at point of recruitment or matriculation of health care personnel. Anyone with anti-HBs level below 10mIU/ml is said to be non-responders or to be unprotected against HB infection.

The case in Nigeria is different when compared to countries with low prevalence of HB infection among general population. Nigeria falls into the high endemic region (HBSAG prevalence ≥8%) with prevalence ranging from 9% to 39%, compared to USA with

prevalence of 0.003% [5], the percentage coverage for HB vaccination is also said to be low ranging from 20% to 50% among selected health care workers in the country. It is therefore important to determine periodically knowledge of hepatitis B transmission and protection among groups of Nigerian which are at higher susceptibility to HB transmission and to also determine if category of work place influence uptake of vaccination and or post exposure treatment.

Research methodology

Research design: A descriptive cross-sectional study conducted between November 10, 2015 to December 11, 2015.

Research population: Health care personnel (HCP) working in blood related units of various hospital categories in Osogbo, Osun State, Nigeria. HCPs are defined as all paid and unpaid persons providing health care, or working or training in health-care settings, who have reasonably anticipated risks for exposure to infectious materials, including blood or body fluids, contaminated medical supplies and equipment, or contaminated environmental surfaces. HCP might include but are not limited to physicians, nurses, nursing assistants, nurse practitioners, physician assistants, therapists, technicians, emergency medical services personnel, dental personnel, pharmacists, laboratory personnel, autopsy personnel, health-care students and trainees, contractual staff not employed by the health-care facility, and persons not directly involved in patient care but with potential exposure to infectious agents that can be transmitted between patients and HCP (e.g., housekeeping, laundry, security, maintenance, and volunteers

Research settings: 1. Department of community medicine, Ladoke Akintola University (LAUTECH) anchoring professional masters in Public health program where health care practitioners from different categories of hospital set up converged. 2. Selected private hospitals in Osogbo. 3. Jaleyemi Catholic hospital, Osogbo. 4. Selected primary health care centres in Olorunda Local government of Osogbo. In this study five level of hospital categories are identified namely: (i) Teaching Hospitals/ Federal medical Centres/ National Specialist hospitals. (ii) General hospitals. (iii) Primarycare/Comphrensive health centres. (iv) Private hospitals. (v) Mission hospitals.

Research sampling and sampling technique: Two hundred and fifty questionnaires were distributed among HCP participating in the professional masters program at LAUTECH, five randomly selected private hospitals , five randomly selected primary health centres and one mission hospital all in Osogbo, Osun state, Nigeria.

Method of data collection: Data were collected using pre-tested self administered questionnaires

Method of data analysis: The Statistical Package for Social Sciences (SPSS-20) was used for data processing. Simple descriptive statistics were used (mean ± standard deviation for quantitative variables and frequency with percentage distribution for categorized variables. Multivariate analysis done by crosstabulating knowledge, vaccination schedules & transmission of Hepatitis B & uptake of post exposure managemet against cadre of workplace and HCP categories. Twelve stems of True/False questions were asked to determine knowledge of HB transmission, vaccination & post exposure management. A score of 5 is allotted to correct answer while zero to wrong answer bringing total obtainable score to sixty. Score of or above 45 is taken in this study as excellent knowledge, while score ranging between 30 to 44 is taken as good knowledge, score of 19 to 29 as having fair knowledge , while score of 18 or less is taken as having poor knowledge.

Ethical consideration: Names were not written on the questionnaire given to the respondent for confidentiality and verbal consent was taken.

Result

A total of two hundred &fifty questionnaires were distributed, two hundred and thirty were returned giving 92% retrieval rate. Majority (65.2) of participants were in their third & fourth

decades, three quarters of participants were females while 82.6% of the health care professionals were married as the time of the study. Over 95% of the HCP had tertiary level of education, over 60% of them were nurses followed by community health officers and medical doctors. (Table 1) One third of the participants had spent over ten years in hospital setting while another third have spent between 1 to 3 years. (Table 2). About half of the participants were from teaching/specialist federal medical centres

Overall knowledge of transmission of HB is adjudged good (54.5%), knowledge about vaccination using HB vaccine was fair (42.4) while knowledge of post exposure management of HB was excellent (70.5%), with overall mean knowledge of HCP calculated as 55.8% (good). Questions mostly missed under vaccination had to with schedule interval of vaccination, safety of HB vaccine in pregnancy & meaning of vaccine responders (Table 4). Multivariate analysis of the questions mostly missed by the general participants with regard to workplace category showed that HCP working in teaching hospitals followed by those working in primary care centre are less likely to miss the question compared to those working in general & private hospitals (Table 5), the difference is statistically significant.

Over three-quarter (76.5%) of participants affirmed that their employer did not request for evidence of HBV vaccination either pre or post appointment as health care personnel. Sixty percent of participating HCP reported that there work place do not have written or unwritten policy on mode of reporting exposure to HBV blood/body fluids. About seventy percent of participants reported that patients that come to their health facility are not screened for HBV status routinely.

Eighty-six percent of participants have taken HBV vaccination in the past with over 70% completing the three vaccine schedules. However, about half of the responders reported that the vaccination was taken at childhood with 29.6% and 11.3% of them taking the vaccination before and after present employment respectively.

Multivariate analysis showed that HCP working at teaching hospitals followed by those working at primary care centres are more likely to be vaccinated against HBV compared to those working at general hospitals. Those working in private hospitals have the least chance of getting vaccinated against HBV. The difference was statistically significant. (Table 5). It further showed that HCP working at primary care centre are more likely to receive treatment in form of booster HB vaccine following exposure to HBV source blood/body fluids, followed by those working in teaching hospitals. The difference observed is also significant. (Table 5)

Close to half of the HCP (48.7%) who participated in this study felt they were at risk of exposure to HBV by virtue of their job description. Those working at teaching hospital expressed highest fear of risk of exposure (42%) compared to only 0.9% of those working at general hospitals (figure 2).

Discussion

Overall mean knowledge of healthcare practitioners in this study is judged to be good (55.8%) this is agreement with findings of Samuel et al & Habiba et al (2009) Knowledge about post exposure treatment followed by knowledge of transmission of HBV appeared better understood than knowledge about vaccination. Majority of participants though knew that complete vaccination involved three doses confused timing of the doses, a good proportion also were of the opinion that the vaccine was not safe in pregnancy. This is not unexpected as the common sense rule is that many medications & vaccine are contraindicated in pregnancy. The risk that a developing fetus will be adversely affected by vaccinating the mother during pregnancy is primarily theoretical, indeed, there is no evidence of risk from vaccinating pregnant women with inactivated virus or bacterial vaccines or toxoids. The live vaccines for which there have been rare but documented cases of congenital infection after administration are smallpox, yellow fever, and rubella. The available HBV vaccines contain hepatitis B surface antigen (HBSAG) produced in yeast from recombinant DNA technology and do not contain the whole virus. Therefore, there is no risk of fetal transmission and

pregnancy is not a contraindication to vaccination. In fact, susceptible pregnant women who are at risk for HBV infection should be specifically targeted for vaccination.

Eighty six percent of the participants have been vaccinated against HBV infections this is similar to 70.2% of Samuel et al in South west of Nigeria and 74.7% of Habiba in Kuwait. This appears to be good though almost 50% of the participants banked on childhood immunization and no testing is usually done after completion of schedules to detect if they actually responded to the vaccines. Assumption that once one is vaccinated correlates to being protected will lead to 8-16 % of people susceptible to HBV infection and who could become chronic carriers [1]. Multivariate analysis showed that HCP at teaching hospitals followed by those working at primary care centres were more likely to be vaccinated and receive post exposure treatment than those working at general & private hospitals. The difference was statistically significant. The teaching hospitals are better equipped understandably but it was surprising that HCP at primary care levels have higher chance of being vaccinated compared to those in general hospitals. It may be because vaccinations are mainly administered to the local community by the staff of primary care centres and secondly because HCP working at secondary care hospitals were poorly represented in this study. It is important that efforts are made at all levels of work place especially private hospitals to ensure that workers are protected. Written policy on reporting of exposure & management of at risk staff should be clearly documented.

Recommendation

Ministry of health to bring out guidelines for HCP protection against HBV and ensure that health facilities comply

Conclusion

Although knowledge of HBV infection, transmission and post exposure is good among health care personnel in health facilities of Osogbo, most of the health facilities do not request for HBV vaccination before employment neither are there clear policy on reporting of exposure to at risk blood or body fluids. The risk of poor protection appears worst among HCP working in private and general hospital. Urgent need to engage ministry of health to bring out guidelines for HCP protection against HBV and ensure that health facilities comply

Tables and figures

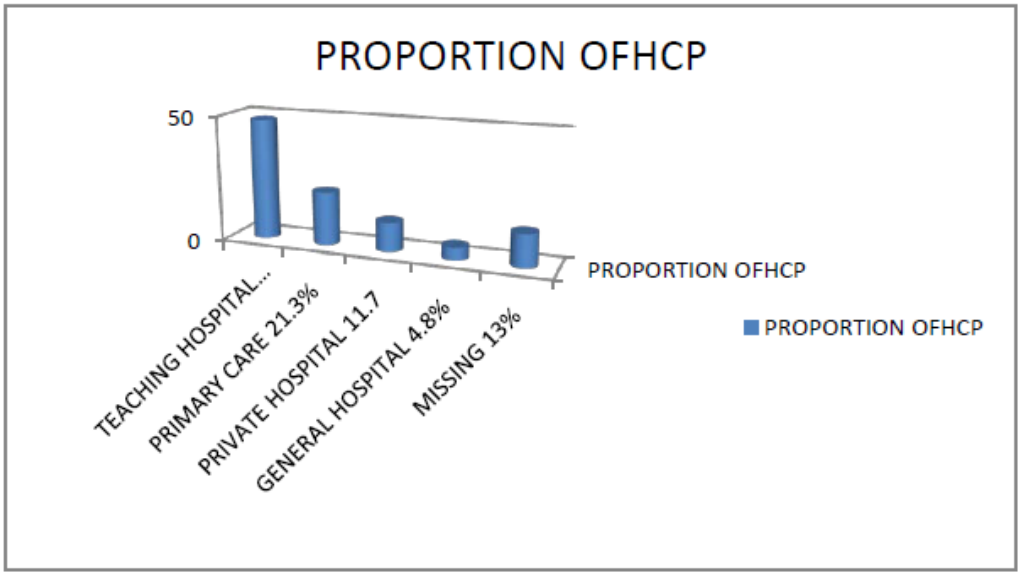

Figure 1. Cadre of Health care facility of participants

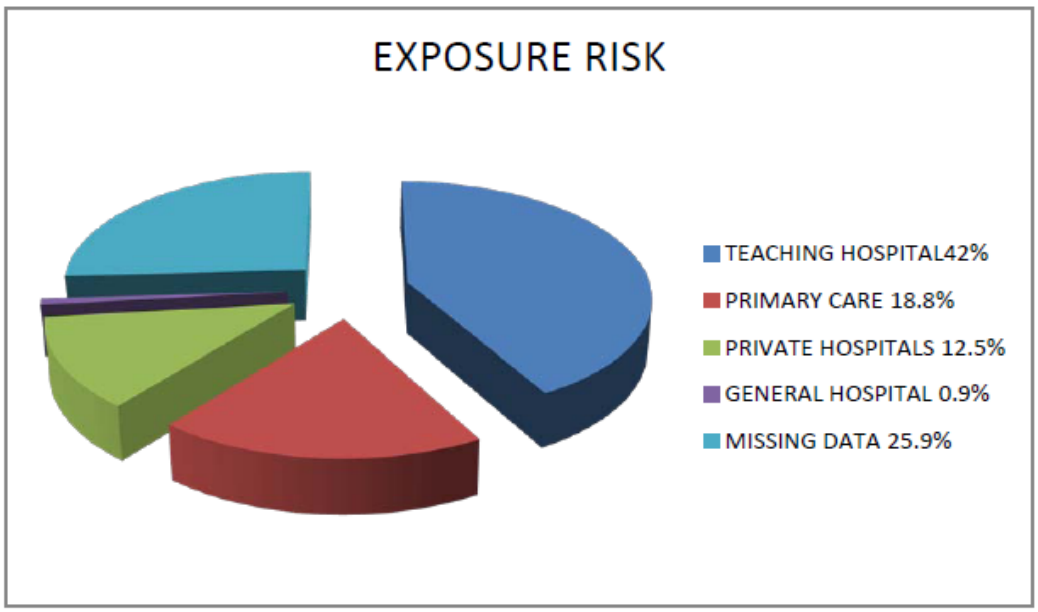

Figure 2. Perception of risk of exposure to hepatitis b infection by HCP working at different cadres of health facility

Table 1. Sociodemographic data

PARAMETERS	FREQUENCY	PERCENTAGE (%)
AGE(YEARS)		
20 – 29	34	14.8
30 – 39	98	42.6
40 – 49	52	22.6
≥ 50	41	17.8
Missing	5	2.2
TOTAL	**230**	**100**
PROFESSIONAL STATUS		
NURSES	147	63.9
COMMUNITY HEALTH OFFICERS	29	12.6
DOCTORS	20	8.7
LABORATORY STAFF	7	3.0
WARD ORDERLIES	6	2.6
MICROBIOLOGISTS	2	0.9
PHARMACISTS	2	0.9
ADMIN OFFICERS	2	0.9
SOCIAL WORKER	1	0.4
MISSING	16	6.95
TOTAL	230	100
SEX		
FEMALE	170	73.9
MALE	59	25.9
MISSING VALUE	1	0.4
TOTAL	230	100
MARITAL STATUS		
MARRIED	190	82.6
SINGLE	34	14.8

SEPARATED	5	2.2
MISSING	1	0.4
TOTAL	230	100
LEVEL OF EDUCATION		
SECONDARY LEVEL	8	3.5
TERTIARY LEVEL	221	96.1
MISSING VALUE	1	0.4
TOTAL	230	100

Table 2 Time spent at present work place

DURATION IN MONTHS (YEARS)	**NUMBER**	**PERCENTAGE**
1 – 12 (< 1)	7	3.0
13 – 36 (1-3)	81	35.2
37- 60 (>3 – 5)	30	13.0
61 – 120 (>5 – 10)	31	13.5
≥ 121 (> 10)	81	35.2
TOTAL	230	100

Table 3 Knowledge of health care personnel

HEPATITIS B KNOWLEDGE	**SCORE (TOTAL OBTAINABLE 4600)**	**PERCENTAGE**
TRANSMISSION	2505	54.5
VACCINATION	1940	42.2
POST EXPOSURE MANAGEMENT	3245	70.5
AVERAGE SCORE & PERCENTAGE	**7690**	**55.8**

Table 4 Relationship of work place category to knowledge, attitude & practice (multivariate analysis)

PARAMETER	TEACHING HOSPITAL	GENERAL HOSPITAL	PRIMARY CARE CENTRE	PRIVATE HOSPITAL	CHI-SQUARE
Risk of transmission of HBV lower if source is positive for both HBs & HBe antigen (FALSE)	69.8% CORRECT RESPONSE	4.7% CORRECT RESPONSE	11.6% CORRECT RESPONSE	2.3% CORRECT RESPONSE	X^2= 64.547 **P = 0.0000**
Vaccination schedules for HBV are 3 doses given at 0,3 & 6months (FALSE)	48.3% CORRECT RESPONSE	0% CORRECT RESPONSE	24.1% CORRECT RESPONSE	10.3% CORRECT RESPONSE	X2 = 12.910 P = 0.115
HBV vaccine is safe in pregnancy (TRUE)	18.3% CORRECT RESPONSE	0.8% CORRECT RESPONSE	27.5% CORRECT RESPONSE	7.6% CORRECT RESPONSE	X^2 = 26.373 **P = 0.001**
HBV vaccination received	23.1% VACCINATED	2.0% VACCINATED	21.1% VACCINATED	7.0% VACCINATED	$X^{2 = 45.651}$ **P = 0.000**
Do you think you at risk of HBV by virtue of your job description?	42.0% YES TO AT RISK	0.9% YES TO AT RISK	18.8% YES TO AT RISK	12.5% YES TO AT RISK	$X^{2 = 68.744}$ **^{P}= 0.000**
Did you receive treatment following exposure to HBV ?	28.6% RECEIVED POST EXPOSURE TREATMENT	0% RECEIVED POST EXPOSURE TREATMENT	47.6% RECEIVED POST EXPOSURE TREATMENT	4.8% RECEIVED POST EXPOSURE TREATMENT	X2 = 95.337 **P = 0.000**

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