

Original Research Article

## **Awareness and Status of Hepatitis B Viral Vaccination among Workers and Students of Health Care Profession of a Tertiary and Secondary Hospitals in Sokoto, North Western Nigeria**

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### **ABSTRACT**

African countries are among the regions with high burden of Hepatitis B viral (HBV) infection. Hepatitis B virus can be found in various body fluids of an infected individual and is highly infectious. Effective HBV vaccine was available since 1982, but its awareness and coverage among health care professionals differ from one place to another.

The aim of this study was to determine the awareness and status of Hepatitis B vaccination among workers and students of health care profession of tertiary and secondary health care hospitals in Sokoto, North Western Nigeria. These health care professionals include Doctors: 23, Nurses: 51, Nursing interns: 19, Midwifery: 65, Midwifery interns: 21, Medical Laboratory Scientists: 65, Medical Laboratory interns: 10, Science Laboratory Technicians: 61, and Science Laboratory Technician interns: 29. This research was a cross sectional, in which 344 workers and students of health care profession in selected Hospitals, in Sokoto metropolis were enrolled, from October, 2015 to March, 2016. Self administered questionnaire was adopted for the collection of data and Special Package for Social Science (SPSS Version 20) was used for the statistical analysis. Chi-square test was used for comparing variables and level of significance was set at  $P < 0.05$ .

About 52.9 % were aware of HBV vaccine and 43.4 % of them had HBV vaccination, however only 46.8 % completed the vaccine schedules. The commonest source of information about the availability of HBV vaccine was from the working place of the respondents (57.7 %). The most frequent reason given by the respondents for not being vaccinated was due to careful handling of the patients (46.6 %).

**Keywords:** HBV, HBV Vaccine, Health care Professionals

### **INTRODUCTION**

Hepatitis B virus (HBV) infection is highly infectious and causes global health challenge. About 2 billion were infected with HBV globally, with African and Asian countries having the higher prevalence of the infection. <sup>[1]</sup> Hepatitis B virus is a potential cause of life threatening liver disease and patients with chronic course of

the infection are at risk of developing liver cirrhosis and hepatocellular carcinoma. <sup>[2]</sup>

The virus can be found in (blood, semen and vaginal fluids as well as other body fluids) of an infected individual.

Therefore health care professionals are at risk of contracting HBV infection. Hepatitis B viral infection is preventable by HBV vaccine which is safe, about 95 %

effective, available since 1982 and was first effective anti cancer vaccine, [1,2] however its awareness and coverage among health care professionals varies from one place to another. [3-6]

An individual is said have adequate HBV vaccine response and immune against HBV infection if anti HBs (antibody against HBsAg) titre is greater than 10 IU/L following 3 HBV vaccines at 0, 1 and 6 months. [7]

This study aimed at determining awareness and status of HBV vaccination as well as factors that may contribute to failure of HBV vaccination among workers and students of health care profession.

## MATERIALS AND METHODS

This was a across sectional study design conducted in selected Government Hospitals in Sokoto metropolis, comprising of Specialist Hospital Sokoto (SHS), which is a tertiary Hospital and 4 other secondary Hospitals, namely: Maryam Abacha Women and Children Hospital Sokoto, Noma Children Hospital Sokoto, Women and Children Welfare clinic Sokoto and Comprehensive health care centre Kofar Rini Sokoto, from October, 2015 to March 2016.

The study participants were 344 health care professionals, comprising Doctors: 23, Nurses: 51, Nursing interns: 19, Midwifery: 65, Midwifery interns: 21, Medical Laboratory Scientists: 65, Medical Laboratory Scientist interns: 29, Science Laboratory Technicians: 61 and Science Laboratory Technician interns: 29. The study participants were selected by systematic sampling technique and they provided written informed consent. The ethical committees of Ministry of Health Sokoto and Specialist Hospital Sokoto approved the study. Self administered questionnaire method was adopted in collecting data about the awareness and status of HBV vaccination as well as demographic data amongst the study participants. Source of information about the HBV vaccine, number of HBV Vaccine

dosage received and reasons for not being vaccinated were also asked in the questionnaire.

Statistical Package for Social Sciences (SPSS, Version 20) was used for the statistical analysis, Chi-square test was used for the statistical tests and level of significance was set at  $P < 0.005$ .

## RESULTS

### Socio demographic characteristics of the study participants:

Three hundred and forty four (344) health care professionals participated in the study, comprising Doctors 23(6.6), Dental 2(0.6), Nurses 69(19.9), Nurses interns 1(0.3), Midwifery 65(18.8), Midwifery interns 21(6.1), Medical Laboratory Scientists 65(18.8), Medical Laboratory Scientist interns 10(2.9), Science Laboratory Technicians 61(17.6) and Science Laboratory Technician interns 29(8.4). The mean age of the study participants was  $28 \pm 7$  (Mean  $\pm$  Standard deviation). Majority of the study participants were females 201(58.4), Male 143 (41.6). About 170(49.4) and 174(50.6) were married and single respectively. These results are shown in Table 1.

Table 1: Socio demographic characteristics of the respondents

| Variable                            | n(%)      |
|-------------------------------------|-----------|
| Age (mean $\pm$ SD)<br>28 $\pm$ 7   |           |
| <b>Sex</b>                          |           |
| Male                                | 143(41.6) |
| Female                              | 201(58.4) |
| <b>Cadre</b>                        |           |
| Doctor                              | 23(6.7)   |
| Nurse                               | 51(14.8)  |
| Nursing intern                      | 19(5.5)   |
| Midwifery                           | 65(18.9)  |
| Midwifery intern                    | 21(6.1)   |
| Medical Laboratory Scientist        | 65(18.9)  |
| Medical Laboratory Scientist intern | 10(2.9)   |
| Laboratory Technician               | 61(17.7)  |
| Laboratory Technician intern        | 29(8.4)   |
| <b>Marital status</b>               |           |
| Married                             | 170(49.4) |
| Single                              | 174(50.6) |

### Awareness about the availability of HBV vaccine among the study participants:

About 182(52.9) were aware of the availability of HBV vaccine among the study participants. The awareness was significantly higher among Doctors 20(87.0)

compared to other health care professionals ( $P < 0.001$ ). However the HBV vaccine awareness did not differ significantly with marital status and sex, married 98(57.6),

single 84(48.3) ( $P < 0.082$ ), male 81(56.6), female 101(50.2) ( $P < 0.242$ ), as illustrated in Table 2.

Table 2: Overall HBV vaccine awareness and its comparison by discipline, marital status and sex among the study participants

| Variable                            | HBV vaccine awareness n(%) | P-value |
|-------------------------------------|----------------------------|---------|
| Overall                             | 182(52.9)                  |         |
| <b>Cadre</b>                        |                            |         |
| Doctor                              | 20(87.0)                   |         |
| Nurse                               | 18(35.3)                   |         |
| Nursing intern                      | 10(52.6)                   |         |
| Midwifery                           | 30(46.2)                   |         |
| Midwifery intern                    | 14(66.7)                   |         |
| Medical Laboratory Scientist        | 43(66.2)                   |         |
| Medical Laboratory Scientist intern | 5(50.0)                    |         |
| Laboratory Technician               | 30(49.2)                   |         |
| Laboratory Technician intern        | 12(41.4)                   | 0.001   |
| <b>Marital status</b>               |                            |         |
| Married                             | 98(57.6)                   |         |
| Single                              | 84(48.3)                   | 0.082   |
| <b>Sex</b>                          |                            |         |
| Male                                | 81(56.6)                   |         |
| Female                              | 101(50.2)                  | 0.242   |

### Source of information about the availability of HBV vaccine:

Majority of the respondents obtained the information about the availability of HBV vaccine via their working places 105(57.7), while school curriculum 36(19.8), media 23(12.6) and other sources specified by the respondents 18(9.9) formed the least source of information as represented in Figure 1.

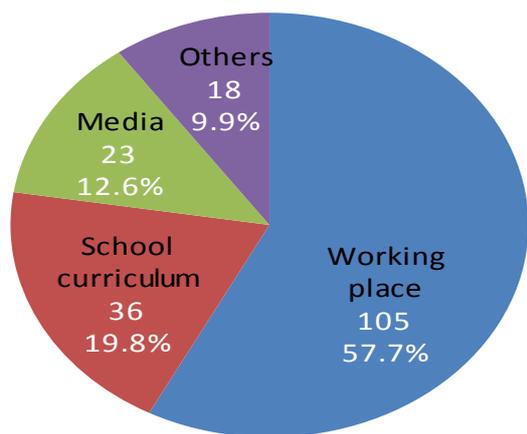


Figure 1: Source of information about the availability of HBV vaccine among the study participants

### Status of HBV vaccination among the study participants:

About 79(43.4) of the respondents that were reported to be aware of the HBV vaccine were vaccinated with HBV vaccine and this

represents about 23.0 % as the overall HBV vaccine coverage among the entire study participants. However only 37(46.8) of those who commenced HBV vaccine completed the 3 vaccine dosages. These results are illustrated in Table 3.

Table 3: Status of HBV vaccine among the study participants

| Variable  | HBV vaccine status, No(%) |           |
|---|---------------------------|-----------|
|   | Yes                       | No        |
| <b>Among respondents aware of availability of the vaccine</b> |                           |           |
| Received  | 79(43.4)                  | 103(56.6) |
| Completed 3 dosages   | 37(46.8)                  | 42(53.2)  |
| <b>Overall</b>  |                           |           |
| Received  | 79(23.0)                  | 266(77.0) |

### Reasons for not being vaccinated with HBV vaccine among respondents reported to be aware of the vaccine.

The most frequent reasons given by the respondents for not being vaccinated with HBV vaccine were careful handling of the patients 48(46.6) and not knowing the place to be vaccinated 38(36.9). The least reasons were lack of time and other reasons specified by the participants. Figure 2 demonstrated these results.

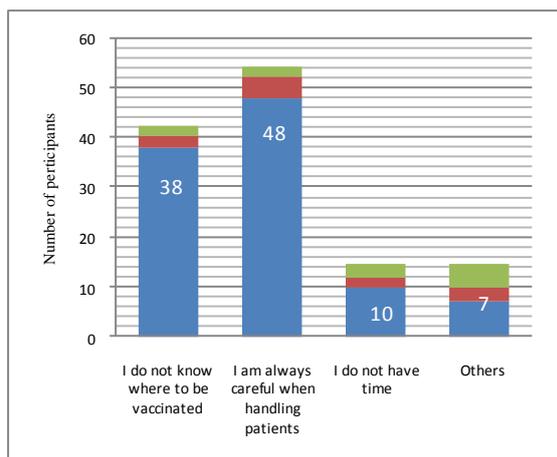


Figure 1: Reasons for not being vaccinated with HBV vaccine among participants reported to be aware of the vaccine

## DISCUSSION

The value (52.9%) obtained in the current study as the prevalence of awareness of HBV vaccination among health care professionals was lower compared to what was reported in South East (86.8%), [8] and South West (97.4%), [6] in Nigeria. Rana et al, (2013) and Hassan et al, (2016) in their studies among health care workers at combined Military Hospital, Kharian cantonment Pakistan and Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria, respectively, reported that about 62.5 % and 68.5% of their study participants respectively were aware of the protective role of HBV vaccine. [5,9] Also contrary to this result in the current study, Khan et al, (2010) in their study in India, documented that all the medical and dental interns were aware of the HBV vaccine and 87.3 % of nursing interns were aware of the availability of the HBV vaccine, [3] while Setia et al, (2013) reported that 85 % of the medical students in medical colleges at Karachi, Pakistan were aware of HBV vaccine. [4] Each year on 28, July, a symposium is carried out to mark World hepatitis day, this gathering enlighten health care professionals and general public about HBV infection and related matters, however the discussion almost always take place in tertiary health care hospitals in our environment, therefore this may explain why disparity occurred between the current study and previous studies as the current

study involved a tertiary hospital and 4 other secondary hospitals while all the previous studies under review were tertiary hospitals. The awareness about the HBV vaccination did not differ with sex and marital status, however it was significantly higher among Doctors compared to other health care professionals. Khan et al, (2010) and Adekanle et al, (2015) documented contrary results with regard to sex and cadre respectively. [3,6]

More than half of the respondents (58 %) obtained the information about the availability of the vaccine via their working places, while school curriculum, media and other sources (specified by the respondents) formed the least source of information about the availability of HBV vaccine in descending order. However Setia et al, (2013) found that school curriculum was mainly source of information among medical interns (60 %) and dental interns (53 %), while 49 % of nursing intern obtained the information from the school curriculum. [4] Media play an important role in the dissemination of information on health issues or a breakthrough in health care issue, however school curriculum is the most vital mean of dissemination of information during training of health care professionals in the school and this may explain why high percentage of the respondents in the current study were not aware of the existence of HBV vaccination as fewer study participants obtained this information from the school curriculum.

Several studies documented higher percentages of vaccine coverage among health care professionals compared to the current study which documented 43.4 % and 23.0 % among respondents reported to be aware of HBV vaccine and overall coverage respectively, [3-6] however this result in the current study is comparable to 43 % reported by Hassan et al, (2016). [9] About 46.8 % of those who commenced HBV vaccination, completed the 3 HBV vaccine dosages in the current study, while Khan et al, (2010), Kesieme et al, (2011), Adekanle et al, (2015) and Hassan et al, (2016)

documented 70.6 %, 26.8 %, 65 % and 56 % respectively in their studies. (3,6,8,9)

Low HBV vaccine coverage in the current study is not unexpected because high percentages (47.1%) of the study participants were not aware of the existence of HBV vaccine. Factors that may contributed to the low percentage of completing the HBV vaccine dosages in the current study may probably be as a result of some respondents were not due for the third HBV vaccine dosage at the time of the study, or some respondents were not aware that HBV vaccine is given in three dosages at given interval of time. The most frequent reasons for not being vaccinated among the study participants that were aware of the HBV vaccine were careful handling of the patients (46.6 %) and not knowing the place to be vaccinated (36.9 %). Similarly Setia et al, (2013), reported that most of the interns that were not vaccinated said they were too careful when handling patients, [4] while Hassan et al, (2016) found that about 57.1 % of those not vaccinated was due to not knowing where to be vaccinated. [9] Avoiding HBV vaccination due to careful handling of the patients may render health care personnel at risk of contracting HBV infection because of its high infectivity. Not completing the recommended dosages of HBV vaccine may result in not getting the protective antibody titre against HBV infection.

In conclusion, high percentage of study participants was found not to be aware of availability of HBV vaccine. School curriculum had little contribution with regard to the source of information about the availability of the HBV vaccine, however majority obtained that information in their various working places. The level of awareness about HBV vaccine was observed to differ with cadre, higher among Doctors compared to other health care professionals. Less than half of the respondents that were reported to be aware of the availability of HBV vaccine commenced the vaccine and completed the 3 dosing regimen of the vaccine. Careful

handling of the patients and not aware of the place to be vaccinated were often reasons for not being vaccinated among the respondents that were reported to be aware of the HBV vaccine. Reasons for not completing HBV vaccine dosages were not ascertained and this was a limitation of this study. Inability of this study to assess the level anti-HBs titre among those who completed HBV vaccine dosages was also a limitation.

We recommend that symposium for World Hepatitis day should be extended to secondary health care hospitals, so as to increase the level of awareness and knowledge about HBV infection among health care professionals in these hospitals. We also recommend that health care institutions should frequently update their curriculum, especially with regard to local and or global diseases that pose concern and challenge, such as HBV infection. The health care institutions should come up with policies to ensure that the health care professionals are properly vaccinated against HBV infection as increasing access to HBV vaccine was one of the global strategies launched in May, 2016 by World Health Assembly for ensuring elimination of HBV infection as a public health problem.

**Conflict of Interest:** None declared

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