

Hepatitis B Vaccination Status and Needle stick Injuries among Medical Students in a Nigerian University

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Abstract

Background: Hepatitis B virus (HBV) is the most common blood borne pathogen that poses an occupational risk to health-care workers. The incidence of infection following needle stick injury has been reported to be high among medical students. Effective vaccines against HBV are available. The aim of this study was to determine the vaccination status and prevalence of needlestick injury among medical students in a tertiary institution in a developing country (Nigeria).

Method: Information regarding hepatitis B status, history of needlestick injury and awareness of risk factors for HBV were obtained from clinical medical students using a self administered questionnaire. Three hundred and forty six students responded.

Results: Three hundred and five (88.7%) agreed that medical education exposes one to HBV infection and 315 (91.6%) were aware of the availability of vaccine against HBV.

Only 42 (47.7%) were vaccinated against HBV. Majority (57.4%) gave lack of opportunity as reason for non immunization while 34.7% had never given it a thought. One hundred and sixty-six (48%) of the respondents admitted to a previous needlestick injury and only 17 (10.2%) of those who reported history of needlestick injury had post-exposure prophylaxis against HBV infection.

Conclusion: HBV vaccination status is very low among medical students in Nigeria and the prevalence of needle stick injuries is high. Universities must not only provide HBV vaccination free of charge but also enforce its use by these students.

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Introduction

The hepatitis B virus (HBV) is one of the commonest infectious pathogens the world over¹. According to WHO, over two billion people (a third of the world's population) have been infected with HBV, out of which 5% are chronic infections². Chronic hepatitis B infection, is associated with a 25% chance of death from cirrhosis or liver cancer³.

Historically, HBV is the most common blood borne pathogen that poses an occupational risk to health-care workers⁴. The incidence of infection following needle stick injury among this group is between 6-30% and effective vaccines against HBV are available⁴. One plasma derived vaccine has been shown to be effective against hepatocellular carcinoma in children in Taiwan⁵.

Medical Students, the doctors of tomorrow are particularly at a high risk of infection by the HBV via needle-stick injuries for many reasons. They lack experience and are not formally taught how to bleed patients and therefore learn on the job. They also lack the knowledge of precautionary measures and proper post-exposure behaviour⁶.

Medical students in Nigeria spend prolonged periods around patients on the wards and clinics in their last three years of training. HBV vaccination in some institutions is not offered free of charge to them and they are not compelled by any law to get vaccinated.

Studies are available about HBV vaccination status in Nigerian health workers⁷⁻¹⁰ but not among clinical medical students who are at an even higher risk of needle-stick injuries and hence HBV infection. It is therefore necessary to examine the HBV vaccination status and the prevalence of needlestick injuries among clinical students in the medical school in Jos, Nigeria.

Methods

This was a cross sectional study of clinical medical students at the University of Jos, Nigeria. A voluntary self administered questionnaire was distributed to the students on the status of HBV vaccination. Items included in the questionnaire were sex, awareness of exposure, history of needle stick injury, awareness of HBV vaccination and reasons for not being vaccinated. The ethics committee of the Jos university teaching hospital approved the study.

Data obtained was analyzed using Epi Info 2000 version 3.2.2. Results are expressed as proportions.

Results

A total of 346 clinical students completed the questionnaire. There was 100% response rate. There were 118 females (34.1%) and 228 males (65.9%). Three hundred and five (88.7%) agreed that medical education exposed one to HBV infection while 13 (3.8%) did not think so and 26 (7.6%) did not know whether it exposed one. Three hundred and fifteen (91.6%) were aware of the availability of vaccine against HBV while 29(8.4%) were not.

Two hundred and fifty respondents (72.7%) had not been vaccinated against HBV. Of the 96 (27.7%) students vaccinated, only 42 (47.7%) got the complete dosage of three injections. The majority (57.4%) gave lack of opportunity as the reason for not being immunized while other reasons included never giving it a thought (34.7%), very expensive (3.2%) and being HBV positive (3.2%) among others (Fig 1).

One hundred and sixty-six (48%) of the respondents admitted to a previous needlestick injury, while 118 (34.1%) had never had any needlestick injury and 62 (17.9%) could not remember. Only 17 (10.2%) of those who reported history of needlestick injury had post-exposure prophylaxis against HBV infection.

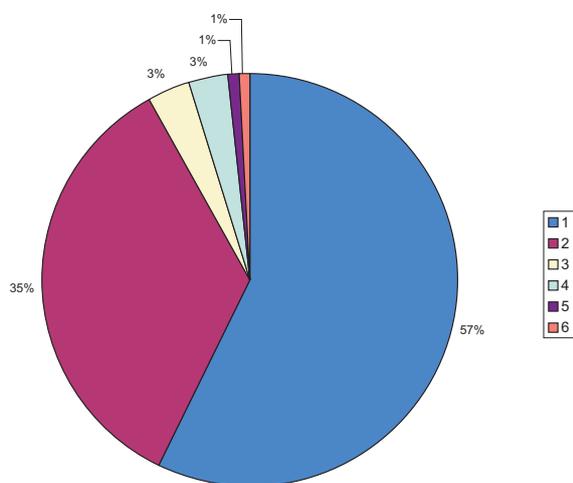


Figure 1: Reasons for non hepatitis B virus vaccination among medical students

Keys: 1 = No opportunity, 2 = Never gave it a thought, 3 = Expensive, 4 = Hepatitis B surface antigen positive, 5 = Not aware of vaccine, 6 = Not necessary

Discussion

The results of the study show a very low HBV vaccination status among medical students in Jos Nigeria. Only 27.7% (96) were vaccinated. This compares with the zero to 22.4% observed in other studies in Nigeria among health workers, but contrasts sharply with the over 95%

seen in Australian medical and dental students, 86% in German medical students, 42.2% medical students in Pakistan⁷⁻¹³. The majority (57.4) gave lack of opportunity as the reason for non vaccination. This is similar to the result in Enugu, Nigeria¹⁰. This disparity may be partly explained by the fact that HBV vaccine has usually been self procured in Nigeria unlike in the developed world where it is provided free. Another reason may be the general attitude of the Nigerian populace to immunization¹⁴. It may also reflect the low level of information on the usefulness of HBV vaccination.

The findings of this study have public health implications for Nigeria. Firstly, this means that the future doctors who may contact the infection have a 25% chance of dying from liver cirrhosis or cancer³. Secondly, the economic consequences are enormous on the already resource limited health care system as the cost of training doctors in Nigeria is expensive. In addition, there is a grave implication for transmission of infection from these doctors to their patients. The Nigerian government in its attempt to curb the high prevalence of HBV has added the HBV vaccination to its National Program on Immunization. It is however restricted to infants and even at that it is not fully operational as the vaccines are not always available and some parents have to purchase them.

As high as 11.3% of students were not aware that medical practice predisposed them to higher risk of acquiring HBV. This in itself will make them take unnecessary risks. This situation is different from what obtains in Germany where students tend to overestimate the risk of transmission, although it has been shown that students' knowledge of transmission risk via needlestick injury is poor¹². There is therefore the need to optimize prevention of HBV through a re-definition of medical education curriculum to include universal precaution and vaccination early in their training. The prevalence of needlestick injury in our study was 48%. This is slightly lower than the 53.7% reported among health workers in south eastern Nigeria but higher than the 12-35% reported internationally among medical students¹⁰. The none-availability of the modern blood letting apparatus (e.g. the vacutainers and retractile needles) may have contributed to the higher prevalence in our study.

The major limitation encountered in our study was the reliance on self reported HBV vaccination status as it has been shown to be undependable^{3, 15}. A serological confirmation of immunity would have been more appropriate. This however is lacking in our environment.

Conclusion

This study has shown that HBV vaccination status is very low among our medical students compared to rates seen internationally and the prevalence of needle stick injuries is high. It is therefore imperative to teach the importance of vaccination early in medical school. Universities must

not only provide HBV vaccination free of charge but also enforce its use by these students.

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