

## HEPATITIS B VACCINATION STATUS AMONG HEALTH WORKERS IN ENUGU, NIGERIA.

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### ABSTRACT

**Background:** Health workers in Nigeria are particularly at increased risk of contracting hepatitis B virus in their work place because Nigeria is a holoendemic area. Hepatitis B vaccination virtually eliminates this risk. There are few studies on the perception and uptake of hepatitis B vaccination among health workers in Nigeria and none to our knowledge in the University of Nigeria Teaching Hospital (UNTH), Enugu.

**Objective:** To determine the Hepatitis B vaccination level among all categories of health workers in UNTH, Enugu, and the factors that influence its uptake.

**Method:** The study was cross-sectional in design. Subjects were health workers likely to be exposed to patients and or their body fluids. The tool was a self administered pre-tested questionnaire and analysis was done using SPSS version 11.5 software.

**Results:** Fifty point four percent of the health workers felt that their jobs exposed them to an increased risk of contracting hepatitis B virus infection. There is a significant occupational difference in perception with only 5.5% of the ward attendants as against 67.9% of other workers feeling that their jobs exposed them to increased risk ( $P = 0.00$ ).

Twenty two point four percent had received Hepatitis B vaccination, 3.7% had received 3 or more doses. Only years of occupational practice had a significant influence on vaccination uptake ( $P = 0.00$ ). The most common reason for non-vaccination was lack of opportunity (43.08%). Among the 53.7% of the respondents who had had needle stick injury, none received post exposure prophylaxis.

**Conclusion:** There is a low level of hepatitis B vaccination and no post exposure prophylaxis among health workers in UNTH, Enugu. This is due to poor perception of the risk of contracting this infection and non-availability of the vaccines.

**Key words:** Hepatitis B, Vaccination, Health Workers.

### INTRODUCTION

Hepatitis B is the most important infectious occupational disease that health workers are exposed to.<sup>1</sup> The risk of being infected is dependent on the prevalence of the virus carriers in the environment, the frequency of exposure of the health worker to blood and body fluids and the infectivity of the hepatitis B virus.<sup>2,3</sup> Health workers in Nigeria are particularly at increased risk because Nigeria is a holoendemic area, with a hepatitis B virus carrier rate of 15 – 37%.<sup>4</sup>

Hepatitis B vaccine has been found to reduce the risk of acquiring this infection to virtually zero.<sup>3</sup> The Centers for Diseases Control Atlanta (U.S.A), therefore recommended hepatitis B vaccination and post exposure prophylaxis in exposed unvaccinated health workers, as part of the universal precautions

policy for the protection of health workers.<sup>2</sup> Previous studies in this country showed low levels of uptake of vaccination among health workers,<sup>5, 6</sup> and were mainly limited to doctors, they were also conducted in the south western part of the country.<sup>5,6</sup> This study was conducted to determine the hepatitis B vaccination level among all categories of health workers in Enugu, South Eastern Nigeria, and the factors that influence its uptake.

### MATERIALS AND METHODS

This cross-sectional study was carried out between June and August 2003, among staff of UNTH, Enugu who have direct contact with patients and or their body fluids (doctors, nurses, laboratory scientists, ward attendants, radiographers physiotherapists and medical social workers). Those unlikely to be so exposed were excluded. A 2-staged random sampling was done, using the distribution of

the different occupations as a frame. Informed verbal consent was obtained from the subjects and the approval of the Ethics Committee of the hospital was obtained. A self administered, pre-tested questionnaire was the study instrument.

Analysis was performed using SPSS Version 11.5. Frequencies were compared with Chi-Square test while multivariate regression was used to determine variables with predictive effect on immunization.  $P < 0.05$  was taken as indicating statistical significance.

## RESULTS:

Two hundred and forty six health workers participated in the study, 150 (60.98%) were females, while 96 (39.02%) were males. Male to female ratio was 1:1.6. One hundred and twenty seven (52%) were married, 100 (40.7%) single and 19 (7.7%) were widowed. Most of the subjects were aged between 20 – 49 years. Distribution of respondents according to occupation is as shown in table I. Sixty-seven (27.2%) were doctors.

One hundred and twenty four health workers (50.4%) felt that their jobs exposed them to an increased risk of contracting hepatitis B virus. Forty six (68.7%) of the 67 doctors, 37 (63.8%) of the 58 nurses and 25 (73.5%) of the 34 laboratory scientist versus only 3 (5.5%) of the 55 ward attendants perceived an increased occupational exposure to hepatitis B virus. The occupational difference in perception is statistically significant ( $\chi^2 = 64.72$ ,  $df = 4$ ,  $p = 0.00$ ).

Table 1: Distribution of Health Workers according to Occupation

Occupation	No of respondents	Percentage
Doctors	67	27.2%
Nurses	59	24.0%
Medical Laboratory Scientists	34	13.8%
Ward Attendants	55	22.4%
*Others	21	8.5%
No response	10	4.1%
Total	246	100%

\*Radiographers 8, Physiotherapists = 11 Medical Social Workers = 2.

Fifty-five (22.4%) health workers had received hepatitis B vaccination. Of these 35 (65.6%) had received one dose, 6 (10.9%) two doses and 9 (16.3%) 3 or more doses. Table II shows that hepatitis B vaccination rate does not differ significantly among the various occupations ( $\chi^2 = 2.32$ ,  $df = 4$ ,  $p = 0.68$ ). Awareness of the risk of contracting hepatitis B did not also have any influence on vaccination pattern ( $\chi^2 = 1.46$ ,  $df = 1$ ,  $p = 0.23$ ). However, years of occupational practice significantly influenced vaccination. While only 17.9% of those who have worked in the hospital for ten years or less had been vaccinated, 41.79% of those who have worked beyond ten years were vaccinated ( $\chi^2 = 23.07$ ,  $df = 3$ ,  $p = 0.00$ ). On multiple regressions, only years of occupational practice had a predictive influence on vaccination ( $p = 0.00$ ) (Table III). As shown in Table IV the most common reason health workers gave for not receiving hepatitis B vaccination was lack of opportunity (43.08%). While no doctor or ward attendant was unaware of hepatitis B vaccination, 45% of the lab scientists, 35.7% of other paramedics and 9.7% of nurse were unaware of hepatitis B vaccination ( $\chi^2 = 74.40$ ,  $df = 20$ ,  $p = 0.00$ ).

One hundred and thirty two (53.7%) of the respondents have had needle stick injuries in the course of performing their duties. Of these 35 (26.5%) determined the hepatitis B carrier status of the patients. Ten (7.5%) informed the hospital management and none received post exposure prophylaxis.

Table 2: Distribution of Hepatitis B Vaccination among the various Occupations

Occupation	Hepatitis B Vaccinate		Total
	No	Yes	
Doctors	52	14	66
Nurses	40	10	50
Medical Scientists	22	11	33
Ward Attendants	41	13	54
Others	15	5	20
Total	170	53	223*

$\chi^2 = 2.32$ ,  $df = 4$ ,  $p = 0.68$

\*23 health workers did not respond.

**Table 3: Results of Multiple Regression Analysis of Factors Influencing Hepatitis B Vaccination by Health Workers**

Variable	B	Standard Error	Beta	T	P
Year of Practice	0.8	0.05	0.297	3.89	0.00
Occupation	0.03	0.03	0.09	1.19	0.23
Awareness of Transmission of Hepatitis	0.09	0.07	0.10	1.33	0.19

**Table 4: Distribution of Reasons for Respondents not getting vaccinated**

Distribution	No of Respondent	Percent
Not necessary	2	0.8%
No opportunity	106	43.08%
Possible Source of infection	4	1.6%
Not aware of Hepatitis B virus	19	7.7%
Hepatitis B Surface antigen Positive	0	0
Others	5	2.03%
No response	116	44.7%
<b>Total</b>	<b>246</b>	<b>100%</b>

## DISCUSSION:

Health workers' perception of the risk of contracting hepatitis B virus in their workplace is sub-optimal (50%). This is worse among ward attendants (5.5%). It is however higher than the finding in Ibadan (36%).<sup>6</sup> This poor perception is in spite of the high prevalence of HbsAg sero-positivity among doctors<sup>5,7</sup> and the general population.<sup>4</sup>

Twenty two point four percent of the health workers had received hepatitis B vaccination. However, only 3.7% received adequate vaccination, which is three or more doses.<sup>8</sup> This is within the range of 0 -20% observed in previous studies in this country.<sup>5, 6, 9</sup> It contrasts sharply with the 49% and 90% vaccination level among Pakistani and English health workers respectively.<sup>10,11</sup>

Health workers who have worked for longer than ten years are more likely to have been vaccinated. This has been previously reported in Ibadan.<sup>5</sup> The reasons for this is not clear but in an environment where vaccine supply is poor and erratic, those who had spent longer time in the system are more likely to benefit. In spite of the occupational difference in the perception of the risk

of contracting this infection, no difference was noticed in vaccination uptake. The impact of this is worse for doctors because of their increased occupational risk of contracting this infection as previously documented in Nigeria<sup>5,7</sup> and England.<sup>12</sup> For reasons not clearly elucidated there is a poor relationship between knowledge and practice.<sup>5, 6, 11</sup> This is also our finding.

In this study, lack of opportunity and information are the two most common reasons for non-vaccination. This contrasts with the findings in Pakistan and England where cost and lack of information were the main impediments to vaccination.<sup>10, 11</sup> The difference could be because hepatitis B vaccine is not always available, but when available is provided free by the hospital management to their staff as required by the National Programme on Immunization.<sup>13</sup>

The risk of contracting hepatitis B from needle stick injury from HbsAg positive patient is 1 - 6%, but rises to 37 - 62% if the patient is also HbeAg positive.<sup>14</sup> However, post exposure prophylaxis with hepatitis B immunoglobulin and or vaccine reduces this risk by 70 - 75%.<sup>14</sup> Fifty three point seven percent of the respondents have had needle stick injury. Only 26.5% of them determined the hepatitis B carrier status of the involved patients and none received any type of post exposure prophylaxis. Poor perception and inertia are likely reasons for this, since most of them did not inform the hospital authority.<sup>6</sup> However, of the few that informed the hospital management (7.5%), none received any prophylaxis. Vaccines were most likely not available as documented in a previous study in this environment. In conclusion there is a low level of hepatitis B vaccination and no post exposure prophylaxis among health workers in UNTH, Enugu. This is due to non-availability of the vaccines, poor awareness when vaccines are available and poor perception of the risk of contracting this infection.

It is recommended that health workers should be enlightened about the risk that they are exposed to, and be informed about the availability of hepatitis B vaccine. Hepatitis B vaccine should be free, and always available. Vaccination should be a pre-employment requirement for at risk health workers.

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