


HEPATITIS B: A PILOT STUDY ON AWARENESS AND ATTITUDE AMONG STAFF NURSES AND STUDENTS OF A TEACHING HOSPITAL IN INDIA

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ABSTRACT

Background. Hepatitis B is a serious public health concern and health care professionals especially nurses are at higher risk of acquiring this infection. Basic knowledge, awareness and a positive attitude are required to prevent this disease.

Objective. The present pilot study was conducted to assess awareness and attitude regarding hepatitis B among staff nurses and nursing students of a teaching hospital in north India.

Material and Methods. A total of 205 subjects who gave consent to participate were included in this descriptive study. A self-structured pre-tested close ended questionnaire comprising of two parts was used to collect information from the study subjects. First part collected information on demographic details of the study subject and second part assessed subjects' awareness and attitude on various aspects of hepatitis B infection including vaccination. *Chi-square* test and multiple linear regression analysis was used for statistical analysis.

Results. The mean age of the study subjects was 25.8±5.6 years. Awareness regarding HBV infection was present among 92.6% (190) of subjects. Long-term effects of hepatitis B were known to 58.4% (119) of subjects and 79.1% (162) of subjects reported taking universal precautions. Half of the subjects (105), were getting regularly tested for hepatitis B antigen. The odds of getting regularly tested for hepatitis B antigen were 3.26 times greater in female subjects and 3.45 times greater in subjects who were GNM.

Conclusion. Low awareness levels were reported regarding some important aspects of hepatitis B among study subjects though more than 90% were aware of it. There is an urgent need for education and training programs for nurses designed to increase their knowledge about HBV infection.

Keywords: hepatitis B, infection, awareness, vaccination, nurses

INTRODUCTION

Hepatitis B infection is a serious global healthcare problem which is caused by hepatitis B virus (HBV). World Health Organization (WHO) has estimated that more than 254 million people are living with chronic hepatitis B infection, each year adding 1.2 million new infections [1]. In 2022, 1.1 million deaths were reported globally, mostly from cirrhosis and hepatocellular carcinoma surpassing malaria and tuberculosis. According to recent estimates, sixty-one

million people are infected with hepatitis B in the WHO South-East Asia Region only [2].

Hepatitis B infection shows variable clinical manifestations ranging from asymptomatic HBV carriers to complete liver failure. It begins as acute infection, but in some people, it becomes chronic and often progresses to chronic hepatitis, cirrhosis, and ultimately hepatocellular carcinoma [3]. It has been estimated that 40% of health care workers (HCWs) are infected with hepatitis B in developing countries [4]. Transmission of HBV in HCWs occurs mainly

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through the skin prick with an infected, contaminated needles and syringes or through accidental inoculation of minute quantities of blood during any surgical procedure [5]. Physicians, dentists, nurses, laboratory staff, and dialysis center personnel are at high risk of acquiring infection.

About two-thirds of patients with acute HBV infection show mild, asymptomatic and subclinical illness that usually goes undetected [6]. Medical history of the patient is unreliable in identifying exposure to HBV infection, therefore all the patients should be considered as potential HBV carriers regardless of their medical history [7]. Proper diagnosis for HBV should be based on testing for a series of serological markers of HBV and by additional testing to exclude alternative etiological agents such as hepatitis A and C viruses [8].

Infection rates remain high, especially in countries with lower socio-demographic profiles such as India which has over 50 million hepatitis B cases. This is despite the fact that an effective vaccine against this deadly disease has been available for over 30 years. Healthcare workers are four times more likely to be infected with HBV compared to the general population. Effective and extensive use of HBV vaccine can dramatically control and reduce the number of incident infections in countries worldwide [9]. Knowledge and attitudes of HCWs plays a key role in prevention of spread of hepatitis B infection. Nurses with direct patient contact fall into particular risk group, therefore, a pilot study was conducted to assess the awareness and attitude and among staff nurses and nursing students of a teaching hospital regarding hepatitis B.

MATERIAL AND METHODS

Ethical clearance and study setting

The present descriptive cross sectional study was conducted among staff nurses and students of a teaching hospital after obtaining ethical clearance from the institutional ethics committee. The purpose of the study was thoroughly explained to the study subjects and informed consent was obtained from every subject prior to the start of the study. Subjects were also assured of confidentiality of their data and it would only be used for research purposes. The study was conducted for a period of two months.

Study population and study sample

Study population consisted of all the staff nurses and nursing students of a teaching institute. The subjects were called in the Out Patient Department (OPD) of the hospital according to availability from different departments of the hospital to participate

in the study. This was done by using the following formula to calculate the required sample size:

$$n = \frac{Z^2 pq}{d^2}$$

where Z is the standard normal deviation (1.96), p=0.915, percentage of knowledge from previous literature (91.5%) [7], q=1-p and d=0.05 degree of error (5%).

Based on the calculations, a sample size of 121 was arrived at initially. To ensure maximum participation of subjects (working in the hospital) in the study and also take into account non-responders, we doubled this figure on the recommendations of the statistician which was finally 242. The response rate was 85%, therefore the final sample comprised of 205 subjects which seemed adequate. A two-stage random sampling technique was employed:

Stage 1: Seven clinical departments and three laboratories were selected using simple random sampling (ballot method).

Stage 2: From each of the selected departments and laboratories, subjects were stratified according to their working profile and proportionately enrolled in the study using simple random sampling.

Preliminary survey and pre testing of the questionnaire

Preliminary survey was conducted on 10% of the study population to determine the feasibility of the study. The questionnaire was based on previously validated instrument and modifications done accordingly with the suggestions of our experts [10]. Cronbach's coefficient was found to be 0.81 which signifies an acceptable internal reliability of the questionnaire. The content validity ratio was also calculated by using itemrated content validity indices to test the validity. This was attained by noting the responses on the dichotomous scales where the academicians indicated whether an item is favorable (score of +1) or unfavorable (score of 0). A panel of four academicians were invited from the department of Infectious Disease and Microbiology to calculate the content validity ratio (0.84). In addition, there were no changes required in the questionnaire as a result of pretest.

Data collection and analysis

The questionnaire, written in English language was distributed by a single investigator among the study subjects. The subjects were told to approach the investigator in case of any doubt regarding the content of the questionnaire which was divided in two parts:

Part 1: 'General Section' which was made to collect socio-demographic details of the subjects (age, gender, educational profile, experience).

Part 2: Comprised of 12 questions on awareness and attitude of the subjects regarding hepatitis B infection.

The principal investigator made sure that the subjects answered all the questions and none of the questionnaires were incomplete. The response of subjects towards the questionnaire was assessed on a two-point Likert scale (Yes or No).

Statistical analysis

Data were entered into Microsoft Excel Spreadsheet version 2010 and was assessed using a statistical package (SPSS, version 21.0, Chicago, IL, USA). Categorical measurements were calculated using number and percentages. *Chi-square* test as used to evaluate the relationship between some demographic factors on some aspects of hepatitis B infection. The significance level was set at <0.05. Multivariate logistic regression analysis was also performed to assess the effect of various independent variables on getting regularly tested for hepatitis B antigen. Odds ratio with 95% CI were also generated.

Table 1. Socio-demographic details of the study subjects

Characteristics	Number	Percentage
Age (years)		
18-35	152	74.1
36 and above	53	25.9
Gender		
Male	47	23
Female	158	77
Qualification		
GNM	82	40
BSc	39	19
MSc	24	11.7
Student	60	29.3
Experience (years)		
<1	62	30.2
1-2	70	34.1
3-5	33	16.1
More than 6	40	19.5

RESULTS

Socio-demographic details of the study population is depicted in Table 1. The present study was conducted among 205 subjects of a teaching institution. The mean age of the study subjects was 25.8±5.6 years. A vast majority of the subjects were females (N=158, 77%)

as compared to males. GNMs (General Nursing and Midwifery) constituted 40% of the study population (N=82) and only 11.7% (N=24) had qualification in Masters in Nursing Science (MSc). More than one-third of subjects (N=70, 34.1%) had an experience between one and two years.

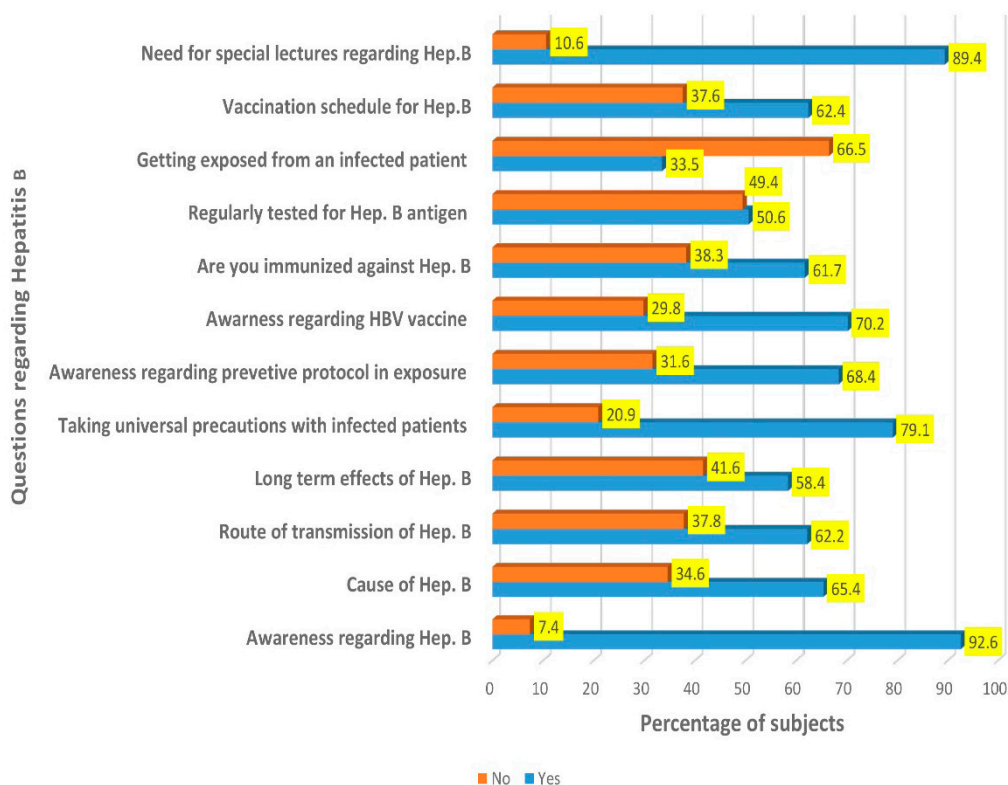


Figure 1. Subjects' responses towards the questionnaire on hepatitis B

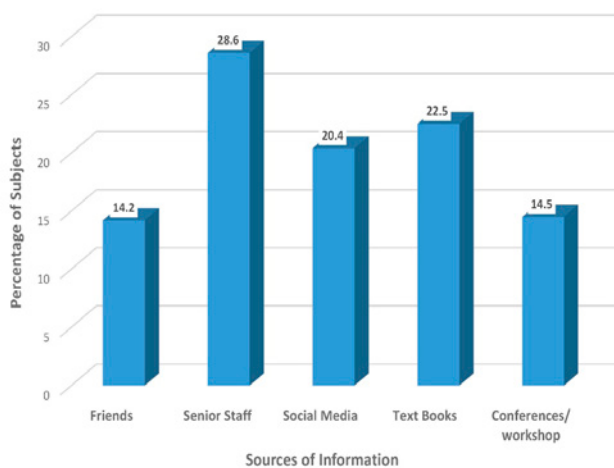


Figure 2. Various sources of information cited by study subjects on hepatitis B

Subjects' response to the questionnaire

Various responses of the subjects towards the questionnaire are shown in Figure 1. More than 90% of subjects (N=190) were aware regarding HBV infection, however only 65.4% (N=134) of subjects were aware regarding its cause. Long-term effects of hepatitis B were known to only 58.4% (N=119) of subjects and 79.1% (N=162) of subjects reported taking universal precautions while dealing with infected patients. More than 70% (N=143) of subjects were aware of vaccine to prevent hepatitis B but 37.6% (N=77) were unaware regarding the vaccination schedule. More than one-third of subjects (N=68, 33.5%) reported of getting exposed from an infected patient and only 61.7% (N=126) of subjects were fully vaccinated for HBV. Half of the subjects (N=105), were getting

Table 2. Association of qualification with awareness regarding cause, long term effects and vaccination schedule for hepatitis B

Qualification	Cause of hepatitis B		Long term effects of hepatitis B		Vaccination schedule for hepatitis B	
	Yes	No	Yes	No	Yes	No
GNM	74 (90.2%)	8 (9.8%)	66 (80.4%)	16 (19.6%)	72 (87.8%)	8 (12.2%)
BSc	24 (61.5%)	15 (38.5%)	23 (60%)	16 (40%)	27 (69.2%)	11 (30.8%)
MSc	20 (83.3%)	4 (26.7%)	16 (66.7%)	8 (33.3%)	19 (79.1%)	5 (21.9%)
Student	16 (26.6%)	44 (73.4%)	14 (23.4%)	46 (74.6%)	10 (16.6%)	50 (83.4%)
p value ¹	0.032*		0.014*		0.074	

¹ Chi-square test; *statistically significant (p<0.05)

Table 3. Multiple logistic regression analysis on getting regularly tested for hepatitis B antigen

Variable	Odds Ratio (OR)	95% CI	p value
Age			
18-35	1.78	0.82-3.89	0.071
36 and above	1	Ref	
Gender			
Male	1	Ref	0.022*
Female	3.26	0.72-4.31	
Qualification			
GNM	3.45	0.18-4.07	0.001*
BSc	2.67	0.34-7.53	
MSc	3.14	0.19-6.75	
Student	1	Ref	
Experience			
<1	1	Ref	0.027*
1-2	1.34	4.67-8.34	
3-5	2.56	4.98-7.45	
More than 6	4.23	2.56-5.34	

*statistically significant (p<0.05)

regularly tested for hepatitis B antigen. Senior staff and text books were cited as the two main sources of information regarding HBV by 28.6% (N=58) and 22.5% (N=46) of study subjects as compared to other sources. (Figure 2).

A vast percentage of subjects who were GNMs had awareness regarding cause of hepatitis B (90.2%), long term effects (80.2%) and vaccination schedule (87.8%) as compared to subjects who were qualified as BSc, MSc and students of nursing. Also, there was statistically significant association of qualification of subjects with the awareness regarding cause ($p=0.032$) and long term effects of hepatitis B infection ($p=0.014$) (Table 2).

Multiple logistic regression analysis

Multiple regression analysis was performed to assess the effect of various independent variables on getting regularly tested for hepatitis B antigen. Odds ratios were also generated (Table 3). The odds of getting regularly tested were 3.26 times greater in females as compared to males and 3.45 times greater in subjects who were GNMs as compared to others. Moreover, subjects having experience of more than 6 years were showed more willingness towards getting regularly tested as compared to less experienced subjects. (OR: 4.23).

DISCUSSION

The hepatitis B virus is world's most common and highly contagious disease which has caused significantly mortality. In health care setting, hepatitis B infection may occur due to the lapse in the sterilization technique of instruments or due to improper disposal of hospital waste [11]. Hepatitis B is not only the most transmissible infection, but also the only one that can be prevented by vaccination [12]. The present pilot study was conducted among staff nurses and nursing students to assess their awareness and attitude regarding hepatitis B infection as they fall into high risk group. A close ended questionnaire was used to record the responses of the subjects. Such questions are easy to analyse and may achieve a quicker response from subjects.

More than 90% of the subjects were aware regarding hepatitis B infection in the present study. Similar findings were observed in a recent study conducted among primary health care nurses in Saudi Arabia [13]. However, another study conducted at an apex health-care institute in Central India among medical and nursing students found contrasting results [14]. This could be because of lack of educational and training programmes on hepatitis conducted in the work place. Findings of another study conducted in Ghana revealed that more than 90% of staff nurses

knew the cause of hepatitis B [15]. This is contrary to the findings of our study.

'Universal precautions' are designed to prevent infection from inoculation; contact with mucous membranes such as mouth or eye, or through skin damages such as cuts [16]. Approximately 80% of subjects in the present study followed universal precautions while dealing with hepatitis B patients. Results of another study conducted among nurses and midwives in Sudan are in congruence with our study [17].

Awareness regarding hepatitis B vaccine was reported from more than 70% of subjects in the present study. This is in contrast to the findings of some other study conducted among nurses in Nigeria [18]. Moreover, only 61.7% of the subjects in the study were reported to be immunized with hepatitis B vaccine in spite of the fact that more than one-third of subjects reported getting exposed from an infected patient. This finding is consistent with similar studies conducted in different low and middle income countries (LMICs) that reported hepatitis B vaccine coverage ranging from 56.9% to 69.1% [19-21]. However, a study conducted among Polish HCWs reported vaccine coverage of 90% [22].

The findings of the study posited that the qualification of subjects was significantly associated with awareness regarding cause and long term effects of hepatitis B. Similar findings were also observed in a hospital-based study conducted in Nigeria among HCWs including nurses [23]. Senior staff and text books were cited as the two main sources of information regarding HBV in our study. However, reports of another study conducted among midwives and nurses in Turkey revealed continuing education programs and brochure reading as their main sources of information apart from formal education [24]. A vast majority of subjects in our study showed need for special lectures to update their knowledge regarding hepatitis B, which is an encouraging finding.

Multiple logistic regression analysis revealed that odds of getting regularly tested for hepatitis B antigen were 3.26 times higher in female subjects as compared to their male counterparts which is analogous to a previous study conducted in Iran [25]. Furthermore, subjects who were GNMs and those who had experience of more than 6 years demonstrated a higher likelihood of getting themselves regularly tested for hepatitis B antigen as compared to others. Prolonged education, training and experience provide individuals with the necessary skills and knowledge to effectively implement preventative measures and strategies, like the good practice of getting regularly tested for hepatitis B antigen [26].

The present study had some limitations. Though the study was conducted in an accredited teaching

institution in north India, the results of the present study may not be generalizable to the entire nursing staff employed in other hospitals because of limited sample size and difference in study settings. As the study relied upon self-reported data and researchers mainly relied upon information provided by the subjects, some subjects could have given socially acceptable responses. Moreover, due to the cross-sectional design of the study, we cannot determine a cause-effect relationship.

CONCLUSION

Though a vast majority of subjects had awareness regarding hepatitis B infection, low awareness levels were witnessed regarding some important aspects like cause, long term effects of hepatitis B infection, vaccination schedule etc. Suboptimal attitude was also found in significant number of subjects regarding immunization and getting regularly tested for hepatitis B antigen.

Recommendations

There is an urgent need of educational and training programs (continuing education programs and workshops) for nursing staff and students focusing more on prevention of hepatitis B in order to protect themselves and others. There should also be mandatory regular screening of all health care staff for HBV and provision of free or subsidized vaccination services. These should be included in the institutional or hospital policy. It is recommended that future research involving a larger sample (including more hospitals and other medical professionals) should be conducted to gather more valuable information on hepatitis B infection.

Conflict of interest

The authors disclose no conflicts of interest.

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