

Awareness, Attitude and Vaccination Status Regarding Hepatitis B among Staff Nurses of a Teaching Hospital in North India

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Abstract

Background: Hepatitis B is a well-documented occupational hazard for health care workers, including both doctor and paramedical personals. Vaccination is the best way by which one can arm oneself against Hepatitis B virus (HBV) infection. The present study was conducted to assess awareness, attitude and vaccination status of staff nurses of a teaching hospital in north India. **Materials and Method:** All the staff nurses (170) who gave consent to participate in the study were enrolled in the study. A self-structured close ended questionnaire comprising of three parts was used to collect information. First part comprised of questions on demography, second part assessed subjects' awareness regarding HBV infection and third part comprised of questions on immunization status. Chi-square test and multiple linear regression analysis were used for statistical analysis. **Results:** The mean age of the study subjects was 24.9 ± 6.8 years. Awareness regarding HBV infection was present among 94.7% (161) of subjects. Universal Precautions were followed by 81.8% (139) of subjects. Only 18.8% (32) subjects were following correct method of disposal of Biomedical Waste (BMW). The odds of getting immunized were 4.46 times greater in subjects who had awareness of Hepatitis B infection than those who did not. **Conclusion:** Awareness regarding HBV injection and its coverage was high among the subjects. Very few subjects were aware regarding correct route of transmission emphasizing the need for effective intervention programmes designed to increase knowledge about HBV infection.

Key Words: Hepatitis B, Immunization, Infection, Awareness, Nurses

Introduction

Hepatitis B virus (HBV) infection has been a major cause of morbidity and mortality among health care workers. HBV is a cosmopolitan infectious agent currently affecting over 350 million people worldwide, presently accounting for more than two billion infections [1]. Hepatitis B shows variable clinical manifestations ranging from asymptomatic HBV carriers to complete liver failure, and it becomes chronic, often progresses to chronic hepatitis, cirrhosis, and hepatocellular carcinoma [2]. It has been estimated that 14.4% of hospital workers are infected with HBV and HCV [3]. Among the health care personals', HBV, is transmitted by the skin prick with an infected, contaminated needles and syringes or through accidental inoculation of minute quantities of blood during the surgical and dental procedures. Physicians, dentists, nurses, laboratory staff, and dialysis center personnel are at high risk of acquiring infection [4].

Majority of HBV infections are sub-clinical, as a result approximately 80% of all infections are undiagnosed [5]. It has been proved that the 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 [6]. Infection control practices in developing countries have not been widely indexed. Majority of hospitals have no infection control programme due to lack of awareness about the disease or deficiency of trained staff.

It has been recommended that prevention is a safeguard against epidemic of viral hepatitis. Hepatitis B vaccines, for prevention have been evaluated in clinical trials to determine protective level of serum antibodies, i.e. anti-HBs. Persons who respond to HBV vaccine with titers of anti-HBs 10

mIU/mL or greater are protected against acute and chronic HBV infection [7]. By knowing facts, having proper awareness and attitudes the menace of this disease can be prevented to a great extent [8]. As health-care workers (HCWs) remain at a high-risk of transmission by skin prick with infected or contaminated needles and syringes, also through accidental inoculation of minute quantities of blood during the surgical and dental procedures, it is very important for them to follow proper measures of infection control and prevention [9]. Knowledge and attitudes of HCWs plays a key role in prevention of spread of infection. Therefore, the present study was conducted to assess the knowledge, attitude and vaccination status among staff nurses, regarding hepatitis B.

Materials and Methods

Ethical clearance and study setting

The present cross sectional study was conducted among staff nurses of a teaching hospital after obtaining ethical clearance from the institutional ethics committee. The study subjects were completely informed about the purpose of the study and informed consent was obtained from every subject prior to the start of the study.

Study setting and study sample

Study population consisted of all the staff nurses of a teaching hospital in north India. The study was conducted for a period of two months. 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. A total of 195 nurses (Universal sample) were initially enrolled in the study and the participation was voluntary. The

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response rate was 87%, therefore the final sample comprised of 170 subjects. A pilot survey was conducted on 10% of the study population to assess the feasibility of the study.

Measurement and instrument

Data collection was carried out using a self-structured closed-ended questionnaire. The subjects who were asked to participate in the study received a questionnaire to fill in. The questionnaire was pre-tested on 25 subjects from the survey sample for content validation before it was administered. The reliability of the questionnaire was good (0.82). The questionnaire included three sections- Section A was ‘General section’ containing four questions on socio-demographic details of the participants. Section B consisted of ten questions regarding awareness and attitude regarding Hepatitis B and Section C contained thirteen questions on awareness regarding immunization and immunization status. The questionnaire was handed to the authors or the co-supervisor after finishing. It took the subjects approximately ten to fifteen minutes to fill in the questionnaire. If the subjects had any questions about the study or the questionnaire they could ask the authors or the co-supervisor who were present in the room all the time.

Statistical Analysis

Results were statistically analysed using SPSS package version 15.0 (SPSS, Chicago, IL, USA). Descriptive statistical analysis was carried out in the present study. Results on continuous measurements were presented as Mean + Standard Deviation and results on categorical measurements were presented in number and percentage.

Results

Chi-square test was used to determine if there were any associations found between different variables. Multivariate analysis was performed using logistic regression to evaluate other variables that are independently associated with acceptance of immunization. A ‘P’ value <0.05 was considered statistically significant (Table 1).

A total of 170 subjects participated in the study. The mean age of the study subjects was 24.9 ± 6.8 years. There were 164 females and only 6 were males. The subjects were comprised of 85 (50%) GNM, 32 (18.8%) were Bachelors in Nursing Science (BSc), 1 (0.6%) was Masters in Nursing Science (MSc) and 52 (30.6%) were students. Majority of subjects 60 (35.3%) had an experience between one and two years.

Table 1. Experience level was significantly related to the qualification of subjects (p=0.00).

Characteristics	Number	Percentage
Age (years)		
18-35	156	91.8
36 and above	14	8.2
Gender		
Male	164	96.5
Female	6	3.5

Qualification		
GNM	85	50
BSc	32	18.8
MSc	1	0.6
Student	52	30.6
Experience (years)		
< 1	52	30.6
2-Jan	60	35.3
4-Mar	23	13.5
More than 5	35	20.6

Awareness regarding hepatitis B infection

More than 90% of subjects (161, 94.7%) were aware regarding HBV infection. However, when awareness among subjects was compared the experience level, statistically insignificant results were obtained (p=0.373). Approximately 85% (144) of subjects were aware regarding any preventive protocol against HBV in case of accidental exposure through an infected patient/instrument. However, only 1.8% (3) of subjects were aware regarding all the possible routes of transmission of HBV.

Precautions taken while dealing with hepatitis B patients

Regarding types of precautions followed by the study subjects while dealing with hepatitis B patients, 81.8% (139) of subjects followed ‘Universal Precautions’ and only 2.9% (5) of subjects reported taking no precautions (Figure 1). Qualification of the subjects was significantly related to subjects who were following special precautions but insignificantly related to subjects following Universal Precautions (Table 2).

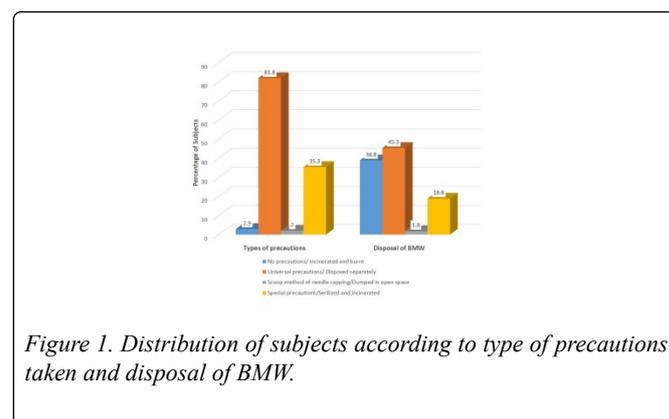


Figure 1. Distribution of subjects according to type of precautions taken and disposal of BMW.

Disposal of Bio Medical Waste (BMW) infected with Hepatitis B

Figure 2 depicts the knowledge regarding disposal of BMW infected with HBV. Multiple answers were cited by the study subjects. Astonishingly, only 18.8% (32) subjects were of the opinion that BMW should be first sterilized and then incinerated which was the correct option. Following a specific method of sterilization for disinfection of instruments used on patients infected with HBV was cited by 90.6% (154)

subjects. However, both these findings showed a statistically significant relationship ($p=0.012$).

Awareness regarding immunization for Hepatitis B / immunization status

Approximately 95% (161) of subjects were aware regarding Hepatitis B vaccine (HBV) and 92.4% (157) of subjects were immunized against HBV (Figure 2).

Awareness regarding HBV was reported more from subjects who were more experienced ($p<0.05$). However, statistically insignificant results were obtained when experience level was compared with immunization status of subjects ($p>0.05$) (Table 3). Getting regularly tested for Hepatitis B antigen was reported by 50.6% (86) of subjects.

Table 2. Association of experience with awareness of immunization and immunization status. *Statistically significant, **Statistically insignificant (Chi-square test)

Qualification	Universal Precautions		Special Precautions	
	No	Yes	No	Yes
GNM	18 (21.2%)	67 (78.8%)	64 (75.3%)	21 (24.7%)
BSc	5 (15.6%)	27 (84.4%)	23 (71.9%)	9 (28.1%)
MSc	0	1 (100%)	0	1 (100%)
Student	8 (15.4%)	44 (84.6%)	22 (42.3%)	30 (57.7%)
P value*	0.632**		0.015*	

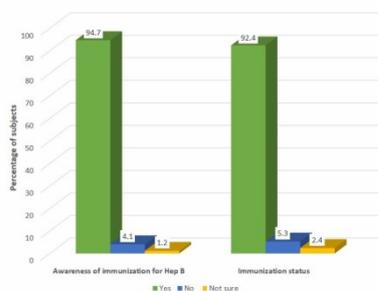


Figure 2. Awareness regarding immunization and immunization status of study subjects

Table 3. Association of experience with awareness of immunization and immunization status. *Statistically significant, **Statistically in-significant (Chi-square test)

Awareness and status		Experience level (years)				P value
		<1	3-Feb	4-Mar	More than 5	
Awareness of immunization	Yes	47 (29.2%)	59 (36.6%)	22 (13.7%)	33 (20.5%)	0.004*
	No	4 (57.1%)	1 (14.3%)	1 (14.3%)	1 (14.3%)	
	Not sure	1 (50%)	0	0	1 (50%)	
Immunization status	Yes	46 (29.3%)	58 (36.9%)	21 (13.4%)	32 (20.4%)	0.731**
	No	4 (44.4%)	2 (22.2%)	1 (11.1%)	2 (22.2%)	
	Not sure	2 (50%)	0	1 (25%)	1 (25%)	

Multiple logistic regression analysis

Multiple regression analysis was performed to assess the effect of various independent variables on the immunization status of the subjects. Odds ratios were also generated (Table 4).

The odds of getting immunized were 4.46 times greater in subjects who had awareness of Hepatitis B infection than those who did not. The chances of getting immunized also increased 1.91 times for those who were getting regularly tested for hepatitis antigen than those who were not getting tested.

Discussion

The hepatitis B virus is highly contagious and causes the world's most common liver infection.

It is also the most important infectious occupational hazard in the health care profession [10]. In health care setting, Hepatitis B infection may occur due to lapse in the sterilization technique of instruments or due to improper hospital waste management [11].

The present study was conducted to assess the knowledge, awareness and vaccination status regarding Hepatitis B among staff nurses of a teaching hospital. To avoid recall bias, the study used a close ended questionnaire [12]. Such questions are easy to analyse and may achieve a quicker response from participants.

More than 90% of the subjects were aware regarding Hepatitis B infection in the present study. This finding is similar to some other study conducted in central India among government and private nurses [13]. Also, 85% of subjects were aware regarding the preventive protocol against HBV infection. This could be because of educational and training programmes on Hepatitis conducted in the work place as well as patients with complications of Hepatitis who present regularly to the hospital. However in spite of such high awareness, very few subjects (1.8%) could correctly identify all the possible route of transmission of virus. This was in contrast to another study conducted in some other part of India [14].

'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 [15]. More than 80% of subjects in the present study followed universal precautions while dealing with Hepatitis B patients. On the contrary only 20% of subjects reported following universal precautions in a study conducted in some other part of India among BSc nursing students [16]. However qualification was not significantly related to following universal precautions in both the studies ($p>0.05$).

Table 4. Multiple analysis of factors associated with immunization status of subjects. Statistically significant at $p<0.5$

Variable	Odds Ratio (OR)	95% CI	P value
Age			
18-35	1.82	0.86-4.89	0.67
36 and above	1		
Are you aware of Hepatitis B Infection			
Yes	4.46	0.70-28.31	0.04
No	1		
Are you getting regularly tested			
Yes	1.91	0.32-11.20	0.02
No	0.7	0.13-3.74	0.96
Not sure	1		
Qualification			
GNM	0.83	0.19-5.07	0.99
BSc	1.04	0.62-32.53	0.13
MSc	0.97	0.19-8.75	0.78
Student	1		

The results of the present study showed that only 18.8% of the subjects were aware regarding the correct disposal of BMW. This is contrary to some other study reports where more than 50% of the subjects had good knowledge regarding BMW disposal [17]. Another study conducted in a tertiary hospital in India reported that 85% of nurses had knowledge regarding correct BMW management [18]. Comparatively lesser no. of subjects followed a specific method of sterilization of instruments in a study conducted in western India as compared to the present study [19].

Awareness regarding Hepatitis B vaccine was reported from 95% of subjects in the present study. This finding is in agreement to some other study conducted among nurses in Nigeria [20]. Moreover, more than 90% of the subjects in the study were reported to be immunized with Hepatitis B vaccine. This finding is much better than reports of similar studies conducted in Germany and central India [21,22]. Reports of another study conducted in a tertiary hospital in northern India revealed that more experienced subjects had higher rate of acceptance or completion of immunization [23]. This finding was in contrast to our study reports.

Multiple logistic regression analysis revealed that, odds of acceptance of immunization was 4.46 times higher in subjects

who were aware regarding Hepatitis B infection as compared to those who were not aware. This finding is in agreement to another study conducted in a tertiary hospital in Pakistan [24]. A possible explanation could be that the knowledge of HBV infection resulted in positive attitudes among the subjects and sustained their beliefs in the safety and efficacy of vaccine. Moreover, odds of acceptance of immunization was also 1.91 times higher among subjects who were getting regularly tested. It could be because that they might be more conscious about Hepatitis B infection and its prevention.

The present study had some limitations. The results of the present study may not be generalizable to nursing staff present in other hospitals in other parts of the country although the study was conducted in an accredited teaching institution in north India. As the study relied upon self-reported data, some subjects could have given socially acceptable responses. Lastly, the cross-sectional design of the study limits the results to be used for establishing a cause-effect relationship.

Conclusion

A high majority of the staff nurses in the present study were aware regarding HBV infection and its immunization. Moreover, the vaccination coverage among the staff was high. However, very few of them were aware regarding the correct route of transmission of Hepatitis virus infection. Also, very few of them were following proper method of disposal of BMW infected with HBV. Therefore there is an urgent need of educational and training programs focusing more on HBV and safe and effective management of BMW. As only half of the staff nurses were getting them regularly tested for HBV, there should be mandatory regular screening of all health care staff for HBV in the hospital policy.

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