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A CROSS-SECTIONAL STUDY OF AWARENESS ABOUT HEPATITIS B AMONG NURSING STUDENTS OF MIMS COLLEGE AT VIZIANAGARAM, ANDHRA PRADESH

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ABSTRACT

Context: Hepatitis B is an inflammatory disease of the liver caused by Hepatitis B virus and is a global public health problem. In India the carrier rate of hepatitis B is higher among health care personnel. Nurses are probably the most commonly exposed health care staff exposed to needle prick, injuries and contact with infectious fluids. They are exposed to this risk right from their student career.

Objectives: To determine the awareness about HBV, Hepatitis B, its transmission and prevention.

Methods: A descriptive cross sectional study was conducted among 119 nursing students with the help of prestructured questionnaire having questions about HBV, Hepatitis B, its transmission and Hepatitis B vaccine. The statistical tools like Z test of difference between two proportions, mean and standard deviation (SD) values were employed.

Results: Overall 77% of all the students knew that Hepatitis B is a member of Hepadnavirus family. On an average 81.27% of the students were correct regarding knowledge on Hepatitis B infection. After considering all the statements, answer to transmission of Hepatitis B was observed to be correct in 71.01% of students. Prevention of Hepatitis B by vaccine administration was correctly known to 104 (87.39% of 119) respondents.

Conclusions: Majority of the nursing students were aware about Hepatitis B. The knowledge regarding most of the parameters was significantly higher among BSc nursing students as compared to GNM students. It was also observed that there is a lack of knowledge about the hazards of Hepatitis B, its transmission and efficacy of vaccine.

Keywords: Hepatitis B, Hepatitis B virus, Awareness, Nursing students,

INTRODUCTION

Hepatitis B is a leading cause of chronic hepatitis, cirrhosis and hepatocellular carcinoma.¹⁻⁴ Hepatitis B previously known as serum hepatitis is an inflammatory disease of the liver caused by Hepatitis B virus (HBV) and is a global public health problem. Nearly two billion people in the world have been acutely infected by HBV and there are nearly 350 million people chronically infected.¹ In South East Asian Region, there are estimated 80 million HBV carriers (about 6% of

the total population).^{5, 6} HBV is a DNA virus belonging to the virus family Hepadnaviridae. HBV enters the liver via the bloodstream and replication occurs only in the liver tissue. The virus is 42-47 nm in diameter and circulates in the blood in concentrations as high as 10⁸ virions per ml. HBV is transmitted by per cutaneous or mucosal exposure to infected blood or other body fluids through numerous routes: perinatal, mother to child, sexual, needle-sharing, and occupational/health-care-related.^{4, 7}

India has the intermediate endemicity of Hepatitis B with Hepatitis B surface antigen (HBsAg) prevalence between 2% and 10% among the population studied. The number of carriers in India has been estimated to be over 40 millions.^{5, 6} In India the carrier rate is higher among health care personnel (10.87%) as compared to the blood donors (6%) and general public (5%). Among healthcare workers seroprevalence is two to four times higher than that of the general population.⁸

Hepatitis B infections may occur in the health care settings due to lapse in the sterilization technique of instruments or due to the improper hospital waste management because 10 to 20% of health care waste is hazardous which may create a variety of health risks.⁹ The majority of the infections are subclinical, so approximately 80% of all HBV infections are undiagnosed.⁴ Among the health care personnel, HBV is transmitted by skin prick with infected, contaminated needles and syringes or through accidental inoculation of minute quantities of blood during surgical, gynecological and dental procedures.⁶ Nurses are probably the most common health care staff exposed to needle prick injuries and contact with infectious fluids. They are exposed to this risk right from their student career. Hence it is important that nurses as well as nursing students should have a thorough knowledge regarding Hepatitis B to minimize the health care settings acquired infections among them and other health personnel.

With this background, the present study was conducted among the nursing students to determine the awareness about HBV, Hepatitis B, its transmission and prevention.

MATERIALS AND METHODS

The study was conducted at the College of Nursing of Maharajah's Institute of Medical Sciences (MIMS), Nellimarla during July 2012. The type of study was descriptive cross sectional study. All the nursing students ranging from first

year to fourth year present in the classrooms of the college in the campus on the day of study were included. Ultimately there were a total of 119 students i.e. 71 from Bachelor of Science (BSc) nursing and 48 from General Nursing Midwifery (GNM) streams. The participants were fully informed about the design and purpose of the study. Anonymity of the participants was maintained throughout the study. The data collection was done with the help of a pre-tested structured questionnaire distributed among these students in the classroom and they were asked to fill the questionnaire. The questionnaire consisted of closed ended questions to assess the knowledge and awareness about HBV and Hepatitis B, its transmission and Hepatitis B vaccine. Data entry was done in Microsoft excel 2007 software. Statistical analysis was done with help of SPSS software. The statistical tools like Z test of difference between two proportions; mean and standard deviation (SD) values were employed. Statistical significance was considered at p values <0.05 .

RESULTS

A total of 119 nursing students were included in the study. Bachelor of Science (BSc) nursing students were 71 (i.e. 59.66%) and General Nursing Midwifery (GNM) students were 48 (i.e. 40.34%). The mean age of BSc nursing students was 20.11 ± 2.23 years and that for the GNM students was 21.06 ± 2.28 years. The details regarding the number and age of the study participants according to the academic year is shown in Table 1. The mean age of the GNM nursing students was significantly more than that of the BSc nursing students ($p=0.0237$).

Table 2 shows the observations regarding this knowledge about Hepatitis B virus (HBV) in the study participants. The different aspects like family of Hepatitis B virus (HBV), its structure and size were included in it. The study participants were grouped according to their study courses as BSc nursing and GNM nursing and comparison

between them on various parameters was made. Overall 77% of all the students knew that Hepatitis B is a member of Hepadnavirus family. Significantly higher proportion of BSc nursing students had a knowledge about it ($Z=2.32$, $p=0.0203$). Overall 56% students had a knowledge that diameter of HBV is 42 nm. It was also found to be statistically highly significant in BSc nursing students ($Z=2.11$, $p=0.0348$). The total students having knowledge about 4 genotypes of HBV were 68%. Significantly higher number of GNM nursing students had knowledge about this parameter ($Z=2.14$, $p=0.0324$). The number of respondents who could answer correctly that HBV is not a retrovirus was 61 (51.26% of 119) including 30 (42.25% of 71) Bsc and 31 (64.58% of 48) GNM. Thus higher number of GNM respondents knew about this parameter and this difference was found to be statistically significant ($Z= 2.391$, $p= 0.0168$). The knowledge that HBV is one amongst smallest enveloped viruses and it can be detected in clinical specimens by Polymerase chain reaction (PCR) was present in respectively 49% and 51% of the respondents. There was no statistical difference between the BSC and GNM nursing students regarding this parameter.

The awareness of respondents about Hepatitis B infection is shown in Table 3. On an average 81.27% of the students were correct and remaining 18.73% were incorrect regarding knowledge on Hepatitis B infection. Except for statements about liver inflammation due to acute HBV infection and increased risk of doctors and nurses for Hepatitis B, there was no statistically significant difference in the knowledge between Bsc and GNM students regarding other statements. After applying Z test for difference between two sample proportions, significant difference was noted among Bsc and GNM students regarding awareness that acute illness is due to HBV causing liver inflammation ($Z= 1.98$, $p=0.0468$). Similarly significantly higher proportion of BSc nursing students had a correct knowledge that Doctors and nurses are at an

increased risk for Hepatitis B. Only 15 (21.13% of 71) of Bsc nursing students and 16 (33.33% of 48) GNM students which accounts for total 31(26.05% of 119) students were correct regarding knowledge that HBV infection was previously known as serum hepatitis.

The correct knowledge regarding transmission of Hepatitis B considering all the statements was observed in an average of 71.01% students whereas 29.99% of the students had an incorrect knowledge about Hepatitis B transmission as shown in Table 4. Overall 58% of the respondents had correct knowledge about sexual transmission of Hepatitis B. Significantly higher number of BSc nursing students were correct about it ($Z=2.59$, $p=0.0096$). However Hepatitis B is not transmitted by hand shaking was known correctly to higher number of GNM students and is statistically highly significant ($Z=3.25$, $p= 0.0012$). Transmission of HBV by needle prick injuries being more common than Human Immunodeficiency Virus (HIV) was correctly known to a total of 85(71.43% of 119) respondents which included 55(77.46% of 71) BSc nursing and 30(62.5% of 48) GNM students.

Regarding the awareness about prevention of Hepatitis B by vaccine, 104 (87.39% of 119) respondents had correct knowledge and only 15 (12.61%) were incorrect. The dose schedule of the vaccine was known correctly to 99 (83.19% of 119) respondents and remaining 20 (16.81%) had incorrect knowledge of the doses. The correct knowledge regarding vaccine gives 85-90% protection against HBV was observed in only 28 (39.44% of 71) and 25(52.08% of 48)) respectively of BSc nursing and GNM students thus amounting to a total of 53 (44.54% of 119) respondents.

DISCUSSION

In the present study considering all the statements about HBV, correct knowledge about HBV was observed in about half of the respondents. Half of the students being unaware about the details of

HBV structure and characters may be due to its theoretical importance only and less practical application. This observation is in coherence with another study among the dental students which revealed that on an average, 59.23% of the students were correct regarding knowledge about HBV.⁴ However this knowledge is less in comparison with another study among the medical students in which 86.7 % of them had correct knowledge about HBV.⁶

About three-fourths of the study participants were aware that HBV infection resulted in Hepatitis B. Another study among the first year nursing students from North India revealed that only 42% of the students had correct knowledge regarding etiology of hepatitis B.¹⁰ The higher knowledge in the nursing students in the present study could be due to the reason that the study group included students from all the academic years of the nursing course and Hepatitis B is covered in classes extensively as a part of study curriculum.

Transmission of Hepatitis B on exposure to blood or other body fluids, needle prick injuries and unprotected sexual exposure was correctly known to respectively four-fifth, three-fourth and half of the participants. These findings are coherent with another study among the dental students wherein majority of them knew about transmission of Hepatitis B by blood borne, needle injuries or sexual exposure.⁴ In the present study the number of correct answers about this statement is more than that observed in another study among the first year nursing students where 35.2% were aware that unsafe blood transfusion could lead to Hepatitis B. The awareness was further found to be less among them regarding unprotected sex and reusing of needle-syringes as a potential risk factor for Hepatitis B.¹⁰ Correctness of the statement that Hepatitis b is not transmitted by hand shaking was observed among 68% of the respondents. This observation is in contrast to the study⁴ by other investigators who obtained 95% correct answers among the respondents.

Eighty-eight percent of the participants were aware regarding the prevention of Hepatitis B by vaccine. Whereas other studies reported that awareness about Hepatitis B vaccine was present among only 66%¹⁰ of first year nursing students, sixty-five percent among medical students¹¹ and thirty-five percent¹¹ among non medical students.

Requirement of screening test for detection of Hepatitis B surface Antigen (HBsAg) among patients undergoing surgery was not known to one-fourth of the nursing students. Whether nurses are at the risk of contracting Hepatitis B or not was also not known to one-fourth of the students. This lack of awareness about the above two aspects may increase the risk of Hepatitis B transmission. This has been proved by another study.¹²

Studies conducted in the general public in India¹³ and abroad^{14, 15} have revealed that the awareness about HBV and Hepatitis B is less. These studies^{13, 14} also showed that awareness level is significantly more in those with higher education levels and source of knowledge about Hepatitis B is mainly public media like newspapers and Television. In the present study awareness among the nursing students was observed to be better than that among the general public. This could be easily explained that the nursing students were a part of health team and Hepatitis B was covered in the study curriculum for them. However the importance of the subject is to be emphasized, so that transmission of Hepatitis B can be decreased among the patients as well as among the health personnel including nurses.

CONCLUSION

The present study concludes that overall majority of the nursing students were aware about Hepatitis B. The knowledge regarding most of the parameters was significantly higher among BSc nursing students as compared to GNM students. It was also observed that there was a lack of knowledge about the hazards of Hepatitis B, its transmission and efficacy of vaccine. It is also alarming that screening of patients for HbsAg was

not known to many. Thus there is a need to increase the awareness about Hepatitis B in consideration of these facts. In addition to this, it is recommended that routine health education and complete vaccination of nursing students should be carried out so that the occurrence of Hepatitis B among them can be minimized.

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Table 1. Distribution of study participants according to the course of nursing

Nursing study year	Number	Percentage	Mean and Standard deviation of age in years
BSc 1 st year	17	14.29 %	17.47 ± 0.51
BSc 2 nd year	15	12.61 %	18.36 ± 0.50
BSc 3 rd year	14	11.76 %	20.6 ± 0.63
BSc 4 th year	25	21.01 %	22.6 ± 0.76
GNM 1 st year	25	21.01 %	19.2 ± 0.91
GNM 2 nd year	10	8.40 %	21.7 ± 0.82
GNM 3 rd year	13	10.92 %	24.15 ± 0.56
Total	119	100 %	20.51 ± 2.29

Table 2: Knowledge of respondents about Hepatitis B virus (HBV)

Statement regarding knowledge of HBV	Correct response Number (%)			p- value
	BSc (n=71)	GNM (n=48)	Total (n=119)	
Hepatitis B Virus (HBV) is a member of Hepadnavirus family	53 (74.65)	26 (54.17)	79 (66.39)	0.0203*
HBV has a diameter of 42 mm	45 (63.38)	21 (43.75)	66 (55.46)	0.0348*
There are 4 genotypes of HBV	43 (60.56)	38 (79.17)	81 (68.07)	0.0324*
HBV is one amongst smallest enveloped animal viruses	36 (50.7)	22 (45.83)	58 (48.74)	0.6031
HBV in clinical specimens can be detected by PCR	35 (49.3)	25 (52.08)	60 (50.42)	0.7641

* indicates significant p-values

Table 3 Awareness of respondents about Hepatitis B

Statement regarding awareness about Hepatitis B	Correct response Number (%)			p- value
	BSc (n=71)	GNM (n=48)	Total (n=119)	
Hepatitis B is an infectious illness caused due to HBV	64 (90.14)	38 (79.17)	102 (85.71)	0.0929
The acute illness due to HBV causes liver inflammation	62 (87.32)	35 (72.92)	97 (81.51)	0.0468*
Chronic Hepatitis results in Cirrhosis of liver and Hepatocellular carcinoma	64 (90.14)	39 (81.25)	103 (86.55)	0.1645
Hepatitis b surface antigen (HBsAg) is most commonly used to screen against HBV infection	65 (91.55)	38 (79.17)	103 (86.55)	0.0524
Patients undergoing surgery should be screened for HBsAg	55 (77.46)	36 (75)	91 (76.47)	0.7566
Doctors and nurses are high risk population for HBV infection	54 (76.06)	26 (54.17)	80 (67.23)	0.0124*

* indicates significant p-values

Table 4 Awareness of respondents about transmission and vaccine against Hepatitis B

Statement regarding awareness about transmission of Hepatitis B	Correct response Number (%)			p- value
	BSc (n=71)	GNM (n=48)	Total (n=119)	
Transmission of HBV results from exposure to blood or body fluids	64(90.14)	37(77.08)	101(84.87)	0.5118
Transmission of HBV results from needle stick injuries	56(78.87)	36(75)	92(77.31)	0.6214
Transmission of HBV results from unprotected sexual exposure	48(67.61)	21(43.75)	69(57.98)	0.0096*
Hepatitis B is not transmitted by hand shaking	37(52.11)	39(81.25)	76(63.87)	0.0012*
Hepatitis B infection is preventable by vaccination	63(88.73)	41(85.42)	104(87.39)	0.5961
Vaccine is administered in 2 or 3 dose schedule for protection against HBV	58(81.69)	41(85.42)	99(83.19)	0.5961

* indicates significant p-values