STATUS OF HEPATITIS B VACCINATION AMONG NURSING STAFF OF AYUB TEACHING HOSPITAL, ABBOTTABAD.

Muhammad Bilal Khattak[1], Muzafar Islam[2*], Muhammad Junaid Khan[3], Sabir Khan Khattak[4], Fatima Sherin[5], Zahid Irfan Marwat[6]

ABSTRACT

STUDY DESIGN: A cross-sectional study

PLACE AND DURATION: Ayub teaching hospital, Abbottabad, Pakistan from February to August 2016.

METHODOLOGY: After inclusion and exclusion criteria, total of 200 nursing staff were Interviewed through a Semi-structured pre-tested questionnaire. Data was collected on Non probability convenient sampling and was analyzed by using SPSS (ver-22).

RESULTS: Among total 200(100%), n=188(94%) were females and n=12(6%) were males with an average age of 28.94 (18min-57max) years. About vaccination status, n=85 (42.5%) completely vaccinated, n=29 (14.5%) partially vaccinated and n=23(27.05%) had taken a booster as per recommendations. Knowledge item of nursing staff resulted in n=2 (1.0%) did not know about the importance of vaccination, n=50 (25.5%) considered it not important. Practice item of total population resulted in n=123 (61.5%) had needle prick, and the majority of them n=80 (40.0%) used disinfection only. When the status of vaccination of HBV was checked against demographic parameter, a significant relation was found ($p<0.005$) except gender.

CONCLUSION: This study concluded that the status of the vaccination is poor among nursing staff. Besides, knowledge about hepatitis B among nursing staff is inadequate. Measuring anti-HBs titer, administering a vaccination and a booster dose, and offering general screening for HBs antigen should be made compulsory for HCWs.

Keywords: Nursing Staff, Hepatitis B, Vaccination, Safe Practice

[1] Department of Medicine, Khyber Girls Medical College, Hayatabad Medical Complex Peshawar, K.P Pakistan.

[2] Department of Surgery, Ayub Teaching Hospital, Abbottabad, K.P Pakistan.

[3] Department of Community Medicine, Ayub Medical College, Abbottabad, K.P. Pakistan.

[4] Department of Medicine, Ayub Teaching Hospital, Abbottabad, KP, Pakistan.

[5] Department of Anatomy, Ayub Medical College Abbottabad, KP, Pakistan.

[6] Department of Biochemistry, Nowshera Medical College, Nowshera, K.P. Pakistan.

Address for Correspondence:
Dr. Muzafar Islam
Department of Surgery,
Ayub Teaching Hospital, Abbottabad, K.P Pakistan.
Mobile No.: +992-(300)9396279
Email: muzaffarafridi889@gmial.com

INTRODUCTION

Healthcare workers (HCW) especially nursing staffs are more prone to bloodborne pathogens. Due to occupational hazards, Hepatitis B Virus(HBV) is a well-known risk factor for them[1] Hepatitis is inflammation of the liver. There are different types of it, like, A, B, C, D, E plus type X and G. Hepatitis B is a lethal condition and life-threatening infection caused by Hepatitis B Virus(HBV).[2]

In 1963, Dr. Baruch Blumberg discovered an antigen in the blood which causes Hepatitis B which then regrouped in 1967 officially. Till 1989, Hepatitis A considered as the only infectious Hepatitis but in 1989 Hepatitis C, in 1990 Hepatitis E, and 1995 Hepatitis G were identified.[3] Krugman and colleagues in 1967 established existence of two types of Hepatitis one of which called serum Hepatitis now called Hepatitis B.[4] Prince and colleagues relate this Hepatitis to virus.[5] Serologic diagnosis of Hepatitis B is possible with these studies, and it opens the door to the investigation.[6] There are many causes of Hepatitis, but Viral Hepatitis is most common. It can be self-limiting or can lead to complications such as fibrosis, cirrhosis or liver cancer. HBV is a DNA virus Hepadnaviridae

family, which contains partially double strand 3.2kb DNA genome. It has a nucleo-capsid core composed of protein surrounded by an outer lipid envelope.7Infection of Hepatitis B can be acute or chronic, and it can be symptomatic or asymptomatic. Symptomatic have prodromal phase; vomiting, nausea, anorexia, and fever. Thisis followed by icteric phase; Jaundice, discomfort in the right upper quadrant and hepatomegaly. Extrahepatic symptoms occur in 20% cases in which CNS and GIT are involved. Chronic HBV infection leads to Hepatocellular carcinoma which has increased prevalence in Asia. [5,8]

Transmission occurs from infectious blood or other body fluids. Parenteral routes are the most common routes of transmission, i.e., by infected blood products, blood transfusion, reuse of contaminated syringes, organ transplants and through sexual contact. It has a high risk in intravenous drugs users, homosexuals, health care workers.[9] It is 50-100 times more infectious then HIV and its spread is even possible during autopsies of unclaimed or unvaccinated bodies. Singh RK emphasized upon the screening of medico-legal autopsies and as well on the practice of preventive measures in Mortuary. [10]

Acute infection does not require any treatment as it is resolved by the adult body itself, while the chronic infection needs therapy.[11] Hepatitis B vaccine is recommended for infants in the US as it is protective more in children and develops 95% of protective antibodies in infants.[12] Immunization reduces the risk of Hepatitis B in person with high-risk factors.[13] HBV vaccination reduces the carrier state and also reduce the spread of infection.[14] WHO recommended that in immunization program of all countries, Hepatitis B vaccination should be included. [15]

Worldwide, it public health threat and 10th major deaths causing disease. 1/3rd of the world population has been infected in their lives including 240-350 million who have chronic infection. 750,000 people die annually among the 300,000 deaths occur due to liver cancer.7,9In a study conducted in Netherland showed that 35% HCW and 47% of the nursing staff were not vaccinated for HBV.[16] During the past two decades this risk has become even more severe as the prevalence of HBV has increased dramatically, and risk of getting hepatitis B by HCW is four times higher than general adult population.[17,18] Regarding the HBV infection, Pakistan comes in the intermediate prevalence zone.40-60% of HBV infections in HCWs was attributed in developing countries while it is less than 10% in developed countries.[19] The prevalence of HBs Ag among the HCW and nursing staff has been carried out by many authors but detail work has not been performed yet.[20] This study aimed to determine the status and frequency of hepatitis B vaccination among nursing staff of Ayub teaching hospital, Abbottabad, to assess the knowledge of nursing staff about hepatitis B infection and their attitude toward safe techniques.

METHODS

This is a descriptive cross-sectional conducted at Ayub teaching hospital, Abbottabad from February 16, 2016 to August 16, 2016 among 200 Nursing staff. Of Ayub Teaching Hospital, Abbottabad. The sample technique adopted was Non probability convenient sampling. All Nurses that were present at work during the study period were considered for the study. Those who had a history of HBV infection, or were not voluntary to participate were excluded. A structured questionnaire was developed including all the independent and dependent variables of interest. The questionnaire was pre-tested twice before adopting a final version. Data was collected on the questionnaire by the nurse him/herself assisted by interviewer. Informed consent was taken from all the subjects. The personal health information included demographic details of the nursing staff regarding their age, sex, and occupation, duration of employment, socioeconomic status, and marital status. Moreover, the status of HBV vaccination, exposure to blood and/or blood products, and the way of HBV transmission were also recorded. Use of universal precautions in daily practice was also taken into account. Patients were classified on the basis of HBV vaccination status:vaccinated group was labbeled in subjects receiving 3 doses of HBV vaccination(0, 1, and 6 months), partially vaccinated group received either single or 2 doses (0 and 1 month), and unvaccinated group for those who had received no dose of HBV vaccination. Data was analyzed using SPSS version 22.0. Relation of significance difference between dependent and independent variables were found by chi-square test. P-value less than 0.05 was considered significant. Data was described in terms of frequencies and percentages for categorical variables. Continuous variables were described in terms of mean and Standard Deviation.

RESULTS

A total of 200 nurses, consisting of n=188(94%) females and n=12(6%) males were included in the study. They had an average age of 28.94 (18min-57-max) years, an average length of service of 7.75(1min-35max) years and average monthly income of Rupees. 34760 (5000min-92000max). In the study population, the majority, n=102(51%) were charge nurses, n=197(98.5%) belonged to middle class). About vaccination status, n=85 (42.5%) completely vaccinated, n=29 (14.5%) partially vaccinated and n=86 (42.0%) were not vaccinated. n=23(27.05%) had taken a booster as per recommendations, while n=62(72.94%) didn't have any booster dose (Table-1). Among total n=200 (100%), knowledge item of nursing staff resulted in n=2 (1.0%) did not know about the importance of vaccination, n=50 (25.5%) considered

that HBV vaccination is not important but n=198(99.0%) considered HBV as dangerous, and n=83 (41.5%) said that the vaccination was paid by government hospital. Practice item of total population resulted in n=123 (61.5%) had needle prick, and majority of them n=80 (40.0%) used disinfection only. N=101 (50.5%) did not use any preventive measures instead, they handle with extra care. Almost all nursing staff discard the used syringe and n=192 (96.0%) is needle cutter for this purpose. (See table 2 for more detail).

When the status of vaccination of HBV was checked against demographic parameter, a significant relation was found($P < 0.005$) except gender. During initial years of service n=32 (16%), which are almost charge nurses n=50(25%), vaccination status is satisfactory (Table 3).

DISCUSSION

HBV is the issue of concern in society and in our health care system due to its high risk of infection.[21] Among the pathogens which are blood-borne, HBV has gained the status of global public health threat by being the 10th major cause of death.19HBV has increased risk in HCWs especially nursing staff due to exposure to prone procedures.2 vaccines are available which reduce the risk of Hepatitis B.[13]

According to our study, the 42.5% of the study population was completely immunized, 14.5% had incomplete vaccination,and 43% were unimmunized. In a study among HCWs at tertiary care hospital in North Western Pakistan reported that 75.6% of Nursing staff were completely vaccinated against hepatitis B.20 In another study conducted in Pakistan, 69.6% of HCW-were immunized with a vaccination rate of 17.2% in nursing staff.[21] Similarily, in Karachi, a study reported 52% complete hepatitis B vaccination.[22] In a study conducted in Netherland showed that 35% HCW and 47% of the nursing staff were not vaccinated for HBV.[23] These studies show results like our study with minor differences. The vaccination status in Peshawar as in the studied mention above is greater than ours, the reason behind the less vaccination status is due to that 58.13% of the unvaccinated population did not consider it important while 13.95% did not think that they are at risk and 4.6% was of the opinion that vaccine is costly and 20.93% said that the government should arrange vaccine.[20]

Regarding vaccination, 42.98% of the vaccinated staff stated that vaccination was compulsory for their job, 45.61% of the staff done vaccination on theirown knowledge. While with cost 77.19 said the cost of vaccination was paid by the hospital while 22.80% paid it by itself, this is also a reason of low vaccination in nursing staff as most of the nursing staff was from a middle class and cannot afford vaccination cost. In a study conducted in Karachi, the status of vaccination in HCWs was 86% because of the reason that the cost was paid by the hospital administration.[24]

In our study, the nursing staff knowledge was assessed regarding the fatality of the disease and spread of Hepatitis. 99% of the total population consider it a dangerous disease, 30.5% thought it to be transmitted through needle stick injury, 2.5% from blood transfusion and 0.55%, 1% through sexual transmission and drug/needle sharing respectively, 65% attributed the transmission of hepatitis B by all of the above-mentioned ways. In a study conducted in Saudi Arabia reported that 91% individuals pointed out that hepatitis B is a serious disease, 82% was of the view that it could transmit from patient to HCWs. [25] In a study done in Nepal, 97.7% of HCWs knew about its transmission through infected blood transfusion.[26] this is very close to our study. Also, studies from Ahmadabad India and Iraq showed that 86.7% and 49.3% of HCW. [27,28]

Like other blood-borne diseases the most common and significant mode of transmission of HBV is needle stick injury, in our study 61.5% of the total study population suffered from needle stick injury, after which 40 % of the study population cleaned it by local disinfectant, 8% by water and 5% did not give any attention. In a study in India after needle prick injury, 60.9% washed the site with water and soap, 14.8% did nothing,and 7.8% took post-exposure prophylaxis, which is almost closer to our study. [18] In another study, 92% of the nurses cleaned the wound with spirit.[29]

Safe practice of injection can prevent HBV transmission through needle prick injury, so 37.5% of the total study population used gloves, 50% stated that they took extra care, and 12% did nothing to prevent needle stick injury. In a study conducted in Lahore 64.9% nurses failed to use gloves while administering injections.[29] Here, 15% of difference regarding safe practice exist.

While discarding the used syringes, 100% of the staff practiced it,and 96% did by using needle cutter and 3% by bending them with hands. In a study in Lahore 97.4% of nursing staff using needle cutter for discarding syringes.[29] In the case of biological fluid spillage on the bed sheet, 64.5% of individuals cleaned it with water, 18% cleaned it with cotton/cloth, 15.5% discarded it,and 2% did nothing. 91% reported using gloves while cleaning the biological fluid.

CONCLUSION:

We conclude that vaccination of nursing staff against HBV is low despite the fact that they are at high risk. It is due to lack of awareness and the high cost of the vaccine. Nursing staff has sufficient knowledge to consider Hepatitis a fatal disease, as well as regarding the transmission of the disease. They are reluctant to take adequate preventive measures to protect themselves from the Hepatitis.

DECLARATIONS

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Ethical approval: Yes

Table-1. Descriptive statistic of demographic data and status of vaccination.

s.no	Variables	Description		
1	Length of service	Mean 7.75±6.71 years (min 1 – max 35)		
2	Age	28.94±7.708 years (min 18 – max 57)		
3	Monthly income	347600±19622/631 Rupees (min 5000 – max 92000)		
		Categories	Frequencies	Percentages
4	Gender	Male	12	6%
		Female	188	94%
5	Marital Status	Married	109	54.5%
		Unmarried	91	45.5%
		Divorced/widowed	0	0.0%
	Length of service (groups)	1-4 Years	96	48.0%
		5-9 Years	39	19.5%
		10-14 Years	31	15.55
		15-19 Years	25	12.5%
		>20 Years	9	4.5%
6	Designation	Students	51	25.5%
		Charge nurse	102	51.0%
		Staff nurse	37	18.5%
		Head nurse	10	5.0%
7	Socioeconomic status	Poor class	2	1%
		Middle class	197	98.5
		Upper class	1	0.5%
8	Status of vaccination	Completely	85	42.5%
		Partially	29	14.5%
		Unimmunized	86	42.0%
9	Booster dose	Yes	23	11.5%
		No	87	43.5%
		Did not know	90	45.0%
		Did not know	90	45.0%

10.	**Incase blood spills out on bed sheet, floor or table during procedure what measures do you take to clean it?**			
		Clean it with cotton/cloth	36	18.0
		Wash it with water(laundry)	129	64.5
		Don't clean it	4	2.0
		Discard bed sheet	31	15.5
11.	**Do you use gloves while cleaning the blood/body fluids of the patient?**			
		Yes	183	91.5
		No	17	8.5
		Total	200	100.0

Table 3. cross tabulation of dependent variable, status of vaccination -HBV against independent variable and chi-squared test.

S. No	Variables	Categories	Status of the vaccination against hepatitis b			Total	P-value
			Vaccinated	Partially vaccinated	Not vaccinated		
1.	**Gender**	Male	7(3.5%)	1(0.5%)	4(2.0%)	12(6.0%)	0.505
		Female	78(99.0%)	28(14.0%)	82(41.0%)	188(94.0%)	
2.	**Marital status**	Married	51(25.5%)	22(11.0%)	36(18.0%)	109(54.5%)	0.003
		Un married	34(17.0%)	7(3.5%)	50(25.0%)	91(45.5%)	
3.	**Duration of service(years)**	1-4 years	32(16.0%)	6(3.0%)	58(29.0%)	96(48.0%)	0.000
		5-9 years	20(10.0%)	7(3.5%)	12(6.0%)	39(19.5%)	
		10-14	16(8.0%)	6(3.0%)	9(4.5%)	31(15.5%)	
		15-19	13(6.5%)	7(3.5%)	5(2.5%)	25(12.5%)	
		>20 years	4(2.0%)	3(1.5%)	2(1.0%)	9(4.5%)	
4.	**Monthly income (rupees)**	<20000	9(4.5%)	3(1.5%)	36(18.0%)	48(24.0%)	0.000
		21000-	36(18.0%)	11(5.5%)	29(14.5%)	76(38.0%)	
		41000-	35(17.5%)	11(5.5%)	19(9.5%)	65(32.5%)	
		>61000	5(2.5%)	4(2.0%)	2(1.0%)	11(5.5%)	
5.	**Designation**	Staff nurse	21(10.5%)	3(1.5%)	13(6.5%)	37(18.5%)	0.000
		Charge	50(25.0%)	20(10.0%)	32(16.0%)	102(51.0%)	
		Students	9(4.5%)	3(1.5%)	39(19.5%)	51(25.5%)	
		Head nurse	5(2.5%)	3(1.5%)	2(1.0%)	10(5.0%)	
6.	**Socioeconomic status**	Poor	0(0.0%)	0(0.0%)	1(0.5%)	1(0.5%)	0.400
		Middle	83(41.5%)	29(14.5%)	85(42.5%)	197(98.5%)	
		Upper	2(1.0%)	0(0.0%)	0(0.0%)	2(1.0%)	
		Total	85(42.5%)	29(14.5%)	86(43.0%)	200(100.0%)	

Table 2. knowledge, attitude and practice of nursing staff about hepatitis B.

s.no	Questions	Categories	Frequency	Percent
1.	**If vaccinated, the cost of vaccination was paid by.**			
		Yourself	26	13.0
		Hospital	83	41.5
		Not applicable	91	45.5
2.	**If not vaccinated state the reason?**			
		Don't know	2	1.0
		Don't consider it important	50	25.0
		Don't think you are at risk	12	6.0
		Vaccination is costly	4	2.0
		Government shall arrange	29	14.5
		Not applicable	103	51.5
3.	**Do you consider Hepatitis B a dangerous disease?**			
		Yes	198	99.0
		No	2	1.0
4.	**In your opinion how does the transmission of hepatitis B occurs?**			
		Needle stick injury	61	30.5
		Blood transfusion	5	2.5
		Sexual transmission	1	.5
		Drug abuse/sharing needles	2	1.0
		All of these	131	65.5
5.	**Have you had a needle stick injury in the recent past?**			
		Yes	123	61.5
		No	77	38.5
6.	**If yes what measures did you take to prevent hepatitis B?**			
		HBV immunoglobulin	9	4.5
		HBV vaccination/booster	4	2.0
		Used disinfectant only	80	40.0
		Didn't give attention	10	5.0
		Consulted medical specialist	4	2.0
		Cleaned with water	15	7.5
		Not applicable	78	39.0
7.	**What preventive measures do you take to prevent needle stick injury?**			
		Use gloves	75	37.5
		Don't use anything	24	12.0
		Handle with extra care	101	50.5
8.	**Do you discard syringes after using once?**			
		Yes	200	100.0
9.	**If yes what measures do you use to discard syringes once used?**			
		Needle cutter	192	96.0
		Bending needle with hand	6	3.0
		Other techniques	2	1.0