ASSESSMENT OF HEPATITIS B VACCINATION STATUS IN DOCTORS OF SERVICES HOSPITAL, LAHORE

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Background: Hepatitis B is the most common serious infection of the liver and can lead to premature death from liver cancer or liver failure. Of the two billion people who have been infected with Hepatitis B virus, more than 350 million have chronic infection. The objectives of this study were to assess the Hepatitis B vaccination status, reasons for non-compliance and the risk of exposure to doctors at a tertiary care hospital. **Methods:** Three hundred and twenty-two doctors were selected from the various departments of the hospital by simple random sampling. They were given a self-administered questionnaire after taking verbal consent. Some doctors refused to fill-in the questionnaire while some others were on leave during the time of study and the remaining 215 doctors responded to the questionnaire. **Results:** A total of 215 doctors, (age range 22–59 years) responded to the questionnaire. Amongst them 11.6% had not received even a single dose of Hepatitis B vaccine while 14.4% had not completed the required course of vaccination. Most common reason cited by doctors for non-immunisation was that they had not thought about it. Consultants were more likely of the other doctors to have received completed vaccination (83.9% versus 69.9%) ($p<0.05$). They were also significantly more likely to know their antibody titre after completing vaccination. Needle stick injuries were common. One hundred and forty-five doctors in the study admitted having received at least one needle prick/sharp injury. Of them, 51.6% had received a needle prick/sharp injury more than once. **Conclusion:** Despite the availability of an effective vaccine in the market doctors continue to remain non-vaccinated. It is the lack of awareness and carelessness on part of doctors coupled with the negligence of the risk that has led them being incompletely vaccinated. There is a need to ensure that every doctor is completely vaccinated against Hepatitis B before he/she enters professional practice.

Keywords: vaccination, Hepatitis B, medical staff, professional hazard, needle prick injury

INTRODUCTION

Hepatitis B is the most common serious infection of the liver and can lead to premature death from liver cancer or liver failure.[1] Of the two billion people who have been infected with Hepatitis B virus (discovered in 1966), more than 350 million have chronic infections. It is preventable with safe and effective vaccines that have been available since 1982. Although the vaccine will not cure chronic hepatitis, it is 95% effective in preventing chronic infections from developing, and is the first vaccine against a major human cancer.[2]

Transmission commonly occurs among people who share needles to inject illicit drugs. Because Hepatitis B Virus (HBV) is present in serum in large quantities (10^8–10^{10} virions/ml), it spreads through contact with saliva, tears, breast milk, urine, vaginal fluid and semen.

Health Care Workers (HCWs) are at increased risk of occupational acquisition of HBV infection.[3] Viruses may be deposited in needles and syringes, and may be transmitted to HCWs by accidental injury. Thus the HCWs constantly place themselves in potential danger by attending to infected patients.

The Hepatitis Branch of the Centre for Disease Control has estimated that 500–600 healthcare workers whose job entails exposure to blood products are hospitalised annually, with over 200 going on to develop chronic hepatitis.

Global studies indicate that, depending on location, 10–40% of healthcare workers may show serologic evidence of past or present HBV infection.[4]

Doctors and paramedics can easily get infected with the highly infectious Hepatitis B virus in hospital and clinic settings with consequent morbidity and mortality. Although Hepatitis B infection is completely preventable by following a simple and widely available vaccination schedule yet doctors continue to get infected with this disease.

Several international and local studies on healthcare workers in hospitals to assess their vaccination status have shown variable results; often showing that healthcare workers are inadequately vaccinated.

This study was conducted with the same objectives to assess the vaccination status of doctors working in Services Hospital Lahore and possible reasons for non-immunization.

MATERIAL AND METHODS

It was a cross-sectional study conducted during May and June 2007, principally to assess the Hepatitis B vaccination coverage among doctors.

Simple random sampling technique was applied and 12 departments were selected for the study: Medicine (3 wards), Surgery (2 wards), ENT, Eye, Psychiatry, Anaesthesia, Obs/Gyn, Urology, Histopathology, Dermatology and Neurosurgery. All 322 doctors working in these departments irrespective of their designation were included in the study, 54 were on leave and 53 refused to participate in the study, remaining 215 doctors participated.

A 5-page questionnaire was designed covering all the study variables. The questionnaire was pre-tested before implementation. Consent was taken from the doctors and hospital administration before collecting the information. Complete confidentiality of the provided information was then ensured.

All data from the questionnaires were entered in EpiInfo-3.3.2 and analysed using SPSS-12.0. Tabulation and cross tabulation of the data was done. Chi-square test was used to assess the significance of differences. A *p*-value of 0.05 or less was used as a cut-off point and data was then presented.

RESULTS

Of the 215 doctors a greater number of responders (51.6%) were less than 30 years of age, (median age= 28 year) and were males (60.0%). The number of the consultants was far less than that of the junior doctors (28.8% compared to 71.2% respectively), 75.8% of the total doctors in the survey had duration of service in the hospital of 5 years or less. Most of the doctors (68.4%) were not regular employees and were working on contract basis.

Regarding vaccination 26.05% of the doctors had not received the required course of Hepatitis B vaccine. Out of them 11.6% had not received even a single dose. Source of vaccine was more from doctors' own pocket rather than from the hospital (66.5% compared to 21.9%). Most common reason stated by the doctors for not receiving the vaccine or not completing the required course was that they had not thought about it (51.4%). Other common reasons included difficulty in obtaining the vaccine (18.5%) and fear of vaccine (17.1%). Results also show male and young population of doctors out number females and older than 30 years in receiving complete doses of vaccine (Table-1). Doctors having duration of service less than 5 years and working on contract basis were more likely to have received complete Hepatitis B vaccination (74.8 and 76.2% respectively). In consultants 83.9%, while 69.9% of the other doctors had completed their vaccination ($p<0.05$), (Table-1).

Booster dose was taken up by only 37.7% of the doctors who had completed vaccination course, and 44.2% of the consultants had received booster dose compared to 34.6% of other doctors. More consultants (19.2%) had knowledge of their antibody titre after completing vaccination course, while only 56% of other doctors do ($p<0.05$), (Table-2).

One-hundred forty-five doctors in the study admitted at having received at least one needle/sharp injury. A great majority of doctors who had received injury but had not completed the required course of vaccination, documented at having taken no action after injury (94.4%, $p<0.05$) as compared to those who had received complete course of vaccination (Table-3).

Table-1: Relationship of vaccination status with characteristics of doctors (n=215)

Characteristics		Vaccination complete		Vaccine not complete*		Total		*p*
		No.	%	No.	%	No.	%	
Gender	Male	96	74.4	23	26.7	129	100	0.849
	Female	63	73.3	33	25.6	86	100	
Age (Years)	<30	85	76.6	26	23.4	111	100	0.365
	>30	74	71.2	30	28.8	104	100	
Designation	Consultants	52	83.9	10	16.1	62	100	0.035
	Other Doctors	107	69.9	46	30.1	153	100	
Specialty	Medical	87	73.7	31	26.3	118	100	0.934
	Surgical	72	74.2	25	25.8	97	100	
Duration of Service	≤5	122	74.8	41	25.2	163	100	0.597
	>5	37	71.2	15	28.8	52	100	
Employment Status	Contract	112	76.2	35	23.8	147	100	0.272
	Permanent	47	69.1	21	30.9	68	100	
Received Injury	Yes	109	75.2	36	24.8	145	100	0.558
	No	50	71.4	20	28.6	70	100	

Table-2: Relationship of designation of doctors with receiving booster dose and knowledge of antibody titre

	Received Booster (n=159)				Know Antibody Titre (n=159)			
	Yes		No		Yes		No	
Designation	No.	%	No.	%	No.	%	No.	%
Consultants	23	44.2	29	55.8	10	19.2	42	80.8
Other Doctors	37	34.6	70	65.4	6	5.6	101	94.4
Total	60	37.7	99	62.3	16	10.1	143	89.9
***p*-Value**	0.239				0.007			

Table-3: Vaccination status of doctors with action taken (Viral Screening) after injury (n=145)

Vaccination Status	Action Taken (Viral Screening)			
	Yes		No	
	No.	%	No.	%
Completed	22	20.2	87	79.8
Not Completed	2	5.6	34	94.4
Total	24	16.6	121	83.4
p-value	0.041			

DISCUSSION

Doctors and paramedics can easily get infected with the highly infectious Hepatitis B virus in hospital and clinic settings with consequent morbidity and mortality. Although Hepatitis B infection is completely preventable by following a simple and widely available vaccination schedule yet doctors continue to get infected with this disease.

The incomplete vaccination of doctors in a tertiary level teaching hospital in Pakistan was last documented in 2003,[5] in Aga Khan Hospital and before that in 2001[6] in Ganga Ram Hospital. We observed that doctors still remain incompletely vaccinated against HBV. This is despite the availability of an effective vaccine in the market.

Difficulty in obtaining the vaccine was cited as the commonest reason by the doctors for non-immunization in a similar study conducted in University Hospital of Manchester UK[7]. Only 18.5% of doctors who are incompletely vaccinated in our study show similar response. A great majority of doctors in our study responded that the most common reason for them not being vaccinated or not completing the required course is that they have not thought about it. It seems that while the doctors are careless on their part on acquiring the vaccine, a health policy is lacking which would have ensured that the doctors get complete vaccination before they enter into professional training.

An important finding of this study was that the consultants were more likely than the other doctors to have completed the required course of Hepatitis B vaccine ($p<0.05$). This is independent of the gender, age, specialty, or duration of service. Consultants were also more likely of the two to have received booster dose. Knowledge of the antibody titre, after completing the required course of vaccination, was also significantly more in the consultants ($p<0.05$). Study in Ganga Ram Hospital[6] showed similar results, the difference being that fewer consultants had received booster as compared to other doctors. Similar results were depicted in a study done on NHS consultants by NAC Smith[8], and on surgeons by Smith ER, Banatvala JE and Tilzey AJ in different hospitals of London[9] regarding the booster dose and antibody titre knowledge. This suggests that the awareness among junior doctors is less as compared to consultants. Or it may simply be the negligence on part of junior doctors, which accounts for this behaviour.

This study supports previously documented results[5] that a great majority of doctors who have received needle stick injuries were completely vaccinated against H-epatitis B. But still the frequency of needle prick/sharp injuries and hence the risk of acquisition of HBV infection remains high.

It has been estimated that the risk of acquiring HBV infection following puncture with a needle contaminated by an HBV carrier ranges from 6% to 30%[10]. Doctors who had received injury and were incompletely vaccinated against Hepatitis B were 24.8% in our study. Similar results were seen in a study in University of Manchester regarding incomplete vaccination and risk exposure.[11] This again highlights the negligence and lack of awareness amongst doctors.

Results regarding the risk of exposure to doctors are also seen in studies conducted in Kampala Uganda by WHO country office on Health Care Workers[12] and a study amongst HCW in US Naval Research Unit Cairo, Egypt.[13] An alarming (94.4%) proportion of the doctors in our study who had received injury and were incompletely vaccinated admit not taking any action after injury ($p<0.05$). This finding is supported by similar results in studies in Kenya.[14] Only 16.6% had viral screening after such an injury. This again highlights the need for the streamlining of the safety measures doctors observe and to educate doctors about the risks posed by such injuries.

CONCLUSION

We conclude that it is the lack of awareness and carelessness on the part of doctors coupled with the negligence of the risk that has led them being incompletely vaccinated.

While the doctors continue to be exposed to needle prick and sharp injuries, they do little afterwards to minimise the risk of spread of infection from the patients. This again can be attributed to the lack of awareness and to doctors' underestimating the severity of the consequences.

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