Hepatitis B Vaccination among Health Care Workers and Students of a Medical College

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Abstract

Objective: To study the vaccination status against Hepatitis B among health care workers and students of a medical school.
Materials and Methods: It is a descriptive study done at Allama Iqbal Medical College, Lahore. The participants comprised of 206 health care workers of various categories and 327 medical students. The main outcome measure was vaccination status and reasons for non-vaccination.
Results: Only 49% health care workers and 42.20% medical students were vaccinated. The main reasons for non-vaccination (47.7%) among health care workers was the high cost of vaccination, while the most often cited reason (33.7%) among medical student was the belief that they were not at risk. This belief was also prevalent among nurses (36.4%), laboratory workers (38.6%) and paramedics (33.2%).
Conclusion: In a low-income country like Pakistan the health institutions should bear the cost for vaccinating their staff. Efforts should also be made to impart appropriate health education regarding hepatitis B infection (JPMA 50:239, 2000).

Introduction

Although the incidence of hepatitis B infection has drastically reduced after the introduction of effective vaccination, modification of high-risk practices and possibly a decrease in the number of susceptible persons[1], yet about 400 million people worldwide are carriers of hepatitis[2]. World Health Report 1999 states that in 1998, hepatitis contributed 0.1% of disability adjusted life years (DALYs)[3] .The acute and chronic consequences of hepatitis B infection are major problems both in developed as well as developing world.
Immunization with hepatitis B vaccine is the most effective means of preventing hepatitis B infection and its consequences. The recommended strategy for preventing this infection is selective vaccination of persons with identifiable risk factors. The Advisory Committee on Immunization Practices (ACIP) recommends hepatitis B vaccine for every one 18 years of age and younger as well as for adults over 18 years of age who are at risk of hepatitis B infection. Adults who are at increased risk of infection and who should receive vaccination include: sexually active heterosexual adults with more than one sex partner in the prior 6 months or a history of sexually transmitted disease; men who had sex with men; illicit injection dritg users, hemodialysis patients and persons at occupational risk of infection. The health care workers (HCWs) fall in the last category of high-risk group[4].
The prevalence of HBsAg positivity among Pakistani health workers has been studied by various authors[5-7]. The vaccination status of Pakistani HCWs has, however, not been studied in detail. The present study was undertaken to assess the vaccination status of HCWs and medical students of a medical school and its affiliated hospital.

Materials and Method

This study was conducted at Allama lqbal Medical College, Lahore and its affiliated teaching hospital during September 1998.
A questionnaire was circulated among all medical students and HCWs of departments of Medicine, Surgery, Pathology and Community Medicine. The health care workers included Professors, Associate Professors, Assistant Professors, Residents, Interns, Nurses, Technicians and Paramedics.
Eighty-one percent of medical students and 63% of HCWs completed the questionnaire. The data was analyzed using Epi-lnfo,[6].

Results

The demographic characteristics of the study population are shown in Table -1 while Table - 2

RP= Table 1. Demographic characteristics of study population.

Characteristics	Students		Health Care Workers		Total	
	No	%	No.	%	No.	%
Age (years)						
<25	324	99.10	33	16.01	357	66.98
25-34	3	0.90	126	66.16	129	24.20
35-44	-	-	38	18.45	38	7.13
> 45	-	-	9	4.37	9	1.69
Total	327	100.00	206	100.00	533	100.00
Sex						
Male	190	58.10	121	58.70	311	58.35
Female	137	41.90	85	41.30	222	41.65
Total	327	100.00	206	100.00	533	100.00
Department						
Medicine	-	-	89	43.20	89	16.70
Surgery	-	-	88	42.70	88	16.51
Laboratory	-	-	20	9.70	20	3.75
Community Health	-	-	9	4.40	9	1.69
Pre-clinical	131	40.07	-	-	131	24.57
Clinical	196	59.93	-	-	196	36.77
Total	327	100.00	206	100.00	533	100.00

Table 2. Vaccination status of study population.

Study population	Vaccinated n = 239		Non-vaccinated n = 294	
	No.	%	No.	%
Students	138	42.20	189	57.80
Pre-clinical	62	47.33	69	42.67
Clinical	76	38.77	120	61.23
Health Care Workers (Departments)	101	49.00	105	51.00
Medicine	52	58.40	37	41.60
Surgery	37	42.00	51	58.00
Laboratory	9	45.00	11	55.00
Community Health	3	33.30	6	66.70
Health Care Workers (Category)	101	49.00	105	51.00
Interns/Residents	64	50.39	63	49.61
Assistant/Associate/Professors	15	83.33	3	16.67
Nurses	13	40.60	19	59.40
Lab. Workers	9	45.00	11	55.00
Paramedics	0	0.00	9	100.0

depicts the vaccination status. Out of 533 subjects only 239 (44.84%) were vaccinated against Hepatitis B. The proportion of vaccinated subjects was slightly higher among HCWs (49%) as compared to students (42.2%). The difference was, however, statistically non significant ($P>0.05$).

Those HCWs working in the Department of Medicine had the highest vaccination status (58.4%) compared to 42% in Surgery, 45% in laboratory workers and 33.3% among those working in Community Health Department. The difference of vaccination status between those working in Medicine and Surgery was statistically significant ($P<0.05$). Among HCWs, the highest percentage (83.33%) of vaccination was in teaching staff (Assistant Professor/Associate Professor/Professor). Only 40.6% nurses and 45% laboratory workers were vaccinated, while none of the paramedics were vaccinated.

The reasons for non-vaccination among HCW and students are shown in Table 3.

Table 3. Reason for non-vaccination among 105 health care workers and 189 medical students.

Reasons	Health Care Workers						
	Interns/Residents	Assistant/Associate/Professors	Staff Nurses	Lab. Workers	Paramedics	Total	Medical Students
Not informed	-	-	18.2	-	33.2	5.4	2.6
Did not consider it necessary/at risk	13.1	33.3	36.4	38.6	36.4	21.9	33.7
Vaccination not available	22.8	-	-	-	-	14.4	5.3
Vaccination too costly	54.2	66.7	30.7	30.7	36.4	47.7	31.2
Laziness	9.6	-	30.7	30.7	-	10.6	27.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	63	3	19	11	9	105	189

All figures represent percentages

The most common reason (47.7%) among HCWs was the high cost of vaccination, while most frequently cited reason (33.7%) by the students was the belief that they were not at risk of acquiring hepatitis.

Discussion

The sero-prevalence of Hepatitis B among various groups of Pakistani population is estimated to be around 3%[8-12] The prevalence of HB5Ag positivity among Pakistani health workers ranges from 5.2% among subjects studied by Zahid et al.6 in 1991 to 7.5% among 114 operating room personnel examined by Mujeeb[13] et al. in 1998.

Table 4. Sero-prevalence of hepatitis B among health care workers and medical students.

Country	Author	Year	HBsAg Positivity		Reference
			Category	Prevalence (%)	
Health Care Workers					
Pakistan	Khan et al	1996	HCW	6.31	5
	Zahid et al	1991	HCW	5.23	6
	Shah et al	1991	HCW	7.10	7
	Mujeeb et al	1998	ORP*	7.50	13
Nepal	Shreshtha et al	1990	HCW	2.60	14
Greece	Panis et al	1986	Dentist	2.60	15
Portugal	Marinho et al	1999	HCW	16.80	16
Thailand	Chokbunyasit et al	1995	Nurses	6.60	17
Egypt	Al-Zayadi et al	1999	HCW	6.60	18
Medical Students					
Pakistan	Khan et al	1996	Students	5.7	5
Portugal	Marinho et al	1999	Students	5.5	16
India	Khurana et al	1997	Students	2.3	19

*ORP = Operating Room Personnel.

Table-4 compares the HBsAg positivity of Pakistani HCWs with similar studies from other countries. The seroprevalence of Hepatitis B among Pakistani HCWs is higher than Nepal[14] (2.6%) and Greece[15], (2.6%) but lower than Portugal[16] (16.8%), and corresponds closely to prevalence reported from Thailand[17] (6.6%) and Egypt[18] (6.6%).

The sero-prevalence of hepatitis among medical students of Pakistan[5] (5.7%) is similar to that reported by Marinho et al[17] from Portugal (5.5%). A similar study from India shows that only 2.3% of medical students were seropositive for hepatitis B[19].

The vaccination status of Pakistani HWCs is lower than the figures reported from USA[20,21], (40-78%) and UK[22,23] (79-88%). A report from the University of California at Los Angeles[24], Los Angeles USA, also shows that only 40% of Pathologists and 51.9% Gynecologists were vaccinated (Table 5).

Table 5. Comparison of vaccination status of HCWs and medical students of various countries

Country	Author	Year	Vaccination status		Reference
			Category	Prevalence (%)	
Health Care Workers					
Pakistan	Nasir et al	1999	HCWs	49.00	Present study
	Mujeeb et al	1998	ORP*	36.00	13
U.S.A.	Mahoney et al	1997	Nurses	75.00	20
			Pathologists	75.00	20
	Lee et al	1997	Paramedics	78.00	21
	Murata et al	1993	Gynecologists	51.90	24
			Pathologists	40.00	24
U.K	Smith et al	1997	Surgeons	79.54	22
	Neepa et al	1995	ERP**	88.00	23
Portugal	Marinho et al	1999	HCWs	57.00	16
Medical Students					
Pakistan	Nasir et al	1999	Students	42.20	Present study
Portugal	Marinho et al	1999	Students	41.00	16

*ORP = Operating Room Personnel.
**ERP = Emergency Room Personnel.

Only 42.2% of medical students were vaccinated; of whom only 36% of 114 operating room personnel reported by Mujeeb et al were vaccinated; 47.33% were from of pre-clinical years and 3 8.77% from clinical years (Table-2). This may appear to be a paradoxical finding but the reason is that for the last three years, all new entrants to our medical school are made aware of the importance of vaccination against Hepatitis B. Many students now get vaccinated during the first year of medical school. This trend is reflected in the higher proportion of vaccinated students in pre-clinical years.

The major reason of non-vaccination (44.7%) among HCWs was the high cost of vaccination, while the main reason cited by the students (33.7%) was the belief that they were not at risk. In Pakistan, there is no medical insurance and most hospitals do not bear the cost of vaccination of their staff Due to high cost of. vaccination, most HCW do not get vaccinated for it. The cost of the complete course of vaccination in Pakistan is about Rs. 1200 (US $ 25.00). This is approximately equivalent to the 10 days salary of an vaccination be provided free, while 41.2% agreed to pay less than Rs. 250(US $ 5.00).

The fact that 36.3% of medical students, 54.6% of staff nurses, 3 8.6% of the laboratory workers and 68.6% of the paramedics were either not informed about the importance of vaccination or they did not consider them to be at risk, calls for the institution of appropriate health education program.

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