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STATUS OF HEPATITIS B VACCINATION AMONG THE HEALTH CARE WORKERS OF A TERTIARY HOSPITAL, LAHORE

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This study was carried out to assess the immunisation status among health care workers of a tertiary hospital and reasons for non-immunisation. This is a descriptive cross-sectional study conducted at Jinnah Hospital, Allama Iqbal Medical College, Lahore from May 2005 – July 2005. A total of 358 health care workers were selected using systematic random sampling technique. A pre-tested structured questionnaire was used after taking verbal consent from the respondents. All that 358 health care workers of different cadres were interviewed. Among them, 60% of the respondents were completely immunised against hepatitis B, 18% had incomplete immunisation and 22% had no immunisation at all. Main reasons for non immunisation are lack of motivation (38%) and high cost of the vaccine (28%). This is suggested that there should be 100% immunisation coverage of health care workers against hepatitis B by providing it free of cost and also making immunisation compulsory for them. Health care workers should be motivated by regular health education campaigns to improve their immunisation status.

Epidemics of blood borne pathogens have affected the entire developing world. Hepatitis B is one such disease which imposes a heavy burden on national economy and individual families due to rising cost from acute and chronic morbidity. In fact Hepatitis B is a global health problem. More than 2 billion people have evidence of past or current infection with 350 million chronic carriers world wide.[1] In Pakistan, it is estimated that 1 out of every 20 people is a hepatitis B carrier.[2] Because of their contact with patients or infective material from patients, many health-care workers (HCWs) e.g. physicians, nurses, emergency medical personnel, dental professionals and students, medical and nursing students, laboratory technicians, hospital volunteers, and administrative staff are at risk for exposure to and possible transmission of vaccine-preventable diseases. Maintenance of immunity is therefore an essential part of prevention and infection control programs for HCWs. Optimal use of immunizing agents safeguards the health of workers and protects patients from becoming infected through exposure to infected workers.[3]

Although hepatitis B virus is not highly contagious, its presence in very high amounts in the blood secretions of infected persons (indirectly means) even an isolated single and minute exposure can transmit this infection. Any one who may be exposed to blood and other potentially infectious body fluids while on job is at risk which includes health care workers also. As in 1997, it was documented that 170 possible cases of HBV transmission to Health Care workers shows the distribution of documented and possible HBV infections by occupation.[4] The rate of transmission of hepatitis B virus to a non-immune health care worker ranges from 2%, if the source patient is Hepatitis B 'e'antigen negative to 40% if the source patient is hepatitis B 'e'antigen positive.[5] Overall the estimated risks of hepatitis B infection after an occupational exposure ranges from 20-30%.[6] Data indicates that 5-10% of HBV infected workers become chronically infected. Persons with chronic HBV infection are at risk for chronic liver disease (i.e., chronic active hepatitis, cirrhosis and primary hepatocellular carcinoma) and are potentially infectious throughout their lifetimes. An estimated 100-200 health care personnel died annually during the past decade because of the chronic consequences of HBV infection.[7]

Hepatitis B is a well documented occupational hazard for health care workers, including both laboratory and nursing personnel. Since the development of effective hepatitis B vaccines, the Immunization Practices Advisory Committee (ACIP) has recommended that health care workers receive the vaccine. Pre-exposure immunization of HCWs against HBV and documentation of their response to vaccination have been recommended.

The present study was focused on assessing the vaccination status among the health care workers and to find out the reasons for non immunization among them for hepatitis B in a tertiary care hospital in Lahore. The outcome of the study would be considered to suggest ways and means for improvement of immunization status in the

health care workers.

SUBJECTS AND METHODS

It was a descriptive, cross-sectional study, conducted in Jinnah Hospital, Lahore which is a tertiary level hospital attached to the Allama Iqbal Medical College. It is an 1100 bedded hospital. A sample of 358 health care workers of Jinnah Hospital, Lahore (JHL) was interviewed after their verbal consent from May to July 2005. Doctors working in Medicine and allied specialties and Surgical and allied specialties were the subjects. The doctors comprising of consultants, registrars, medical officers and house officers. Nurses, student nurses and other paramedical staff were also included in the study. Systematic random sampling technique was used for selection of the respondents. First health care worker was selected randomly from a pre-maintained list and then every 3rd health care worker was selected till the required sample size was completed. This method was used for each cadre of health workers included in the study separately. A structured questionnaire was used for collecting the data. The questions were closed ended and open ended.

The operational definitions are:

Complete immunisations status: Health care workers who received three doses of hepatitis B vaccination at 0, 1 and 6 months were considered as completely immunized.

Partially immunised: Health care workers who received one or two doses of Hepatitis B vaccination.

Not immunised: Health care workers who had not received any dose of vaccine.

RESULTS

A total of 358 respondents with an age range between 18-59 years were interviewed. The study showed that 60% of the respondents were completely immunised against hepatitis B, 18% had incomplete immunisation and 22% had no immunisation at all (Table 1). With regards to the cadre of health care workers, 80% of the doctors belonging to the medical and surgical departments along with their allied specialties were fully immunisation. Regarding nurses and paramedics 49% and 31% respectively were fully immunised. The highest incidence of non-immunisation was found among the paramedics (40%) followed by doctors working in the medical and allied specialties (25%) and nurses (20%) (Table 2).

The reasons stated by those not immunised, were lack of motivation (38%), high cost of the vaccine (28%), no belief in immunisation (10%), and other causes not mentioned in the questionnaire (20%). Lack of motivation was the main reason among the doctors (15%), followed by paramedics (13%) and nurses (10%). The second most important reason for non immunisation was high cost which was 23% among the paramedics (Table 3).

Table 1: *Frequency distribution of health care workers.*

No. of doses	Medical and allied	Surgical and allied	Nurses	Paramedics	Total
One dose	2 (0.55%)	4 (1%)	5 (1%)	9 (2%)	20 (5%)
Two doses	3 (0.83)	4 (1%)	19 (5%)	20 (6%)	46 (13%)
Three doses	**80 (22%)**	**64 (18%)**	**38 (11%)**	**31 (9%)**	**213 (60%)**
No vaccination	15 (4%)	8 (22%)	16 (5%)	40 (11%)	79 (22%)
Total	100 (28%)	80 (22%)	78 (22%)	100 28%)	358 (100%)

Statistical Analysis

95% CI for fully immunised health workers = 54.1 to 64.5%
95% CI for partially immunised health workers = 14.63 to 22.9%

Table 2: *Immunisation status according to different cadres of health care workers against Hepatitis B.*

Immunisation status	Doctors medical and allied	Doctors surgical and allied	Nurses	Paramedics
Fully immunised	**80 (80%)**	**64 (80%)**	**38 (49%)**	**31 (31%)**
Partiallly immunised	5 (5%)	8 (10%)	24 (31%)	29 (29%)
Not immunised	15 (15%)	8 (10%)	16 (20%)	40 (40%)
Total	100 (100%)	80 (100%)	78 (100%)	100 (100%)

Table 3: *Reasons for non-immunisation for hepatitis B.*

	Do not believe in immunisation	Too costly	Lack of motivation	Phobia	Any other	Total
Medical and allied	3 (4%)	1 (1%)	5 (6%)	0	6 (8%)	15 (19%)
Surgical and allied	0	0	7 (9%)	1 (1%)	0	8 (10%)
Nurses	1 (1%)	3 (4%)	8 (10%)	1 (1%)	3 (4%)	16 (20%)
Paramedics	4 (5%)	18 (23%)	10 (13%)	1 (1%)	7 (9%)	40 (51%)
Total	8 (10%)	22 (28%)	30 (38%)	3 (4%)	16 (20%)	79 (100%)

DISCUSSION

Hepatitis B though a preventable disease is one of the major causes of morbidity and mortality throughout the world including Pakistan. There are about 31% cases of acute viral hepatitis, 60% cases of chronic liver disease and 59% cases of hepatocellular carcinoma due to hepatitis B infection in Pakistan.[8] Hepatitis B is a well – documented occupational hazard for health care workers, including both laboratory and nursing personnel. An estimated 100 – 200 health care personnel have died annually during the past decade because of the chronic consequences of HBV infection.[9] Thus health care workers are at increased risk of heaptitis B virus infection and pre-exposure immunisation of health care workers against HBV is strongly recommended. This is highly effective vaccine with 95% seroconversion rates.[6]

This study shows that 60% of the healthcare workers were completely immunised whereas 18% had incomplete immunised. In a study conducted in Agha Khan University Hospital, Karachi, showed that 86% of the health care workers were completely immunised.[10] The reason for this differrence is that in Agha Khan University Hospital, all health care workers who are in direct patient contact, are provided free of cost immunisation against hepatitis B. In another study conducted among health care workers in Allama Iqbal Medical College, Lahore only 49% were immunised.[11] On the other hand a study conducted in Athens, reported that 57.1% of health care workers were immunised.[12] Among different cadres of health care workers, this study reported that 80% of the doctors, 49% of the nurses and 31% of the paramedics were fully immunised. While in a study conducted in Sir Ganga Ram Hospital, Lahore, immunisation rate was 72% among the doctors.[13] Among doctors at Jinnah Hospital Lahore, 40% were completely vaccinated. In this study, it was observed that status of complete immunisation was equal (80%). Whereas doctors workings in surgical and allied departments are more prone to hepatitis B because of high incidence of PCE (percutaneous exposure) and MCE (mucocutaneous exposure) than doctors belonging to the Medical and allied subjects. In another study at Agha Khan University reported that the surgical residents (92.3%) and consultants (92.3%) had higher immunisation status compared to medical and allied specialties (68.8%) and (75%) respectively.[10]

The present study has reported that 38% of the nursing staff and 31% of the paramedical staff was completely immunised against the hepatitis B. The same was noted in Agha Khan study where the immunisation of the nurses was higher than the paramedics.[10] On the other hand another study conducted in a Nigerian teaching hospital, high complete immunisation status was found among non-clinical workers (medical record personnel — 76.3% and engineering staff — 69.5%) whereas the lowest rate was found among nurses (39.7%) and doctors (40.3%).[14]

The main reasons for non immunisation differ widely among the different cadres of health workers. The present study reports that the main causes of non-immunisation were lack of motivetion (38%), high cost of the vaccine (28%) and other causes (20%). Studies conducted in Allama Iqbal Medical College, Lahore the main reason of non immunisation was high cost among the health care workers (47.7%).[11] In this study, high cost was the main reason narrated by the paramedics (23%) but surprisingly the lack of motivation was the main reason among the doctors i.e the most educated group (15%). Only 8% of the health care workers said that they did not believe in immunisation. The Nigerian study reported that workers with the highest possibility of knowledge of, and exposure to hepatitis B infection within the hospital setting i.e. doctors, nurses and laboratory workers, showed the greatest apathy to the immunisation program.[14] In a study conducted in Allama Iqbal Medical College, nurses (36.4%) and paramedics (33.2%) had the idea that they were not at risk.[11] Similarly in another study, lower perception of risk among doctors is the main reason for poor vaccine uptake.[15] A Taiwan study indicated that the concern about the efficacy of Hepatitis B

vaccine, fear of pain from repeated injections, time and money were the main determinants among the nursing students for not having the immunisation for hepatitis B.[16] Similarly in a study done at Agha Khan University, the main reasons for discontinuing the immunisation were ignorance,[11] high cost of immunisation (08) and difficulty in getting vaccines whereas the study in Fatima Jinnah Medical College, Lahore cited high cost followed by the unavailability of the vaccine as the main reasons for non-immunisation.[13]

It is **concluded** that a significance of proportion of health workers handling patients in a tertiary care hospital is not fully immunised with hepatitis B vaccine. In various categories of health workers immunisation coverage is very low among paramedics and nurses although they are equally susceptible to exposure. The proportion of non-immunised doctors is more in surgical and allied units as compared to medical and allied units. Lack of motivation is the most common reason for being not immunised among all categories of health workers.

RECOMMENDATION

Hepatitis B is an important health hazard to both health care workers and the patients they treat therefore it is very important to achieve 100% immunisation coverage not only by providing free immunisation facilities by the Government in the public sector hospitals but it is also to be made mandatory / compulsory for the health care workers legally. All the health care workers should be motivated for behavior change and ensured for immunisation to enhance their occupational safety.

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