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Research Paper

Awareness of Infectious Occupational Health Risks and the Compliance of Recommended Vaccines Amongst the Medical Interns At Rural Hospital – A Pilot Study

Medical Science

KEYWORDS : Occupational Health Hazards, Vaccination Awareness, Post Exposure Prophylaxis

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ABSTRACT

Health professionals are at increased risk of exposure to infectious diseases, as they are exposed to potentially contaminated substances with a variety of pathogens. This was a cross-sectional questionnaire pilot study was conducted among 50 medical interns at M.I.M.E.R. Medical College & Dr.BSTR Hospital, Talegaon Dabhade, Pune 410507 in order to assess their current level of awareness. This study concludes that all medical interns should undergo a comprehensive training program regarding awareness of occupational health risks and vaccination coverage, reflecting the need for motivational policies, through activities for clarification and expansion of vaccination coverage.

INTRODUCTION

Health professionals are under an increased risk of exposure to infectious diseases, as during their work activities they are usually exposed to risks by biological agents due to contact with body fluids potentially contaminated with a variety of pathogens (1). Important measures to prevent some infections in the workplace consist of the immunization and monitoring of vaccination status of professionals, considered essential in infection control programs for these individuals (2).

Appropriate immunization of Health professionals, in addition to decreasing the overall rate of disease among vaccines, reduces the number of secondary cases, time associated to exposure management, and also provides protection to patients (3).

In India, Universal Immunization Program (UIP) conducted by Ministry of Health and Family Welfare (MoHFW), Government of India (GOI) does not present a specific protocol of vaccination coverage for this group of workers. In general the vaccines recommended by this program include: BCG, MMR, Polio, DPT and Hepatitis B (4).

Considering immumopreventable diseases in relation to medical students, it is recommended that corrective measures are taught while they are undergraduate medical course, before contact with patients, to avoid exposure to unnecessary risks. Also, the awareness of occupational diseases, the risk of transmission and the need for immunization should be present from the period of academic training. From this perspective, Higher Education Institutions are at a great responsibility to prepare students for safe clinical practice. (5)

Thus, in order to create this awareness among the medical students, it is essential to assess their current level of awareness. With this aim study was conducted among Medical Interns at M.I.M.E.R. Medical College & Dr.BSTR Hospital, Talegaon Dabhade, Pune 410507.

OBJECTIVES

To assess knowledge, awareness and compliance among medical interns dental professionals regarding of Infectious Occupational Health Risks.

MATERIALS AND METHODS

A cross-sectional questionnaire pilot study was conducted among 50 medical interns, who voluntarily participated in the study. Data collection was done using structured questionnaire which was designed to asses the professional's knowledge and compliance regarding recommended vaccination and post exposure to needle prick injuries.

RESULTS

A total of 50 respondents completed the questionnaire. Out of 50 respondents 96% were up to date with four routine vaccines recommended by MoHFW, GOI under UIP viz.BCG, MMR, Polio and DPT. 94% respondents have also received Hepatitis B. Considering Hepatitis B Vaccination 8% have received first dose, 12 % have received second dose, 44% have received third dose and 30% have received booster dose as well however 6% have not taken HBV vaccine. After receiving complete course of Hepatitis B vaccine only 14% respondents checked Anti HBS Antibody level. Respondents who did not check for Anti HBs antibody level, 46% of them thought it is not important for them; for 28% Test was not available and cost was too high for 8% respondents. Annual influenza vaccine was not received by 92%. Respondents who did not receive Influenza vaccine out of them 62 % thought it is not important; Vaccine was not available for 22% respondents and cost of vaccine was too high for 8% respondents. Regarding chickenpox vaccine, 68% Respondents have received it in childhood whereas 31% did not receive the same as depicted in Table I.

Table I. Information about recommended vaccination:

Questions	Responses	Frequency	Percentage
Are you up to date with your routine (BCG, MMR, Polio, DPT) vaccination?	Yes	48	96
	No	0	0
	Partial	1	2
	Don't Know	1	2
Hepatitis –B vaccination: Did you receive a complete course of Hepatitis –B vaccine?	No	3	6
	Dose 1	4	8
	Dose 2	6	12
	Dose 3	22	44
	Booster	15	30
Did you check your Hepatitis –B antibody (Anti HBs Antibody) level after the complete course of Hepatitis –B vaccination?	Yes	7	14
	Don't think it's important	23	46
	Test not available	14	28
	Cost too high	6	12

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Questions	Responses	Frequency	Percentage
Influenza (Flu) – Do you get your annual Flu vaccine?	Yes	4	8
	Don't think it's important	31	62
	Vaccine not available	11	22
	Cost too high	4	8
Have you had chicken-pox in childhood?	Yes	34	68
	No	16	32

Table II depicts awareness about Post Exposure Prophylaxis. Considering the risk of transmission of blood borne viruses (HIV, Hepatitis B, Hepatitis C) after needle stick (injection needle) injury; 84% responded it to be High Risk, 14% responded Low Risk. 60% Respondents are aware of protocol for post exposure prophylaxis and follow up. After needle stick injury incident 18 % followed up on day zero, 6% followed on six weeks, 12% followed up on 3 months ,4% followed up on 6 months whereas 60% did not follow up after the same incident.

Table II. Information about post exposure prophylaxis

Questions	Responses	Frequency	Percentage
How do you perceive the risk of transmission of blood borne viruses (HIV, Hepatitis-B, and Hepatitis –C) after needle stick (injection needle) injury?	High Risk	42	84
	Low Risk	7	14
	No Risk	0	0
	Doesn't Matter	1	2
Have you got written protocol/ policy or are you aware of protocol for post exposure prophylaxis and follow up?	Yes	30	60
	No	20	40
Is there any proper follow up of needle stick injury incident?	No	30	60
	At Day 0	9	18
	6 weeks	3	6
	3 months	6	12
	6 months	2	4

Table III depicts awareness of respondents regarding health of staff they are working with in different departments of postings. Considering the overall percentage of staff members who have received complete course of Hepatitis B vaccination according to respondents; 2% responded staff to be completely vaccinated, 46% responded 50-75% of the staff is vaccinated, 14 responded less than 50% staff is vaccinated, 32 % respondents are not sure about the vaccination of staff whereas 6% responded staff is not vaccinated for hepatitis B. Main reasons for not having policy/protocols for prevention of occupational health risk of transmission of infectious diseases t respondents and their staff; 12% respondents perceived it as low risk, for 8 % cost was factor and 80% responded lack of awareness.

Questions	Responses	Frequency	Percentage
What percentage of your staff members has received a complete course of Hepatitis-B vaccination?	None	3	6
	< 50%	7	14
	50- 75%	23	46
	100%	1	2
	Don't know or not sure	16	32
What are the main reasons for not having policy /protocol for prevention of occupational health risk of transmission of infectious diseases to you and your staff?	Perceived low risk	6	12
	Cost	4	8
	Lack of awareness	40	80

Table III. Information about Staff Health

DISCUSSION

Burden of occupational disease is increasing at an unprecedented rate. In 1985, to increase awareness among health care workers regarding the dangers of sharp injuries and other types of disease transmission, the Centers for Disease Control (CDC) and the Occupational Safety and Health Administration (OSHA) in the United States introduced the "Universal Precaution Guidelines, "which have become the worldwide standards in both hospital and community care settings.(6)

While assessing the immunization status of the Interns at a tertiary general hospital, our study identified 96% were up-to-date with their routine vaccination of BCG, MMR, Polio, DPT vaccines.

Baseline information regarding the immunization status of interns against hepatitis B was collected. It was observed that only 44 % interns had completed the three-dose HBV vaccination schedule. 8% have received first dose, 12 % have received second dose, 44% have received third dose and 30% have received booster dose as well but 6% have not taken HBV vaccine. Comparing to a study done by Acharya et al, 66.3% were completed three doses, 21.8% were partially immunized with either one or two doses, and remaining 11.9% were not immunized against hepatitis B. (7) Awareness regarding the checking the Anti HBs antibodies after complete vaccination of HBV was very poor as 86% interns did not check for it. Surprisingly 46% think that it is not important whereas Unavailability of the test (28%) and cost (12%) too remains other important factors for the same. More emphasize on awareness of the same should be implemented.

Annual Flu vaccine has been received by only 8% interns. However, from recent data in the USA, only 22% of Health Care Workers reported having received the vaccine. And 34.8% health care workers received in Hong Kong.

However, Health professionals are known to resist being vaccinated against influenza. That was confirmed by our study, where just 8% of interns had received the influenza vaccine last season. HOFMAN et al. found that the most common reasons for refusal were: fear of adverse effects, misconception that vaccination can cause influenza and unsuitable time/locations of vaccination - the third reason was the most common amongst medical house staff and students as compared to our study interns again thought it is not important followed by vaccine was not available and cost was too high. (3) Majority 84% of interns had perceived high risk regarding mode of transmission of blood borne viruses in the present study. Similar findings by Magdy et al.(9) and Singh et al.(10) among medical students, revealed that 77.7% and 86.7% of students had correct knowledge regarding mode of transmission of same respectively. Another study done by Kasetty et al.(11) among dental professionals, showed that 82.1% had correct knowledge regarding the mode of transmission. Whereas a study done by Khan et al.(8) among medical students of Karachi, found that only 57.1% had correct knowledge regarding the same.

Since 60% of the intern are aware of protocols for post exposure prophylaxis and follow up but there are no proper follow up of 60% interns after needle prick injuries. As medical interns are at increased risk of acquiring needle stick injury and increased prevalence rate of hepatitis B in India, interns should be routinely vaccinated upon entry into the medical institutes.(12)

Staff at Tertiary Hospital is at a greater risk at contracting blood borne diseases due to their constant contact with blood, body fluids, or sharps contaminated with blood. In the present study we found that 50-75% of staff has received complete vaccina-

tion of Hepatitis B. In a similar study conducted by Singhal et al., in 2011 they found that a significant number (41.7%) of Health Care Workers were unvaccinated even at an apex healthcare center.(13)

Main reason for not having policy/protocol for prevention of occupational health risk of transmission of infectious diseases to intern and staff is Lack of awareness.(80%) Hepatitis B vaccination protocol and needle stick injury prophylaxis are collated in Tables IV and V, respectively (14,15).

Table IV.

The vaccination schedule most often used has been three intramuscular injections. The following timing of injections are	
1st dose	At elected date
2nd dose	4–10 weeks after the 1st dose
3rd dose	1–5 months after the 2nd dose
Dosage and administration	
Paediatric dose vaccine: 10 µg dose (in 0.5 ml suspension) is recommended for neonates, infants, and children up to 10 years of age	
Adult dose vaccine: 20 µg dose (1.0 ml suspension) is recommended for adults and children above 10 years of age	
Booster dose	
It would seem advisable to recommend a booster dose when the anti-HBs antibody titer falls below 10 IU/L, particularly for all people at risk	
After the 0, 1, and 6 month primary immunization schedule a booster dose may be required 5 years after the primary course	

Table V.

Vaccination and antibody response status of exposed AHCWs[a]	Treatment (source)		
	HBsAg[b] positive	HBsAg[b] negative	Unknown or not available for testing
Unvaccinated	HBIG[c] ×1 and initiate HB vaccine[d] series	Initiate HB vaccine[d] series	Initiate HB vaccine[d] series
Previously vaccinated			
Known responder[e]	No treatment	No treatment	No treatment
Known non-responder[f]	HBIG×1 and initiate re-vaccination or HBIG×2[g]	No treatment	If known high risk source, treat as if source were HBsAg positive
Antibody response unknown	Test exposed person for anti-HBs[h] If adequate, no treatment is necessary If inadequate[i] administer HBIG×1 and vaccine booster	No treatment	Test exposed person for anti-HBs If adequate,[j] no treatment is necessary If inadequate,[i] administer vaccine booster and recheck titer in 1–2 months

Persons who have previously been infected with HBV or immune to workplace oral blood require post exposure prophylaxis. [b]Hepatitis B surface antigen. [c]Hepatitis B immunoglobulin, dose 0.06 ml/kg intramuscularly. [d]Hepatitis B vaccine. [e]A responder is a person with adequate levels of serum antibody to HBsAg (i.e. anti-HBs≥10 mIU/ml). [f]A non-responder is a person with inadequate response to vaccination (i.e. anti-HBs<10 mIU/ml). [g]The option of giving one dose of HBIG and revaccinating the vaccine series is preferred for non-responders who have not completed a second three dose vaccine series. For persons who previously completed a second vaccine series but failed to respond, two doses of HBIG are preferred. [h]antibody to HBsAg. AHCW = Auxiliary healthcare worker

CONCLUSION

Considering the results which we have obtained from this study, we would like to suggest that, all medical interns should undergo a comprehensive training program regarding awareness of occupational health risks and vaccination coverage, reflecting the need for motivational policies, through activities for clarification and expansion of vaccination coverage. However it needs a larger study to enlighten this topic.

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