Prevalence of Hepatitis B Vaccination among Oral Health Care Personnel in Mysore City, India

Veera Reddy[1], Darshana Bennadi[2], Nandita Kshetrimayum[3], C.V.K. Reddy[7], Satish G[5], Umashankar Kura[4], Guruprasad Yadavalli[6]

[1]Senior dental health officer, General hospital, Molkalamuru, Chitradurga District, Karnataka, India. [2]Senior Lecturer, Department of Public Health Dentistry, Sree Siddhartha Dental College and Hospital, Tumkur, India. [3]Assistant Professor, Department of Public Health Dentistry, Regional Institute of Medical sciences, Dental College, Lamphelpat, Imphal, West Manipur, India. [4]Professor and Head, Department of Public Health Dentistry, J S S Dental College and Hospital, Mysore, India. [5]Reader, Department of Conservative and Endodontics, Darshan Dental College & Hospital, Udaipur, Rajasthan, India. [6]Reader, Department of Orthodontics, Government Dental College & Research Institute, Bellary-583101, Karnataka, India. [7]Reader, Department of Oral & Maxillofacial Surgery, AME'S Dental College Hospital & Research Centre, Raichur-584103, Karnataka, India.

Abstract

Background: The transmission of blood borne virus in health care workers is a potential occupational hazard to patients as well as to the Oral Health Care Personnel (OHCP). Hepatitis B remains a serious threat to dental team. To assess the vaccination status and post vaccination antibody status of oral health care personnel against Hepatitis B virus (HBV) infection.

Subjects and Methodology: Descriptive Cross-sectional questionnaire study was conducted among the oral health care personnel of Mysore city.

Results: Out of 300 oral health care personnel 256 (85.4%) were vaccinated for HBV infection and 44 (14.6%) had not taken vaccination. Highest frequency of vaccination was seen among dentists and least amongst dental lab technicians and other workers. This difference was highly significant among the different occupation groups (p= 0.001).

Conclusion: Majority of the OHCP of Mysore city have been vaccinated. Among them, dentists formed the majority group of vaccinated. But there was ignorance and less awareness regarding Hepatitis B vaccination among dental lab technicians and other workers like dental assistants and cleaning staff. Awareness amongst OHCPS against Hepatitis B vaccination has increased significantly over the years, but there are few who do not intend to get vaccinated.

Key words: Viral hepatitis, Vaccination, Oral health care personnel

Introduction

Viral hepatitis is one of the five important infectious causes of premature death in the world. At least one million people die from hepatitis in the world yearly, about 2 billion patients are suffering from hepatitis B, and there are more than 350 million carriers in the world. About 75% of carriers were found in Asia and India with prevalence rate of 2-8%. [1]. In India, HBsAg prevalence among the general population ranges from 2 to 8%, which places India in an intermediate HBV endemicity zone and India with 50 million cases, is also the second largest global pool of chronic HBV infections. Among healthcare workers seroprevalence is two to four times higher than that of the general population [2].

The majority of the infections are sub-clinical, so that 80% of all infections are undiagnosed. It has been demonstrated that patient medical histories are unreliable in indentifying exposure to Hepatitis B Viral infection (HBV). So regardless of the medical history, all patients should be therefore to be regarded as potential carrier [3].

Healthcare workers have a high risk of occupational exposure to many blood-borne diseases including HIV, Hepatitis B, and Hepatitis C viral infections. Transmissibility of Hepatitis B is dependent on virus concentration and can change in the different stages of the disease. Therefore in some disease stages Hepatitis B may actually be less transmissible than other blood-borne diseases. In developing countries, Hepatitis B vaccination coverage among healthcare workers is very low for various reasons, including awareness, risk assessment, and low priority given by the health managements of both government and private hospitals. Most of the hospitals need to implement post-exposure management strategies including the coordination among various departments for reporting, testing, and vaccination [2,3].

Dentists, dental hygienists, assistants, laboratory technicians, secretarial staff, and cleaning staff are all at risk from cross infection, several studies have shown that the risk of exposure to HBV for general dentists is about three to four times greater, and for non-immunized surgical specialists about six times greater than that of the general population [4,5].

The transmission of blood borne virus in health care workers is a potential occupational hazard to patients as well as to the oral health care personnel. The staff of health providing services should be familiar not only with treatment but also with epidemiological aspects of diseases such as transmission, prevention and control [6]. There is little recent data on the awareness, acceptance and uptake of the vaccine amongst oral health care personnel in Mysore city. Hence the present study has been undertaken with aim to assess the awareness of vaccination and post vaccination antibody status of oral health care personnel against Hepatitis B virus (HBV) infection in Mysore city, India.

Subjects and Methodology

Descriptive cross sectional questionnaire based survey was

Corresponding author: Darshana Bennadi, Department of Public Health Dentistry, Sree Siddhartha Dental College and Hospital, Tumkur, India; Tel: +91-9164984840; e-mail: darmadhu@yahoo.com

conducted among dentists, staff nurse, dental hygienists, dental lab technician and dental assistants who had been working least two months in Mysore city. Mysore city has two dental colleges and 250 registered dental clinics (IDA branch). 300 oral health care personnel included in the study by convenience sampling method (Lottery method) and who gave the informed consent with response rate of 72%. Questionnaire was printed in English and Kannada. A pilot study was conducted on 25 oral health care personnel to assess the validity of the questionnaire who were not included in the later study. Permission to conduct the survey was obtained from the Principals of the respective colleges and informed consent was obtained from the participants.

Ethical clearance was obtained from the institutional ethical clearance committee and all the participants of the study were approached on one particular day at their respective places; the purpose of the survey was explained. The questionnaire covered general information like age, gender, employment position and place of work, years of practice and information about knowledge regarding hepatitis B, status of vaccination, post vaccination antibody status for Hepatitis B. Questions were explained whenever necessary and they were given assurance regarding confidentiality of their responses and requested to give correct answers by completing it individually and filled questionnaires were collected on consecutive day. Second visit was made to involve those who were not available on first visit and again the same procedure was followed.

Collected data (questions) were coded for ease of calculation and analyzed with help of a computer using SPSS for windows 16 Software. Appropriate statistical tests such as Percentage distribution and Chi- square were used to derive any significant differences among the responses given by oral health care personnel. The significance level was set at $p < 0.05$.

Results

A total of 300 filled questionnaires were collected from oral health care workers of Mysore city with response rate of 72%. Most of the OHCP working in teaching institutions which is accounted to 50.0%, private clinics 26.6% and in both teaching institution and private clinics 23.4%. Among them majority (68.7% (n = 206)) were dentists followed by hygienists (*Table 1*).

Table 1. *Distribution of Respondents with respect to Age, Gender, Designation, and Place of work in Mysore city.*

Socio demographic characteristics	Number	Percentage
Age		
20 -25yrs	**79**	**26.3%**
26 -30yrs	**114**	**38.0%**
31 -35yrs	**56**	**18.7%**
35+	**51**	**17.0%**
Gender		
Male	**148**	49.3%
Female	**152**	50.3%
Designation		
Dentist	**206**	68.7%
Staff nurse	30	10 %
Lab teach	24	8.0%
Hygienist	**10**	3.3%
Others	**30**	10.0%
Place of work		
Institution	**150**	50.0%
Clinic	**80**	26.6%
Both	**70**	23.4%

The awareness of OHCP towards Hepatitis B vaccination was good. Most of the participants were unaware about the doses left or to be taken. Out of 300 oral health care personnel, 256 (85.4%) were vaccinated against HBV infection and 44 (14.6%) had not taken vaccination. Among the vaccinated group, 93.7% (240) had completed vaccination course, 6.3% (16) partially completed vaccination course. Among those who had partially completed the vaccination course, six OHCP had received one dose and remaining ten had received two doses of vaccination (*Figure 1*).

Highest frequency of vaccination was seen among dentists, followed by staff nurses, hygienists and least amongst dental lab technicians and other workers like dental assistants and sweepers. This difference in frequency statistically highly significant among the different occupation groups (p= 0.001) (*Figure 2*).

Highly significant difference was between those OHCP who checked post vaccination Hepatitis B antibody titers and not checked (P<0.001) (*Figure 3*). Out of 17.1% who checked post vaccination Hepatitis B antibody titers majority were dentists (90%) followed by staff nurse.

Discussion

Oral health care workers have a greater probability of acquiring

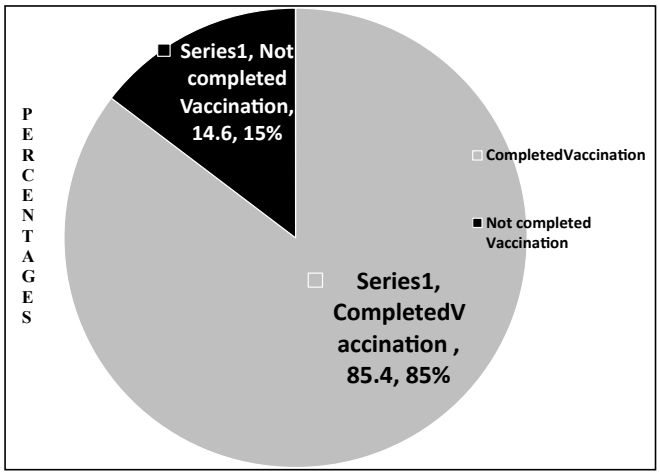

Figure 1. *Vaccination Status of Oral Health Care Personnel.*

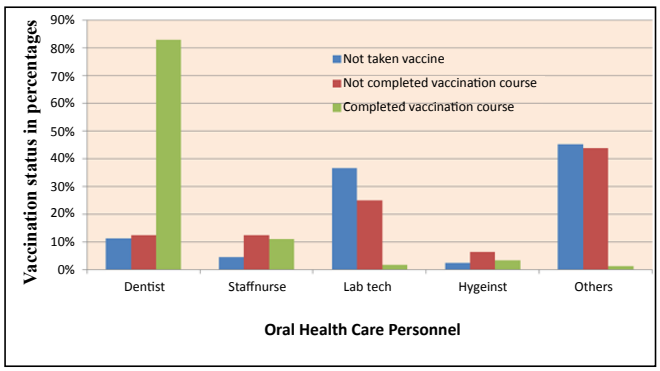

Figure 2. *Vaccination Status among Different groups of Oral Health Care Personnel.*

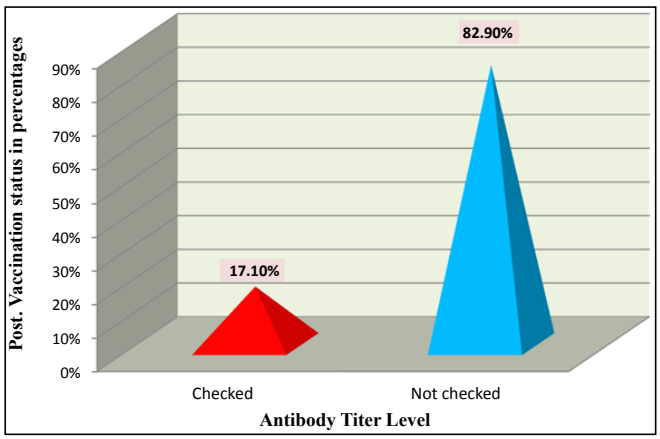

Figure 3. *Status of Post Vaccination Hepatitis B Antibody Titer Level among Oral Health Care Personnel.*

Hepatitis B infection, because they are occupationally exposed. The need for vaccination against this disease should be considered as a priority.

Our study revealed that among the 300 OHCP, 85.4% (256) were vaccinated and 14.6% had not taken vaccination. This was in agreement with a study conducted by Paul et al. [7]. There was significant difference in rate of vaccination in various working groups, the highest vaccination rate among was dentists (99%) followed by nursing staff (93%) and dental lab technician (67%) and least among others (56%). The dental lab technicians and other staff were not aware and were ignorant about HBV. The reason for increased awareness among dentist and staff nurse could be attributed to the compulsory vaccination as per the hospital policy.

This study reported that reason for not receiving or discontinuing vaccination was just ignorance and high cost. This observation was in agreement the other studies [8-11]. The Center for Disease Control (CDC) guidelines recommended that post vaccination antibody test was must after 1-2 months after completing three dose regimen of Hepatitis B vaccination [12,13].

The present study results showed that majority of OHCP (199 (82.9%)) did not get their antibody titer measured in spite of full vaccination course. These findings are somewhat similar to those western based studies in which post vaccination testing were not carried [13,14]. In these studies, the most frequently quoted reason amongst the dental health care workers for not checking the post vaccination Hepatitis B antibodies status was ignorance followed by incomplete vaccination, whereas our study showed it was non availability of checking facilities and the high cost. Our study showed that majority of the dentists checked post vaccination Hepatitis B antibodies titer. Moreover, the facility of post vaccination anti-HBs titers on as a routine procedure may not be accessible to all OHCP.

Conclusion

Majority of the OHCP of Mysore city have been vaccinated. Among them, majority were dentists. But there was ignorance and less awareness regarding Hepatitis B vaccination among dental lab technicians and other workers like dental assistants and sweepers.

Awareness amongst OHCPS against Hepatitis B vaccination has increased significantly over the years, but there are few who do not intend to get vaccinated. Health care center is a source of viral transmission. There are many reports of HBV infections acquired through infected surgeons, dentists, nurses, equipments used and needle stick injuries. Hepatitis B is a preventable disease and the students and other health care workers of medical sciences have an effective role in its prevention.

Recommendations

- Vaccination to hepatitis B infection must be made mandatory before admission to medical universities, and also before employing any staff in hospital of any cadre
- Post vaccination antibody status should be checked to identify vaccination failure.
- All the OHCP should be educated and motivated regarding post-vaccination serology.
- Nationwide guidelines for barrier techniques and Hepatitis vaccinations should be developed through educational interventions aimed at reducing the risk of cross contaminations during practice.
- Routine screening and immunization against Hepatitis B should be made for the dentists and dental auxiliary personnel who are most potent risk group. Periodic monitoring should also be given utmost importance.

References

1. Porter S, Scully C, Samaranayake L. Viral hepatitis. Current concepts for dental practice. *Oral Surgery, Oral Medicine, Oral Pathology*. 1994; **78**: 682-695.

2. Singhal V, Bora D, Singh S. Hepatitis B in health care workers: Indian scenario. *Journal of Laboratory Physicians*. 2009; **1**: 41-48.

3. Goebel WM. Reliability of medical history in identifying patients likely to place dentists at an increased hepatitis risks. *The Journal of the American Dental Association*. 1979; **98**: 907-913.

4. Cottone JA. The global challenge of hepatitis B implications for dentistry. *International Dental Journal*. 1991; **41**: 131-141.

5. Cottone JA, Molinari JA. Hepatitis B vaccine: An update. *The Journal of the Californian Dental Association*. 1989; **17**: 11-12.

6. Vaswani AS, Shaikh NA, Bhatty SA. Hepatitis B vaccination status among health care workers at civil hospital Karachi. *Medical Channel*. 2010; **16**: 45-51.

7. Paul T, Makatabi A, Alamas K. Hepatitis B awareness and attitudes amongst dental health workers in Riyadh, Saudi Arabia. *Odonto Stomatologo Tropicale*. 1999; **86**: 9-12.

8. Chartres L. Guidelines on immunisation against hepatitis B--the effects on dental health care workers. *British Dental Journal*. 1995; **178**: 312-315.

9. Foster T, Hon H, Kanwal F, Han S, Spiegel B. Screening high risk individuals for hepatitis B: physician knowledge, attitudes, and beliefs. *Digestive Diseases and Sciences*. 2011; **56**: 3471-3487.

10. Samaranayake LP, Scully C, Dowell TB, Lamey PJ, MacFarlane TW, Matthews RW, McDonald KC. New data on the acceptance of the hepatitis B vaccine by dental personnel in the United Kingdom. *British Dental Journal*. 1988; **164**: 74-77

11. Hu Y, Dai X, Zhou YH, Yang H. A knowledge survey of obstetrics and gynecology staff on the prevention of mother-to-child transmission of hepatitis B virus. *The Journal of Infection in*

Developing Countries. 2013; **7**: 391-397.

12. Lee H, Kiang P, Watanabe P, Halon P, Shi L, Church DR. Hepatitis B virus infection and immunizations among Asian American college students: infection, exposure, and immunity rates. *The Journal of American College Health*. 2013; **61**: 67-74.

13. Wallace J, Hajarizadeh B, Richmond J, McNally S. Challenges in managing patients in Australia with chronic hepatitis B: the General Practitioners' perspective. *Australian and New Zealand Journal of Public Health*. 2013; **37**: 405-410.

14. Tellalian D, Maznavi K, Bredeek UF, Hardy WD. Pre-Exposure Prophylaxis (PrEP) for HIV Infection: Results of a Survey of HIV Healthcare Providers Evaluating Their Knowledge, Attitudes, and Prescribing Practices. *AIDS Patient Care and STDs*. 2013; **27**: 553-559.