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Prevalence of HIV and Hepatitis-B in the Out Patient Department of a Private Dental College Hospital Chennai, India

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Abstract

Acquired Immunodeficiency syndrome caused by the Human Immunodeficiency virus is greatly prevalent in the Indian subcontinent. Hepatitis-B is another condition that is affecting the population. Healthcare professionals are at an increased risk of being exposed to such pathogenic infections. Having adequate knowledge towards the infection and appropriate preventive equipment such as vaccinations, masks, gloves is crucial in preventing spread of infection. The current study assessed the prevalence of HIV and hepatitis-B conditions among the out patients visiting Saveetha Dental College. The study was performed in the out patient department of Saveetha Dental College, Chennai, India. Data required for the study was procured by reviewing patient records and analysed data of 86000 patients between June 2019 to March 2020. The data was sorted in excel and statistically analysed using the IBM SPSS software analysis and the results tabulated. A prevalence rate of 3.2% was observed with regard to hepatitis-B in this study. The study showed female predilection with the mean age of this study being 41yrs. Prevalence of HIV was not observed in this study.Healthcare professionals are at high stake of infection due to occupational exposure. Proper clinical examination, history of the patient, preventive gear, vaccination and sterility protocols must be ensured to minimize the spread of infection.

Keywords *: HIV ; hepatitis-B ; occupational exposure ; healthcare ; vaccination ; PPE*

Introduction

Acquired immunodeficiency syndrome (AIDS) is a chronic, contagious and debilitating disease caused by Human Immunodeficiency Virus[1]. HIV infections were first detected in Chennai, India among the female sex workers[2,3]. India harbours about 5.134million individuals affected by AIDS currently [4,5]. AIDS is mainly said to spread via the sexual contact but can also spread through body fluids. Antiretroviral treatment has aided in transforming AIDS from an inevitably fatal disease condition to a manageable disease in some aspects [6,7]. The current developments towards the field of HIV management include Enzyme Linked ImmunoSorbent Assay, Polymerase Chain Reactions etc.[8,9]. However there is an increased necessity for a powerful tool for diagnosis, management of HIV [10,11]. The risk of transmission of this disease from an affected individual to an oral healthcare professional during the course of treatment is high as they are in close proximity to the affected individual.

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Hepatitis-B is an inflammatory condition of the liver commonly caused due to a viral infection [12,13]. Other possible causes of hepatitis include autoimmune hepatitis, hepatitis that occurs as a secondary infection due to intake of drugs and toxins, alcohol. Three types of hepatitis are well identified namely, A, B, C with the B and C types having an increased rate of occurrence . About 325 million carriers of hepatitis-B, have been identified worldwide with a death rate of 1.34 billion [14].Today viral hepatitis has become a silent epidemic and is the major cause of conditions such as liver cirrhosis and liver carcinoma [15]. In a dental practice the spread of infection from an affected individual can be expedited through various routes including, direct and indirect contact with body fluids such as blood, saliva, droplet splatter, aerosols etc [16]. Studies show that patients with periodontal diseases show higher detectability of surface antigen of HBV in whole unstimulated saliva [17,18]. The magnitude of prevalence of hepatitis-B has increased ten times in the past ten years, however the prevalence of it in dental practice in India is comparatively low, about 0.3% [19]. Occupational exposures should be reported immediately to prevent further collateral damage. Dental care professionals are at an increased risk of cross infection while treating patients [20]. Aerosols are also capable of spreading pathogens from clinician to patient and vice versa [21,22]. It is important to create awareness among dental students regarding hepatitis-B vaccines, as there is possibility of exposure in dental clinics to various sources of infection [23]

Standard precautions are imperative and a prerequisite for all patients and especially in individuals having hepatitis-B/AIDS. Dental personnel should wear the barrier protective gear, which includes the gloves, mask and protective eyewear whenever there is a potential for contact with body fluids, non-intact skin, or mucous membranes [24].

The individuals affected by the above conditions tend to show features pertaining to each, hence it is imperative of the clinician to take a thorough history of the patient and examine the patient carefully if any suspicion arises.

The aim of this study focuses on the prevalence of HIV and hepatitis-B in the out patient department of Saveetha Dental College.

Materials and Methodology

The study was performed in the out patient department of saveetha dental college, under a university setting. It was a retrospective study. Ethical approval was obtained from the institutional committee (ethical approval number : SDC/SIHEC/DIASDATA/0619-0320). Data required for the study was procured by reviewing patient records and seanalysed data of 86000 patients between June 2019 to March 2020. The sample size of the study n=485. Verification of the data was done in the presence of an external reviewer, procedure notes, medication history, lesion photographs and blood test reports. Stratification and randomization was done to minimise any sampling error. Incomplete data was excluded.

The collected data was sorted, tabulated in excel and assessed for the following parameters namely Age ,Gender , presence or absence of HIV ,presence or absence of Hepatitis-B and specially referred cases.

The sorted data was then entered in the IBM SPSS software and descriptive analysis performed. The results were interpreted in graphs.

Results and Discussion

The total number of patients in this study was 485. Among them the prevalence of hepatitis-B was found to be 3.2%, that is 15 out of the study population tested positive for hepatitis-B. The prevalence of HIV was not observed in this study [GRAPH 1]. The mean age of the study population in association with hepatitis-B was observed to be around 41yrs. The gender distribution of the study shows a female predilection in association with hepatitis-B, with 60% of the tested individuals being females and 40% of the individuals being males [GRAPH 2]. The speciality referred to testing positive for such systemic diseases in this study show that the Oral Medicine department is frequented by a rate of 93.33%, followed by the Oral Surgery department at the rate of 6.67% [GRAPH 3]. Chi square statistical analysis performed and the p-value was obtained to be 0.000, which was statistically significant.

Pervasive increases in serious transmissible diseases such as hepatitis-B and HIV over the last few decades have created global concern and affected the treatment approach of all healthcare practitioners [25,26]. Serious infections such as hepatitis-B and human

immunodeficiency virus (HIV) are transmitted in dental practice through percutaneous injuries [27,28]. Infections may be transmitted in the dental operatory through several routes, most dentists believe that the diseases are acquired via a cut in the fingers contaminated by the affected individual's saliva or blood thus paving a way for the entry of the pathogenic organism [29,30].

Prevalence of HIV was not observed in this study. Previous literature cites that 0.4% chances of prevalence of HIV in healthcare professionals, claim a 0.5% rate of prevalence of HIV among dental professionals due to transmission from affected individuals [31,32]. Studies also cite that there is a high prevalence of HIV cases across all regions of India except the Southern region [33]. The focus of World Health Organisation with regard to information, education, and communication activities has been directed towards stimulating safe behaviors, reducing the HIV stigma and discrimination and demanding generation of HIV/AIDS services. Dental health care providers may be exposed to many microorganisms via blood, oral or respiratory secretions. Though the risk of transmission of HIV in dental settings is low, the repercussions of being infected are life threatening. Therefore, high standards with regard to infection control and waste disposal are essential in managing occupational contagion and cross infection. Our study findings are not in concordance with literature, this can be attributed to factors such as patient consent, sample size, uneven distribution, unicentric study, unbiased data, physician referral, patient conditions, private college study setting.

Prevalence of hepatitis-B in this study was observed to be 3.2%. Previous literature cites similar findings, 2% of the screened population is hepatitis-B positive, 3.9% prevalence rate of hepatitis-B in the North Indian population [34,35]. Our study results are in concordance with the literature.

The mean age of our study obtained in association with hepatitis-B was 41yrs. Previous literature also cites similar findings, average age of the patients screened 40years, majority of patients screened reported to be about 40yrs [36]. Our study findings are found to be in concordance with the literature citations. This may be due to various factors such as obesity with increase in age, immunosuppression with rising age thereby down in barrier for disease entry, habits such as alcoholism, smoking, lifestyle etc.

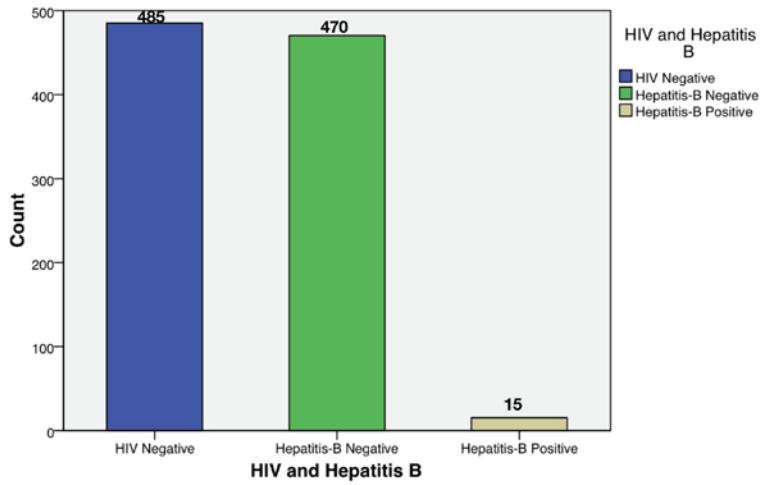
The gender distribution in this study shows a female predilection for hepatitis-B. Previous literature findings differ, cite hepatitis-B infection more frequent in males compared to females [37]. The association between gender and hepatitis-B in this study was found to be statistically significant (Chi square test, p value = 0.000) In an attempt to explain the disparity among the genders, suggestions have been made that lifestyle choices, such as drinking, smoking or even how much water a person drinks, might be the reason. Prevalence of HBV infection in males as compared to females may be due to them being employed outside their homes, wider span of exposure and contact with public, visiting salon/barber shops as well as their involvement in blood transfusion practices, while women are mostly involved in household activities, although there is an increasing number of working women in these years, based on the social, cultural and religious preferences and influence women are attributed to less contact compared to males and hence unlikely to get hepatitis-B compared to males. Our study findings are not in concordance with the literature. This can be attributed to reasons such as unbiased data, patient's consent, physician referral, unicentric study, geographical distribution and sample size.

The individuals infected with hepatitis-B are referred from the undergraduate clinics to the speciality care to assist them and narrow down the exposure spectrum across patients. Our study results point, Oral Medicine department having an exposure rate of 3% of the prevalent 3.2%, while 0.2% of the cases are referred to the Oral Surgery department. Previous literature findings report, Oral medicine department professionals are at high risk of exposure [38,39,40,41]. Our study findings are in concordance with the literature.

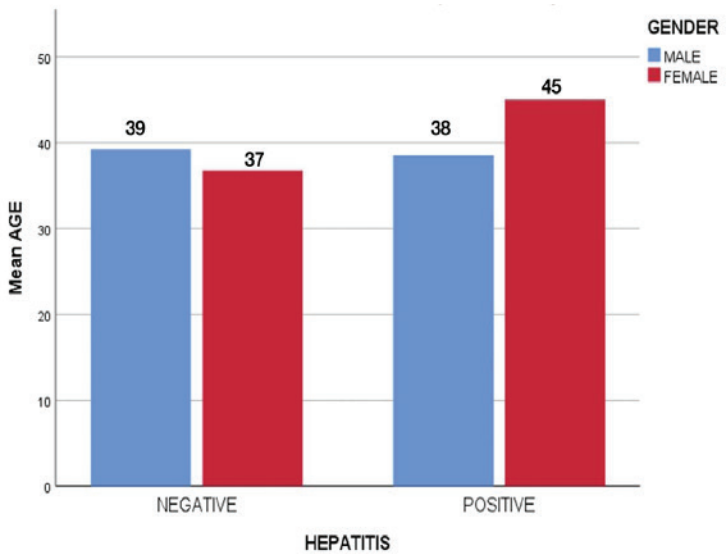
Dental surgeons have a great risk of exposure to these diseases due to the numerous encounters which involve use and disposal of sharp instruments and aerosol emitting handpieces and scalers. Every health care speciality that involves contact with mucosa, blood or blood contaminated with body fluids, must have proper protocols of ensuring compliance with standard precautions and other methods to minimise infection

risk, smaller sample size, geographical location, unequal distribution, incomplete data excluded, unicentric study.

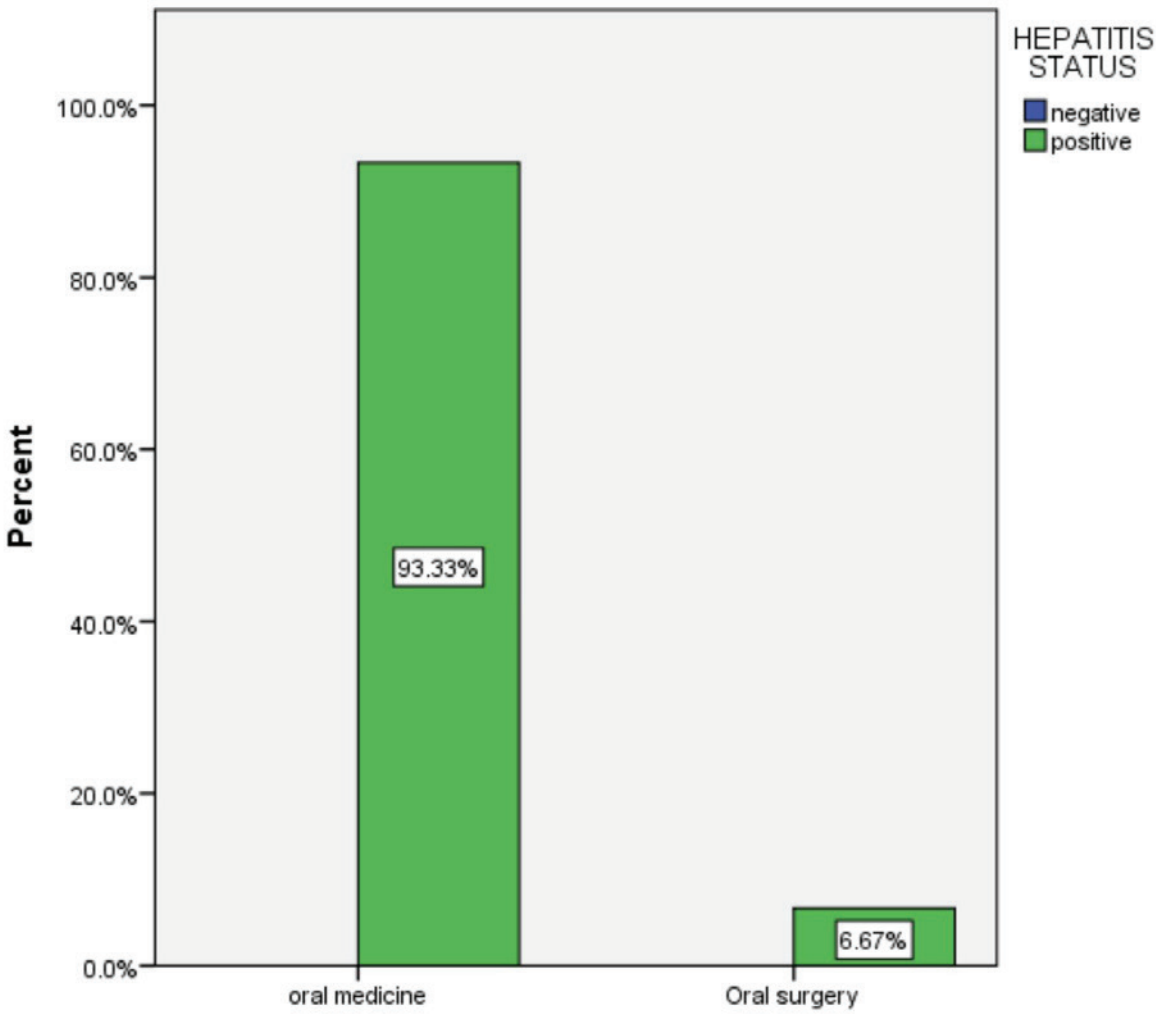
The existing rate of prevalence in dental offices is of concern. Clinical examination to reveal any lesion or oral manifestation of a disease, precautionary protective equipment, knowledge of identification of affected individuals, management of the patients and necessary vaccinations, disinfection and sterility protocol maintenance is imperative for a dental surgeon.



Graph 1: Bar chart depicting the distribution of hiv and hepatitis-b, the y-axis represents the number of individuals, x-axis represents the status of hiv and hepatitis-b as observed in this study, green denotes the number of individuals who tested negative for hepatitis-b, brown denotes the number of individuals who tested positive for hepatitis-b and blue denotes the number of individuals who tested negative for hiv. Prevalence of hiv was not observed in this study. Prevalence of hepatitis b was found to be present in this study.



Graph 2 : Bar chart depicting the gender distribution in association with hepatitis-b positive individuals, the x-axis represents status of hepatitis-b among the study population, y-axis represents the mean age of the study population, red denotes the number of females and blue denotes the number of males. An overall female predilection for hepatitis-b was observed in this study. This was statistically significant (Chi square test; p-value = 0.000 - significant)



Graph 3 : Bar chart depicts the speciality referred for dental treatment of hepatitis-b positive individuals in association with hepatitis-b positive individuals as observed in this study, x-axis represents the speciality referred to for treatment, y-axis represents the percentage of individuals referred to each speciality, green codes for positive cases referred to each speciality. Oral medicine speciality had more referred cases for treatment compared to Oral surgery speciality in this study. This was statistically significant (Chi square test; p-value = 0.000 - significant)

Conclusion

Within the limitations of this study, the prevalence of hepatitis-b was observed to be 3.2%, with the mean age of the study being 41yrs, showing a female predilection. The Oral Medicine speciality was found to have been the choice of referral for treatment of the affected individuals. Prevalence of HIV was not observed in this study. However any institution should be aware of these transmissible diseases and should ensure proper protocols and precautions when treating these patients.

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Conflict of Interest : None declared.

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