

**Viral Infections vis-a-vis the Significance of Case History for Diagnosis and Prevention in Dental Clinical Settings**<sup>1</sup>Dr. Shibin Shaju, <sup>2</sup>Dr Saquib Mulla, <sup>3</sup>Dr. Nidhi Poothulil, <sup>4</sup>Dr. Harjit Kalsi**Corresponding author:** Dr. Shibin Shaju**Citation of this Article:** Dr. Shibin Shaju, Dr Saquib Mulla, Dr. Nidhi Poothulil, Dr. Harjit Kals, “Viral Infections vis-a-vis the Significance of Case History for Diagnosis and Prevention in Dental Clinical Settings”, IJDSIR- May - 2020, Vol. – 3, Issue -3, P. No. 516 – 524.**Copyright:** © 2020, Dr. Shibin Shaju, et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.**Type of Publication:** Original Research Article**Conflicts of Interest:** Nil**Abstract**

**Introduction:** This study is inspired by the recent COVID-19 pandemic, which has caused loss to life and health of millions of people all over the world and the risk it poses to those at the frontline, the healthcare personnel. Moreover worldwide, nearly 2 billion people are infected with hepatitis B, C, D and transfusion-transmitted virus, 360 million have chronic infection, and 600,000 die each year from HBV-related liver disease or hepatocellular carcinoma. The oral cavity as being an ‘open gate’ of the human body comprises an appropriate field for the establishment of varying infections.

**Objectives and Aim:**

This study aims to demonstrate the significance of hygiene protocols and anamnesis in the practice of dentistry. However, the point of departure for this study is to establish the significance of prevention of viral infections, especially through usage anamnesis, such as the medical history of HBV and travel history of patients in dental clinical settings.

**Materials/methods:** The research study relies on a recent survey-based research method, conducted during COVID-

19 lockdown in India, using a research tool designed and developed for the study. The research used a purposive and convenient sampling method through an online Google survey among, dentists with a minimum of one year experience in dental clinics in rural (N=25) and urban (N=56) parts of India. We selected the sample from (n=81) dentists for the study through informed consent. The responses from dentists selected for the study belonged to (i) major dental clinics(n=17) with more than two dental chairs; in the rural area and the majority of the minor dental clinics (n=62) with less than three dental chairs belonged to the urban area. The statistical tools like co-relation tests were done using SPSS-version-19 to demonstrate the significance of hygiene protocols and anamnesis in dentistry.

**Results:** Both descriptive and inferential analysis of the data gathered demonstrated that even though there was no significant difference (p=.389) in the documentation of recent travel history among the dental clinics, there was a significant difference (p=.008) in the rural and urban area, and in the documentation of travel history of dental patients in various regions (p=.055), which demonstrates

the urgent need for the inclusion of recent travel history for prevention of COVID-19 and medical history of Hepatitis. Regarding the hygiene protocols to be implemented pre and post dental procedures in clinical settings, while there was a significant difference (.050) in the usage of surface disinfectants for routine wiping; there was no significant difference (.661) for the dental clinic that chemically disinfects the impressions, before sending it to the laboratories.

**Conclusions:** It was found that the preventive measures for viral infection both COVID-19 and HBV in major dental clinical settings were less in rural areas as compared to the minor dental clinical settings in urban areas. However, the awareness on methods of prevention of viral infections, especially through usage anamnesis, medical history of HBV and travel history among the practitioners remained high in major dental clinical settings, as compared to minor dental clinical settings. Hence there is a need to have increased measures to create awareness on the significance of anamnesis to prevent transmission of oral viral infections in dental settings through an appropriate medical and travel history of dental patients.

**Key words:** Oral Viral Infections, Hepatitis, COVID-19, Dental Clinical Settings. Prevention, Anamnesis.

### Introduction

Viral Infections continue to be one of the most critical issues in healthcare services worldwide. Globally, 2 billion people are infected with hepatitis B, C, D and transfusion-transmitted virus Lavanchy, D. (2004) [1]; 360 million have chronic infection, and 600,000 die each year from HBV-related liver disease or hepatocellular carcinoma. Hepatitis B is a leading cause of chronic hepatitis, cirrhosis, and hepatocellular carcinoma, accounting for 1 million deaths annually. Knowledge of the intricacies of viral infections and of the molecular

biology of this fascinating virus has led to the successful development of a vaccine and to treatment, sometimes capable of eradicating the chronic infection. Viral infections may be less common but appear in different clinical forms. The oral cavity as being an 'open gate' of the human body comprises an appropriate field for the establishment of varying infections opines Karathanasi, V., et al., (2015) [2].

### Prevention of Oral infections in Dental Clinics

Infection prevention and control of cross-contamination are essential in providing a secure environment for patients and healthcare workers within healthcare settings in general and more specifically in dental practices. Transmission of infection during dental procedures may occur through direct contact with saliva, oral fluids, or blood, airborne droplets containing infective agents, or indirect contact via contaminated objects (W. G. Kohn, 2003) [3]. Oral viral infections can be either primary and localized or secondary to systematic infection. In fact, more than two billion people have been infected with hepatitis B virus (HBV). Globally, 350-400 million suffer from chronic HBV infection (Mahboobi, N. et al,2013) [4]. It is hypothesized that dentists and dental staff are infected and transmit the virus to their patients more than any other occupation. Hence the need to create alertness and prevent the ill-equipped and carelessness in dental clinical settings forms the background of this research study.

### Prevention of Hepatitis and Covid-19 Virus In Dental Clinical Settings

In December 2019, a series of unexplained pneumonia cases were reported in Wuhan, China (Sun, P., Lu et al 2020) [5]. On 12 January 2020, the World Health Organization (WHO) temporarily named this new virus as the '2019 novel Coronavirus' (2019-nCoV). On 11 February 2020, the WHO officially named the disease

caused by the 2019-nCoV as Coronavirus disease (COVID-19). The epidemic of coronavirus disease 2019 (COVID-19), originating in Wuhan, China, has become a major public health challenge for not only China but also countries around the world (Meng, L et al 2020) [6]. The World Health Organization announced that the outbreaks of the novel Coronavirus have constituted a public health emergency of international concern. Coronavirus disease (COVID-19) is caused by SARS-COV2 and represents the causative agent of a potentially fatal disease that is of great global public health concern (Rothan, H. A et al 2020) [7]. Based on the large number of infected people that were exposed to the wet animal market in Wuhan City, China, it is suggested that this is likely the zoonotic origin of COVID-19.

COVID-19 has its etiologic agent, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2): the 2019 coronavirus is different from SARS-CoV, but it has the same host receptor: human antigens in-converting enzyme 2 (ACE2). SARS-CoV-2 was first discovered in 2019 in Wuhan, China, unfortunately spreading globally, resulting in the 2019–2020 pandemic, as declared by the World Health Organization (WHO) and the Public Health Emergency of International Concern (PHEIC) (WHO,2020) [8]. Viral infections may be less common but appear in different clinical forms, especially in dental emergencies. COVID-19 infected person's travel has resulted in its spread worldwide. The infection started in Asia, but it has rapidly spread across the world including India. According to the WHO, this is the first pandemic caused by a coronavirus. Against this landscape, the treatment of COVID-19 has been based on containment measures: in China, India and South Korea, the severe application of such interventions has regularly and drastically reduced new cases, and this experience shows that a reversion of epidemic growth is possible in the

short-term. Similar is the situation in India, which opted as a country to undergo 3 weeks lockdown as an initial step to contain the wide and wild spread of the disease. Human travel and contact appear to be the ultimate cause of concern, especially for dental clinics as they are in the frontline, during dental emergencies. Recent travel history, therefore, is a matter for great concern for dental clinics that quite often ignores the need for recording it.

### **Aim of the Study**

The study aims to focus on the significance of case history of patients in dental clinics in terms of recent travel, immunity-related diseases, recent case history and information about the hygiene protocols to be implemented pre and post dental procedures in clinical settings. However, the significance of case history information for the diagnosis and prevention of virus COVID-19 and HBV infection through dental clinical settings forms the point of departure in this study. The research study relies on a recent survey-based research method, conducted during COVID-19 lockdown in India, using a research tool designed and developed for the study. This study also aims to demonstrate the need to introduce travel history as a point of reference for treatment in case history documentation of patients in dental clinics that come for dental treatment and establish the awareness among practicing dentists regarding the significance of pre and post hygiene protocols for dental procedures. The limitations and restrictions of people coming from outside their home, social distancing, the cessation of almost all working activities and the request to the population to use protective masks and gloves all have the aim of minimizing the likelihood that people who are not infected come into contact with others who are already infected and probably still asymptomatic (Li R. et al 2020) [9]. This study examines the previous case history recording in clinical settings and attempts to

demonstrate, the significance of recent travel history as part of case history documentation, as the point of departure, to ensure the containment and prevention of COVID-19 and Hepatitis through dental clinics. In doing so, awareness among the dentists as frontline health workers during dental emergencies, about the hygiene protocols to be implemented pre and post dental procedures are also examined.

### **The Dentists at the ‘Open Gate’ for COVID-19 and HBV infection**

Dentists are often the first line of diagnosis, as they work in close contact with dental emergency patients. On 15 March 2020, the New York Times published an article entitled ‘The Workers Who Face the Greatest Coronavirus Risk’, where an impressive schematic figure describing that dentists are the workers most exposed to the risk of being affected by COVID-19 and HBV infection, much more than nurses and general physicians (Gamio, L. 2020) [10]. Dental personnel have been recommended to take several personal protection measures and avoid or minimize operations that can produce droplets or aerosols; moreover, the use of saliva ejectors with a low volume or high volume can reduce the production of droplets and aerosols. In fact as given in figure-1, depicts the position of the dentist exposure to diseases in terms of proximity while working in clinical settings as compared to others. Hence the study also aims to find out the COVID-19 and HBV infection preventive aspects and factors that contribute to its containment in Dental clinical settings before, during and after various procedures.

### **Prevention of COVID-19 and Hepatitis through Dental Clinics**

COVID-19 and HBV infection continue to be one of the most critical issues in healthcare service worldwide. It continues to be one of the most critical issues in healthcare service worldwide, even in dental emergencies. However,

travel history is still not considered as part of clinical case history for a dental patient as an interim measure. In fact their summary of procedures and interim guidance for screening to identify COVID-19 infection for Emergency and Urgent Dental Patients, as per American Dental Association (ADA,2020), ‘If the patient has had exposure to an individual with suspected or confirmed COVID-19 infection, travelled to countries currently under a travel ban or been exposed to confirmed SARS-CoV-2 biologic material (either themselves or via another individual), consider referring the patient to a hospital setting. Risk of transmission increases with these exposures’ (ADA,2020). [11].The great discussion about hepatitis B in the main world health centres is related to the high HBV infectivity and anti-viral resistance which is up to 100 times higher than that of the human immunodeficiency virus (HIV) and 10 times higher than that of the hepatitis C virus (HCV). This characteristic is related to social conjecture, particularly in developing countries, since this disease is mainly silent and asymptomatic. Furthermore, it can evolve through different paths depending on the age, lifestyle and the patient’s general health condition, aside from HBV genotypes and subgenotypes and mode of the pathogen’s acquisition.

The vulnerable groups to this disease include health care professionals, who have a higher prevalence of HBV infections than the general population, regardless of the endemic condition in the region where they live. Therefore, approaching this subject in relation to dental professionals is essential, since they perform unsanitary activities in continuous and direct contact with the main modes of HBV transmission: blood and saliva. Besides, associated factors make dental surgeons more susceptible to this disease: high rates of laboratory accidents with contaminated sharp equipment, poor biosafety practices, negligent self-care, high virus pathogenicity and lack of

immunization against HBV. Oral viral infections can be either primary and localized or secondary to systematic infection, explains Ramesh, N., & Don, K. R. (2019).[12] The need to create alertness and prevent the ill-equipped and carelessness in dental clinical settings forms the background of this research study. It is hypothesized that dentists and dental staff are infected and transmit the virus to their patients more than any other occupation. Hence the need to create alertness and prevent the ill-equipped and carelessness in dental clinical settings forms the background of this research study.

### **Significance of Anamnesis (Case history) in the Dental Clinical Settings:**

The medical history (case history) of a patient is that 'information obtained by a physician by asking specific questions; either of the patient or of other people who know the person and can give suitable information, to obtain information useful in formulating a diagnosis and providing medical care to the patient' Yakar, E. N., & Cura, N. (2014)[13]. According to them, through case history, the dentist-patient relationship is strengthened with increasing experience. Therefore, well-kept medical history is important for ethical and legal aspects of dentistry. Dentists always must avoid harm to the patient and establish a balance with helpful principles. This situation is not just a legal responsibility, but also an ethical principle, especially during the pandemic like COVID-19 and HBV infection. The well-compatibility between dentists, patients and their relatives protects the dentist from possible difficulties (Ray, A. E.,1993)[14]. Taking a careful case history and planning treatment stages are the success of the dental treatment procedure, especially when a dentist is at the frontline of medical practitioners in case of dental emergency patients.

### **Materials and methods**

The research study relies on a recent survey-based research method, conducted during COVID-19 lockdown in India, using a research tool designed and developed for the study. The research used purposive and convenient sampling method gathering data from dentists working in dental clinics in various regions [6 regions] with at least one year of clinical experience. The research study relies on a recent survey-based research method, conducted during COVID-19 lockdown in India, using a research tool designed and developed for the study. The research used a purposive and convenient sampling method through an online Google survey among, dentists with at least one year experience in dental clinics in rural (N=25) and urban (N=56) parts of India. We selected the sample from (n=81) dentists for the study through informed consent. The dentists belonged to major dental clinics (n=19) with more than two dental chairs, in the rural area and the majority of the minor dental clinics (n=62) with less than three dental chairs belonged to the urban area. The data were collected on a pre-tested, validated structured questionnaire as the research tool, equipped with multi-criteria decision analysis method to prioritize the prevention of viral infections through dental clinical settings. The research tool consisted structured questionnaire to assess the significance of recent travel and case history in the case records of dental patients and information about the hygiene protocols to be implemented pre and post dental procedures in clinical settings. The statistical analysis was done using SPSS Version-21, with test tools like chi-square co-relation test for finding the significance of the existing dental case history recording practices, dental procedures in rural and urban clinical settings were employed. The knowledge and awareness among dentists about the transmission of COVID-19 and HBV infection through travel and the

significance of travel history records of dental patients were also examined.

### Statistical Analysis

It may be noted that in the table-1 there was no significant difference in the population area and region of the dental clinics were spread out equally in rural and urban population area in all the regions of the country as the p-value was .532. While the majority (91.13%) of the dentists in the dental clinics, kept case history records of dental patients and used it for guidance and counselling, the majority (69.13%) of them did not include recent travel history as part of case history records and there was a significant difference in the inclusion of recent travel history of dental patients in the rural and urban area (table-2) as case history records as the p-value is .044, demonstrating that dentists from the urban area did not consider recent travel history significant for the case history record in dental clinical settings. It may be noted that in the table-3 there was a significant difference among the region of India and the number of dental clinics that included recent travel history as part of case history records as the p-value was .000. It was found that the majority (33.33%) of the dental clinics that did not consider the travel history of patients in case history records belonged to the northern region of India. This is a matter of concern while considering the COVID-19 pandemic situation India and HBV infection. It may be noted that in the table-4 there was no significant difference among the regions of India and the number of dentists in clinics that wear protective eyewear during the dental procedure as the p-value was .427. However, it was found that the majority (27.84%) of the dentists did not consider wearing the protective eyewear during the dental procedure, as significant and they belonged to the northern region of India, and is similar to the findings in the study on Saudi dental students (Al-Maweri, S. A., et al., 2014)

[15]. This is also a matter of great concern while considering the COVID-19 pandemic and HBV infection situation in India.

### Conclusion

We found a considerable number of dental surgeons in the Public Health System non-immunized against HBV. They are vulnerable and exposed to the main modes of virus transmission, especially due to the high prevalence of occupational accidents. Furthermore, knowledge, years in the public service and the value given to self-care related to the immunization schedule completion affected the vaccine protection. Both descriptive and inferential analysis of the data gathered demonstrated that even though there was no significant difference ( $p=.389$ ) in the documentation of recent travel history among the dental clinics, there was a significant difference ( $p=.044$ ) in the rural and urban area, and in the documentation of the travel history of dental patients in various regions ( $p=.000$ ), which demonstrates the urgent need to the inclusion of recent travel history for prevention of COVID-19 and HBV infection. Again regarding the hygiene protocols to be implemented pre and post dental procedures in clinical settings, while there was a significant difference (.050) in the usage of surface disinfectants for routine wiping, there was no significant difference (.661) the dental clinic that chemically disinfects the impressions, before sending it to the laboratories is similar to the findings of the study among the oral health of the aged by Rivett, D.(2006) [16]. However, it was noted that of the dentists in the northern region of India (13.9%) did not use protective eyewear during dental procedures and is a matter of concern for prevention of COVID-19 spreading and HBV infection to frontline medical practitioners during dental medical emergencies. Hence there is a need to have increased measures to create more awareness among dentists for

preventing transmission of COVID-19 infection and HBV infection through dental clinical settings. There was no significant difference in the population area and region of the dental clinics were spread out equally in rural and urban population area in all the regions of the country. While the majority (91.13%) of the dentists in the dental clinics, kept case history records of dental patients and used it for guidance and counselling, the majority (69.13%) of them did not include recent travel history as part of case history records and there was a significant difference in the inclusion of recent travel history of dental patients in the rural and urban area (table-2) as case history records as the p-value is .044, demonstrating that dentists from the urban area did not consider recent travel history significant for the case history record in dental clinical settings, as found in their study on HBV infected persons in Kuwait, by Al-Mutairi, B. S. N. (2013). In fact, it was found that the majority (33.33%) of the dental clinics that did not consider the travel history of patients in case history records belonged to the northern region of India. This is a matter of concern while considering the COVID-19 pandemic and HBV infection situation in India. However, it was noted that of the dentists in the northern region of India (13.9%) did not use protective eyewear during dental procedures and is a matter of concern for prevention of COVID-19 spreading and HBV infection to frontline medical practitioners during dental medical emergencies. Hence there is a need to have increased measures to create more awareness about the significance of anamnesis to prevent transmission of oral viral infections in dental settings as found in their recent study in Italy by (Izzetti, R, et al., 2020) [18]. This will act as a deterrent for preventing transmission of COVID-19 infection and HBV infection through dental clinical settings.

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### Legends Table and Figure

Table 1: Depicting the Population Area and Region of Dental Clinics

Population of the Area	Region of India					Total
	Central	Southern	Northern	Western	Eastern	
Rural	2	7	10	5	1	25
Urban	3	15	21	17	0	56
Total	5	22	31	22	1	81

'p'-Value=.532

Table 2: Depicting the Population Area and Significance of Recent Travel History Inclusion

Population Area	Inclusion of Recent Travel History of Dental Patients in Case history Record		Total
	No	Yes	
Rural	21	4	25
Urban	35	21	56
Total	56	25	81

'p'-Value=.044

Table 3: Depicting the Regions and Significance of Recent Travel History Inclusion



Region of India	Travel History of Patients in Case history Records		Total
	No	Yes	
Central	4	1	5
Southern	7	15	22
Northern	27	4	31
Western	17	5	22
Eastern	1	0	1
Total	56	25	81

'p'-Value=.000

Table 4: Depicting the Regions and Wear Protective Eye Wear during Dental procedure.

Region of India	Wear Protective eye wear during Dental procedure			Total
	No	Yes	Some Times	
Central	2	2	1	5
Southern	3	8	11	22
Northern	13	9	11	33
Western	5	10	5	20
Eastern	0	0	1	1
Total	23	29	29	81

'p'-Value=.427

Figure 1: Depicting the Level and Position of the Dentist Exposure to diseases in Terms of Proximity While Working in Clinical Settings as Compared to Others.

