Infection Control and Dentistry: A Review

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ABSTRACT

Infection control is expressed as all the steps and precautions that can be taken to control the spread of infection. The purpose of infection control in dental practice is to prevent the transmission of disease-causing agents such as bacteria, viruses and fungi, etc. In this literature review, the literature search was conducted using different databases like PubMed, MEDLINE, EBSCOhost, and articles published in the different journals were obtained. The literature data consisted of different original articles, reviews, textbooks, etc. were documented and the selection of all literature data done on the basis of objectives of the review. The different barrier techniques like mouth mask, gloves, protective eyewear, protective clothing, etc. are now advised to protect both the dental practitioner and the patient from cross-infection during a routine examination, as well as during dental treatment procedures. The high standards of infection control & occupational safety must be followed by the dental practitioner for the safety of the patients and dental auxiliary in the clinics and hospitals. This review is concluded that the neglecting to fulfill efficient precautions and steps of infection control in dental clinics and hospitals also position others, including the practitioner’s family and other patients, at an increased risk of disease.

KEYWORDS: Clinical practice, Dentistry, Disease transmission, Health care, Infection Control, Occupational safety

INTRODUCTION

Infection control is explained as each and every practicable precautions or step which can be taken to restrain the spread of infection.¹ The main aim of infection control in dental practice is to prevent the transmission of disease-causing agents like bacteria, viruses, fungi, etc. from one patient to another patient, from patients to a dental practitioner orwiseversa.² However, it is essential that endogenous spread of infection also be prevented by limiting the spread of infectious agents.

The increase in the incidence of spreadable diseases like AIDS, hepatitis, herpes simplex, etc., the dental practitioners has diversified its attitude towards cross-infection measures. The different barrier techniques such as mouth mask, gloves, protective eyewear, protective clothing, etc. are precisely advised to guard both the dental practitioner as well as the patient from cross-infection during the routine examination and dental treatments.³ Hence, infection control can also provide the patient with a sense of safety and trust towards the dentist.

METHOD

In this literature review, the literature search was done by the online as well as text search regarding the topic. Initially, the online literature search was conducted using different databases like PubMed, MEDLINE, EBSCOhost, and articles published in the different journals were obtained. The search engine such as Google, Google scholar were used to find the articles using the keywords as ‘Infection control’; ‘Dentistry’; ‘Occupational safety’; etc. Finally, the literature data consisted of different original articles, reviews, textbooks, etc. were documented and the selection of all literature data done on the basis of objectives of the review.

INFECTION CONTROL AND DENTISTRY

Nowadays, many countries maintain acceptable standards in dental infection control and safety imposed by a higher level of practice standards which were formulated by regulatory bodies in their respective countries to improve the level of safety. Many patients were infected with Hepatitis B Virus (HBV) by dental practitioners were reported in different regions of the United States of America (USA) during the 1960s and 1970s. Still, infection control did not gain significance, perhaps due to the approach of vaccines to resist the HBV virus.³

Although concepts in dental infection control were improved in the 1960s and were accomplish after human immunodeficiency viral (HIV) infections extended epidemic proportions. Infection control gained further momentum in the USA after patients treated by an HIV infected dental practitioner later tested positive for the HIV virus, and also after dental auxiliaries became infected while involved in patient dental treatment procedures. While this disease has been spreading the African subcontinent since the late 1980s and currently Asia and South-Asia in specifically. It is now being restrained in the USA and Western Europe, where dental practitioners have improved their practice of infection

control either voluntarily or involuntarily. The many of individuals infected with HIV and developing a severe disease as Acquired Immune Deficiency Syndrome (AIDS) continues to rise worldwide. There is an annual increase incidence of this disease worldwide, each with high morbidity levels within the populations, but with dissimilar regional variations. Apart from HIV and AIDS, there is a plethora of blood-borne and other different diseases encountered in the dental clinic or hospital that may pose a risk. Therefore, based on the evidence, information, and rules, high standards of dental infection control and occupational safety must be followed by the dental practitioner for the safety of all patients.

The disease transfer from one patient to another in the dental clinic or hospital is considered cross-infection, while disease transfer to the dentist during dental treatment is considered an occupational exposure to a given pathogen. Hence, the dental practitioner must be learned about the diseases frequently encountered during dental care and must responsibly provide care to all patients without getting infected, or without infecting patients. Dental practitioners are exposed to a wide variety of microorganisms in the blood and saliva of patients and these micro-organisms may cause infectious diseases such as a routine cold, pneumonia, tuberculosis, herpes, hepatitis B, AIDS, etc.

The general routes for transmission of microbial agents in dental practice are following as the direct contact with infectious lesions or infected saliva or blood; the indirect contact via transfer of microorganisms from an infected intermediate object; the airborne transmission of microorganisms or aerosolization; and spatter of blood, saliva, or nasopharyngeal secretions directly onto broken or intact skin or mucosa. The part of the problem of implementing as well as knowing the significance of infection control was that many dental practitioners and auxiliaries previously failed to comprehend or appreciate the infection potential presented by saliva and blood during dental treatment. Hence, the negligence to implement operative precautions and care also positions the others, including dental practitioner’s family and other patients, at an increased risk of disease.

A surprising manifestation was first developed in the 1970s by Crawford et al using the premise ‘If saliva were red’ and the author had practitioners dip their digits into red poster paint before starting their regular clinical treatment. The paint afterwards was deposited on the different surfaces of the operatory as treatment proceed. This demonstrated the cross-contamination that appeared from the practitioner’s saliva-covered digits. However, during treatment, dyed saliva was noticeable as spatter that greatly infected the face, hair, protective eyewear, mask, chest, arms, and clothing of the dental practitioner by the end of the procedure. Also, the dental auxiliary and high-volume evacuator became freighted with intraoral exudate. The application of a fluorescent light more vividly demonstrated the spatter. The routine examinations and dental prophylaxis procedures also substantially exposed the dentist and patient to potentially contagious fluids.

When Molinari et al used red dye and water to simulate patient saliva, while cross-contamination by the simulated saliva was conclusive as the gloved hands of the dental practitioner became noticeably infected during the intraoral examination. When other procedures were begun, such as periodontal probing and scaling and root planning, saliva also infected the instrument tray, instruments, and other equipment. The unit light handle also was regulated repeatedly throughout the sitting and disclosed evident infection from the practitioner’s hands. When the practitioner repositioned her eyewear during the polishing procedure, oral fluids were carryover afterwards to her face, glasses, and mask. Finally, the patient showed dramatic proof of the quiet of oral fluid spread and the resultant aggregation of infection at the end of the appointment.

The young children quickly acquire and transmit infections, and often harbour contagious organisms and may shed pathogens, peculiarly respiratory and gastrointestinal viruses, even if asymptomatic. In a location where young children assemble, the close proximity of ample numbers of contagious and susceptible elements favours transmission. Behavioural characteristics such as deficient hygiene, habitual mouthing of hands and toys or other objects, drooling and direct contact among children during play facilitate the spread of infection. The prevention contains proper office design and administrative policies, triage, routine practices for the care of all patients. For examples like hand hygiene; application of gloves, masks, eye protection and gowns for particular procedures; sufficient cleaning, disinfection and sterilization of surfaces and equipment including toys, and sterile technique for invasive procedures, and extra precautions for specific infections.

Dental practitioner faces any ones of kind situations when treating patients and particularly children. Children and adolescents have varying levels of physical, mental, emotional, and social development. Dental practitioners are regularly challenged to match the psychological needs of their young patients while sustaining proper infection control practices. Infections deliver a significant hazard in the dental environment, and both patients and the dental practitioner can be exposed to pathogens. Also, contact with blood, oral and respiratory secretions and infected equipment happen. Hence, proper infection control procedures can prevent transmission of infections among patients and dental health care practitioner.

The word ‘Disease control’ or ‘Infection control’ does not signify complete prevention of iatrogenic, nosocomial infections or occupational exposures to blood and other potently infectious material, it only means reducing the risks of disease transmission. As the level of infection control in developing country like India still far behind,
and many of questions about infection control practices and their efficiency still remain unanswered. Therefore, it needs more efforts and development of precise programs.

The infection control policy through grass-roots education should address the following as the training for dental students and practitioners regarding infection control; the surveillance of safe practices; the establishment of a routine evaluation of the infection control programs, including evaluation of performance indicators, the setting up HIV and blood-borne disease treating dental care centers; and the extending duties of public health dentist to provide outreach dental care to rural HIV and other disease patients.

The pervasive increases in serious transmissible diseases over the last few decades have created global concern and impacted the treatment mode of all health care practitioners. The emphasis has now extended to reassuring and demonstrating to patients that they are well protected from risks of contagious disease. Therefore, Infection control has prevented to allay concerns of the safety and instill trust and in providing a safe environment for both patient and dental practitioner.

**CONCLUSION**

This literature review is concluded that the dental practitioner must follow acceptable standards in their clinics as well as hospitals regarding infection control and safety. And, neglecting to implement effective precautions of infection control and safety place patient as well as a dental practitioner as well as others, including the dental practitioner's family and other patients, at a high risk of disease transmission.

**REFERENCES**


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