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Relationship between the Oral Hygiene and the Odontogenic Infections of Oral and Maxillofacial Region

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ABSTRACT

The description maxillofacial odontogenic infection applies to potential maxillofacial and facial odontogenic infections. 155 patients visiting the dental clinic of Bahgdad Hospital and alleging dental caries were examined. A self-administered questionnaire had to be responded to by both respondents. Participants were asked to answer questions on both population and oral hygiene. After completion of the questionnaires, they were collected. The sample was then moved to the culture and identification Microbiology Laboratory to prepare and sterilized Pre-Reduced MacCardney bottle thioglycollate bubble. SPSS version 20.0 was used for analyzing data. Statistical research descriptive has been completed. In order to analyze the relationship of results between two categorical variables, the Chisquared test and significance were computed at $p<0.05$. Data submitted by tables and figures. Oral infection continues to be an important public health concern. Good oral health and dental plaque control routine require good oral hygiene. In recent decades, the number of people who hold their teeth more naturally increased. Adequate oral hygiene is difficult to achieve and normal oral mucosal infection and chronic asyphtomatic teeth. Holding the oral health of patients with medical or acute conditions is a particular concern. The mouth is a significant possible source of infection and inflammation and pays tribute to all dentists' daily recollection of the public health and overall health burden.

KEYWORDS: oral hygiene; odontogenic infections; maxillofacial region.

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INTRODUCTION

Oral microbiota is distinctive as well as rich. No other microbiota is similar. *Streptococci* are the oral flora of most indigenous peoples. The most frequently isolated bacteria from pus infections are Negative *Bacillus* such as *Prevotellae* and *Fusobacterium* spp (Jevon et al., 2020, Dai et al., 2019).

Progress in the detection and prevention of oral diseases in the past 50 years has led to a considerable increase in the number of individuals keeping more natural teeth for long periods. Many of the teeth however are highly repaired and exposed in an increasingly dental population to further breakdowns and danger periodontal diseases (Johnson et al., 2020). Modern dental treatment is for the oral, but is not always possible or maintained. The development of disease will also only end and chronic asymptomatic infections can start. Increased incidence is chronic or malignant mucosal disorders. Thus the mouth has become a possible source of infection and inflammation that leads to general health and wellbeing and the highest burden of disease (Rautemaa et al., 2007).

More than three million cases and more than 205 000 deaths worldwide were registered in 2020. In respond to this daunting pandemic, dentists are advised to track and advise dental services to protect themselves, their peers and their patients against the infection. Center for Disease Control and Prevention (CDC), the ADA and the National Health Service (NhS) (Odeh et al., 2020). Dentists belong in some regular dental procedures to the highest risk groups for coronavirus transmission and aerosol transmission potentials contraction (Brown, 2020). Asymptomatic (carrier) and acute respiratory problems patients may be involved in ambulatory dental treatment (Day, 2020). The increasing concern for cross-infections and the potential significance of dental practice in infection dissemination are pushing dentists to leave home quarantine as is the case for other non-health sectors of the population (Du et al., 2020).

When discovered early, dental care can be easy and inexpensive. Treatment involves dental restoration, incision and drainage, endodontic treatment, scaling and planning, and effective localized infection removal (Nadig and Taylor, 2018). Odontogenic infections may cause local and systemic complications after hematogenic, lymph, or direct spread (Agbara et al., 2016).

Although the frequency of infections due to improved orodental and general healthcare has declined in recent years, the incidence of these infections in the general population remains uncertain. Odontogenic diseases are not caused by a human body (Weise et al., 2019). The term maxillofacial odontogenic infection applies to infections involving potential odontogenic origin maxillofacial areas and facial planes (Keswani and Venkateshwar, 2019). Oral and maxillofacial surgeons usually suffer odontogenic maxillofacial infections. Morbidity and mortality still underestimate the acute dental abscess. The presence of infections such as sepsis and respiratory compromise can range from simple block swelling to life-threatening complications and is one of the most common emergency reporters in the emergency room (Yuvaraj, 2016).

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In most cases, facial infections in maxillofacial areas arise from odontogenic fections, a complication of acute and untreated chronic disease. Infections in the face-to-face also cause extreme morbidity and lead to serious and life-threatening effects such as septicemia, mediastinitis, thoracic empyema, fasciitis necrotisation, laryngeal spasm, renal failure and death where they can escalate without early intervention (Adekunle et al., 2019). Factors including insufficient health-seeking behaviour, poor oral hygiene, poor dietary conditions, misuse of antibiotics, among others, may be linked to facial space infection (Adekunle et al., 2019). Hence, this study aimed at determining the relationship between the oral hygiene and the odontogenic infections of oral and maxillofacial region.

MATERIALS AND METHODS

Study Design and Sample Size

The study was conducted on 155 patients who visited the Dental clinic of Hospital Bahgdad and were confirmed to be suffering from dental caries. The sample cut across both sexes.Approval was obtained from the research ethical committee of the Faculty in the University. Also, informed consent from the patients was obtained. All the respondents were requested to answer a self-administered questionnaire. Participants were encouraged to answer all the questions which included the demographic and oral hygiene sections. After completion, the questionnaires were collected and filed away.

Data Collection, Management and Analysis

For the bacteriological screening, Bahl et al. (2014) method was adopted. Briefly, a pus sample was sucked with a sterile jet needle and syringe from the affected tooth foundation. The sample was moved immediately to the prepared and sterilized MacCartney bottle thioglycollate broth, which was then taken to culture and identification in the Microbiology laboratory. SPSS version 20.0 was used to evaluate the data collected. Statistical descriptive analyzes were performed. The findings of this chi-squared test have been tested between two group variables, and the significance has been calculated at $p<0.05$. In tables and figures, the results were presented.

RESULTS

Table 1: Demographic information of the participants

Group	No	Percentage	Mean	SD
Sex				
Male	90	58.06		
Female	65	41.94		
Age				
15-19	3	1.94		
20-24	6	3.87		
25-29	21	13.55		
30-34	13	8.39		
35-39	22	14.19	40.74	2.18
40-44	19	12.26		
45-49	43	27.74		

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50-54	16	10.32
55-59	12	7.74
Educational qualification		
High school	23	14.84
College	45	29.03
BSc	61	39.35
MSc	21	13.55
PhD	5	3.23

Table 1 displays the age, gender and education qualifications. The research involved a total of 155 patients who were aged 15 and 55 years of ages with odontogenic maxillofacial infections. As listed in table 1, the percentage for males is 58.06 per cent, and for females is 41.94 percent.

Table 1 presented the age categories into 9 sections. Age group 45-49 showed the highest number of 43 participants (27.74 percent) of the survey has odontogenic maxillofacial infections; this indicated adults are more liable to be contacted with the infection. Age group 35-39 showed 22 participants (14.19 percent) with odontogenic maxillofacial infections. 13.55 percent was recorded for the age group of 25-29 with 21 participants respectively. 19 participants (12.26 percent) were shoed for the age group 40-44 in this study. The age group 50-54 indicated 16 participants with the percentage of 10.32 respectively. Age group 30-34 and 55-59 showed 13 and 12 participants with the percentage of 8.39 and 7.74 respectively. The study showed that age group 15-19 and 20-24 showed a smaller number of participants with 1.94 and 3.387 percentage respectively. This showed that, the chance of odontogenic maxillofacial infections is minimal to young adults of age 15-24.

This study has showed participants in five different academic qualifications ranging from the High school to PhD level respectively. The study showed a very smaller percentage of the participants in PhD level with just 5 participants (3.23 percent). 21 participants (13.55 percent) with MSc were showed to have odontogenic maxillofacial infections. The study indicated 23 participants (14.84 percent) with High school certificate were infected with odontogenic maxillofacial infections in this study. 45 participants (29.03) with college certificate were identified with odontogenic maxillofacial infections in this study. Lastly, 61 patients (39.35 percent) were identified with the infection of odontogenic maxillofacial having BSc. This implies that the level of one's educational qualification does not guarantee the extent of which the person can be infected with odontogenic maxillofacial infection.

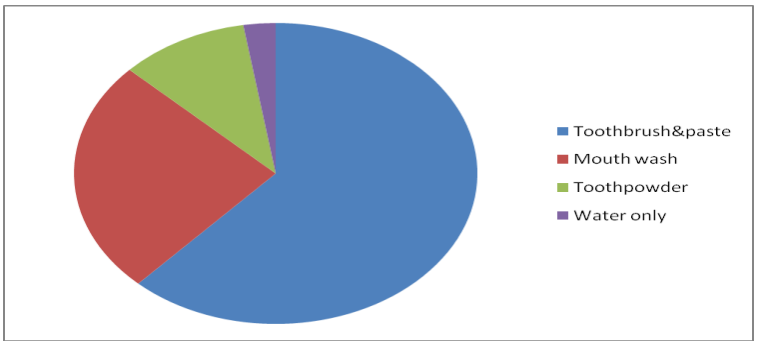

Figure1: Method of tooth cleaning among the patients

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Figure 1 showed the methiod of tooth cleaning amoung patients with odontogenic maxillofacial infections in four different categories. The first category was represented with blue colour which is the method of patient that cleans their tooth with toothbrush and paste. The second categories are the patient that cleans their tooth by mouthwash. The third categories are represented with green colour indicating the patients cleaning their tooth with toothpowder and lastly, those patients cleaning their tooth with only water has the leastmethod.

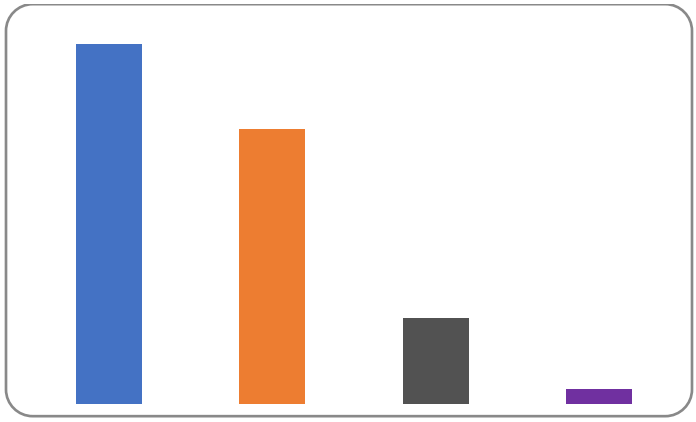

Figure 2: Frequency of tooth cleaning among patients

Figure 2 showed the frequency of tooth cleaning among patients with odontogenic maxillofacial infections. This study showed four different frequencies respectively. Majority of the patients wash their tooth once daily, more than half of the patients washes their tooth twice in a day. Few of these patients washes their tooth thrice in a day while a very low number of these patients showed they washes their tooth after meals.

Table 2: Percentage (%) frequency of isolated bacteria from the patients

Organism	% Frequency
Staphylococcus spp	95.48
Streptococcus spp	83.23
Micromonas spp	10.97
Actinomyces spp	9.03
Lactobacillus spp	47.74
Fusobacterium spp	4.52
Bifidobacterium spp	1.94

Based on the findings in this study, table 2 identified seven (7) different species of organisms were isolated from the patients with odontogenic maxillofacial infections. *Staphylococcus spp.* has the highest percentage of 95.48 in patients followed by *Streptococcus spp*. with 83.23 percentages respectively. This implies that odontogenic maxillofacial infections can be caused by *Staphylococcus spp*. *Lactobacillus spp*. had showed a bit high percentage of 47.74 in patients with odontogenic maxillofacial infection. *Micromonas* and *Actinomyces spp.* showed a minimum percentage of 10.97 and 9.03 respectively for the infection of odontogenic maxillofacial among humans. *Fusobacteriumspp*. has indicated just 4.52 percent of odontogenic maxillofacial

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infections while *Bifidobacterium spp*. was the least among the isolated bacteria with 1.94 percent in this study.

DISCUSSION

A significant global public health challenge remains oral infection. Good oral hygiene and routine dental plaque control is essential for good oral health. The prevalence of oral diseases indicates, however, that most people do not achieve levels consistent with good oral health that are plaque controlled. Accordingly, methods of improving oral hygiene in the population included applying antibacterial agents to oral care products.

As most of us have regular wages or rely on a family worker, socioeconomic factors have been a major variability in odonatological infections. In under-service patients lacking in health care through an emergency room of publicly funded hospitals that are in line with our socio-economic factor in their study, Zhang et al. (2010) reported that maxillofacial infections are more common in 250 maxillofacial infection patients.

The most important factor to treat effectively odontogenic spatial maxillofacial infection is to recognise the infection status of patients, taking account of its diffusion and its life threats.

The submandibular space was less timely among the spaces most frequently observed. Sato et al. (2010) reported a higher incidence of submandibular spatial infection in 210 maxillofacial patients. Ylijoki et al. (2001) reported that three molar mandibular infections were the most common source of odonatological infections, while in their studies 100 patients with extreme odontogenic diseases were the most common location of infection.

The main causes of odonatological mastic infections were lower molars, with the first and second mandibular, maxillary, and premolar infections as well as infections spreading beyond the space of the pterygomandibular or the sub-andibular zone.

In most of our cases, the administration of parenteral antibiotics, extraction, extraction and drainage of extraoral drugs and the exploration of the affected drainage facilities, and extraction and intraoral incision without drainage of some antibiotic products by our patients without drainage, were adequate for the solution of the infection. Treatment of the infections affecting the maxillofacial complex has been documented by Sato et al. (2009) in a classic procedure consisting of trigger removal, abscess drainage, and antibiotic therapy. In its study Keswani and Venkateshwar (2019) have reported the responsibility for good outcomes in the treatment of orofacial, surgical and antimicrobial infection.

Possible prevention for oral infections

Triclosan is another antimicrobial agent with multiple oral activities (Ford et al., 2007). This agent is more suitable for use in the long term as it has no major side effects and has a long history of safe use of consumer goods (Sorsa et al., 2006). The benefits in the treatment of

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periodontal and oral mucosa are double antibiotic and anti-inflammatory properties and several studies showed now plaque and gingivitis are less effective (Ford et al., 2005). Triclosan has also been shown to delay progression of periodontal disease for 3-5 years in adults and adolescents with preexisting disease (Keefe et al., 2007). These advantages are expected to compound the continued application over much longer periods. This may have a direct effect on the expression of disease in the general population. The long-lasting effects of the use of antimicrobials are of concern, and the therapeutic value against decreased resistance and resistant strains must be weighed. Today, no evidence exists for the use of triclosan formulations for oral applications, although well-documented therapeutic advantages are given (Barker et al., 2005). It is important to note that in sensitive patients or those with pre-existing disease the main therapeutic gain from chronic periodontitis are found (McGuire et al., 2006). Patients with medical and immunological conditions are a vulnerable group to control oral infection of these patients using triclosanic dentures (Sarkonen et al., 2005). However, this has been demonstrated and additional research is needed to determine the impact of these products on patients with medical problems (Rautemaa et al., 2007).

CONCLUSION

The number of individuals with more natural teeth has increased over the last few decades. Help for tissue and oral mucosal infection are difficult to obtain proper oral hygiene and chronic asymptomatic teeth. In patients with medically compromised or acute conditions, preservation of oral health is of special concern. The mouth is a major source of possible infections and inflammation that recognizes the public health burden and general health routinely understood by dentists. Hence, the relationship between the oral hygiene and the odontogenic infections of oral and maxillofacial region was examined in this research paper.

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