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Caries Prevalence in a Semi Urban Area of Kuwait- A Cross-Sectional Pilot Study

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Abstract

Aim: This pilot study is aimed at assessing the caries prevalence in a semi urban area in Kuwait, by estimating the DMFT status.

Materials and Methods:

92 individuals belonging to Indian Origin of age groups ranging from 11 to 56 years were randomly selected and examined for prevalence of dental caries.

Decayed-Missing-Filled Index (DMF) which was introduced by Klein, Palmer and Knutson in 1938 and modified by WHO was used as a standard to assess the DMFT in permanent dentition in which 28 permanent teeth are examined excluding the 3rd molars.

Dental probe and mouth mirror was used to examine the teeth for caries.

Result and Discussion:

Among the observed population, 53% had caries experience in their lifetime. 36.92% of males and 22.22% of females had decayed teeth. 30.77% of males and 29.63% of females had filled teeth. The mean DMFT of the observed population was found to be 2.195. The mean decayed, missing, filled teeth index was 2.446 for males and 1.591 for females respectively. Prevalence of dental caries was found to be more in males than females and further more between the age groups 53-56 years. The age group 53-56 years had more mean filled teeth showing that they had more awareness.

Conclusion:

The study showed that the caries prevalence is moderate and caries severity is low, mean DMFT 2.195. Oral hygiene awareness programmes and caries prevention programmes need to be conducted to instigate more awareness.

Keywords: Caries Prevalence, Dental Caries, Oral Health, Semi Urban Area

INTRODUCTION

The State of Kuwait, is an Arab country which lies at the north-eastern edge of the Arabian Peninsula. With a land area of 17,820 square kilometres (6,880 square miles) , the country's 2016 population estimated at 3.73 million, which includes over one million Kuwaitis and more than two million expatriates. Expatriates account for around 70% of Kuwait's total population, comprising of 1.1 million Arab expatriates and 1.4 million Asian expatriates. Indians in Kuwait comprise a total of 825,000, including Indian expatriates and Kuwaiti citizens of Indian descent. [Retrieved January 22nd, 2017, from http://worldpopulationreview.com/countries/kuwait-population/]

Dental caries is a commonly prevalent disease caused by bacteria. As food is consumed, bacteria metabolize fermentable carbohydrates, producing acids, which diffuse into the hard-dental tissue, and demineralize the tooth enamel. [1] Even though dental caries is the most predominant chronic disease of childhood, oral health is often neglected within the health care system. [2]

The FDI, WHO, and International Association for Dental Research (IADR) issued "Global Goals for Oral Health 2020" in 2003. [3] These goals provided direction for local, regional, and national planners and policy makers to bring about improvement in the oral health status of their populations. WHO generated a scale based on the DMFT values to classify the dental caries severity: DMFT values between 0.0 and 1.1 were considered very low; 1.2–2.6 were low; 2.7–4.4 were moderate, 4.5–6.5 were high, and values exceeding 6.6 were considered to be very high. [4]

Within the same country, there is variation in caries prevalence from region to region. Geographic variables such as race, climate, diet, culture and economic factors also have a significant impact on the caries prevalence. [5] This pilot study is thus aimed at assessing the caries prevalence of a small portion of the Indian expatriate community belonging to a semi urban area in Kuwait to infer from it the current oral health status and possible prospective research in a large scale.

MATERIALS AND METHODS

The cross-sectional pilot study was done on a population of 92 individuals of both sexes from a semi urban area; Abu Halifa in Kuwait. The study population was chosen to be done in a semi urban area where people of Indian origin reside, so that there is a similarity in the lifestyle, diet and culture. The age group of the sample population ranged from 11 to 56 years of age and were randomly selected and examined for prevalence of dental caries.

Prior permission and approval to conduct the study was taken from the individuals in person and details such as age, sex, diet and brushing habits were noted down along with the examination for decay, missing, filled teeth. The data was recorded in a printed DMFT index form according to WHO standards.

The sample involved in the study was divided into 8 age groups; 11 to 16 years, 17 to 22 years, 23 to 28 years, 29-34

years, 35 to 40 years, 41 to 46 years, 47 to 52 years and 53 to 56 years of age.

Intra oral examination was done using a mouth mirror and a dental probe which conform to WHO standards. [6]

Decayed, missing, filled teeth was assessed using Decayed-Missing-Filled Index (DMF) which was introduced by Klein, Palmer and Knutson in 1938 and modified by WHO as a standard to assess the DMFT in permanent dentition. Only the 28 permanent teeth excluding the 3rd molars were included in the examination. A tooth was considered decayed if there was a cavity was present; if a carious lesion and restoration were present. All the teeth were examined in a orderly manner using the FDI tooth numbering system. [8] Each component was identified separately and added together to get the DMFT as follows: decayed/untreated caries (D); missing teeth/due to caries (M); filled/dental restorations for caries treatment (F), and teeth/index per tooth (T).

The teeth that were extracted for orthodontic purposes, or those missing congenitally or due to trauma were excluded and hence did not contribute to the final missing teeth (M) score. Missing teeth (M) were taken into account only if there was a definite establishment that the tooth loss was due to caries.

$$DMFT = D(T) + M(T) + F(T)$$

$$Average\ DMFT = \frac{Total\ DMFT}{Total\ number\ of\ individuals}$$

The individuals who were examined were taught how to brush, the importance of flossing and advised to have regular dental checkups.

Results And Discussion

Out of the 92 individuals, 65 were male and 27 were female. Thus, the sex distribution is 70.65% males and 29.35% females. (Refer to Table 1)

From Table 2, we infer that 84.78% of the population were non-vegetarians while 15.22% were vegetarians. Table 3 depicts that 81.52% of the sample were found to brush once a day using toothbrush and toothpaste. Only 18.48% of the population brushed twice a day.

Table 4 shows the caries prevalence of the population was found to be 53%. The caries prevalence in males was 56.92% and females 44.44% respectively.

From Table 5 and Figure 1, we see that the mean DMFT was found to be 2.195. The mean DMFT for males was found to be 2.446 and for females 1.591 respectively.

Analyzing the results from Table 6 and Figure 2, we find that the age group 53-56 years were found to have a greater mean decayed teeth value, hence the group with the most caries. The mean missing teeth value was high for the age groups 23-28 years and 29-34 years. The highest mean for filled teeth belonged to the age group 53-56 years. The mean filled teeth index is largely greater than the mean decayed teeth index for the age group 41-46 years indicating that they have gotten most their decayed teeth filled, showing they have more awareness about oral health. Figure 3 suggests that in males, most of the affected teeth were filled teeth, followed by teeth with decays and missing teeth being comparatively less. In females, most of the teeth were filled followed by missing teeth and very few teeth with decay, showing comparatively better oral health.

Table 1: Sex distribution

	Frequency	Percentage
Males	65	70.65%
Females	27	29.35%
Total	92	100%

Table 2: Dietary Habits

	Frequency	Percentage
Non-Vegetarian	78	84.78%
Vegetarian	14	15.22%
Total	92	100%

Table 3: Brushing habits

	Frequency	Percentage
Brush 1x	75	81.52%
Brush 2x	17	18.48%
Total	92	100%

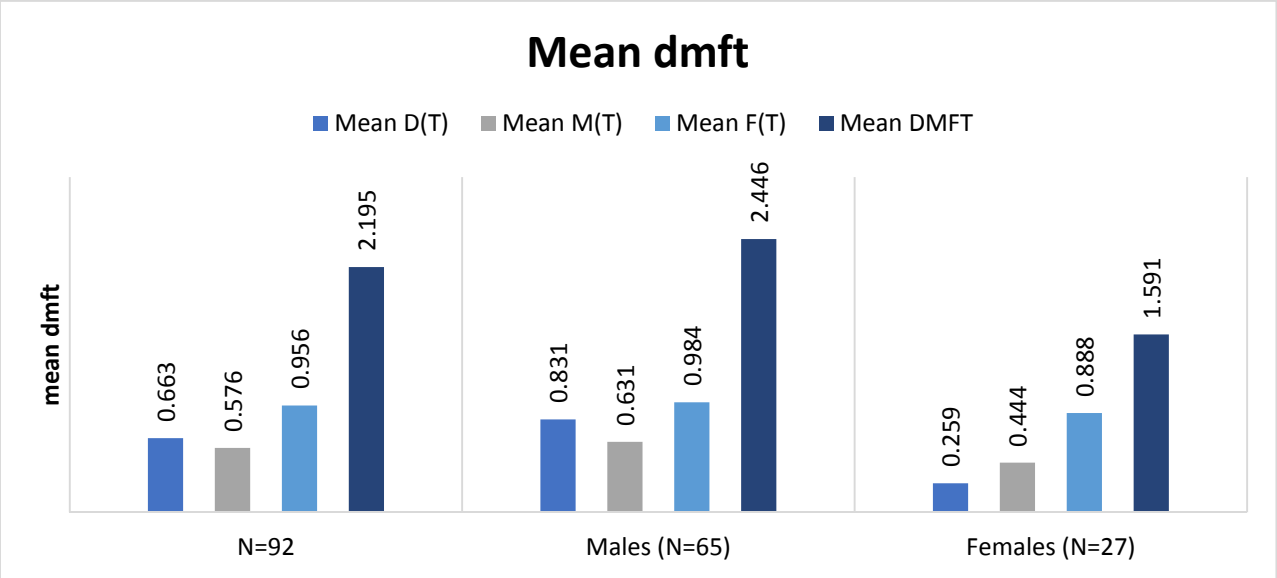

Figure 1: Mean DMFT

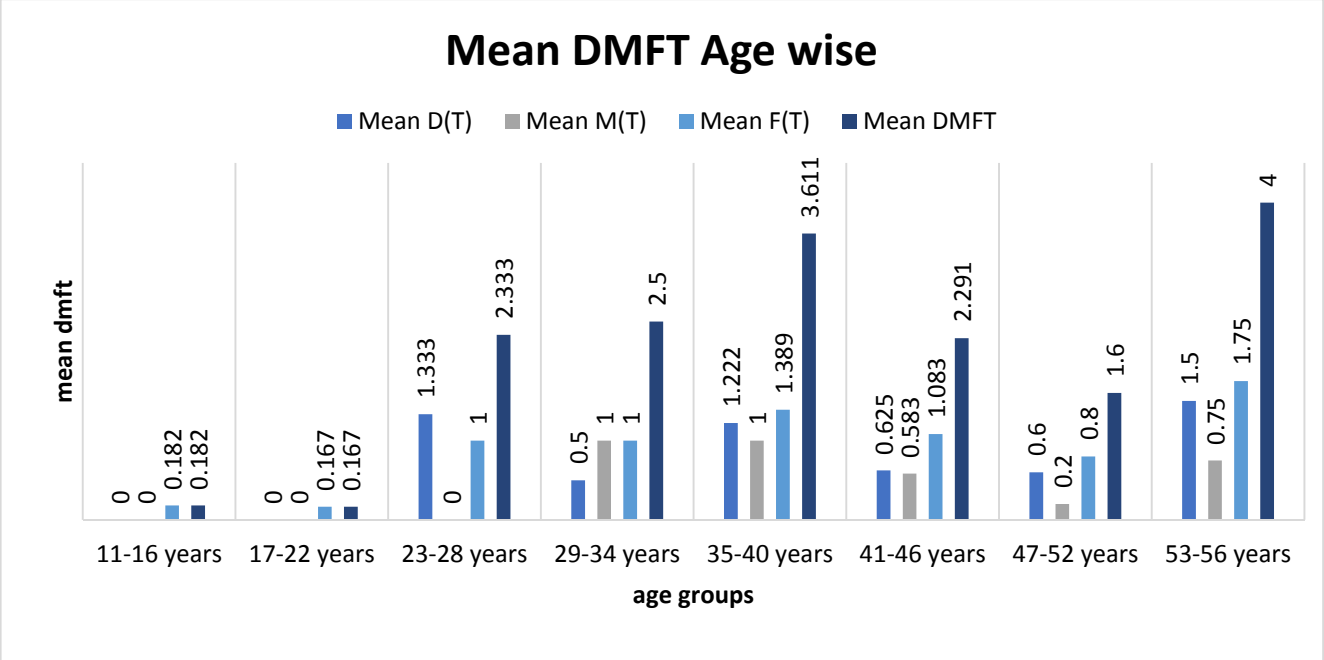

Figure 2: Age wise mean DMFT

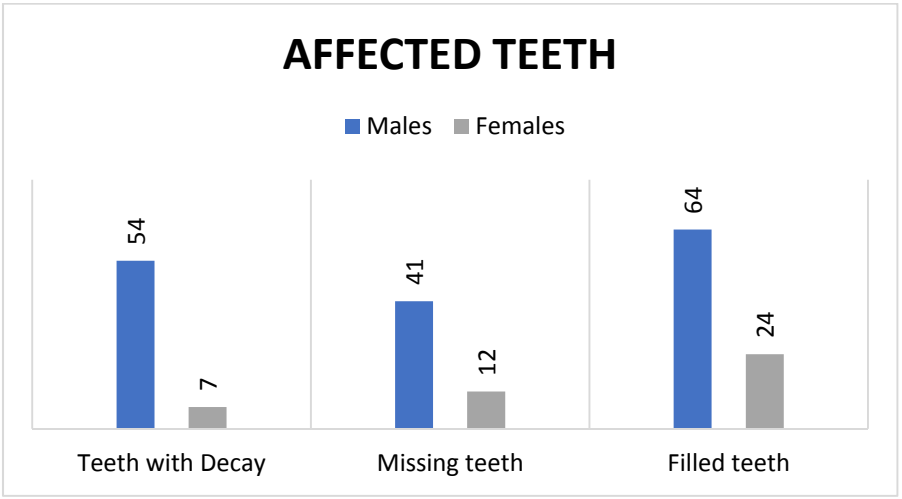

Figure 3: Sex wise depiction of number of teeth affected

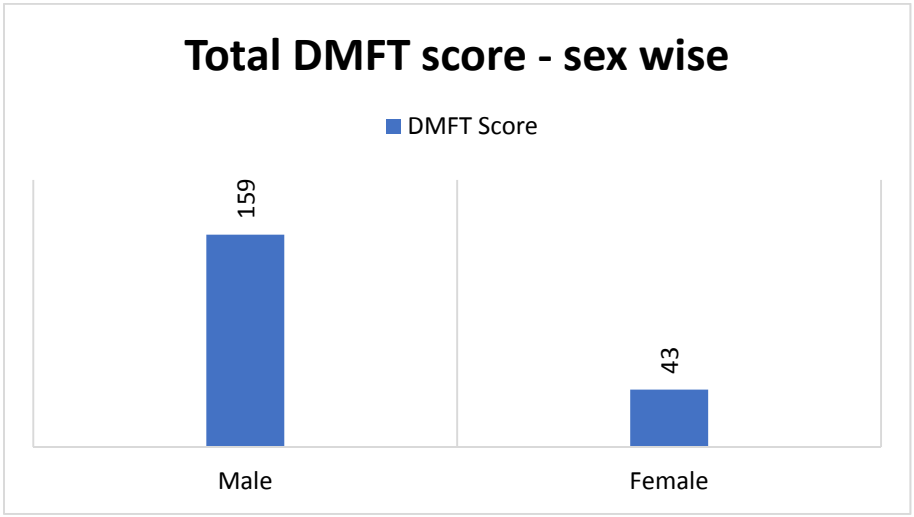

Figure 4: Total DMFT score- Sex Wise

Table 4: Caries Prevalence

Prevalence	Decay %	Missing %	Filled %	DMF %
Males	36.92%	30.77%	30.77%	56.92%
Females	22.22%	22.22%	29.63%	44.44%

Table 5: Mean DMFT Sex Wise

	Mean D(T)	Mean M(T)	Mean F(T)	Mean DMFT
N=92	0.663	0.576	0.956	2.195
Males (N=65)	0.831	0.631	0.984	2.446
Females (N=27)	0.259	0.444	0.888	1.591

Table 6: Mean DMFT Age Wise

	Mean D(T)	Mean M(T)	Mean F(T)	Mean DMFT
11-16 years	0	0	0.182	0.182
17-22 years	0	0	0.167	0.167
23-28 years	1.333	0	1	2.333
29-34 years	0.5	1	1	2.5
35-40 years	1.222	1	1.389	3.611
41-46 years	0.625	0.583	1.083	2.291
47-52 years	0.6	0.2	0.8	1.6
53-56 years	1.5	0.75	1.75	4

Figure 4 depicts the total DMFT score was found to be 159 for 65 males and 43 for 27 females. Thus, the caries prevalence is moderate; 53%, but the caries severity is low; mean DMFT 2.195. [4]

The significance of oral health factor is prominent in promotion of general health since many of the oral health conditions are reflected in systemic diseases and vice versa. However, dental health remains a low priority area particularly in rural and semi urban areas due to less availability or high expense of the required facilities.

In Behbehani and Scheutz' study on Oral Health in Kuwait, caries experience was found to be high within the older age group and the main treatment received was extraction which substantiated the finding that the main reason for dental visits was toothache. The dental status in the older age cohort was worryingly poor with a large unmet treatment. [8] In the present pilot study however, though there is large unmet treatment, the number of teeth treated surpass it by a small margin.

In Al-Mutawa SA's study, the corresponding mean DMFT/DFS figures for 12 and 14-year-olds were found to be 2.6/3.4 and 3.9/4.2. Poor dental hygiene and increasing age were suggestively associated with caries risk in the permanent dentition. [9] In the present study, the mean DMFT for the age group 11-16 years is 0.182.

In Joshi's study in Vadodara, the prevalence of dental caries was found to be 69.12%. The mean dmft/dmfs and DMFT/DMFS were 3.00/4.79 and 0.45/0.56 respectively, concluding that the prevalence and severity of dental caries in Vadodara city is high. [5] The prevalence in this study is comparatively less, 53% and the severity of dental caries is low. [4]

In George, Benley's study in Chennai, 58.2% of males and 54.2% of females had decayed teeth. Around 4.1% of males and 2.9% of females had filled teeth. The mean decayed, missing, filled teeth index was 5.1 and 3.9 for females and males, respectively. In the population younger than 24 years age, the prevalence of dental caries was the highest. [10] In this study, 36.92% of the males and 22.22% of females have decayed teeth. 30.77% of males and 29.63% of females have filled teeth, thus having comparatively better oral health.

In Handa, Sahil's study in Gurgaon, out of the total population 44.9% had dental caries with a mean DMFT of 1.61. [11] In this study, out of the total population 53.26% have caries experience with a mean DMFT of 2.195.

In Christian B's study in Kerala, the DMFT for 12 year olds was found to be 0.15 and it was also found that urban children did not have a higher caries experience compared with rural children. [12] In this pilot study, the 11-16 year olds have a similar DMFT; 0.182, suggesting similarities in the oral health patterns.

One of the limitations of the present pilot study would be the smaller sample size of females examined during the study. However, it is clear that this study can be further explored into a larger sample size and analyzed to understand the caries prevalence and oral hygiene status of the Indian population in a semi urban area in Kuwait.

CONCLUSION

The caries prevalence found to be 53% shows a moderate caries prevalence. The mean DMFT being 2.195 shows less caries severity. Of the total study sample, only 18.48% brush twice a day. Health awareness and education on frequent tooth brushing, flossing, and regular dental visits should be promoted to avoid dental caries. There is an urgency to establish appropriate and maintainable oral health monitoring systems in order to aid in the most cost-effective use of dental resources and the choice of the best means for achieving good oral health. The findings of this study could serve as a guide for planning community oriented oral health promotion programmes. There is also need for more comprehensive study involving a larger sample size.

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