The impact of caries experience on quality of life among dental students in Iraq

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ABSTRACT

Background: Dental caries is generally given the highest priority in national oral health services for adult populations. Yet, there is no study which has explored the impact on quality of life specifically related to dental caries in samples of dental students. The purpose of the current study was to assess the impact of caries experience on quality of life among dental students in three governorates in Iraq.

Materials and Methods: This observational study included 1364 dental students aged 18–22 years old, from three governorates. Information on quality of life was obtained from a structured, self-administered questionnaire from the students who were willing to participate in the study. The data was collected, summarized and statistically analyzed. Caries experience in the present study was determined by the Decayed- Missing Filled Surfaces (DMFS) indexed by WHO in 1997 in which all teeth were examined and all the third molars were included.

Results: Regarding dental caries and the four Quality of Life domains, in each domain scores, DS component had the highest contribution to the DMFS followed by the MS component while FS components had the lowest contribution to the index. On the other hand, DMFS showed the lowest mean among the good scores of all domains and it had the highest mean among the poor type.

Conclusion: The quality of life among dental students is associated with caries severity as the DMFS and its components affected different domains regarding quality of life.

Keywords: caries experience, dental students, quality of life. **(Received: 3/6/2019; Accepted: 28/7/2019)**.

INTRODUCTION

Dental students constitute a special population group concerning their oral health status and behavior since they have the best access to information and motivation for the prevention and treatment of oral diseases [(1).] On the other hand, their caries experience was found to be similar to that of other university students. They explained this by the fact that DMFT index is irreversible while for caries initiation and development, a sufficiently long period of time is needed [(2).]

Caries is a multifactorial disease, in addition to pH fluctuations in the bacterial plaque or biofilm which in turn may be influenced by many factors of oral hygiene, diet, fluoride and salivary flow, a number of other important factors such as social class, income, education, knowledge, attitudes and behavior may be involved in disease causes [(3).]

Oral diseases such as dental caries are highly prevalent and their consequences are not only physical; they are also economic, social and psychological.They seriously impair quality of life in a large number of individuals and can affect various aspects of life, including oral function, appearance, and interpersonal relationships [(4).]

Quality of life is a ubiquitous concept that has different philosophical, political and health-related definitions. Health-related Quality of life is a patient-reported outcome usually measured with carefully designed and validated instruments such as questionnaires or semi-structured interview schedules which include the physical, functional, social and emotional well-being of an individual; its measurement was judged by a healthcare professional or similar [(5).]

According to current knowledge, there is no previous Iraqi study concerning the effect of dental caries on quality of life assessment among dental students in Iraqi populations. This study was administered to a random sample at a public university with a caries experience profile.

The aim of this study was to investigate how the oral health behavior and clinically-assessed dental caries are related to quality of life measured by WHOQOL-BREF Field Trial Version among dental students in Iraq .

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MATERIALS AND METHODS

All the students participating in the study gave their verbal and written informed consent at the beginning. The participants were informed that they could withdraw from the study at any time. Ethical approval for this study was obtained by an official permission from Iraqi Universities/Colleges of Dentistry to facilitate conducting the research.This observational study was conducted at three universities (Basra, Anbar, Mosel), during the period between March 2018 to March 2019.

Approximately 1364 dental students aged 18-22 years old who attended the colleges of dentistry in the selected governorates in Iraq were examined. For convenience, students from the non-government colleges of dentistry were not included, as the study targeted Iraqi students from government universities only.The sample included both genders of the dental students (648 males and 716 females) with age range 18-22 years old.

The participants should not had any chronic medical disease, not physically handicapped, and not exposed to psychological trauma during the last six months. The participants completed a questionnaire containing items regarding name, age, gender, year of study in the bachelor of dental surgery, geographical location and smoking status. All the answers of the questionnaire were confirmed by the researcher.

Self-Administered WHOQOL-BREF (Field Trial Version) was used to evaluate the quality of life for the dental students into three groups: poor, fair and good scores [6-9]. The applied cut-off level reflects public health perspectives and treatment needs, rather than detailed individual statements of symptoms. It was possible to derive four domain scores (physical, psychological, social and environmental domains).

The four domain scores denote an individual's perception of quality of life in each particular domain. Domain scores are scaled in a positive direction (i.e. higher scores denote higher quality of life). Responses to the questions using a 5-point Likert scale. In the present sample, WHOQOL-BREF domain scores discriminated statistically highly significantly between contrasted groups of dental students at p-value <0.05 (n=736, df=734). The reliability index for the WHOQOL-BREF was assessed by using Cronbach's alpha which was 0.98. As a result of that, the indicator stayed on its version without drop of any item.

Caries experience in the present study was determined by the Decayed- Missing Filled surface (DMFS) index by the WHO in 1997[10] in which all the teeth were examined and all the third molars were included. The examination should adopt a systematic approach to the assessment of dentition status. Plain mouth mirror and CPI probe were used in the examination.

Data were statistically analyzed using SPSS version 22 software. According to the central limit theorem, in large samples (>30 or 40), the sampling distribution tends to be normal, regardless of the shape of the data. The collected data were grouped and illustrated in tables, and the following statistical tests were carried out: means, standard error. The Independent-Samples t- test procedure was used to compare means for two groups of cases. ANOVA (one way) was used to determine whether there are any significant differences between the means of more than two independent groups. When the p-values were less than or equal to 0.05, they were considered as statistically significant and if the p-values were more than 0.05 they were regarded as not significant.

RESULTS

A sample of 1364 students from dental colleges in the randomly selected governorates within the study age (18-22 years old) was examined. Table (1) shows the general description of the total samples. In this table the age in years categorized into five groups with the age group of 18 years of highly percentages than the others, females constituted 52.5% of the whole sample while the nonsmoking dental students form about 63.6%of both gender, however, 40.2% of the total sample was from the Basra University.

Figure (1) illustrates that the percentage of dental students with low severity of dental caries was higher than that of dental students with high severity of dental caries. Table (2) demonstrates the Quality of life domains scores according to caries severity where the DMFS ≥ 12 was considered as high severity and the DMFS <12 was considered as low severity. In this table, the mean scores of the four WHOQOL-BREF domains were higher among caries free dental students with highly statistical significance ($p<0.001$) among the three types of caries

severity. However, among caries free dental students, the mean score of psychological domain was lowest.

On the other hand, among the dental students with high caries severity, the mean score of physical domain was the lowest compared to other scores (34.91 ± 0.68) followed by mean scores of environment domain (35.97 ± 0.55) and then the mean score of both psychological and social domains were (42.91 ± 0.40, 40.64 ± 0.54 respectively). Regarding dental caries and the four WHOQOL-BREF domains, in each domain scores, DS component had the highest contribution to the DMFS followed by the MS component while FS components had the lowest contribution to the index. On the other hand, DMFS showed the lowest mean among the good scores of all the domains and it had the highest mean among the poor type. There were statistical highly significant differences (P<0.001) among the three scores of four WHOQOL-BREF domains regarding the DMFS and its components, as illustrated in Table (3).

Table (1): The Distribution of the Total Sample according to the Sociodemographic Characteristics.

Sociodemographic Characteristics		No.	%
Governorate	Anbar	464	34.0 %
	Mosel	352	25.8 %
	Basrah	548	40.2 %
Age	18 years	295	21.6 %
	19 years	270	19.8 %
	20 years	274	20.1 %
	21 years	265	19.4 %
	22 years	260	19.1 %
Gender	Male	648	47.5 %
	Female	716	52.5 %
Smoking status	Smoking	497	36.4 %
	Non smoking	867	63.6 %

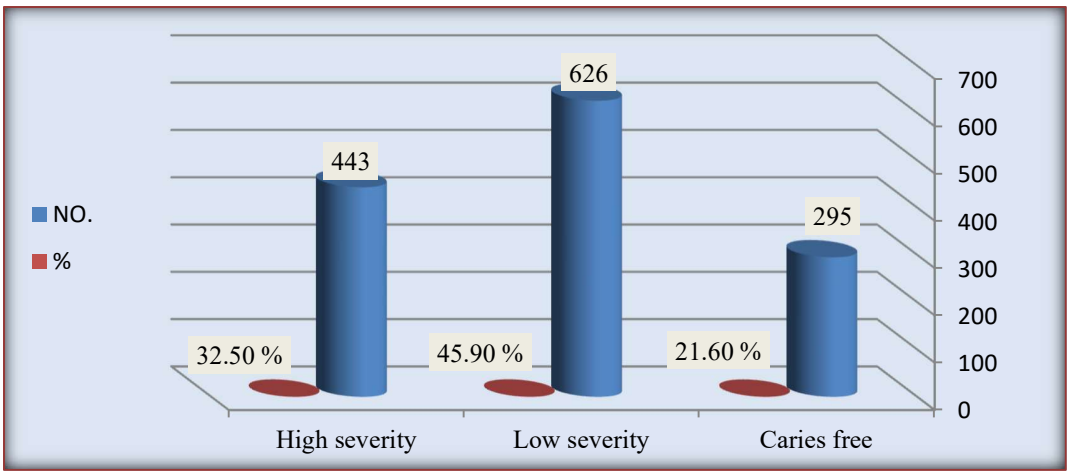

Figure (1): The distribution of dental students according to caries severity

Table (2): Quality of Life Domains Score (mean and SE) according to Caries Severity.

Caries severity		WHOQOL-BREF domains (mean ± SE)			
		Physical	Psychological	Social	Environment
Caries free N= 350		77.13 ± 0.34	63.88 ± 0.79	68.60 ± 0.93	65.27 ± 0.69
Low severity N= 633		59.12 ± 0.38	46.97 ± 0.39	46.13 ± 0.45	43.07 ± 0.57
High severity N= 381		34.91 ± 0.68	42.91 ± 0.40	40.64 ± 0.54	35.97 ± 0.55
ANOVA df= 2	F	1609.46*	393.44*	490.85*	507.28*
	Sig.	0.001	0.001	0.001	0.001

*Highly significant P≤0.01

Table (3): Caries Experience DMFS and its Components (DS, MS, FS) according to Quality of Life Domains Scores.

WHOQOL-BREF domains		Caries experience (Mean ± SE)			
		DS	MS	FS	DMFS
Physical health	Poor N= 323	16.29 ± 0.33	10.90 ± 0.30	0.76 ± 0.05	28.86 ± 0.38
	Fair N= 699	7.07 ± 0.18	4.50 ± 0.16	2.16 ± 0.09	12.25 ± 0.28
	Good N= 342	1.73 ± 0.26	0.58 ± 0.14	0.18 ± 0.03	2.48 ± 0.40
ANOVA df= 2	F	697.25*	509.40*	225.02*	1137.81*
	Sig.	0.001	0.001	0.001	0.001
Psychological	Poor N= 357	13.40 ± 0.38	8.54 ± 0.32	1.73 ± 0.09	23.34 ± 0.58
	Fair N= 661	7.79 ± 0.22	5.18 ± 0.19	0.91 ± 0.05	13.74 ± 0.36
	Good N=346	2.48 ± 0.30	1.13 ± 0.17	0.20 ± 0.03	3.81 ± 0.45
ANOVA df= 2	F	281.16*	202.75*	116.05*	371.51*
	Sig.	0.001	0.001	0.001	0.001
Social	Poor N= 313	12.92 ± 0.39	8.71 ± 0.33	1.62 ± 0.09	22.95 ± 0.61
	Fair N= 726	8.45 ± 0.23	5.35 ± 0.19	1.01 ± 0.06	14.64 ± 0.37
	Good N= 325	1.90 ± 0.30	0.78 ± 0.16	0.14 ± 0.03	2.83 ± 0.44
ANOVA df= 2	F	260.40*	215.69*	96.80*	361.48*
	Sig.	0.001	0.001	0.001	0.001
Environment	Poor N= 268	12.38 ± 0.45	7.91 ± 0.38	1.65 ± 0.10	21.62 ± 0.73
	Fair N= 776	8.83 ± 0.23	5.82 ± 0.19	1.03 ± 0.05	15.52 ± 0.35
	Good N= 320	1.95 ± 0.29	0.70 ± 0.15	0.15 ± 0.03	2.81 ± 0.43
ANOVA df= 2	F	218.07*	176.72*	92.27*	294.75*
	Sig.	0.001	0.001	0.001	0.001

*Highly significant P≤0.01.

DISCUSSION

Dental caries is a disease that is caused by many factors [11]. In order to evaluate dental caries, DMFS index was used, which is an arithmetical index that measures the cumulative caries aggression of the individuals [12]. However, it seemed that students' dental education affects DMFS components since it was noticed that a decrease in the number of carious lesions was accompanied by an increase in the number of fillings as the students progressed from one academic year to the next [2]. This finding shows that as the dental students with low severity (DMFS <12) of dental caries in the present study showed the higher percentage (46.4%). This could be explained by many factors affecting the prevalence of dental caries such as the level of education, socioeconomic status or good oral hygiene measures.

Evaluation of quality of life, including quality of life related to oral health, depends on an individual's expectations and experiences, which vary according to the social, psychological, socioeconomic, demographic, and other cultural factors [4,13]. Students with high DMFS had poor quality of life due to the psychological discomfort which is the biggest drivers of poor quality of life among dental students, which was in line with other studies [15-18]. Therefore, one may assume a similar pattern of quality of life related to oral health exists in young adults in different countries.

In the current investigation, a higher DMFS index was associated with low quality of life as the dental caries is multifactorial disease [19] and one of the most important factor that has an effect on it is the socioeconomic status [20,21] that includes social factor, low life style and behavior, low ability for utilization dental services [22,23]. So, because of these difficulties and the bad environment, this could lead to less care for the oral hygiene [24]. In contrast, Swedish and China studies did not find any differences in quality of life among young adults at high caries risk[17,25]. Nevertheless, Japanese university students with a higher DMFS index had lower quality of life [18].

At present, the mechanisms of the relationship between dental caries experience and quality of life are unclear. Given that physical pain was the most frequently reported, it is assumed that the dental caries experience among the dental students was likely associated with pain in their mouth. Public health measures, as well as dental practitioners, should focus on the prevention of dental diseases to decrease dental pain and DMFS index and improve quality of life among young Iraqis adults.

CONCLUSION

Clinically-assessed oral health (DMFS index) was found to be a significant predictor of low quality of life among dental students in Iraq. Public health measures should focus on the prevention of dental caries and the development of strategies to promote oral health specifically among dental students.

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المستخلص:

الخلفية: يأخذ تسوس الأسنان الأولوية القصوى في خدمات صحة الفم التي تخص الفئة الشبابية. لغاية الآن لاتوجد دراسة محلية تكشف تأثير جودة الحياة وعلاقتها بتسوس الأسنان بين طلاب طب الأسنان.الهدف من الدراسة الحالية :هو لقياس تأثير تسوس الأسنان على جودة الحياة بين طلاب طب الأسنان في ثلاث محافظات في العراق.

المواد والطرق: شملت العينة 1364 طالب طب أسنان بعمر 18-22 سنة من ثلاث محافظات. تم الحصول على معلومات عن جودة الحياة من الطلاب بواسطة أستبيان خاص. تم جمع البيانات وتلخيصها وتحليلها أحصائيا. تم قياس تسوس الأسنان في الدراسة الحالية بأستخدام مقياس DMFS من منظمة الصحة العالمية.

النتيجة: فيما يخص تسوس الأسنان والأنماط الأربعة لجودة الحياة فأنه في كل نمط تكون القيمة المتوسطة للاسطح المسوسة اعلى قيمة في المقياس تليها القيمة المتوسطة للاسطح المفقودة ثم الممتلئة. من ناحية أخرى فأن مقياس تسوس الأسنان يظهر أقل معدل له بين مجموعة جودة الحياة المرتفعة في كل أنماط جودة الحياة ويكون أكبر معدل لتسوس الأسنان بين مجموعة جودة الحياة المنخفضة.

الخلاصة: كان لجودة الحياة بين طلاب طب الأسنان تأثيرعلى تسوس الأسنان كما أنها ترتبط أرتباط وثيق مع شدة التسوس.

الكلمات المفتاحية: تجربة نخر الاسنان, طلاب طب الأسنان, جودة الحياة