RELATIONSHIP BETWEEN CARIES EXPERIENCE AND MOTHERS' DENTAL CARE KNOWLEDGE AND ATTITUDE AMONG PALESTINIAN REFUGEES IN LEBANON

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Abstract
The aim of this study was to assess oral health care and use of dental services among preschool Palestinian refugee children aged 3 to 6 years old, as well as to evaluate oral health care knowledge of their mothers.
Cross-sectional study was carried out through a survey about oral health care of 120 refugee children randomly selected from two nurseries inside a Palestinian camp for refugees in Beirut, Lebanon. Dental examination was performed and mothers were surveyed about their dental care knowledge and attitudes toward their children.
The mean Decayed-Missing-Filled index (dmf) index was 6.5 ± 5.25. The main determinants presenting a significant association with dmf were frequency of sweet consumption, frequency of brushing, brushing starting age, and dental visit experience. Caries severity increased with age and was higher among boys.
Adequate strategies should be targeted to cover the unmet dental needs of refugee's society is needed.

Keywords: Dmf - dental care – knowledge – attitude – Palestinian refugee.

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RELATION ENTRE L'EXPERIENCE DE CARIES ET LES CONNAISSANCES ET L'ATTITUDE DES MÈRES SUR LES SOINS DENTAIRES CHEZ LES RÉFUGIÉS PALESTINIENS AU LIBAN

Résumé
Le but de cette étude était d'évaluer la santé buccale et l'utilisation des services de soins dentaires chez les enfants réfugiés palestiniens âgés de 3 à 6 ans, ainsi que les connaissances à propos de la santé buccodentaire chez leurs mères. Une étude transversale a été effectuée au moyen d'un sondage sur la santé buccodentaire chez 120 enfants réfugiés choisis au hasard à partir de deux garderies à l'intérieur des camps de réfugiés palestiniens à Beyrouth, Liban. L'examen dentaire a été effectué et les mères ont été interrogées au sujet de leurs connaissances à propos des soins dentaires et des attitudes à l'égard de leurs enfants.
La moyenne de l'indice CAO était de 6.5 ± 5,25. Les principaux déterminants qui ont présenté une association significative avec le CAO étaient: la fréquence de la consommation des aliments sucrés, la fréquence du brossage, l'âge du début de brossage, l'expérience des visites dentaires. La gravité de la carie augmente avec l'âge; elle a été plus élevée chez les garçons.
Une stratégie adéquate nécessaire devrait être ciblée pour couvrir les besoins non satisfaits des soins dentaires des réfugiés dans la société.

Mots-clés: indice CAO – soins dentaires – réfugié palestinien.

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Introduction

Health is a fundamental individual right and is valuable to every community. About half a million of Palestinian refugees resided in Lebanon, posing a heavy burden on the host country [1]. Lebanon doesn't provide medical and educational services to the refugees. In order to cover these needs the United Nations has assigned a special branch called United Nations Relief and Works Agency (UNRWA) for Palestine refugees [2].

One of the UNRWA'services is the dental clinics, even though there is a huge gap between the refugees' dental needs and the provided dental services, with the proportion of one dentist for every 25 thousand Palestinian refugees.

Health behaviors and people's lifestyle decisions are not freely chosen, these are conditioned by their social and environmental conditions, which differ across societies [4]. Moreover, the effect of cultural traditions and socioeconomic circumstances on both parent's oral health knowledge and attitudes are directly inverted on their children's dental attendance and oral health care [5 - 7].

In literature, factors such as fluoride utilization, oral hygiene habits, dietary habits, socioeconomic level and parental education are considered as main risk factors studied in most surveys [8 - 11]. Moreover, lack of mother's knowledge on the oral hygiene of their children, as well as adoption of an inappropriate hygiene measures imperils the children to early caries occurrence. Thus the most important stage for the future of oral health is the early childhood, since during this period of life there is establishment of oral hygiene habits and diet that will determine the oral health status of the individual [12, 13].

Therefore, this study aimed to assess the dental caries experience and dental care practices among Palestinian refugees' preschool children living in Beirut camp, Lebanon and to study its relationship with mother's oral health knowledge and attitude.

Material and methods

This cross-sectional study was conducted in a Palestinian refugee camp in South Beirut of Lebanon. 185 children aged 3 to 6 years old attending two nurseries in the camp were included in the study. Randomly the first 60 children on the list provided by each nursery were included. The final sample consisted of 120 Palestinian preschool children.

Permission to conduct this study was obtained from the administration of the two nurseries and from the parents of the participants by sending them a consent form explaining the study purposes. The research started after approval by the ethical committee of the Faculty of Dentistry of Beirut Arab University (B.A.U).

Inclusion criteria for participation in this study were children free of any systemic, mental diseases and total cooperation of children and their parents.

Clinical examination

Dental examination was conducted in nurseries classrooms. Before dental examinations, calibration sessions were performed over two days. In the first day ten preschool children were screened; one week later, those children were rescreened. Intra-examiner reliability was determined using intraclass correlation coefficients (ICCs). The kappa test scores for dental caries assessment gave almost perfect intra-examiner reliability (ICC= 0.96).

All children were asked to brush their teeth before initiating dental screening. Gloves, masks, disposable mouth mirrors and probes were used. Each child was examined sitting on an ordinary chair. Diagnosis was visual under natural light with the aid of headlight using Graham-Field 570 Led Headlight (Grafco). No radiographs were used. Dental examinations were done by a single dentist, and a trained assistant gathered data including the name of the child, the gender and the school name. Caries experience of the child was recorded using the dmf index following the World Health organization diagnosis criteria and scoring system [14], the caries at D2 level were recorded as dental caries. The dmf index is applied to the permanent dentition and is expressed as the total number of teeth or surfaces that are decayed (D), missing (M), or filled (F) in an individual. Scores per individual can range from 0 to 28 or 32, depending on whether the third molars are included in the scoring.

Questionnaire

An Arabic modified version of WHO chart [15] was used. Questionnaire contained questions about child's profile as well as mother's oral health knowledge such as the reason of bushing, the role of fluoride, the correct size of toothpaste and the importance of dental visits. Also questions concerning mother's attitude toward their children's oral health care and attendance which included the age at which the child started brushing teeth, the frequency of teeth brushing, the reason for dental visits, the use of dental services and whether brushing was performed with or without assistance were included. Moreover, information about dietary habits such as the frequency of daily sweet consumption and the preferable times for sweet consumption was collected.

Data analysis

Data obtained from dental examinations and questionnaires were analyzed using statistical analysis software (Megastat Add-In). Descriptive tables were used to summarize the qualitative and quantitative variables.

The dmf index as a dependent variable was used as a reference descriptive statistics. The association between dmf and the independent variables: age, gender, dental health knowledge, oral hygiene habits, sweet consumption and dental visits were performed using statistical tests such as Chi-square test, Fisher Exact test and

Variable	Factors	N	With caries %	Mean dmf ± SD	p-value
Age	3 years old	20	60%	3.2 ± 4.01	0.0159 *
	4 years old	46	82.6%	5.5 ± 5.29	
	5 years old	36	88.8%	7.7 ± 5.38	
	6 years old	18	100%	9.9 ± 3.98	
Total		120	83.3%	6.5 ± 5.25	
Gender	Male	60	83.3%	7.17 ± 5.62	0.3061
	Female	60	75%	5.77 ± 4.85	

Table 1: Prevalence of caries, mean dmf in relation to the age group and gender.
* Statistically significant: $p<0.05$

Variable	Factor	N	%	Mean dmf ± SD	p-value
Reason of brushing	Fight caries	100	91.6%	6.3 ± 5.04	0.500
	More cleanliness	10	8.4%	8.0 ± 7.780	
Fluoride role	Right answer	34	28.4%	5.3 ± 5.53	0.280
	Wrong answer	86	71.6%	6.9 ± 5.13	
Importance of dental visits	Not important	8	6.7%	6.8 ± 6.9	0.855
	It's important	112	93.3%	6.5 ± 5.19	
Toothpaste amount	Full brush	22	18.3%	6.3 ± 4.69	0.838
	Half brush	84	70%	6.7 ± 5.50	
	Pea size	14	11.6%	5.4 ± 5.13	

Table 2: Mother's oral health care knowledge in relaion to mean dmf.

likelihood ratio to compare between qualitative data and t-test to compare between quantitative data. The level of significance was set for a p-value = 0.05.

Results

The total sample included 120 preschool Palestinian refugee children aged 3 to 6 years old. Personal profile of children is presented in table 1. Ten children were aged 3, forty-six were 4, thirty-six were 5 and eighteen were 6 years old at the time of dental examination.

The number of males and females were equal. The total dmf prevalence of examined children was 83.3% and the mean dmf was 6.5 ± 5.25. At the age of 3, 4, 5 and 6, caries prevalence was 60%, 82.6%, 88.8% and 100% respectively. The mean dmf scored 3.2 ± 4.01, 5.5 ± 5.29, 7.7 ± 5.38 and 9.9 ± 3.98 respectively. Age group in relation to dmf showed strong statistical significant difference where p=0.0159. There was no statistical difference between children in relation to gender where p= 0.3061, however the results showed that girls had lower dmf value 5.77 ± 4.85 than boys 7.17 ± 5.62.

Mother's knowledge about oral health care is presented in table 2. Most of the participated mothers (91.6%) answered that the reason of brushing teeth is to fight caries. However, 71.6% of them didn't know the role of fluoride. In addition, 93.3% considered that visits to a dentist are important. Two third of mothers claimed that the correct size of toothpaste for brushing is half brush amount, 18.3% full brush amount and 11.6% pea size amount. Children whose mothers answered positively on oral health care questions had lower dmf values. No evidence of statistical difference was found in mean dmf values in relation to mother's oral health knowledge.

Children's attitudes toward oral hygiene habits are shown in table 3. Mothers were asked about the age at which their children started to brush, how frequently their children's teeth were brushed and whether assistance during brushing was given. Ten children had never brushed their teeth before; those had the highest dmf scores (12.2 ± 4.21). Almost half of

Variable	Factor	N	%	Mean dmf ± SD	p-value
Start brushing age	Never	10	8.3%	12.2 ± 4.21)	0.026 *
	At 2 years	52	43.3%	5.4 (±4.89)	
	After 2 years	58	48.3%	6.4 (±5.32)	
Frequency of brushing	Never	10	8.3%	12.2 (±4.21)	0.021 *
	Sometimes	36	30%	6.9(±5.23)	
	Daily	74	61.6%	5.5(±5.96)	
Brushing assistance	With assistance	78	73.3%	5.7 (±4.98)	0.528
	Without assistance	32	26.6%	6.6 (±5.33)	

Table 3: Children attitudes toward oral hygiene practices in relation to the mean dmf.
* Correlation Statistically significant $p<0.05$

Variable	Factor	N	%	With caries %	Mean dmf ± SD	p-value
Frequency of sweet consumption	Never	0	0%	0	0.00	0.0037 *
	Once daily	24	20%	58%	2.1 ± 2.84	
	Twice a day	16	21.6%	92%	6.2 ± 4.94	
	Three and more	34	28.3%	94%	8.9 ± 4.90	
	Uncontrolled	36	30%	83%	7.2 ± 5.52	
Preferable time for sweet consumption	After meals	16	13.3%	75%	6.4 ± 5.29	0.981
	Between meals	28	23.3%	71%	6.3 ± 4.14	
	Bed time	4	3.3%	100%	8.0 ± 9.90	
	Indefinite time	72	60%	89%	6.4 ± 5.62	

Table 4: Children attitudes toward sweet consumption in realtion to caries prevalence and mean dmf.
* Statistically significant $p<0.05$.

Variable	Factor	N	With caries %	Mean dmf ± SD	p-value
Previous dental visits	No	86	71.6%	10.5 ± 5.05	0.001 *
	Yes	34	28.4%	4.9 ± 4.47	
Last dental visit	≤ 6 months	18	15%	10.8 ± 5.56	0.799
	> 6 months	16	13.3%	10.1 ± 4.76	
Type of treatment	Examination	16	13%	12.4 ± 4.14	0.135
	Extraction	6	5%	12.0 ± 5.00	
	Filling	12	10%	7.2 ± 5.23	

Table 5: Use of dental services in relation to the mean of dmf.
* Statistically significant $p<0.05$.

the children (48.3%) started to brush their teeth after 2 years of age, and 43.3% before 2 years of age. Those who started brushing before 2 years of age exhibited lower dmf levels. Statistical analysis showed significant differences in mean dmf values in relation to start brushing age (p=0.0265). 61.6% of children brushed their teeth daily, their mean dmf (5.5 ± 5.96) was lower than children who brushed their teeth sometimes.

The frequency of brushing teeth in relation to mean dmf showed statistical significant difference (p= 0.021). The mean dmf was lower among children who brushed their teeth with assistance than those who denied assistance during brushing. However, the relation to the mean dmf wasn't statistically significant (p=0.528).

The association between dmf value and dietary habits, in particular frequency and preferable time of daily sweet consumption are presented in table 4. The variable "children who consumed sweets once daily" was associated with dmf value that was almost four times lower than that recorded for children who consumed sweets three times daily. There was a significant difference in dmf value in relation to frequencies of sweet consumption (p = 0.0037). Almost 60% of children preferred to eat sweets in an indefinite time. For the 3.3% who preferred to eat sweets at bedtime, those had higher caries prevalence than children who preferred to eat sweets after meals or between meals. No statistically significant difference was found in dmf scores in relation to the independent variable "preferable time for sweet consumption" (p = 0.981).

Table 5 presents children's dental attendance. About two-third of refugee's children had never visited a dentist before. The mean dmf was higher in children who had never been to a dentist before than those who had past dental visits. A statistically significant difference in mean dmf was present in relation to dental visit experience (p = 0.001). Children whose mothers stated that the reason for child's dental visit was for filling had lower dmf scores than others. No differences were found in mean dmf values in relation to the time that had elapsed since the last dental visit and the type of treatment offered.

Discussion

This is a cross-sectional, population-based study that aimed to understand the asylum effect on oral health care among a group of Palestinian refugee children living in Beirut camp and attending nurseries. As far as our knowledge there is no comprehensive dental studies done before targeted this population. In order to fill the questionnaire, mothers were invited to their children's nurseries to avoid any misunderstanding and confusion. At the end of the questionnaire, mothers were able to ask and discuss questions related to dental health care.

The results of this study showed that the dmf index as an expression of caries experience was very high (6.5 ± 5.25). This index is higher than the goal set by WHO, where the mean index should not exceed 3 [15]. There was a significant difference in dmf value when associated with age groups, the results showed that when age increased the dmf scores increased as well. Several studies confirmed this result [16, 17, 18, 19]; the reason for that could be attributed to the delayed start of brushing age and factor of time since primary teeth of older children have been in the mouth for relatively longer period of time since eruption compared to younger children.

This study showed that Palestinian girls had lower dmf scores than boys. The reason for that is unclear, although it has been claimed that both boys and girls children acquire the same strain of mutans streptococci from their mothers, but Li and Caulfield found that boys have up to 13 times greater risk of developing caries than girls [20]. In another study it was reported that girls had cleaner teeth and lower caries experience in the primary dentition [21].

For a complete understanding of oral health disparities it's critical to investigate the role of genetic, biological, environmental, policy and organizational factors [22]. In our study, we tried to focus on Palestinian refugee's oral health care as well as the dental care knowledge and attitude towards dental care. Information about mothers' dental care knowledge was collected. In general children whose mothers had better knowledge had lower dmf experience than others even though the difference was not significant.

Cultural values have a strong influence on how people synthesize and comprehend health information, how attentive and receptive they are to health messages, and how they prioritize their resources [7, 23]. In the present study, the link between children's attitudes toward oral hygiene habits and dmf experience showed a significant difference in relation to the age at which the child start brushing and to the frequency of brushing. Furthermore, lower dmf scores were found among children who started brushing early and who brushed their teeth daily. This was in accordance with study results of Al Malik et al. [31] and Namal et al. [32] who reported that caries were more prevalent in those whose teeth were brushed less often and who had begun brushing later. Beside Watson et al. [33] reported that one of the strongest predictors of dental caries was an uncooperative child when attempting tooth brushing. About two third of children brushed their teeth with assistance, however this was not significant. Some studies found that parent's attitude to oral hygiene habits is culturally rooted practice and structurally maintained according to different societies [4]. Skeie et al. [23] compared western native children with immigrant children from eastern countries; they found a strong correlation between unfavorable parent's attitudes to oral hygiene and caries experience of their children which was five times higher among immigrant children. Furthermore, it was observed that

western native parents started tooth brushing for their children at much younger age [23].

The results showed little access to dental services among Palestinian refugee children; only 28.4% of them had been to a dentist before. However, the relation between children's dental visit and mean dmf were statistically significant. Children who had never been to a dentist before had dmf values two times higher than those who had past dental visits. The use of dental services was not a common practice among refugee children. This was expected since residents in the camp complain from tragic socioeconomic situation, where the poverty levels are high with 66.4% of Palestinian refugees in Lebanon are poor (<6 USD/person/day) and 6.6% to be extremely poor (2.17 USD/person/day) [24].

Daily sweet consumption was a common practice among all refugee children. A significant difference was found in mean dmf in relation to the frequency of sweet consumption; the dmf score increased when the frequency of sweet consumption increased. Many studies confirm the strong association between caries and consumption of dietary sugars, The socioeconomic evolution in United Arab Emirates that coincide with sudden transition from the traditional feeding and preparing children's meals, to a new style of cheap and ready-to-consume food typical of westernized diets, rich in sugar containing products. Greater consumption of such products by young children resulted in turn in greater dental caries experience [25]. Moreover, the annual per capita sugar consumption exceeding 15 kg has been associated with increased prevalence of dental caries [26].

Oral health care is related to behavioral and lifestyle factors which act as a balance in improving or worsening caries experience. However, further risk factors should be taken into consideration in future studies to outline the oral health disparities of Palestinian refugees.

In the developed countries, about 65% of the decline of caries between the 1970s and 1980s were attributed to the large improvements in socioeconomic conditions [27]. Furthermore, many studies in Western countries about foreign residents from Eastern countries, found that as a result of exposure to the new cultural system, refugees modified their values and health behaviors. Further findings suggested that individuals with high acculturation had better access to restorative and preventive services [28, 29]. In addition, according to the various surveys about the living conditions of Palestinian refugees in Syria and Jordan who lived outside the camps, the social and economic lifestyle of those refugees were not much different from that of the general population in the host counties [30].

Adequate strategies should be targeted to cover the unmet dental needs of refugees' society together with the implementation of health educational programs targeting both parents and their children to achieve better oral health care and proper use of dental services.

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