

The Prevalence of Dental Caries in Kindergartens' and its Associated Factors among Children in Sana'a City

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Abstract

Introduction: Oral health is crucial part of the overall health in children that could have important effects on diverse aspects of the quality of life of children. Dental caries is considered the key outcome for assessing the oral health status of children and continues to pose a serious threat to child welfare.

Objective: This study was undertaken to determine the prevalence of dental caries in kindergarten's children, measure dmft, and the relationship between dental caries and socio-economic factors, feeding practices and oral hygiene practices.

Methodology: A cross sectional study was used. The study population was 386 children from public and private kindergartens excluding who have permanent teeth. The questionnaire was adapted from previous studies. Oral examination was performed by the researcher. Data was analyzed by SPSS. An ethical approval was secured and an approval of the Ministry of Education was gained.

Result: The prevalence of dental caries in kindergarten's children in Sana'a city was 62%. The dmft among the affected children was 4.4(±3.1). The mean of d (±SD) was 4(±3). It increased significantly with increasing age while no significant gender difference. 72% of children in public kindergartens have dental caries (P > 0.05). 73 % of children who belong to mother who didn't finish the secondary education and 79% of children who their mothers have high income have high caries prevalence (P > 0.05). 66% of children who take bedtime drink, 74% who take drinks twice or more /day and 78% who take sweeteners with drinks have dental caries (P > 0.05). Conclusion: The caries prevalence in kindergarten's children of Sana'a city was 62% with a mean dmft score (±SD) of 2.8 (±3.5). Dental caries significantly increased with age, in public kindergartens. There was no significant association between dental caries or mean of dmft and oral hygiene practices.

Keywords: Prevalence; Dental Caries; dmft; Kindergartens; Children; Sana'a City; Yemen

Introduction

Oral health is crucial part of the overall health in children that could have important effects on diverse aspects of the quality of life of children [1]. Dental caries is considered the key outcome for assessing the oral health status of children. Dental caries is a public oral health problem that affects infants, preschool and school's children. It is the most costly diet related chronic disease ahead of coronary artery disease, overweight / obesity, hypertension and diabetes [2]. WHO has ranked dental caries as No3 among all chronic noncommunicable diseases that require worldwide attention for prevention and treatment [3-5].

The prevalence of dental caries was 67% in Jordan [6], 75% in Lebanese [7], 75% in Saudi Arabia [8] and 83% in United Arab Emirates [9]. In Yemen, most of studies were conducted among school children. The prevalence of dental caries was 96% in Sana'a [10], 90% in Aden [11], while in Al-Mukalla, was 50% [12]. On the other hand among 5 years old children the prevalence of dental caries was 68% [13].

Risk factors of dental caries

Dental caries prevalence was observed with increase age [14-16] and higher in males as compared to female [17,18]. The caries prevalence was significantly higher among children from government preschools as compared to those from private preschools in Saudi Arabia [8]. Oral hygiene habits are identified as caries risk factors with a report in a strong correlation between oral hygiene habits and the prevalence of dental caries. A recent publication have shown that daily tooth brushing with fluoride toothpaste in 3 to 6 years old significantly reduces caries incidence [19]. The younger children are when they start tooth brushing the lower the proportion developing tooth decay [20,21]. Teenagers who were caries free were more likely to brush their teeth twice a day at 3 years of age compared with teenagers with caries experience [22]. Two cross sectional studies have reported associations between an increase in frequency of brushing and a reduction in dental caries [23,24]. It is well known that parental attitudes have an impact on the establishment of oral hygiene habits in children [25,26].

Despite the seriousness of dental caries problem among preschool children, there has been a paucity of prevalence studies in Sana'a and in Yemen in general. The only study that we could trace among preschool children is the one conducted by Al-Haddad in 5 governorates among 5 years old children. Such scarcity may be due to the difficulty in accessing to this age group or the mistaken perception that primary teeth are not as important as the permanent, so the Study objectives were to estimate the prevalence of dental caries among Sana'a kindergarten's children., to calculated mft score (d= decay, m= missing due to decay, f= filling teeth) and to assess demographic, and oral hygiene practices associated with dental caries.

Methodology

The study was conducted in Sana'a City, the capital of Yemen. A cross sectional study was used. The study population was the children attending public and private kindergartens in Sana'a City excluding all children with one or more permanent teeth and children who have systemic disease. A sample size was calculated using Epi Info software with 51% dental caries prevalence, 5% margin of error, 95% confidence level and 80% power. The sample size came to be 384. We increased it by 15% to be 440. The questionnaire was adapted from previous similar dental caries studies among preschool children. Oral examination was performed by the researcher. The WHO criteria (1997) for carious lesions were used to diagnose dental caries. Data was analyzed using the Statistical Package for Social Science (SPSS) program. An ethical approval was secured from the Research Ethical Committee at the Faculty of Medicine and Health Sciences. Approval of the Ministry of Education to carry out the study was gained.

Results

This study was conducted on 440 children. 9 children didn't respond. The age of the children is ranged between 2 - 6 years old. 46% of children were 5 years old. 56% were females and 44% were male. 60% were from private kindergartens and 40% from public kindergartens. The prevalence of dental caries in kindergarten's children in Sana'a City was 62%. The dmft was 2.8(\pm 3.5). The mean of d (\pm SD) was 4.4(\pm 3.4), m (\pm SD) was 1.4(\pm 0.9), and f (\pm SD) was 1.8(\pm 0.9). The highest decayed teeth were the left lower first molar (34%) and the lowest decayed teeth were the lower central incisors teeth (1.2%).

Caries prevalence and dmft increased significantly with increasing age. There was no significant gender difference in caries prevalence or dmft score. Children in public kindergartens have statistically significant higher caries prevalence than children in private kindergartens while the dmft increased significantly in private kindergartens' children.

	2 years	3 years	4 years	5 years	6 years	male	female	public	private
Caries/affected	15%	35%	51%	68%	69%	64%	60%	70%	56%
free	85%	65%	49%	32%	31%	36%	40%	30%	44%
P value	< 0.0001					> 0.05		< 0.01	
dmft X	0.2	2.1	2.1	3	3.7	3.1	2.7	3.3	3.6
SD	0.6	4.7	2.9	3.4	3.8	3.6	3.5	2.5	3.5
P value	< 0.01					> 0.05		< 0.05	

Table 1: The association between dental caries and mean of dmft with demographic data.

There was no significant association between dental caries or dmft score and oral hygiene practices in preschool children.

Caries	Brushing			Frequency of brushing/day		Age of starting brushing				Parent's supervising		
	No	Sometimeee	Yes	once	Twice	< 1	1-2	3-4	5-6	assistance	supervising	alone
affected	59%	62%	63%	66%	60%	44%	62%	63%	71%	78%		63%
free	41%	38%	37%	34%	40%	56%	38%	37%	29%	22%		37%
P value	> 0.05			> 0.05		> 0.05				> 0.05		
dmft X	3.2	2.9	2.7	2.7	2.8	2.1	2.5	3.1	2.7	3.2	2.5	3.4
SD	4.3	3.7	3.2	3.2	3.2	3	2.8	3.6	3	3.7	3.1	3.6
P value	> 0.05			> 0.05		> 0.05				> 0.05		

Table 2: The association between dental caries and mean of dmft with oral hygiene practices data.

Discussion

In our study the prevalence of dental caries was 62%. This prevalence is near to the prevalence of dental caries in Sri Lanka (69%) [27], Jordan (67%) [6], Al-Ahsain Saudi Arabia (63%) [28] and Yemen (68%) [13]. However, our prevalence is less than other Middle Eastern countries such as Saudi Arabia (Riyadh) (85%) [8], United Arab Emirates (83%) [9], and Syria (70%) [16]. Such lower prevalence in our study compared to this high prevalence in neighboring countries, can be explained by the fact that no radiographs were used in the present study. Nevertheless it is high compared to other countries such as India (28%) [15] and Turkey (17%) [29]. The plausible explanation for such discrepancy can be inequality in efficiency of health care system.

The mean of dmft between the children who have caries (±SD) in this study is 2.8(±3.5) which is quite the mean dmft score in Samsun in Turkey [30] 2.9, and Northern Palestine [31] 2.5. It is less than the mean score in United Arab Emirates 5.1 [9] and Riyadh, in Saudi Arabia [8] 6.1(±3.9).

Similar to other studies, this study showed that caries prevalence increased significantly with age [15,16,32]. This could be explained by the increasing number of erupted primary teeth and the exposed time to the oral environment and cariogenic challenge. There was no significant gender difference in the prevalence of dental caries. Recent studies reported similar finding [8,28,33]. In the present study, public kindergartens' children have more caries prevalence than children in private kindergartens. This result is in agreement with studies conducted in Saudi Arabia [8,34] and India [35] but unlike study in Al-Mukalla in Yemen [12].

In our study, there is no significant association between dental caries and oral hygiene practices. A study in Australia [36] and in Quchan [37] proved that two factors had a statistically significant relationship with dental caries: The age of starting of brushing and the parents' assistance. A significant difference was between children who were supervised or not for dmft where children who brushed their teeth alone without supervising have higher dmft. This finding is similar to a study in Vientiane, Lao PDR [38]. This may be due to many of

children cannot brush their teeth adequately when untutored and unsupervised. Most children spend less than 60 seconds brushing their teeth, and more than 80% of the time the brush is placed on the least-carries susceptible mandibular anterior teeth.

Conclusion

The caries prevalence in kindergarten's children of Sana'a city was 62% with a mean dmft score (\pm SD) of 2.8(\pm 3.5). Dental caries significantly increased with age, in public kindergartens. There was no significant association between dental caries or mean of dmft and oral hygiene practices.

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