



THE PREVALENCE OF DENTAL CARIES IN PERMANENT DENTITION FOR 12-YEAR-OLD SCHOOL CHILDREN IN NORTHERN PALESTINE

KUZAY FİLİSTİN'DE 12 YAŞINDAKİ OKUL ÇOCUKLARINDA DAİMİ DİŞLENME DÖNEMİNDE DİŞ ÇÜRÜĞÜ GÖRÜLME SIKLIĞI

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ABSTRACT

Aim: To determine the prevalence of dental caries among a representative sample of 12-year-old school children in Northern Palestine, and to evaluate the oral health status of the Palestinian children.

Materials and Methods: 357 children were screened for dental caries, missing teeth due to caries and existing fillings. The screening was performed according to the WHO method.

Results: 84% of the sample (300 children) had dental caries as expressed with DMFT index mean which was found to be 3.45, whereas the other 16% of the sample was caries free. Girls had a higher mean DMFT score compared with the boys: 3.94 vs. 3.04. The Care Experience Index was very low: 6.7% (7.5% for males and 5.8% for females).

Conclusion: The results of this study provided evidence that the oral health programs in the schools of Northern Palestine need improvement and emphasis should be placed on oral hygiene instructions and preventive dentistry.

Keywords: DMFT, Palestinian Children, Permanent Teeth, Preventive Programs

ÖZET

Amaç: Kuzey Filistinli çocukları temsil eden 12 yaşında daimi dişlenme dönemindeki okul çocuklarından oluşturulan örnekleminde diş çürüğü görülme sıklığının ve ağız sağlığının değerlendirilmesi.

Gereç ve Yöntem: 357 çocuk diş çürükleri ve mevcut dolgular ve diş çürükleri nedeniyle eksik, olan dişlerin tespiti için tarandı. Tarama WHO metoduna göre yapıldı.

Bulgular: Örneklemin(300 çocuk) %84'ü DMFT indeksi ile ortalaması 3.45 ifade olarak değere göre çürük dişlere sahipken, numunenin diğer %16'sında çürük bulunamamıştır. Kızların DMFT skoru erkeklere göre daha yüksek bulunmuştur: 3.94 vs 3.04. Ağız Bakımı Deneyim İndeksi çok düşük bulunmuştur.: %6.7 (erkeklerde %7.5, kızlarda % 5.8).

Sonuç: Bu çalışmanın sonuçları Kuzey Filistin'deki okullarda diş sağlığı programlarının geliştirilmesi ve oral hijyen talimatları ve koruyucu diş hekimliği üzerine gerekli vurgulamanın yapılması gerektiğini kanıtlamıştır.

Anahtar kelimeler: DMFT, Filistinli Çocuklar, Daimi Dişler, Koruyucu Programlar

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INTRODUCTION

Most of the developed countries and many developing countries are coming closer to the World Health Organization's (WHO) goal of having less than 3.0 decayed, missing or filled teeth for each 12-year-old child¹.

The WHO carried out several surveys worldwide to evaluate the prevalence of tooth decay using standardized surveys and indices. The most commonly used index was the DMFT Index². It describes the frequency of dental caries in an individual and is obtained by calculating the number of Decayed (D), Missing (M) and Filled (F) Teeth. The WHO aims towards a maximum of three teeth, as a mean, being affected by caries at the age of 12. However, a low mean caries level of "3.0" does not exclude the many individuals in the same population who have considerably higher DMFT values³.

To evaluate dental care rendered to a certain population, the Care Experience Index was examined along with the DMFT Index. The Care Experience Index reflects the restorative care received by those who had dental caries.

In this study, our aim was to determine DMFT mean and Care Experience Index in Northern Palestine in order to evaluate the overall dental health status of the Palestinian children. In addition, finding out that these results fit with WHO criteria would now help the concerned authorities in the health sector to make the right plans and policy changes and work towards improving the oral health of children.

MATERIAL AND METHODS

The sample consisted of 357 students of both sexes covering the Northern Palestinian districts. Included in this study were pupils who had their permanent teeth fully erupted in both arches up to the first permanent molar, whereas any previous history of receiving specific organized preventive treatment excluded them as candidates for this study. The prevalence survey of our 12-year-old children representative sample was examined according to DMFT Index survey methods. World Health Organization (WHO) Oral Health Assessment forms have been used^{4,5}.

Medical, dental and social histories were taken. Data were registered in individual diagnostic charts after examining the teeth of subjects who did not brush their teeth nor had them professionally cleaned prior to examination. No radiographic examinations were performed. Diagnosis of caries was based on the detection of carious lesion at the cavitations stage, in accordance with criteria recommended by the WHO⁶, and documented using decayed (D), missing (M), and filled (F) teeth (T) index. Caries diagnosis was based on visual- tactile criteria using sterile dental mirror and explorer and a portable torch.

Dental examinations were carried out through visits to schools. By using plain mirrors, blunt dental explorers (0.6- 0.7 mm in diameter) and portable torches to illuminate the oral cavity, one trained dentist (B.S.) performed the examination on the subjects who were sitting on their classroom chair in a supine position.

For the DMFT index, teeth that had been extracted for orthodontic purposes, or those that were missing

The Prevalence of Dental Caries for 12-Year-Old
School Children

due to trauma or were congenitally absent, were excluded from the data processing and therefore did not contribute to the final score. Missing teeth were included only if their loss was due to caries.

Care Experience Index was also calculated in this study by dividing the number of filled teeth by the number of examined students.

Statistical Method

Pilot testing had been performed in this study. Descriptive statistics: frequencies, means and standard deviations were calculated. The Statistical assessment and figures had been carried out using SPSS program version 15.

Table 1. The distribution of the sample according to residency and sex of the examined pupils

Residential Area	Cities	Villages	Refugee Camps	Total
Gender				
Male	39	131	25	195
Female	46	75	41	162
Total	85	206	66	357

RESULTS

Our sample size comprised of 357 pupils: 54.6% were males (195 pupils) and 45.4% of the sample were females (162 pupils). The age, gender, and geographic distribution of the children appear in Table 1.

By estimating the Decay Index (DT index) we found that 81.2% of the sample suffers from dental decay in one or more of their teeth at the cavitations' stage. The DT mean was 3.12 (Standard deviation = 2.62) with (95% CI=2.85-3.39) Figure 1.

The second variant was Missing Teeth (MT). The results showed that 6.4% of the examined pupils

suffered from missing one or more of their teeth due to caries. MT mean = 0.11 with (95% CI=0.06-0.16). Thus, the percentage of those who resort to undesirable teeth extraction is very small when compared with those who suffer from decayed teeth. Another low index was the Fillings (FT index). 10.9% in the sample had one or more of their teeth filled, 0.23 (s.d = 0.84) and (95% CI=0.15-0.32).

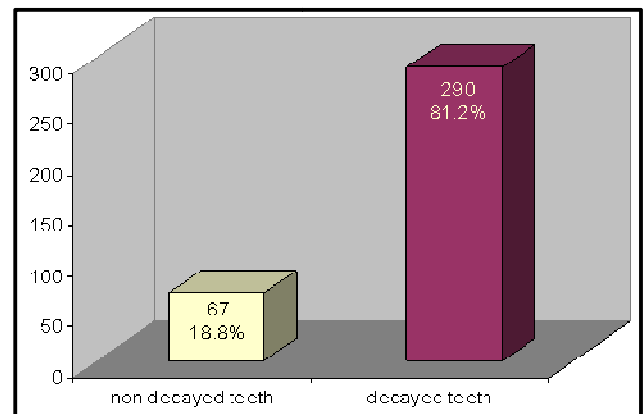


Figure 1.Prevalence of Decayed Teeth

The prevalence of dental caries for 12-year-old school children in Northern-Palestine was evaluated through the DMFT mean, which was found to be 3.45 (95% CI=3.17-3.74). This value is higher than the rate of the WHO's global goal (DMFT mean < 3)⁴, and Palestinian female children had dental caries more than their fellows males Figure2 and Table 2.

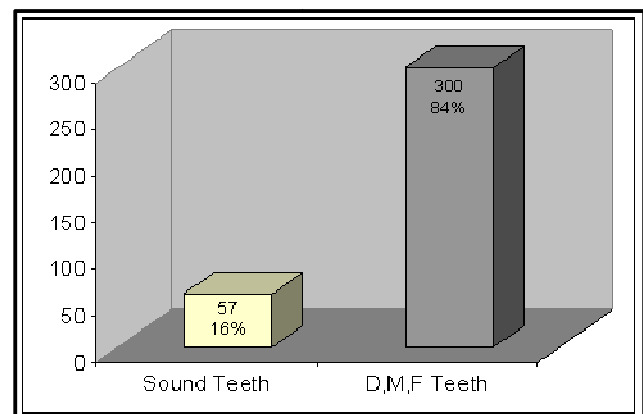


Figure 2.Prevalence of DMFT in the Palestinian sample

The Prevalence of Dental Caries for 12-Year-Old School Children

Table 2.The means of all variations

Gender		Decayed	Missing	Filled	DMFT
Male	Mean	2.73	0.09	0.23	3.05
	N	195	195	195	195
Female	Mean	3.59	0.14	0.23	3.94
	N	162	162	162	162
Total	Mean	3.12	0.11	0.23	3.45
	N	357	357	357	357

The Care Experience Index demonstrated a poor pattern of oral hygiene and care; it was found to be 6.7% for both sexes (7.5% males and 5.8% females) Figure 3.

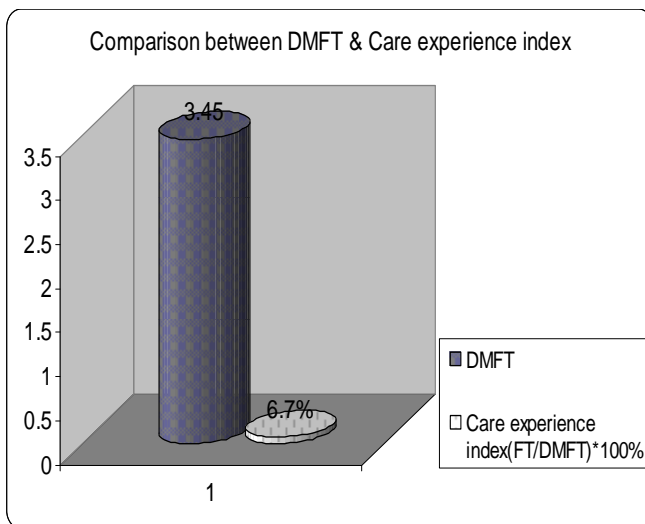


Figure 3.The means of all variations

Looking at DMFT means, we can see that DMFT mean was nearly the same among cities, villages and refugee camps. It was 3.72 for students who lived in the city, 3.41 for those from villages and 3.24 for students living in the refugee camps (UNRWA schools) Table 3.

DISCUSSION

This sample study was conducted in several schools at six governorates in Northern Palestine in

order to evaluate the overall dental health of children living in the West Bank and to compare our results to the global goal of (WHO)⁴ and the neighboring countries⁷⁻¹⁰

Table 3.The means and standard deviations of DMFT according to residential area

Residential Area	Number of Examined Pupils	Mean	Standard Deviation
Cities	85	3.72	2.83
Rural areas	206	3.41	2.80
Camps	66	3.24	2.35
Total	357	3.45	2.73

However, the mean DMFT index for 12-year-old Palestinian schoolchildren was found to be 3.45. This value is higher than the mean DMFT for 12-year-old schoolchildren accepted by the WHO.

In many countries, such as industrialized countries e.g. The United States of America, Chaffin et al found that DMFT was 1.1. and fifty percent of the children were caries free in their permanent dentition, with 17% having DMFT values greater than or equal to 3.0¹¹. In Great Britain, the DMFT mean across England was 0.64. In Wales, it was 1.09, and in Scotland, 1.29.¹² In another study conducted in Italy, the DMFT mean was 1.1.¹³, while in South Africa the DMFT mean for a similar age group was 1.1.¹⁴

When comparing our results to the neighboring countries such as Jordan, we find that the DMFT index for the same age is 2.51¹⁵, while in Kuwaiti schoolchildren, 2.6,¹⁶ and in Syria, fluctuated between 1.4 – 2.5 for the same ages in 2004.¹⁷ In Israel however, the mean DMFT was 1.66.¹⁸



These results show that DMFT mean in Palestine is higher than the standard value of the WHO, which must not exceed 3.0, and at the same time, it is high when compared with the neighboring and other developing countries.

Furthermore, WHO's Oral Health Data Bank released the DMFT values at age 12 for 107 of 173 countries in 1980. Of these, 51% had 3.0 DMFT or less, while the remaining 49% had higher values. In the year 2000, data were available for 184 countries as recorded in the WHO Oral Health Country /Area Profile; of these, 68% had DMFT mean less than 3.0.¹⁹

In this study, we found that only 16% of 12-year-old schoolchildren had DMFT = 0, while it is higher in other countries. For example, in England & Wales, as industrialized countries, 68.7% of the 12-year-old schoolchildren were caries free; while the percentage in Scotland was 52.9%⁷. In Nigeria, a developing country, it was found that 85% of 12-year old schoolchildren were caries free¹⁵, while in Jordan 27.1% of the pupils were caries free¹¹, and the percentage in Kuwait was 26.4%¹⁶.

The Care Experience Index in this study was 6.7%; this is considered very low when compared with the United Kingdom survey values. The UK Care Index mean was 12% in 1995/96 then improved to 55% in BASCDsurvey results in 2002 / 2003²⁰.

Care Experience Index reflects the restorative care received by those who have suffered disease; therefore this has to be viewed in conjunction with DMFT. These results are of great interest when studying dental care rendered to this age group.

It is considered that the main reason for the increase in the rate of caries, above 3.0, and the decrease in the level of FT mean and the Care Experience Index is the deficiency of establishing efficient and applicable "School Oral Health Programs"^{21, 22}.

CONCLUSION

This study revealed that the prevalence of dental caries in permanent dentition for 12-year-old school children in Northern Palestine is higher than many other countries.

This study focuses on the importance of supporting the Palestinian healthcare providers in providing proper patient education and offering prevention programs and primary healthcare to the Palestinians in Northern Palestine.

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