

### Original Article

## Investigations of the Oral Health Status of a Group of Libyan Children and Its Relation to Home Care

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### ABSTRACT

**The aim:** this study was aimed to investigate the oral health status of a group of Libyan children.

**Subjects and Methods:** Two hundred and eight children were included in the study. The samples were subdivided into 3 age groups (6, 6-12 and >12 years old). Both the extent and the degree of gingivitis severity were assessed in the incisor area of the maxilla and the incisor and canine area of the mandible in the anterior teeth by using extent of gingivitis (GE) and gingivitis severity (GS) indices. The individual gingival units: papillae (P), Margins (M) and attached gingivae (A) were assessed for the presence of inflammation based on visual examinations. The caries experience was assessed by using dmft for deciduous teeth and DMFT for permanent teeth.

**Results:** EG & GS were assessed and the majority (206 out of 208 i.e. 99%) of children suffered from different degrees of gingival inflammation. Untreated carious lesions were noticed in 194 (93%) of cases in this group.

**Conclusion:** There has been more untreated caries and more pronounced gingival inflammations of various degrees in this sample due to the lack of proper dental care.

**Key words:** Libyan children, Gingivitis indices, dmft & DMFT, tooth brushing practice.

### INTRODUCTION

Dental caries and periodontal disease are among the most common oral diseases and causing loss of teeth <sup>(1-3)</sup>. Teeth are most susceptible to dental caries soon after they erupt; therefore, the peak age for dental caries is 2–5 years for the deciduous dentition and the newly erupting permanent dentition <sup>(2)</sup>. It was estimated that the prevalence of early carious lesions in 6 to 34 month-old infants is about 30% in high dental caries risk communities <sup>(4)</sup>.

The second International Collaborative Study of Oral Health Systems (ICSII) World Health Organization, 1997, revealed that substantial numbers of children and adults reported impaired social functioning due to oral disease, such as avoiding laughing or smiling due to poor appearance of teeth. Throughout the world, children frequently reported apprehension about meeting others because of the appearance of their teeth or being bullied about their teeth by other peers. In addition, dental diseases cause considerable pain and anxiety. These factors are likely to be exacerbated in societies where pain control and dental care are not readily available.

The aim of this study was to investigate the oral health status in a group of Libyan children to serve as a data base for future studies.

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## SUBJECTS AND METHODS

Two hundred and eight children, free from any systemic disease and/or mental developmental disorder, were examined in the Paediatric Department in the Faculty of Dentistry, Benghazi, Libya during their routine dental visit in the period from March 2016 to August 2016. Parental permission for oral examination and participation in the study was obtained before commencing the study. There were 112 girls and 96 boys included in the study. The sample was further subdivided into 3 age groups, younger age group (< 6 years old), mixed dentition (6-12 years old) and older age group (> 12 years old).

### *Caries experience evaluation*

The extent of dental experience was measured using the dmft / DMFT (for primary dentition/permanent dentition; respectively) index according to the guidelines of Palmer *et al.* <sup>(5)</sup>.

According to the recommendations set by WHO and FDI cooperatively, the global goals for oral health to be achieved by the turn of the century including that children aged 12 years on average should have a DMFT of below 3 (WHO/FDI) <sup>(6)</sup>.

### *Periodontal health evaluation*

The evaluation was based on visual detection of gingival inflammation using index teeth on anterior segment only in upper 4 incisors and 6 lower anterior: 3 papillae (P), 4 marginal gingiva (M) and 4 attached (A) in the upper index teeth and 5 P, 6 M & 6 A in the lower index teeth as modified from <sup>(7-9)</sup> (Table 1).

The gingival inflammation was evaluated according to the degree of severity (Gingivitis severity CS) scores and related characteristic features (Table 2).

## RESULTS

### *Dental caries status*

The caries prevalence varied among the different age groups with the dmft/DMF for those younger

than 6 years was 5.3, 6-12 years was 6 and those older than 12 years were 2.6, (Figure 1). Besides, a great percentage of the attending children (93%) had untreated carious teeth both in the primary and permanent dentitions (Figure 2).

### *Periodontal health results*

In our sample, gingivitis was seen in the majority of children where the inflamed gingival units were scored from 7 to 14. In the different age groups, gingivitis was present in 98% of < 6 years, 99% of 6 – 12, and 100% of > 12 years old (Figure 3)

### *Gingivitis severity inflammation (GS scores)*

The degree of gingivitis severity (GS) assessed in our sample showed that the highest level of severity was of the moderate type (GS2) which was seen in the majority of children (78%), while the severe type (GS3) was found in 15%, and the least was mild gingivitis (GS1) in 6% of the total examined children (Figure 4).

### *Home care practice by Libyan children*

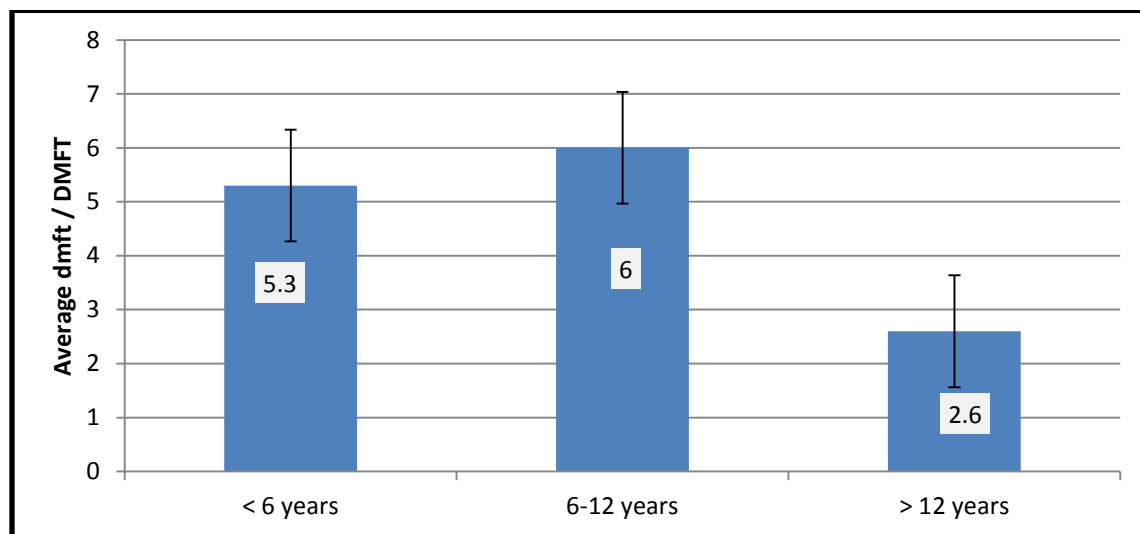
The majority of sampled children did not brush their teeth at all (82%), while few practice once (5%), twice (11%) and thrice (2%) brushings per day, (Figure 5).

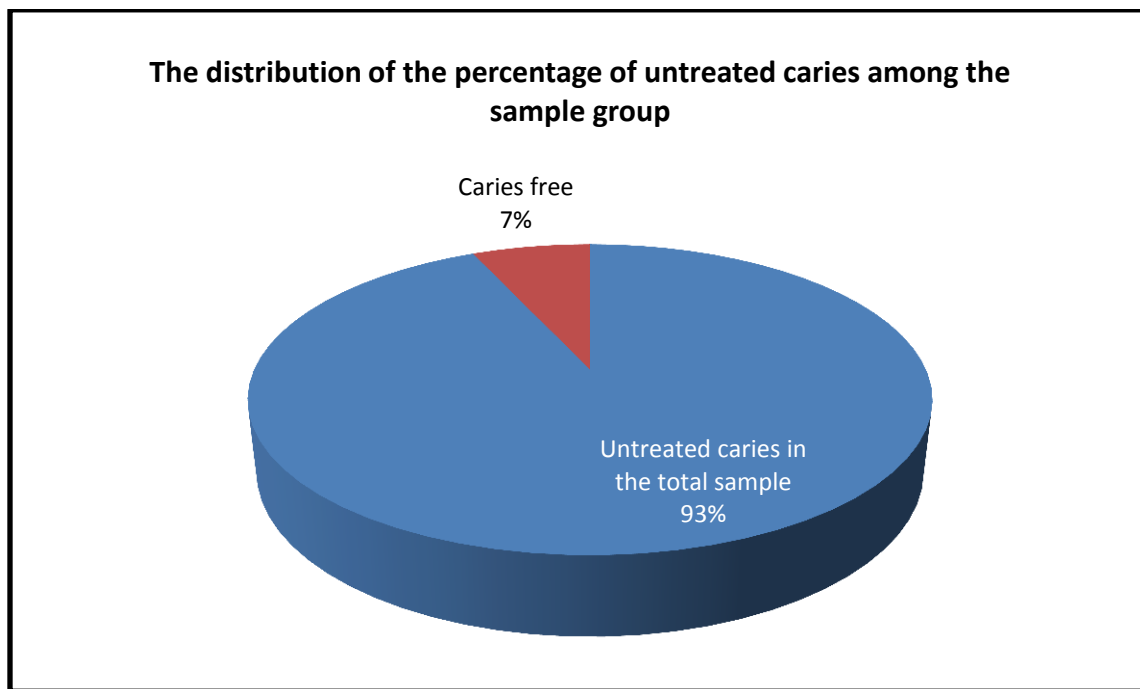
**Table 1:** Distribution of gingivitis extent (GE) scores

Gingivitis extent scores (GE)	Number of inflamed units
GE 1	No inflammation in units
GE 2	Scores from (1-6) inflamed units.
GE 3	Scores from (7-14) inflamed units.
GE 4	Scores from (15-18) Inflamed units.

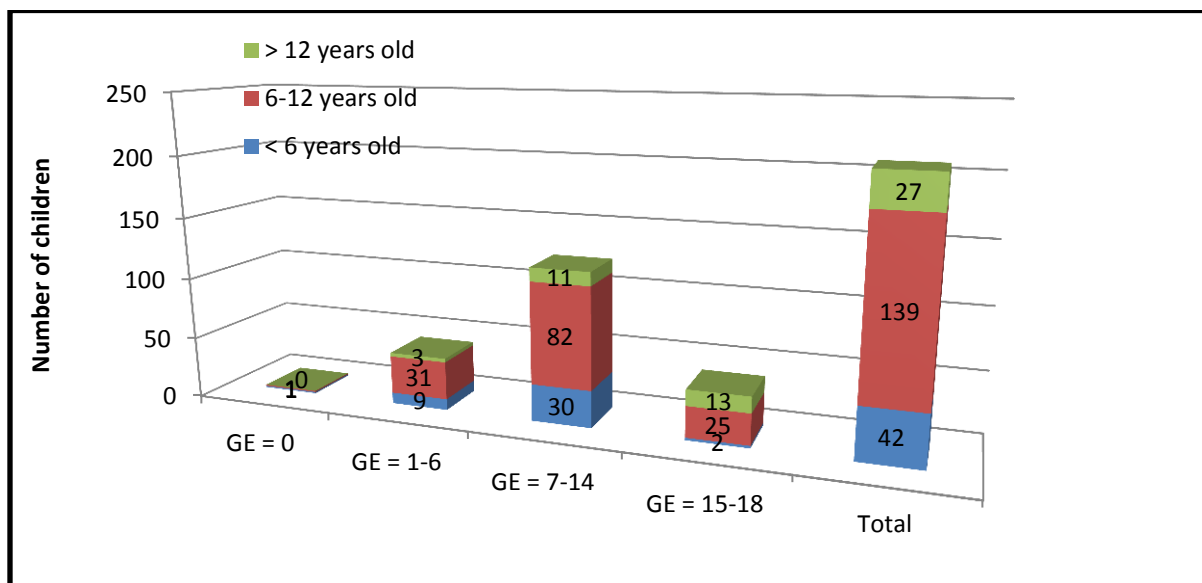
**Table 2:** gingivitis severity (GS) scores and the characteristic features

Gingivitis severity (GS) scores	Characteristic features of degree of gingivitis severity
GS 0	No gingivitis characterised by colour-pale pink: texture-firm, no bleeding on firm digital pressure.
GS1	Mild inflammation with slight change in colour and little loss of contour
GS2	Moderate inflammation with swelling, glazing and redness. Papillae or margins appear rounded.
GS3	Severe inflammation with more swelling, redness and spontaneous bleeding. Slight ulceration.
GS4	Very severe more than above including sloughing and ulceration

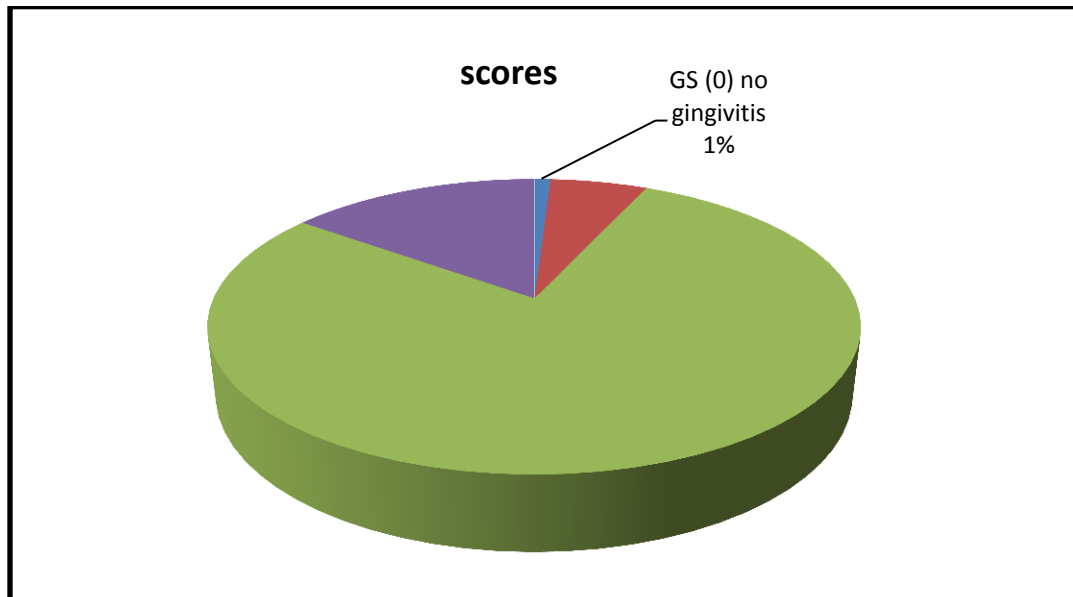
**Figure 1:** displays the total caries experience (dmft & DMFT) among the study groups. In < 6 years old the dmft is 5.3, 6-12 years the dmft+DMFT = 6 and in > 12 years it was 2.6.



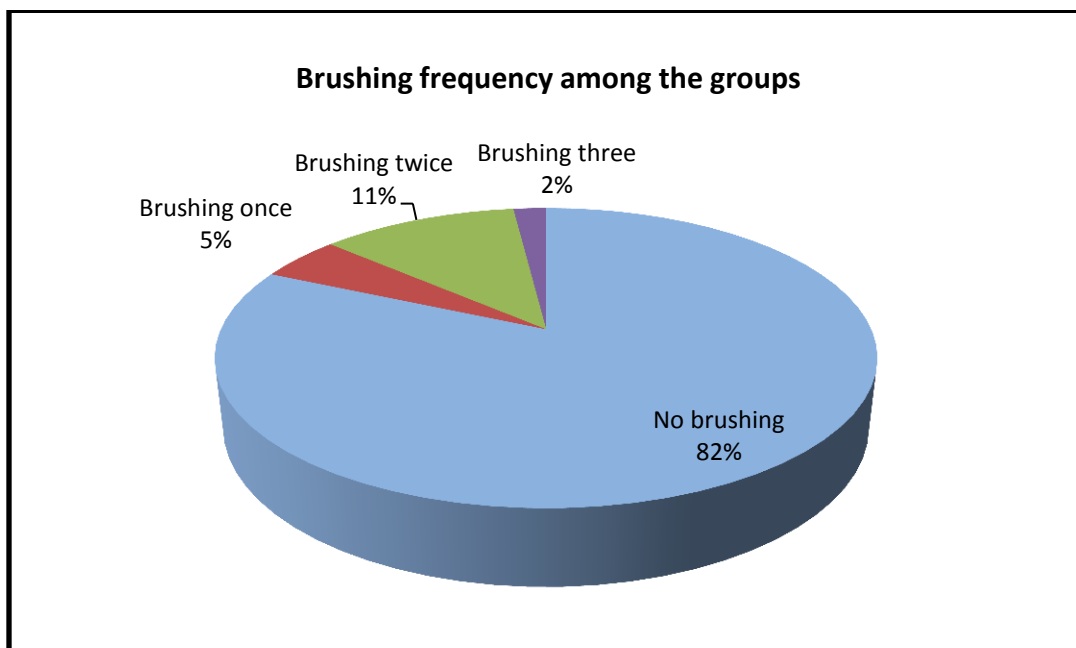
**Figure 2:** shows that 93% of the children had untreated carious teeth, whereas 7% only presented with caries free teeth.



**Figure 3:** shows the majority of children have gingivitis extent (GE) score from 7 to 14 (inflamed gingival units). Gingivitis was present in 98% of < 6 years had gingival inflammation (GE), 99 % of 6-12 years old had GE, and 100% of > 12 had GE.



**Figure 4:** displays the degree of gingivitis severity (GS). Moderate gingivitis (GS2) was seen in the majority of children (78%), severe gingivitis (GS3: 15%), mild gingivitis (GS1: 6%) of the total examined children.



**Figure 5:** shows the frequency of tooth brushing among the study group. Lack of tooth brushing practice at home was seen in 82% of the total sample of the Libyan children, 5% brushed once a day, 11% brushed twice, while 2% brushed 3 times per day.

## DISCUSSION

There is a scarce of data regarding the assessment of oral health status of Libyan population reflected by very limited studies directed at this field <sup>(10)</sup>.

Since an initial occurrence of dental caries in early aged children should excite an alerting serious health problem <sup>(11)</sup>, the present study was undertaken to highlight a clear scenario about oral health of a group of Libyan children living in Benghazi city of Libya.

Our study revealed an alarmingly high level of untreated carious lesions among the total sample (93%) of the examined children. The total dental caries experience noticed in our sample was interestingly higher than the prevalence of caries in Kufra (a town in the south of Libya) where Omar *et al.* <sup>(12)</sup> showed a 3.68 dmft (compared to our 5.2) and 0.9 DMFT (compared to our 2.6) in the child sample of their study. Such difference could be attributed to the availability of fluoridated water in rural areas in Libya including those situated in the south. In addition, our figures were higher than the findings of caries indices scores in another city located on the far- east north of the country, city of Tobruk. Although being a coastal city, similar to Benghazi, still the prevalence of caries was less than those found in our study (the mean dmft and DMFT were 2.81 for 7 years old and 0.78 for 12 years old; respectively). In the capital of the country, i.e., Tripoli, a mean DMFT of 1.58 was reported in 10-13 years old children <sup>(13)</sup>, while another study conducted in the same city found the mean DMFT as 1.68 (SD  $\pm$  1.86) in 12 years old children <sup>(14)</sup>.

The severity of dental caries seen in the present study was greater than that reported by previous studies, which indicated an arising trend in dental caries prevalence in Libya, possibly due to an increased availability of refined sugary diet with poor oral hygiene combined with less exposure to fluoride <sup>(15, 16)</sup>.

In some previous studies, the prevalence of dental caries for 10 – 13 year olds was 56.9% <sup>(15)</sup>, and a slightly lower, i.e. 50%, in 12 year-olds <sup>(17)</sup> compared with the Index of 95.2% found in our study. Other studies assessing dental caries in Libyan children have also reported high figures; 71.8% <sup>(12)</sup>, 84.8% <sup>(13)</sup>, 90.6% <sup>(15)</sup>, 77% <sup>(17)</sup>. In another couple of studies where the oral health of 685

children below the age of six years was investigated, more than half of these children (58%) had carious primary teeth (mean dmft = 2.58), and 57.8% of dental caries was found in 791 of 12 years old children <sup>(18, 19)</sup>.

The high levels of untreated carious lesions shown in this study represent a cause of concern that a high level of unmet treatment needs has already existed. This might be attributed to lack of dental health awareness and neglecting the importance of prevention programs and treatment of carious teeth in children. In addition, dental services in Libya especially those within schools are not able to provide all the dental treatment needed by children <sup>(15)</sup>.

There was an increase in the presence of gingival inflammation (98%) and gingivitis severity (among the children as estimated by gingivitis extent (GE) scores and gingivitis severity (GS) scores. The majority belonged to GE3 scores from (7-14) and GE4 scores from (8-15). More children suffered from moderate gingivitis (GS2) with an estimation of 78% as displayed. Our results apparently exceed those found by Ingafou *et al.* <sup>(18)</sup> where they reported 58% of gingivitis in Libyan children below 6 years in Benghazi.

In the present study, the majority of Libyan children (82%) claimed that they did not use tooth brushing at home at all, in contrast to 59% previously found in Libyan children by Ali in 2004 <sup>(16)</sup>, 19% brushed once per day, 16% brushed twice per day while 7% brushed three times per day.

The severity of caries in children during their sixth year of age was found to be mainly due to failure to attend day care centers, while sweet consumption at least once a day and brushing teeth less than once a day came as behavior risk factors <sup>(20)</sup>.

## CONCLUSIONS

- The study revealed that there were high caries experiences among both the younger patients (< 6 years of age, dmft: 5.3), and in mixed dentition children (dmft + DMFT = 6); while those > 12 showed the least DMFT i.e. 2.6.
- The predominant number of the total study group, i.e., 93% of the 208 children had



untreated carious teeth, whereas 7% only presented with caries free teeth.

- The extent of gingivitis (GE) was present in 98% of < 6 years, 99% of 6-12 years and 100% of > 12 years old.
- Moderate gingivitis (GS2) was seen in 78%, severe gingivitis (GS3) presented in 15%, whereas, mild gingivitis (GS1) was seen in 6% of the total examined children (208).
- Lack of home tooth brushing care practice was revealed in 82% of the total study group.

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