ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2020; 6(2): 159-162

www.oraljournal.com
Received: 08-01-2020
Accepted: 10-02-2020

Majda Elfseyie
Lecturer, Department of Pediatric Dentistry, Faculty of Dentistry, University of Benghazi (UOB), Benghazi, Libya

Saied Elsenussi
Lecturer, Department of Pediatric Dentistry, Faculty of Dentistry, University of Benghazi (UOB), Benghazi, Libya

Rogaia Alaskandrani
Lecturer, Department of Pediatric Dentistry, Faculty of Dentistry, University of Benghazi (UOB), Benghazi, Libya

Rasmia Huew
Associated Professor, Department of Pediatric Dentistry, Faculty of Dentistry, University of Benghazi (UOB), Benghazi, Libya

Corresponding Author:
Majda Elfseyie
Lecturer, Department of Pediatric Dentistry, Faculty of Dentistry, University of Benghazi (UOB), Benghazi, Libya

Estimate of DMFT index using teeth most affected by dental caries in Benghazi, Libya

Majda Elfseyie, Saied Elsenussi, Rogaia Alaskandrani and Rasmia Huew

DOI: https://doi.org/10.22271/oral.2020.v6.i2c.843

Abstract
Background: Although the oral health status is improved over the past years, the dental caries is still the most common chronic disease in childhood. Oral health affects many aspects of life such as ability to speak, mastication and well being.
Aims: to determine the prevalence of caries of the first permanent molars (FPMs) and to compare the caries incidence between maxillary and mandibular arch, and to determine the most affect segment by the decay in the dental arch.
Material and Methods: This cross-sectional survey was conducted of 375 children aged 6 to 12 years in Benghazi city of Libya. The clinical examination for dental caries was based on the World Health Organization (WHO) criteria. It has been calculated the frequency of caries free (CF) and the DMFT index in terms of decayed teeth (DT), filled teeth (FT) and missing teeth (MT). Data were analyses using SPSS version 16, Chi-square test and the Kruskal-Wallis tests were used.
Results: A significant difference was found between sound and carious FPMs in all dental arch segments (P =0.001). The DMFT index of the sample was (1.80±.081) whereas; the highest rate was in left side of the mandible (0.51±.026). The DT component was the highest rate (92.6%) of the DMFT index.
Conclusion: The DMFT in the mandible was higher than the maxilla. The caries prevalence of FPMs was similar in both sides of the dental arches, thus the intensive preventive and health service activities should be promote in Libya to decrease caries risk in school children.

Keywords: Dental caries, dental arch, DMFT, Libya

Introduction
Although the oral health is improved over the past years, the dental caries is still the most common chronic disease is childhood. The dental caries still remains a public health problem, even though it is preventable [1]. The DMFT index is the most important quantitative factor for measuring tooth health status [2]. Dental health is considered as an important factor for well being due to it affect many aspects of the life such as ability of mastication, and speak and learning employment. In addition, dental caries have an important contribution to community health due to the great scourges threatening man's search for quality in life [3]. Dental caries is multifactor disease involving various factors such as genetic cause, diet, bacteria, and tooth morphology, social and cultural environmental factors. Therefore to set baseline data on population's health, the oral health surveys should be conducted to establish the oral health care [4]. A special care is given to the dental caries of FPMs, because of it's an important role in establishing the good functionality of the dental-maxillary anatomy [5]. The limitation of oral health services in many African countries is a possible cause of teeth left untreated or extracted to relieve pain or discomfort [6]. In addition a little data were available on caries incidence in Benghazi city of Libya since years ago. However, a few studies were published in Libya. The goals of the WHO in 2020 to emphasize the essential role of oral health survey in the countries to evaluate their oral health status at least every five years [7], therefore the aim of this study were to evaluate oral health status of Libyans school children by assessing caries incidence of FPMs and DMFT index in each segment of dental arch.

Material and Methods
A cross sectional study was conducted in a total of three hundred and seventy five children, with age ranged from six to twelve years.

The sample collection was convenient and should met inclusion and exclusion criteria as follows: The inclusion criteria were all healthy children with age ranged from 6 to 12 years. Exclusion criteria were subjects with medical problem and mental retardation. All subjects were examined in Pediatric dental clinic of Faculty of Dentistry. A consent form was signed from all parents who their children were involved in this survey. Ethics clearance was obtained from the ethics committee of Faculty of Dentistry. All subjects were examined for caries incidence of FPMs using sterilized mouth mirror, explorer and cotton rolls under a good illumination, and based on WHO for the diagnostic criteria for dental caries incidence. Only FPMs were recorded. Data analysis was performed using SPSS version 16, the Chi-square test and the Kruskal-Wallis tests were used, the significant level was considered as ($P < 0.05$).

Results

A total of 375 children were examined for caries incidence of FPMs and DMFT index in different segments of dental arch. The incidence of sound FPMs was (825 teeth, 55%) and the highest rate was in the upper right and left maxillary arch yielded (219 teeth, 26.5%) and (231 teeth, 28%). Whereas, in the lower arch sound FPMs was approximately equal in both right and left sides (23.4% and, 22.1% respectively). The carious FPMs in all sample was (625 teeth, 45%), they were slightly higher in both right and left mandibular arch yielded (27.0%, and 28.6% respectively). In contrast with the maxillary arch which was slightly lower in both right and left side (23.1%, and 21.3% respectively). A significant difference was found regarding sound and carious FPMs in all dental arch segments, whereas the Pearson chi-square=16.579 (P value =.001) as shown in Figure 1.

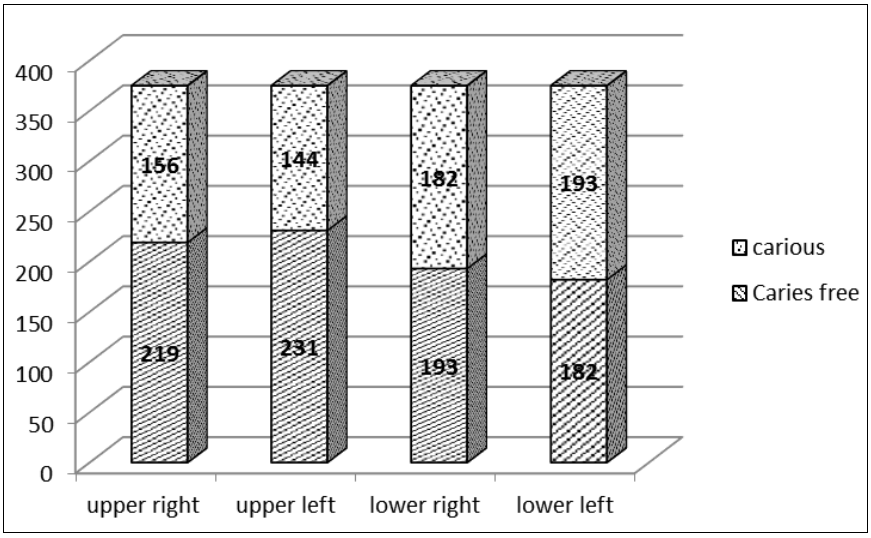

Fig 1: The distribution of caries free and carious FPMs in the dental arch

(Table 1) showed that carious FPMs were (675 teeth, 45%) of all sample, which involved DT, MT and FT component were (41.7%, 1.3%, and 2% respectively), whereas the DT component constituted the major part of the DMFT index (92,6%), followed by filled teeth (4.4%) and small percentage of missing teeth (3.0%). The DT was the highest in the lower left side (26.5%), while the lowest rate was in the upper left side (20.7%). Bilateral occurrence of dental caries was similar in both side of maxillary and mandibular arch. No significant difference was found between the DT, MT and FT in the maxillary and the mandible arches whereas the Pearson Chi-Square=9.430 and p value=0.151. The DMFT in the lower left side of dental arch was significant higher than the left side of maxilla.

Table 1: The DMFT index of the first permanent molars according to the dental arch

Dental arch	DMFT (Mean ±SE)	DT N %	MT N %	FT N %	Total N %
Upper right	0.42^{bc}±0.03	145 (21.5)	5 (0.7)	6 (0.9)	156 (23.1)
Upper left	0.38^{c}±0.03	140 (20.7)	1 (0.1)	3 (0.4)	144 (21.3)
Lower right	0.48^{ab}±0.03	161 (23.9)	8 (1.2)	13 (1.9)	182 (27.0)
Lower left	0.51^{a}±0.03	179 (26.5)	6 (0.9)	8 (1.2)	193 (28.6)
Total	1.80±.081	625 (92.6)	20 (3.0)	30 (4.4)	675 (100)

Mean ± SE. Means with different superscripts in the same column are differ significantly ($P < 0.05$).

Table 2: The DMFT index and the percentage of caries free, carious FPMs according to the location in Libya

Author	DMFT (Mean± SE)	Caries free %	Carious %	Sample/size	Age/year	location
Alsharbati *et al.* [8]	1.63	50	50	762	6-12	Benghazi
Huew *et al.* [9]	1.68±1.86	42.2	57.8	791	12	Benghazi
Kabar *et al.* [10]	0.88±168	25.3	74.7	392	6-12	Tripoli
Baccush *et al.* [3]	1.58	43.06	56.94	720	10-13	Tripoli
Hawew *et al.* [11]	0.87±1.06	66	34	126	12	Jardinah
Kumar *et al.* [12]	1.8±1.40	22.72	77.27	572	6-14	Sebha
This study	1.8±0.08	55	45	375	6-12	Benghazi

Discussion

In the present study, caries free of FPMs was 55%, these finding is higher than the results reported in Iran 38. 5% [13], in Iran (28. 5%) [14], in Behshar city (24%) [15], and in Sudan (39%) [16]. On the other hand, this result are slightly lower than the finding reported in Iran caries free was 68% [17], in Pakistan it was 69.4% [18], and in Sri Lankan (72%) of sample was caries-free [19]. The causes of this discrepancy may be due to the differences in oral hygiene habits, nutrition cultural, socioeconomic status and low fluoride level in the drinking water.

The highest rate of sound FPMs was in the right and left maxillary arch yielded (26.5%, and 28% respectively). In contrast with the lower arch it was approximately equal in both right and left sides (23.4%, and 22.1% respectively).

In the current study, carious FPMs was 45%, this finding is lower than the finding reported by Abuaisha *et al*. [20] who studied Libyan children aged 8-12 years in Klang Valley, Malaysia and showed that dental caries incidence was high 55.8% and in12 years children in Portugal was 52.9% [21], a survey was conducted in 8-10 years children in Pakistan, caries were (60%, and 80% respectively) [22], in Sudanese was 61% [16]. On other hand, it higher than the results reported in Pakistan carious FPMs was 30.6% [18].

In the present study, a similar bilateral occurrence of carious FPMs in both sides of maxillary and mandibular arches. Sadeghi [2] reported caries incidence were similar pattern in both right, left mandibular and right, left maxillary arch (45.8%, 44.4% 36.8%, and 36.9% respectively). Moreover, in the current study, madiblular FPMs were found to be more prone to caries incidence than the maxillary FPMs. The caries incidence were higher on right, left mandibular arch followed by right and left maxillary arch (FDI tooth number 36,46, 16, 26) yielded (27.0%, 28.6%, 23.1%, and 21.3% respectively). a similar results was observed in Istanbul, Turkey [23], in Saudi Arabia [24] and in Pakistan [18], South west coastal, India [25]. These finding may be due to mandibular FPMs erupts earlier than the maxillary, in addition the mandibular FPMs is exposed to oral environment for long period.

The DMFT index as shown in (Table 2) was (1.8±0.08), which is lower than the results reported by previous investigations in a different cities of Libya, in Benghazi [8, 9], Sebah [12] and Tripoli [3, 10]. However, it was lower than the finding in other countries reported such as Iran [2, 13] and in Palestinian [26]. This may be due to cultural, ethnic, and geographical differences and oral hygiene habit. In contrast, the DMFT in this study, it slightly higher than the results in Jardinah, Libya [11] and in Tehran, Iran [1]. On another hand, the DMFT in the current study, it is slightly similar to the results reported in Iran [27] and in Portugal [21]. These differences between DMFT indexes between children in a different region are influenced by many factors such as nutrition habits, socio-economic status, and fluoride concentration of drinking water and oral hygiene services. In this study, the DT component was (41.7%) of total carious FPMs, similar finding was reported in Tripoli, Libya (42.23%) [3], in Iran DT were 40.9%, MT and FT was (0.4% and 6.2% respectively) [2], and in Iran DT was 52.2%, MT was 40.9% and FT was 6.8% [28]. In this study, the DT component constituted the major part of the DMFT index (92.6%), followed by FT (4.4%) and small percentage of MT (3.0%). A similar finding was reported in Bosnia and Herzegovina DT was (88.8%), missing teeth (8.9%) and filled teeth (2.3%) [29]. this may be due to limit the access to dental services with more sugar exposure and lack of knowledge to oral hygiene.

Conclusion

The DMFT was higher in the mandible than the maxilla. The caries prevalence of FPMs was similar in both sides of the dental arches; therefore high bilateral occurrence demands intensive oral health service to decrease caries risk in school children.

Acknowledgements

The authors wish to thank Dr. Mohamed Idris. Alshelmani for his assistance in the data analysis

Conflict of Interests: None declared.

References

1. Goodarzi A, Heidarnia A, Tavafian SS, Eslami M. Evaluation of decayed, missing and filled teeth (DMFT) index in the 12 years old students of Tehran City, Iran. Brazilian J Oral Sci. 2019, e18888-e.
2. Sadeghi M. Prevalence and bilateral occurrence of first permanent molar caries in 12-year-old students. J Dent Res Dent Clin Dent Prospects. 2007; 1(2):86.
3. Baccush M, Nayak C. Prevalence of dental caries in school children from a suburban area in Tripoli, Libya. Acta stomatologica croatica. 1991; 25(1):11-5.
4. Desai V, Reddy R, Manjula M, Saheb SH. Prevalence of dental caries in first and second permanent molars. Int J Res Med Sci. 2014; 2(2):514-20.
5. Chirca EM, Rodica L, Georgescu D-E. The prevalence of caries in first permanent molar in a group of school children aged 6 to 7 years in pitești. Prevalence. 2015; 1:4th.
6. Petersen PE. Improvement of oral health in Africa in the 21st century-the role of the WHO Global Oral Health Programme. African J Oral Health. 2004; 1(1):2-16.
7. Gorgi Z, Abbasi A, Mohsenzadeh A, Damankeshan A, Sheikh Fathollahi M. A survey on DMFT index of the first permanent molar in 12-year-old students of Larestan, Iran, in 2014. JOHE. 2017; 6(1):32-9.
8. Al Sharbati M, Meidan T, Sudani O. Oral health practices and dental caries among Libyan pupils, Benghazi [1993-1994]. EMHJ-East Medi Health J. 2000; 6(5-6):997-1004.
9. Huew R, Waterhouse PJ, Moynihan PJ, Maguire A. Prevalence and severity of dental caries in Libyan schoolchildren. Int Dent J. 2011; 61(4):217-23.
10. Kabar AM, Elzahaf RA, Shakhatreh FM. Scholars J Dent Sci, 2019.
11. Hawew R, Ellwood R, Hawley G, Worthington H, Blinkhorn A. Dental caries in children from two Libyan cities with different levels of fluoride in their drinking water. Community Dent Health. 1996; 13(3):175-7.
12. Kumar PGN, Peeran S, Abdalla K, al-Zain M, Ahmed F. Dental Caries Status among 6-14 Years Old School Going Children of Sebha city, Libya. J Indian Asso Public Health Dent. 2013; 11:18-22.
13. Bazrafshan E, Kamani H, Mostafapour FK, Mahvi AH. Determination of the decayed, missing, filled teeth index in Iranian students: a case study of Zahedan city. Health Scope. 2012; 1(2):84-8.
14. Daneshkazemi A, Davari A. Assessment of DMFT and enamel hypoplasia among junior high school children in Iran. J Contemp Dent Pract. 2005; 6(4):85-92.
15. Mahvi A, Zazoli M, Younecian M, Nicpour B, Babapour A. Survey of fluoride concentration in drinking water sources and prevalence of DMFT in the 12 years old

students in Behshar City. J Med Sci. 2006; 6(4):658-61.
16. Abuaffan AH, Hayder S, Hussen AA, Ibrahim TA. Prevalence of dental caries of the first permanent molars among 6-14 year's old Sudanese children. Indian J Dent Edu. 2018; 11(1):13-6.
17. Dobaradaran S, Mahvi AH, Dehdashti S. Fluoride content of bottled drinking water available in Iran. Fluoride. 2008; 41(1):93.
18. Ali NS, Ali NS, Khan M, Qamruddin I, Askary H, Sajwani A. Prevalence Of Dental Caries In The First Permanent Molars In Children Between 8-12 Years. J Pakistan Dent Asso. 2013; 22(2):119-23.
19. Dasanayake AP, Caufield PW. Prevalence of dental caries in Sri Lankan aboriginal Veddha children. Int Dent J. 2002; 52(6):438-44.
20. Abuaisha AA, Huda B. Dental caries and its associated factors among children aged 8-12 years in Libyan schools, Klang Valley, Malaysia. Asian J Agri Biology. 2018, 55-61.
21. De Almeida CM, Petersen PE, André SJ, Toscano A. Changing oral health status of 6-and 12-year-old schoolchildren in Portugal. Community Dent Health. 2003; 20(4):211-6.
22. Sahito N, Sahito MA, Fazlani KA. Prevalence of dental caries among school children in Hyderabad Pakistan. Int J Applied Sci Res Rev. 2015; 2(1):034-8.
23. Demirci M, Tuncer S, Yuceokur AA. Prevalence of caries on individual tooth surfaces and its distribution by age and gender in university clinic patients. Eur J Dent. 2010; 4(03):270-9.
24. Khan S, Farooq I, Arjaie A, Khabeer A, Farooqi A. Prevalence of firts permanent molar caries among 8 to 12 years old school-going Children living in dammam, kingdom of Saudi Arabia. Ann Jinnah Sindh Med Uni. 2017; 3(1):18-21.
25. Thushara Sudhakaran MNH, Shruthi Attavar, Gowrish Bhat S. Prevalence of Caries in First Permanent Molars in South West Coastal Population of India. Int J Curr Res Aca Rev. 2016; 4(3):106-13.
26. Sgan-Cohen H, Bajali M, Eskander L, Steinberg D, Zini A. Dental caries status, socio-economic, behavioral and biological variables among 12-year-old Palestinian school children. J Clin Pediatr Dent. 2015; 39(4):331-5.
27. Farhadi F, Miab H, Zarandi A. Determination of Decayed, Missing and Filled Teeth (DMFT) index in the 12 years old children of Hadishahr province from Iran. Sciences. 2016; 19:7.1.
28. Yaghooti K, Mohamad M, Irannezhad M. The prevalence of caries in the first permanent molars among students of 7 and 12 years of age in Rafsanjan, Iran, in 2009-2010. JOHE. 2017; 6(1):25-31.
29. Markovic N, Muratbegovic AA, Kobaslija S, Bajric E, Selimovic-Dragas M, Huseinbegovic A. Caries prevalence of children and adolescents in Bosnia and Herzegovina. Acta Medica Academica. 2013; 42(2):108.