International Invention Journal of Medicine and Medical Sciences (ISSN: 2408-7246) Vol. 2(1) pp. 12-16, January, 2015
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Full Length Research Paper

Significant Caries index in 12-14 years old children in Qassim Area- Kingdom of Saudi Arabia

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Abstract

Few studies have investigated the prevalence of dental caries among school children in KSA. The aim of this study was to assess the dental caries status among urban and rural 12-14 years old in Qassim area for the purpose of establishing the dental treatment need. Qassim area was divided into four parts, according to the classification of the ministry of education: Buriydah, Onizah, AlRass and the remaining cities (related to Buriydah). About 2830 students (male and female) were examined along this area. The total DMF for the study sample ranged from 0-22 with mean 3.92 ± 3.58. Regarding residence, 35.9% from Buriydah, 28.5% from areas related to Buriydah, 18.8% from Onizah and 16.8% from AlRass. Generally the DMF is higher than the recommended international rates, it is higher in Buriydah which is the more civilized region in Qassim Area.

Keywords: Prevalence, Dental caries, DMFT index.

INTRODUCTION

Al-Qassim Province is one of the thirteen administrative provinces of Saudi Arabia, and almost in the center of the Arabian Peninsula. It has a population of 1,016,756 and an area of 65,000 km². It is the seventh populated province in the country. It has more than 400 cities, towns, villages, and Bedouin settlements. Its capital city is Buriydah, which is inhabited by approximately 49% of the region's total population. Figure 1.

Worldwide dental caries is the most prevalent of the oral disease with considerable variations in the occurrence between countries, regions within the same country as well as areas in the region with different social and ethnic groups. (Al-Shammary et al., 1991; Al Dosari et al., 2000; Cassamassimo, 2002; WHO 2003a)

Dental caries can affect all ages worldwide. We can't eliminate dental caries as it is multi-factorial disease. The treatment of dental caries is very expensive and by some researcher it was classified in the fourth place according to the treatment cost all over the world according to the World Health Organization (WHO, 2000), (WHO, 2003a).

The WHO uses the mean DMFT index at 12 years-old as the basic index of comparison for oral health in different populations. This index is of easy collection in primary schools, so that DMFT for this age group has been the best epidemiological index to describe the oral health status of the childhood and adolescence (FDI, 2000). According to WHO, (1994) there are five severity stages for DMFT at 12 years-old: very low (from 0 to 1.1), low (from 1.2 to 2.6), moderate (from 2.7 to 4.4), severe (from 4.5 to 6.5), and very severe (6.6 or higher). The research done by AlShemmary et al. (1991), Showed that the dental caries index is about 87.5%, which is very sever according to the previous classification. (Al Dosari et al., 2004)

A lot of researches proved that the dental caries in the developed countries is much less than that in the developing countries. This may be due to the high care by the health as a general and the oral health specifically. A few studies for the caries prevalence have been carried in KSA which showed that the caries index in the saudia children is too high. (Al-Sekait and Al-Nasser, 1988; Al-Shammary et al., 1996). Since 1982 the WHO put a strategic plan to decrease the caries index in the 12 years old children to be less than 50% by 2000

Studying the prevalence of dental caries and its distribution in Qassim area is the first step in planning for the preventive dentistry programme and to educate the population. (Al-Khateeb et al., 1990), (Ismail et al.,1997),

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Figure 1. Map of Saudi Arabia with Al-Qassim highlighted.

(El-Backly et al., 1996), (Harris et al., 2004)

The present study aimed to develop regression models to describe the epidemiological profile of dental caries among urban and rural 12-year-old children in Qassim area.

METHODOLOGY

The survey is designed to study the prevalence of caries index in 12-14 years old school children. The schools were selected in different cities and regions in the cities. Also, a female and male schools had been chosen to cover the complete population. The number of selected schools is related to the population distribution in the cities.

The work was done on three stages:

First stage:

- Studying the population distribution in Qassim area in order to determine the sample size and its distribution.
- Choosing 32 schools (16 male and 16 female) covering 4 divisions according to the ministry of education.
- Arranging the formal conversation with the ministry of education

Second Stage:

Formation of the research team consist of:

- 3 male dentists
- 3 female dentists
- 12 Assistants for the researchers from the student of college of Dentistry, Qassim University.

Third stage:

The survey was done using disposable diagnostic set. The classification of the DMF is carried according to the defined criteria by the WHO for epidemiological diseases. Exclusion criteria comprised students aging above the age range; non Saudi students; using orthodontic appliance at the moment of the examination and/ or whose parents/legal guardians did not sign the consent form.

A tooth is marked as decayed when any of the following was observed: unmistakable cavitations, a detectable softened, or remaining caries roots and filled tooth with signs of caries. When in doubt the tooth is recorded as sound.

The examiners attended some lectures to clarify the criteria defined by the WHO, then they were calibrated by cross examination of 10 patients in the dental clinics of Qassim University before starting the survey and there was an inter-examiner agreement in 95% of the cases and minimum weighted kappa of 0.778.

The findings were recorded and coded as indicated in the standards form for oral health assessment.

RESULTS

The free cases represent 19.3% in the complete sample, 19% in male and 19.7% in female, table 1 and 2. The distribution of the free cases from the sample is higher in Alrass (30.5%) followed by Byraidah (23%), then buraydah (15%) and the least is Onizah (11.9%).

The total study sample includes 2826 children, 1562 (55.3%) were males and 1264 (44.7%) were females, with mean age (13.3 ± 1.9).

Regarding residence, 35.9% from Buriydah, 28.5% from areas related to Buriydah, 18.8% from Onizah and 16.8% from Alrass. Table 3.

The total DMF for the study sample ranged from 0-22, with mean 3.92 ± 3.58, Table 4.

Total DMF in males ranged from 0-21, median was 3 and on the other hand DMF in females was ranged from 0-22 median were also 3. With no statistically significant observed between the 2 genders. Z= 0.512 (p=0.608), Table 5.

It was observed that the DMF ranged from 0-22 in the four study groups with median 4 for both Buriydah and Onizah and in related to Buriydah and AlRass, the median was 2 with highly significant difference between the four groups (p<0.001).

When comparing each groups separately, there

Table 1. The percentage of the free cases among the sample

	Gender					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Zero DMF	296	19%	249	19.7	545	19.3
Non- Zero DMF	1264	81	1015	80.3	2279	80.7%
Total	1560	100%	1264	100%	2824	100%

Table 2. The percentage of the free cases distributed on the four regions

	Area								Total	
	Buryidah		Related to Buryidah		Onizah		Al Rass			
	No.	%	No.	%	No.	%	No.	%	No.	%
Zero DMF	152	15%	185	23%	63	11.9%	145	30.5%	545	19.3%
Non- Zero DMF	861	85%	620	77%	468	88.1%	330	69.5%	2279	80.7
Total	1013	100%	805	100%	531	100%	475	100%	2824	100%

Table 3. Descriptive analysis of studied cases according to total DMF

Total DMF	
Range	0.0 – 22.0
Mean ± SD	3.92 ± 3.58

Table 4. Comparison between male and female according to total DMF

	Male	Female	Z (p)
Total DMF			
Range	0.0 – 21.0	0.0 – 22.0	
Mean ± SD	3.83 ± 3.41	4.04 ± 3.77	0.512 (0.608)
Median	3.0	3.0	

Z : Z for Mann Whitney test

Table 5. Comparison between different areas according to total DMF

	Areas				
	Buriydah	Related to Buriydah	Onizah	AlRass	□ (p)
Total DMF					
Range	0.0 – 22.0	0.0 – 21.0	0.0 – 20.0	0.0 – 16.0	115.565* (<0.001)
Mean ± SD	4.41 ± 3.65	3.33 ± 3.41	4.67 ± 3.63	3.04 ± 3.27	
Median	4.0	2.0	4.0	2.0	
Z_1 (p)		7.089* (<0.001)	1.575 (0.115)	7.593* (<0.001)	
Z_2 (p)			7.565* (<0.001)	1.891 (0.059)	
Z_3 (p)				8.003* (<0.001)	

K: Chi square test for Kurskal Wallis
Z_1 : Z for Mann Whitney test between Buriydah and other areas
Z_2: Z for Mann Whitney test Related to Buriydah and other areas
Z_3: Z for Mann Whitney test Onizah and AlRass
* : Statistically significant at $p \leq 0.05$

were no significant difference, only between Buriydah and Onizah and between areas related to Buriydah and AlRass (p= 0.115) and (p = 0.059) respectively.

A positive non significant co-relation was observed between number of sibling and the DMF of the children. But concerning the order of the child among his siblings it was found to be significantly positive correlated to the total DMF

DISCUSSION

This previous studies clearly shows that dental caries is a serious dental public health problem among Saudi Arabian children, particularly the very young ones. The prevalence of dental caries is high across Saudi Arabia and varied by geographic location. The prevalence of caries in the children between age 12- 14 may reach up to 94%, and the mean DMFT score may approach 7.3. These figures are estimates rather than scientific calculations because meaningful calculations are challenging based on the currently available data, which include highly variable populations. (Al Agili, 2013) Because of this we need to have to obtain baseline oral health information to plan for and to identify improvements in children's oral health status.

The study showing dental caries data among 12–14-year old school children in Qassim area was about 81%; and only 19% of the examined children were caries-free. Al-Qassim has been included twice in a DMF study (Al Dosari et al., 2004; Wyne et al., 2001a). In the first study by Wyne et al. 2001a show in a study of Bedouin children that the overall caries prevalence was approximately 20% for children (mean age 12.7). The results are different from the current research results due to two factors; the first factor that the study was conducted in one area and on a small study sample (90 students).

While the second study conducted by Al Dosari et al. 2004, the dental caries prevalence was 87.9% (mean DMFT = 4.53) for 12–13 year olds this results are in agreement with the current research.

The research also show that AlRass has the lower caries index and this may be due to the high fluoride content in the drinking water in comparison to the other region.

The research results also emphasized that caries prevalence for children in Saudi Arabia as a general and especially in Qassim area remains a challenge and indicates that the WHO (2000) goals are still unmet for children in Saudi Arabia.

CONCLUSION

This study of the dental health among 12-14 years old school in Qassim area showed to be higher than the recommended international rates. The results show that 19.3% only are caries free, with mean of 3.92. Peak values of the caries free are found in AlRass and this may be due to the high percentage of fluoride in the drinking water there. While the highest percentage of caries was found in Onizah and Buriydah. Therefore, measurements that promote preventive and curative dentistry are needed and advocated.

ACKNOWLEDGMENT

We would like to thank Dr. Rami Elmoazean, Dr. Nivin Ismail, Dr. Marwa Mijahed, Dr. Hazem Mourad, Dr. Wael Zakaria, and Dr. Atef Ghopashy for their efforts in collecting the data and support in this research.

REFERENCES

Al Agili DE (2013). A systematic review of population-based dental caries studies among children in Saudi Arabia. The Saudi Dental Journal 25, 3–11

Al Dosari AM, Wyne AH, Akpata ES, Khan NB (2004). Caries prevalence and its relation to water fluoride levels among school children in Central Province of Saudi Arabia. International Dental Journal;54:424-426

Al-Dosari A, Abdellatif H, Al-Refai A (2000). Oral health status of primary dentition among 551 children aged 6 to 8 years in Jazan, Saudi Arabia. Saudi Dent J; 12: 67-71

Al-Khateeb TL, Darwish SK, Bastawi AE, O'Mullane DM (1990). Dental caries in children residing in communities in Saudi Arabia with differing levels of natural fluoride in the drinking water. Community Dent Health; 7:165-171

Al-Sadhan SA (2006). Dental caries prevalence among 12-14 year-old schoolchildren in Riyadh: A 14 year follow-up study of the oral health survey of Saudi Arabia Phase I. Saudi Dental Journal; 18 (1): 2-7

Al-Sekait MA, Al-Nasser AN (1988). Dental caries prevalence in primary Saudi schoolchildren in Riyadh District. Saudi Med J; 9:606-609

Al-Shammary AR, Guile EE, El-Backly M (1996). Oral Health Survey of Saudi Arabia. Personal Communication.

Al-Shammary AR, Guile EE, El-Backly M, Lamborne A (1991). An Oral Health Survey of Saudi Arabia: Phase I (Riyadh)

Cassamassimo PS (2002). Dental disease prevalence, prevention and health promotion: The implications of a more diverse population. Pediatr Dent; 25:16-18

El-Backly M, Al-Shammary AR, Guile EE (1996). Oral Health Survey of Saudi Arabia: Dental caries and periodontal disease levels in children and adults. Saudi Dent J 8 (Supplement): Abst #9;.

Fass E (1962). Is bottle feeding of milk a factor in dental caries? J Dent Child;29:245-251

FDI – WHO (2000). Global goals for oral health in the Year. Int Dent J 1982; 32:74-77

Harris R, Nicoll AD, Adair PM, Pine CM (2004). Risk factors for dental caries in young children: a systematic review of the literature. Community Dent Health;21:71-85

Ismail AI, Tanzer JM, Dingle JL (1997). Current trends of sugar consumption in developing societies. Community Dent Oral Epidemiol;25:438-443

Kingman A, Selwitz RH (1997). Proposed methods for improving the efficiency of the DMFS index in assessing initiation and progression of dental caries. Community Dent Oral Epidemiol;25:60-68

Milnes AR (1996). Description and epidemiology of nursing caries. J Public Health Dent;56:38-50

Reisine ST, Psoter W (2001). Socioeconomic status and selected behavioral determinants as risk factors for dental caries. J Dent

Educ;65:1009-1016
Seow WK (1998). Biological mechanisms of early childhood caries. Community Dent Oral Epidemiol;26(1 Suppl):8-27.
Sheiham A, Watt RG (2000). The common risk factor approach: a rational basis for promoting oral health. Community Dent Oral Epidemiol;28:399-406
World Health Organization (1994). Dental caries levels at 12 years, May 1994. The Oral Health Programme. Genebra. 19 p
World Health Organization (2003a). Global strategy for infant and young child feeding. Geneva.

How to cite this article: Salem WS, Araby YA (2015). Significant Caries index in 12-14 years old children in Qassim Area- Kingdom Saudi Arabia. Int. Inv. J. Med. Med. Sci. Vol. 2(1): 12-16