

## Dental Caries Prevalence In Saudi Preschool Children-Systemic Review

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### ABSTRACT

Dental caries is a transmissible complex disease that develops when cariogenic bacteria adhere to clean tooth surfaces within a carbohydrate-rich environment, particularly that containing dietary sugars. A review of the literature utilizing a Computerised literature review using keyword searches relevant studies carried out in Saudi Arabia. Twenty-three articles were identified initially in five databases. After full texts were retrieved and exclusion criteria had been applied, a total of twelve articles were used for this review. Analyzing the situation from the perspective of Saudi society, the prevalence of dental caries among preschool children aged children is high, ranging between 52 and 96 percent. These facts, once again, suggest that future studies in Saudi Arabia should emphasize the need to assess the magnitude of dental caries disease and other cultural, dietary-associated risk factors as well as devise community-based approaches geared towards this increase in the prevalence of dental caries among the Saudi society

**Keywords:** *Dentals, caries, prevalence, Saudi, preschool.*

### 1. INTRODUCTION

Dental caries, also known as cavities, is often erroneously considered a scab, irregularity or hole in the tooth that leaves a bad taste, however it is a disease or ailment in itself. The carious disease is multifactorial in nature caused by carcinogenic bacteria which resides on the tooth surface whilst sugar-inclusive diets dominate the diet. These bacteria digest the carbohydrates, excepting the fermentable ones, producing lactic acid, that, given enough time, causes dissolution of the hard tissue bed of the tooth.

At just 6 months of age, dental caries may be reason for a child's reduced capacity in eating and nutritional moderation and are noted in many cases to begin approximately around the time when the primary teeth begin to erupt. Pain and infection resulting from dental caries renders a child incapable of maintaining good attendance at school and also leads to further problems in the three basic operations; eating, speaking and even learning.

#### Etiology of dental caries

Dental Caries is a wholly and completely dependent upon every person's unique interaction with, one or more of, the four elements which are known as the Host, Plaque, Diet and Time.

#### Host Factors:

This involves both the tooth as well as saliva of the subject with this feature varying in degree from one subject to another and on the different surfaces of a given tooth.

### **Dental plaque (bacteria):**

Adhesion of bacteria on the surface of a tooth allows a dietable area to release carbohydrates that can further demineralize even more surfaces.

Cariogenic bacteria include mutans streptococci, lactobacilli and other microorganisms.

### **Diet:**

Excessive pH drops during and after eating possibly due to sweetness [sucrose], accelerated decreased pH due to permeability changes, which may not allow enough time for saliva secretion to bring the pH back to neutral, makes enamel prone to demineralization.

### **Characterization of carious degeneration of teeth enamel:**

Practically, when these primary factors appear carious lesion emerges. This type of pain is a dynamic equilibrium between pH on enamel surface combined with loss and gain of mineral ions to the tissue.

### **Epidemiology:**

The amount of studies aimed at dentinal caries prevalence has already reached several dozens. The most promising, such studies include:

#### **An index of permanent teeth:**

- DMF index was proposed in the USA by Klein – Palmer and knutson in 1938, in 1938, WHO suggestions revised it.

1-DMFT measures the proportion of the population with dental caries.

2-DMFS is also the proportion of the population with dental caries which measures severity.

#### **An index for primary teeth:**

1- ‘dmft’ which measures aggravated caries for unfilled teeth only; ‘dmfs’ uses 88 as a threshold to measure farts.

2-deft/defs was put forth in paper by Gruebbel et al in 1944, ‘d’ indicates number of decayed tooth.

‘e-‘ replaces ‘f’ indicating many filling tooth.

One more question we would like to solve: 3, dft / dfs where children were unduly missing teeth. Missing teeth might have been lost through exfoliation or cervical loss due to dentures.

In America, about 50% of children aged 5-9 and 78% of 17 year olds F have at least one non-deciduous tooth which has been caries affected or contains restoration material . (5) Elsewhere, in a survey study conducted as part of the 2003 United Kingdom Children’s dental health survey, four out of ten children under five years of age have already displayed obvious decay experience while more than half of the children at age eight (57%) have also had obvious decay experience. (6)

Since the last 25 years, international research conferences held on the subject have been reporting that the prevalence of the disease of dental caries was decreasing in its incidence globally.

But during the last decade, the trend has changed again. Again and again, scientific reports and studies bring bad news: caries is becoming increasingly common all around the world; it touched not only children, but also adults, damaged not only primary, but also permanent teeth, not only coronal cases but also root surfaces of teeth. And what is worse, caries became widespread in developed countries where it was believed to be eradicated.(7)

### **Treatment**

How can we identify caries at its earliest stage? The very first sign is, undoubtedly, a demineralized area of the tooth surface, which is often characterized by a minimum change to the smooth surface, taking the form of a white spot, or appearing within pits or fissures. Typically, a caries lesion is reversible; for example, if the extent of demineralization does not go beyond the limits of the enamel.

If oral conditions remain unchanged, the process of demineralization will go on leading eventually to the loss of the normal shape of the tooth surfaces forming a cavity. In order to arrest the progress of the caries process, which, if not treated, will eventually lead to 5 pulpitis and loss of the tooth, it is necessary to carry out restorative treatment.

As it is known, dental caries is a microbial disease of long duration that has been modified by dietary habits. The fact that carious teeth are treated and the active lesions are removed does not necessarily mean that the disease has been cured. The risk factors for dental caries tend to change over some time resulting into age and time dependent caries provoking factors which can cause new carious attacks on treated sites or untreated tooth surfaces.

The Best Methods Available for the Primary Prevention of Dental Caries There are 3 methods Shohreh et al used in their article 1-The topical application of Acidulated phosphate fluoride gel (APF) can be effectual only once or twice a year. The evidence for the efficacy of APF gel applied in that proportion was positive. The topical application of fluoride varnish as an anti-caries agent has also shown some promise in 2- permanent and primary teeth where the ratio of correlative studies was reported to be positive about the application of the varnish to the permanent teeth significantly while the evidence of its beneficial use for the primary teeth was still incomplete and inconsistent noticeably 3-The recent review conducted on the use of Chlorhexidine gels concluded that there is moderately strong evidence against its use.

4-Pit and fissure sealants. Pavement pits and fissures are suitable precursors in the prevention of caries in both primary and permanent teeth.

5-Sorbital and xylitol editure containing products. The positive evidence is available as regards both sorbitol and xylitol, though relatively more for xylitol.

6-Behavioral Modification This is possible through motivation to enhance one's oral hygiene as well as change in the diets that may be injurious to ones health for example high sugar diets.

The objective of these surveys is to survey literature on: prevalence of dental caries among Saudi preschool children.

### Methodology

A systematic electronic search was conducted on articles in the Pub Med that fulfilled our inclusion criteria.

A systematic electronic search using particular keywords to fetch UK articles related to the dental caries epidemiology in preschool children of Saudi Arabia.

In all, 9 articles which were selected for reviewing fit the exclusion and the inclusion criteria.

Secondary research was also carried out through: other electronic sources of Information available in the local Specialized Journals in the Arab world.

The secondary study found 3 articles not included during the PubMed search.

### Result

Al-Sekait and Al-Nasser (1988). By fate, this is probably the first work that meets the inclusion criteria, A group of 7040 children aged between, prime ones, belonging to rural and urban schools showed a caries prevalence of 52%. (10)

Al-Malik MI 2006. (8) A group of 300 children from six military dependents' schools who were between 6 and 7 years old were selected randomly. Clinical examinations were undertaken for these children. Carious lesions were noted in 288 (96%) of the children leaving only 4% free of carious lesions. The status of primary teeth teeth per head that is mean decayed, missing, and filled teeth per child (dmft) was 8.06 (+ 4.04) while dmfs was 23.18 (+ 15.64). Most of the teeth affected by caries were mandibular primary second molars which were most affected at the rate of 83.35%, while the least affected were mandibular primary central incisors at the rate of only 1.15 percent.

Wael A. Sabbah et.al 2003(9) The study consisted of 574 children who were selected to take part in this study. The proportion of children with dental caries according to age group (1 – 2 years, 2 – 5 years, 5 – 7 years) was 12.8, 50.0, 76.7 respectively.

Al-Wazzan 2004 (11) In the country, five essays referring to the oral health of primary school children aged six to seven years are known, where 602 primary children aged six to seven years were taken with caries prevalence 94.4%, mean dmft – 7.34.

In the most recent Riyadh study, Wyne (2008) conducted a survey of children aged 3–5 years in 10 government and privately owned preschools that were randomly selected. The overall prevalence rate was 74.8% for caries and the average dmft score was 6.1.

Gandeh and Milaat (13) 2000 have included availability of the examination to schoolchildren between the ages of 6-7 years in Jeddah schools where caries prevalence of 83% was recorded.

According to Al-Malik et al. 2002(14), the study involved 987 preschool children from 6 nursery schools (public) and 11 nursery schools (private) in Jeddah. The overall caries prevalence was 73% and even among those aged 3 years it was 61%, children age 4 years recorded 73 % while those aged 5 years recorded 76%.

According to Farsi 2010 (15), the sample size of 510 children was assessed, of whom 175 were pupils attending public schools while 335 were private school students. The author reported caries prevalence rates of 61% for the 4-year-old children and 67% for the 5-year-old children.

Khan et al. (2001)(16) performed an empirical research involving a total of 457 children aged between 6 and 7 years in Al-Hassa. The children were picked on an arbitrary basis from a population of primary school kids, The caries case rate is 83% with the average dmft of 4.45.

In Abha, a city in Asir region, the rate of occurrence of caries among 6-13 yr old non school going children was found to be 85.4%. The mean dmft and DMFT values recorded were 3.54 and 0.8 respectively.

One hundred and three children aged 5 years old, from preschool nurseries in Al-Kharj, Kingdom of Saudi Arabia, were studied, and the prevalence of dental caries was 82 % reported by Tahir R. Paul, 2003 (18) 23.

Maghbool,A. A. Faisal University, 1992 (19) had carried out work in Al-Khobar province and recorded a prevalence of caries of 87.5% and the dmft score endangered 5.1 at age 6 and 7.

### Discussion or Conclusion

This review helps the reader appreciate that the prevalence of dental caries remains a significant problem among Saudi Arabian children and their preschool counterparts in particular.

The geographic variability of prevalence of dental caries extends to roughly all area in Saudi Arabia. The extent of caries among the primary dentitions in

children who are aged below 6 years was between fifty two percent and ninety six percent and the mean dmft scores were between 3.0 and 7.1. The pattern is that, the severity of the disease also increased with age.

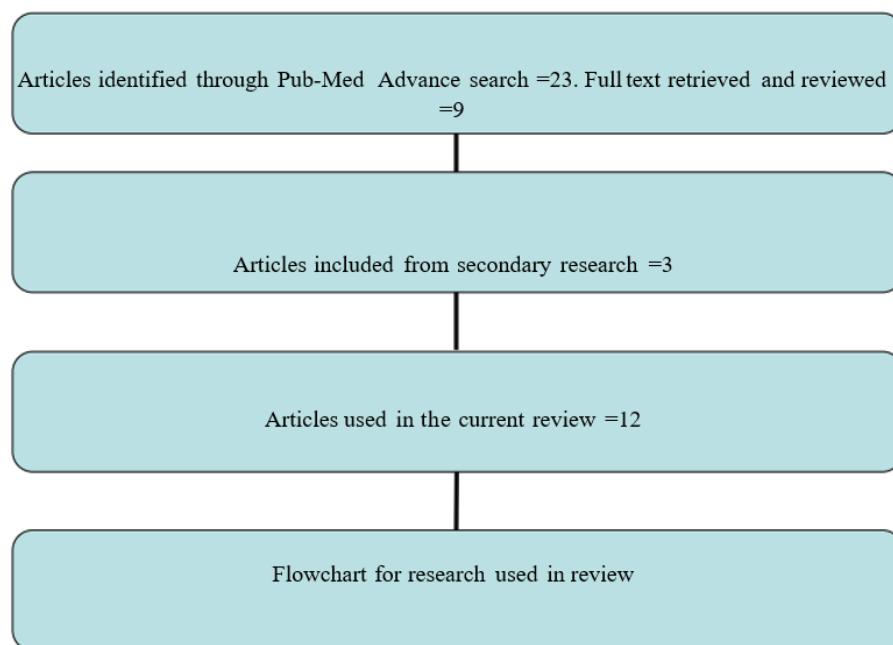
The experience of dental caries a cross Saudi Arabia is very high as for ora conditions. There should also be more causes and needs.

National community-based Strategies for Prevention of dental caries of a number offers include:

- Community education for improved oral health.
- Community Water Fluoridation. -School-based Sealant Programs.

### Conclusion

There is a very high rate of prevalence of dental caries in Saudi Arabia, therefore a clear baseline and effective oral health promotion programme plan should be developed, for Saudi children.



Study	Location/years	Type of Study	Main result Prevalence %
Alsekait, Alnaser	Riyadh - 1988	Cross section - 7040	52%
Al malk	Riyadh - 2006	Cross section - 300	96%

Weal et. al	Riyadh - 2003	Cross section - 574	76%
Al wazzan	Riyadh - 2004	Cross section - 602	94%
Wyne	Riyadh - 2008	Cross section - 1060	74%
Gandeh	Jeddah - 2000	Cross section - 709	83%
Al malk	Jeddah - 2002	Cross section - 987	76%
Faris	Makah - 2010	Cross section - 175	67%
Khan	Al hassa – 2001	Cross section - 457	83%
Abolfotouh	Abha – 2000	Cross section	85%
Tahir	Al kharj – 2003	Cross section - 103	82%
Maghbool	Al khobour – 1992	Cross section	87%

Table summary of study used in this review.

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