

## Influence of Socioeconomic Status on Dental Health among Primary School Children in Najran; KSA

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### **Abstract:**

**Background and objective:** Increasing evidence suggests that socioeconomic factors in terms of parental educational level and family income may be associated with an increased risk of dental caries.

The aim of the current study was to investigate the association between parental socio-economic status and prevalence of dental caries among primary school children enrolled in public schools in Najran; KSA during the period of October 2013 to May 2014.

**Materials and methods:** A total sample of 288 subjects aged 10 -13 years old were selected in our study. Socioeconomic status of the children's parents were obtained through a questionnaire, while the prevalence of dental caries among children was assessed by clinical examination following DMFT index. The statistical analysis performed using the chi-square test. The response rate was high (100%).

**Results:** Caries prevalence among the sample was 72.57% (Mean of DMFT = 0.96). This study results revealed that there is evidence for an inverse relationship between educational level and the caries experience, as that the parents with high educational level scored a significant better oral health status among their children than those who had a low educational level { $P < 0.05$ } respectively. While on the other hand no significant difference was observed among families those reported insufficient family income versus those reported sufficient or moderate family income.

**Conclusion:** It was concluded that dental caries experience of children is strongly correlated to parents' level of education. The inverse association was found to be significant ( $P < 0.05$ ), but no significant association observed in relation to family income.

**Recommendation:** Schoolchildren of parents with low educational level must benefit from more frequent preventive services, oral health education and promotion activities.

**Key words:** Dental caries, socioeconomic status, school children.

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### I. Introduction

Oral health is a part of general health that various aspects of quality of life. Preservation of healthy teeth is one of the key health issues in childhood. Despite marked improvements over the past decades, oral health is still a significant problem. Approximately 60% - 90% of school-aged children and a vast majority of adults in industrialized countries suffer from dental caries.<sup>1</sup>

Many studies carried out in numbers of developed countries that show great improvement and declined in prevalence of dental caries due to adopting various strategies beside application of preventive measures that considerably reduce dental caries rates.<sup>2</sup> Meanwhile, Petersen in his review of various studies on dental caries noticed two distinct trends in the prevalence of the disease. First is the decline in the prevalence of dental caries in developed countries over the past 30 years, and second is the increase in the prevalence of the disease in some developed countries. A decrease in mean DMFT (Decayed, Missing and Filled Teeth index) as low as 2.6 in some developed countries, while increase in mean DMFT up to 1.7 in some developing countries has been reported.<sup>3</sup>

Number of factors have been put forward to explain the variation in prevalence and severity of dental caries that can be found not only between developing and technically developed countries, but also between rural and urban communities within the same country. A systematic review examining the risk factors for dental caries in young children has shown that 20 out of 102 significant risk factors identified were socio-demographic factors. These factors were preceded only by dietary factors, parental oral health and enamel hypo-plasia. One of these major factors is socio-economic status (SES).<sup>4</sup>

Increasing social inequalities any elsewhere coupled with inequalities in income and wealth, have focused attention as a key determinant of population health. The differences of socio-economic most probably reflected in the general health including dental condition of the various communities. Numerous studies have shown inverse relationship between socioeconomic level and prevalence of dental diseases, that is as socioeconomic level increases, the incidence and prevalence of dental diseases and their consequences decrease, while on the other hand, the individuals with low socio-economic levels have poor oral conditions.<sup>5</sup>

Generally, the association between SES and how it operates to influence the incidence and prevalence of dental caries still remains unclear and needs more investigations.<sup>6</sup>

Defining SES is still challenging, as it is complex construct that represents how resources are distributed in the society. SES generally is measured by indicators of human capital, such as social class, wealth, education and individual income, educational and occupational prestige.<sup>7</sup> Another approach is to assign a social status position based on ecological measures derived from place of residence, this measure is assigned to individuals.<sup>8</sup> Furthermore, many social scientists have considered occupation as the most important determinant of the level of social standing of an individual in the society.<sup>9</sup>

The objective of the current study was to assess the consistency and variability of the association between family socio-economic status (SES) and prevalence of dental caries among school children (level 4 and 6) who enrolled in 3 public schools in Najran, KSA in 2014.

## II. Materials And Methods

This is a cross-sectional descriptive study undertaken in Najran city during the period of October 2013 to May 2014. A total number of 288 girls students were selected by adopting multistage technique from 3 different public primary schools. The subjects were grouped into two groups according to age. Group I was 10 - 11 years old represents 40.28% (n=116), while group II was 12 - 13 years old that represents 59.72% (n=172). The principal method of data collection was a semi structured open-ended questionnaire and interview, beside a clinical examination. Structured questionnaires were used for self-administration, whereby the participants were asked about the demographic background, socio-economic status, self-care practices, and utilization of dental health services. Prior to data collection a pilot study was done for assessing the validity and reliability. The schoolgirls were clinically examined in the school's medical rooms by one female dentist according to WHO guidelines for assessing the prevalence of dental caries. The oral conditions were assessed by using daylight, latex gloves, dental probe and mouth mirror; radiographs were not taken in this study. The examination lasted for 20 minutes. The dental caries was assessed according to WHO's global data for the year 2000 on decayed, missing and filled teeth index (DMFT Index).

## III. Statistical Methodology

Data were collected, coded and analyzed using statistical package for social sciences version 20 (SPSS, Chicago, USA). Differences between groups were determined with Chi-  $\chi^2$ . Probabilities of  $p < 0.05$  were considered statistically significant {Confidence Intervals (CI) = 95%}. Ethical clearance was obtained from students' parents as well as schools' principals.

## IV. Results

A total number of 288 subjects were examined and interviewed (Response rate was 100%). Table (1) shows the composition of the surveyed sample according to age groups, whereby, group I that aged 10 – 11 years old include 116 participants (40.28%) beside group II that include 172 participants (59.72%). The current study shows that only 27.43% were healthy, the prevalence rate was 72.57% . DMFT mean (Decayed, Missing and Filled Teeth) for the examined group was 0.96 as illustrated in table 2. Furthermore, table 3 shows that the severity and prevalence of dental caries is significantly higher among the older group (group II) than for group I (P value < 0.05). Income level and its association with dental caries had been studied too as presented in table 4 that reflects insignificant relationship between family income and occurrence of dental caries among the surveyed subjects ( P value > 0.05). This table indicates that family income doesn't influence the occurrence of dental caries. Figure 1 displays the powerful impact of parents' level of education on prevalence of dental caries among school age children

**Table (1)** reflects the composition of the studied sample according to age

Groups/ age	frequency	%
Group I (10 -11 years old)	116	40.28%
Group II (12 -13 years old)	172	59.72%
Total	288	100%

(n=288)

**Table (2)** shows the distribution of the students according to their oral health status

Groups/age	Healthy	Unhealthy			Prevalence of dental caries
		Decayed	Missing	Filled	
<b>Group I</b> (10-11 years old)	37 (12.85%)	41 (14.24%)	30 (10.42%)	19 (6.60%)	31.25%
<b>Group II</b> (12-13 years old)	42 (14.51%)	63 (21.88%)	25 (8.68%)	31 (10.76%)	41.32%
<b>Total</b>	<b>79</b> 27.43%	<b>104</b>	<b>55</b>	<b>50</b> 72.57%	

(n=288); P = 0.001

**Table (3):** Represents caries experience according to DMFT index among the studied students.

Groups /age	Total no.		D	M	F	DMFT
<b>Group I</b> (10-11 years)	288	Mean	0.62	0.13	0.11	0.96
<b>Group II</b> (12-13 years)		%	36.1%	19.1%	17.36%	72.56%
		CI <sub>95%</sub>	0.60 -0.64	0.08 – 0.18	0.09 – 0.12	1.06 -0.86

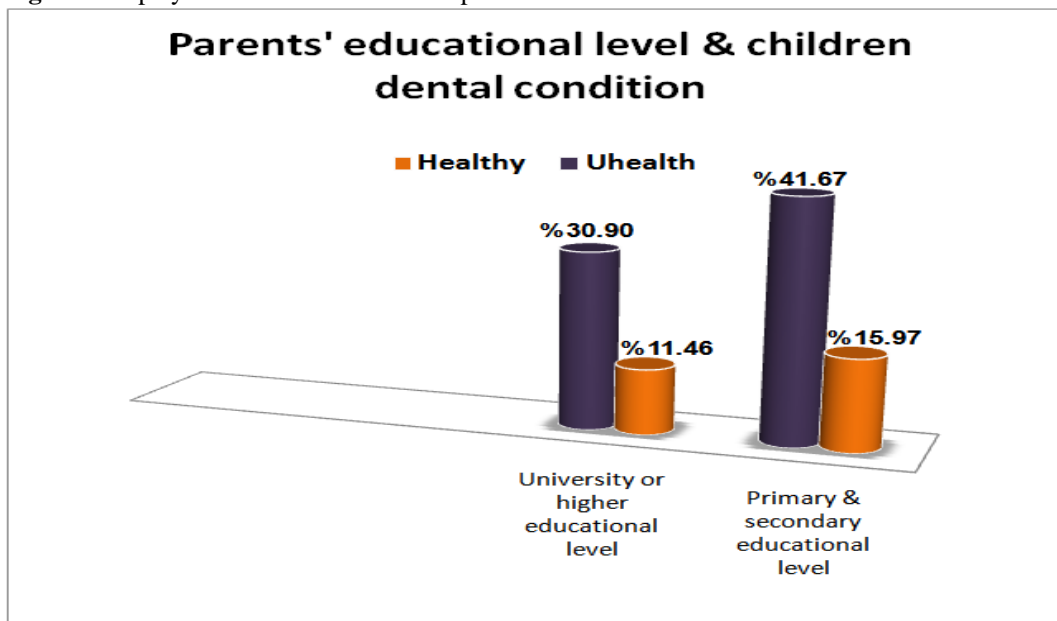
(n=288) P = 0.001

**Table (4):** Average of DMFT values based on income level among the selected sample

Income	Frequency	%	Mean (DMFT ±SD value)
high income (≥ 10000 SR)	139	48.26%	2.24 ± 1.27
moderate income (5000 – 10000 SR)	106	36.81%	2.18 ± 1.08
Low income (≤ 5000 SR)	43	14.93%	2.22 ± 1.19

(n= 288) (p = 0.10)

**Figure 1** displays the association between parents' level of education and their children's oral health



(n= 288) P value = 0.001

## V. Discussion

The relationship between the socio-economic status and in particular educational level is well established in the literature of the field. Numerous studies have shown that individuals with low socio-economic status have a poor oral health condition and thus high prevalence rate and vice versa.

Based on the results of the current study that reflects the inverse relationship between prevalence of dental caries and socio-economic status and particularly the parents' educational level as displayed in figure1, this fact is corroborated with the results that obtained by Teodora and Danila who stated that there is strong relationship between socio-economic status and dental health condition.<sup>10</sup>Also it doesn't away from what reported by Matilla et al who concluded that a greater percentage of children whose parents had a high

educational level received information on personal hygiene measures and their application better than those from parents with low educational level.<sup>11</sup> Additionally, Hammond's paper provides an abundance of evidence in support of a positive association between educational level and health status.<sup>12</sup>

Furthermore, Selwitz et al. believed that the factors implicated in caries initiation and progression were dominated by personal and social factors, such as socio-demographic status and educational level.<sup>13</sup> On the other hand, two studies in Seoul and Korea carried out by Jin et al, they reported that there is no significant association between parental educational level and the prevalence of dental caries.<sup>14</sup>

Moreover, Willems et al showed insignificant and independent effect of parental education level on the occurrence of dental caries in their studied groups.<sup>15</sup> These findings are coincided with what emerge from our study. Income level has also been studied widely, the obtained outcome from this study revealed that there is no significant relationship between family income and prevalence of dental caries. Furthermore, Carmichael et al were unable to show a statistically significant effect of income on the prevalence of dental caries.<sup>16</sup> Interestingly, in Abu Dhabi, Al Hosani and Rugg –Gunn demonstrated that when parental educational level was controlled, higher parental income was related to higher caries prevalence.<sup>17</sup>

On the other hand, numbers of studies had been carried out in Europe showed that persons with low and very low incomes are 5 times more likely to have a bad oral health status compared with those with high incomes.<sup>18</sup>

## **VI. Conclusion And Recommendation**

The existing study concluded and confirmed the existence of some connection between the person's socio-economic status and the oral health condition, which calls for the implementation of oral health educational programs. The application of preventive dental caries programs should be focused on children, their oral hygiene habits, and lifestyles, and this could be achieved by complex prevention programs being implemented at schools and being targeted at lower socio-economic status families. Knowledge imparted through such programs, would go a long way in maintenance of oral health.

### **Limitation:**

Lack of consensus in the literature about how to measure SES in a way that would provide a better understanding of how SES contributes to poor oral health.

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