

# Correlation between the Dental Caries Social Determinants in Children from 4 to 12 Years of Age in Sofia

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**Abstract:** ***Introduction:** The general health of children, including the health of the oral cavity are associated with the social variables in the family. The environmental factors can have a major impact on the development of carious process in one child. **Aim:** This study aims to evaluate the relationship between dental caries and influence of social factors in children from 4 to 12 years of age. **Material and Methods:** The study included 200 children from schools and kindergartens in Sofia. Was conducted targeted medical history, taking into account demographic data for any child - sex, age and socio-economic status, food preferences and health habits of the child. The prevalence of dental caries was registered with the index DMFT. **Results:** The results show that in 75% of children the incidence of tooth decay is over 4, at 18% were up to 4 and 7% are 2 DMFT. 63% of the children are from families with an average social status, 30% are low and 7% with higher social status. Most children consume a frequently throughout the day low molecular weight carbohydrates and fizzy drinks such as is reduced intake of milk and dairy products, fruits and vegetables. The results are significance ( $p < 0.001$ ). **Conclusion:** The prevalence of dental caries is directly related to social variables examined in the family.*

**Keywords:** socio-economic status, oral health, children, carbohydrates, DMFT

## 1. Introduction

The general health of children, including the health of the oral cavity are associated with the social variables in the family [7]. Dental caries is one of the most significant social disease and its consequences are a serious health problem in the majority of children in the world [20]. Environmental factors, such as socioeconomic status, education level of parents, lifestyle and eating pattern can have great impact on the development of carious process in a child.

**Aim:** The aim of this study is to evaluate the relationship between dental caries and influence of social factors in children 4 to 12 years by comparing the results of different social groups.

## 2. Material and Methods

The study included 200 children from schools and kindergartens in Sofia. It was conducted aimed history, taking into account demographics for each child - sex, age and socio-economic status of parents, food preferences and health habits of the child.

The prevalence of dental caries was registered with the index DMF (T + t), where every child by working with an initial diagnostic threshold D1, taking into account the earliest reversible carious lesions in the enamel. To establish the oral hygiene status was used the index of Greene & Vermillion (Simplified - 1964) [13], assessing the plaque on the vestibular surface of the available permanent teeth - 16, 11, 24, 31 and lingual surfaces of 36 and 46. If the permanent teeth had not yet penetrated, the plaque was

evaluated on the vestibular surface of the primary teeth: 55, 51, 64, 81 and the lingual surface 75 and 85.

## 3. Results

Socio - economic status (SES) in the study is divided into three categories - low, medium and high.

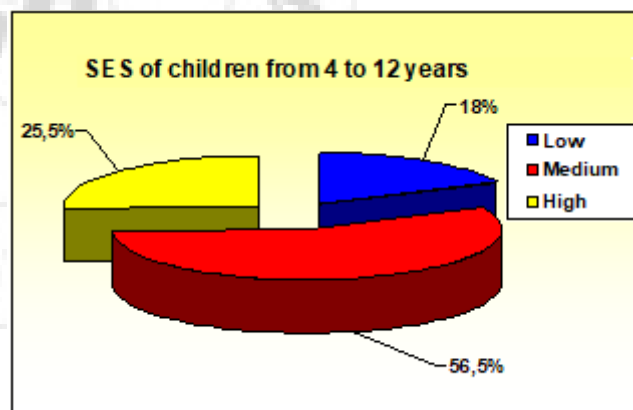


Chart 1

Social status is undoubtedly an important risk factor for the development of caries. The data in the above table shows that 25.5% are of sufficiently good social status, which poses no risk of caries. The majority of children (56.5%) live in families with social status, which creates a medium risk for dental caries and 18% are from families with social status risk for dental caries

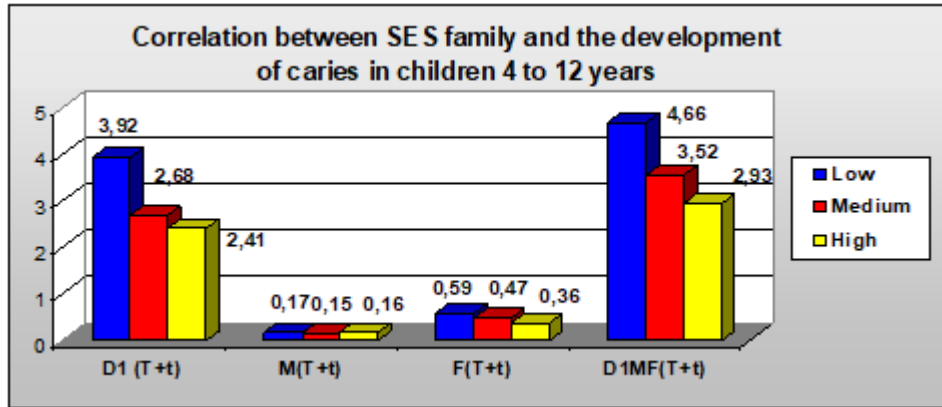


Chart 2

	D1M F (T+t)	D1 (T+t)	M(T+t)	F(T+t)	D1M F(T+t)
Significance P Value	< 0.01	< 0.05	< 0.01	< 0.01	< 0.01

dental caries. Intergroup analysis showed that these indicators most affected are children with low and middle SES. This requires to carry out an assessment of caries risk and modeling of oral environment to conduct the necessary prevention of carious process.

On Chart № 2 reflects the correlation between SES and the development of tooth decay in children studied. There was statistically significant differences in children from the three groups in terms of caries, teeth obturation and intensity of

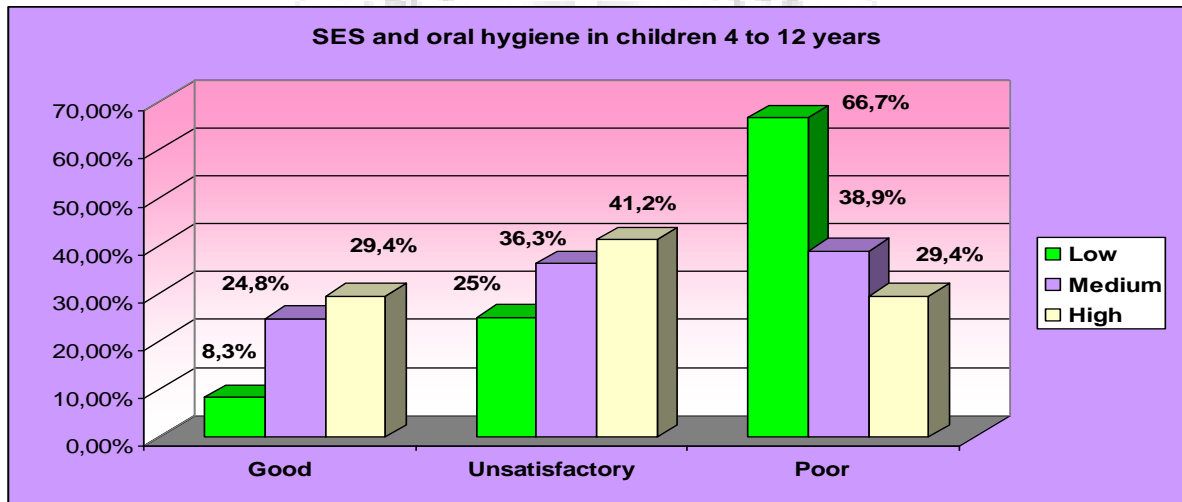


Chart 3

Oral hygiene is a major risk factor for the development of dental caries. From the results it is found that most children have poor oral hygiene and are at high risk of developing caries. Despite this general picture of the high risk should be given to the fact that the highest risk among children with low SES. This result was statistically higher for within group

comparison and explain, as these children are mostly minority families where the level of health awareness is low. These results are very important because they show areas in which you need to work specifically to improve health education.

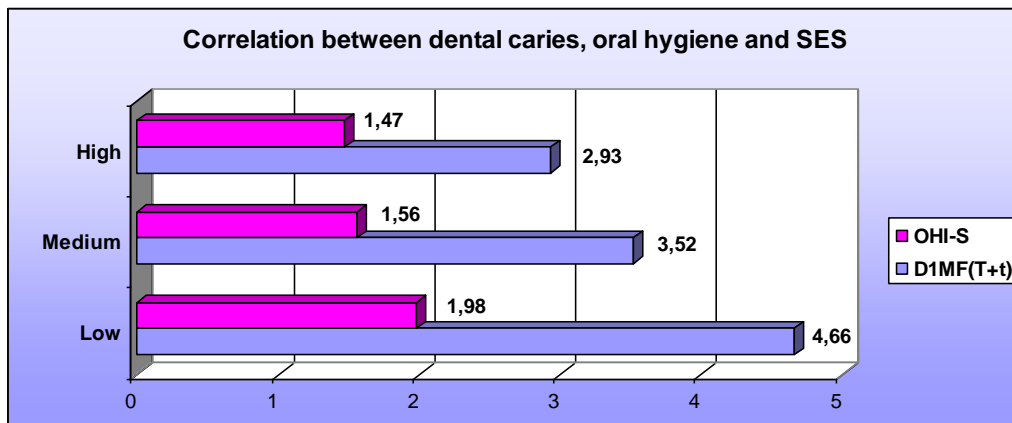
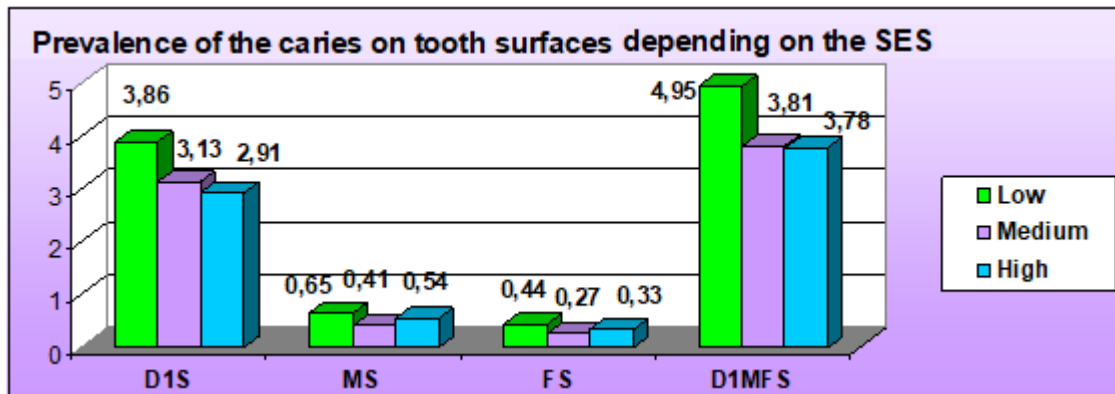


Chart 4

D1MF(T+t) SES	D1MF(T+t)	OHI-S
Significance P Value	< 0.01	< 0.01

most caries in these children. In the other two social groups average number of cavities is lower due to lower levels of oral hygiene index that have reported.

On **Chart No. 4** clearly shows the influence of oral hygiene for the development of dental caries. It is noteworthy that children with low SES it is neglected and this correlates with

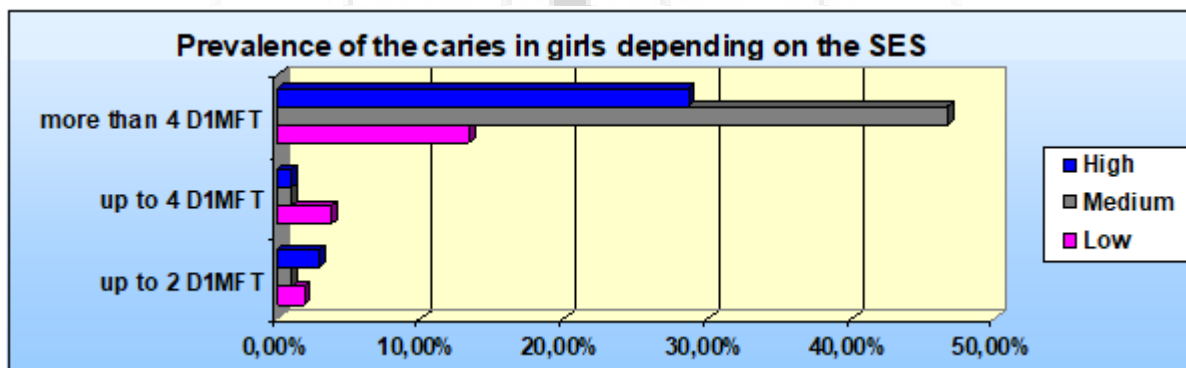


**Chart 5**

D1MFS SES	D1S	MS	FS	D1MFS
Significance P Value	< 0.01	< 0.05	< 0.01	< 0.05

respect to all the analyzed parameters, such as children with low SES are affected most severely in comparison with those of the other two groups.

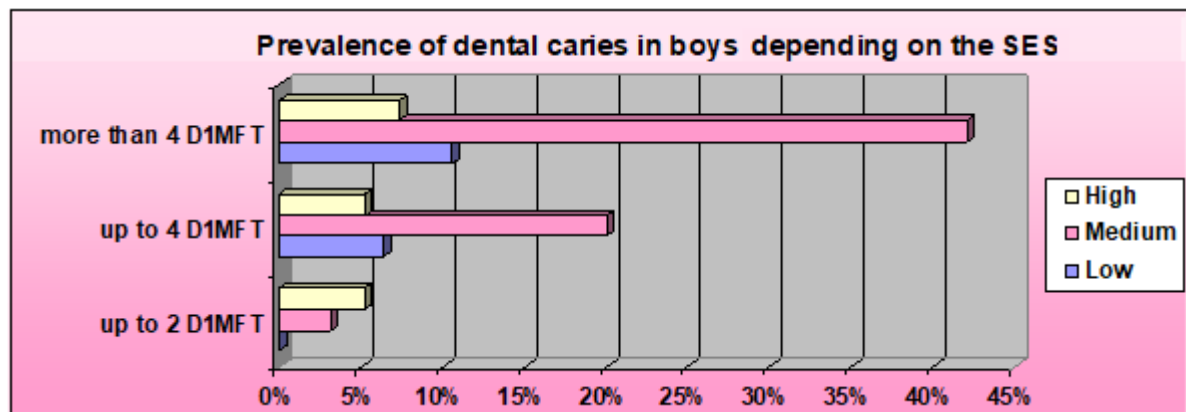
On **Chart No. 5** are reflected affected by caries tooth surfaces. Reported statistically significant difference with



**Chart 6**

**Chart No. 6** on an analysis of the prevalence of tooth decay in researches girls. Worryingly, most have more than 4 D1MFT, as girls are affected mainly by groups with middle and high SES. The results can be explained by the high consumption of carbohydrate foods and inadequate oral

hygiene. Parents of children up to 2 caries have secondary education - 30.5% of cases and 69.5% have higher education. And parents of children with 4 and more than 4 caries have secondary and primary education



**Chart 7**

On **Chart No. 7** reflected the prevalence of tooth decay in surveyed boys. Worrying trends observed in boys groups with middle and low SES. What is needed is prevention of carious process and active motivation. Nutrition affects the condition of the teeth, the most significant effect was a local effect of food containing free sugars on the tooth surface and development of caries and erosion.

**Table 1:** Carbohydrate intake and intensity of dental caries in children

Carbohydrate intake Children n=200	Limited intake	Seldom between meals	Frequent intake
DIMFT	1.8	3.7	6.9
Low SES	13,8%	27,8%	58,4%
Medium SES	12,39%	41,6%	45,9%
High SES	15,7%	29,7%	54,9%

It is noteworthy that eating sweets rarely during the week reflects on the low intensity of caries. With increasing frequency of carbohydrate intake increases the frequency and prevalence of dental caries. Children have a preference for soft carbohydrate foods that are present in their food intakes per day. Recurring foods are soft texture, which will affect their oral risk profile. Consumption of sweetened drinks is a serious risk of caries.

#### 4. Discussion

Oral health is included in the "Common Action Plan against chronic diseases in Europe." The work on the policies of prevention is aimed at focusing on training for oral hygiene and the use of daily basic methods - brushing twice daily with fluoride toothpaste, use of floss to clean interdental spaces, balanced diet, replacing brushing your teeth during the day with sugar-free gum and regularly visit the dentist [15]. Emphasis is placed on the work to reduce the deficit in communication between dentists and patients.

Current understanding of the nature of dental caries as a multifactorial disease, and as a process that left without control may occur and develop at any age, individual, group or society requires persistence and implementation of programs for prevention, even in countries achieved real limit its spread. Mastering it requires a comprehensive approach, including an evaluation of the risk of developing dental caries, recommendations for healthy behaviors and clinical professional care by general dentists.

Over the past 15 years initial caries prevention is a major priority in the work of dentists. The efforts are aimed at increasing the resistance of hard dental structures and special enamel by modeling the oral environment by creating preventive programs with which to influence risk factors for the development of caries. Especially correction carbohydrate diet, topical application of fluoride, remineralizing agents and sealants. It has been shown that oral diseases can be controlled and even eliminated largely through education and prevention initiatives, which in turn would reduce public spending to treat children and students [12].

Children whose parents had socio-economic problems and poorer parents have a higher consumption of confectionery

and have more tooth decay-affected teeth [8] and [22]. Improper nutrition is significant influence on the development of dental caries. Students who do not follow healthy eating habits and eat sticky, sweet foods will have a negative impact on their teeth [6], [11], [14] and [17]. Low socioeconomic status contributes to poor eating habits and unhealthy lifestyles [5], [17] and [22]. Children from families with a lower social status have worse habits for oral hygiene [11], [16] and [24]. In order to protect and preserve the oral health of children, more attention should be paid of health promotion policy, which account of the social and econom and environmental factors affecting the dental status of the child.

Global School Health Initiative of WHO (1995) Aims to mobilize and strengthen health promotion and training initiative in schools to improve the health of students, school staff, families and society [25]. The analysis of published studies showed, that in order to reduce dental caries, preventive measures are applied or programs in many countries [1], [18] [21] and [23] and easily accessible to low-income families [6], [19] and [20]. Topaloglu-Ak et al. that first step to prevent dental caries is the implementation of a national health program, which includes promotional, preventive and minimal intervention approaches [3]. Modern science in the management of dental caries focuses on the reduction of dental plaque, remineralization and implementation of minimally invasive methods of treating dental caries [10]. This study showed that socio-economic status is of great importance for children's oral health and therefore priority should be given to children from families with low incomes and low socio-economic status [2], [4] and [7].

**Conclusion:** The prevalence of dental caries is directly related to social variables studied in the family.

#### 5. Conclusions

- 1) The prevalence of caries depends on the SES family.
- 2) Caries process is more common in girls.
- 3) Impact on the development of carious lesions have - oral hygiene, frequent consumption of carbohydrates and irregular visit to the dentist. They are serious risk factors for the development of caries in children studied.
- 4) The prevalence of tooth decay is directly related to social variables studied in the family.

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