

# THE PARENT'S AWARENESS ABOUT HIDDEN SUGAR AND ITS EFFECT ON DENTAL HEALTH OF CHILDREN IN THE CITY OF KERMAN IN 2016

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## ABSTRACT

**Aim:** Dental caries is the most prevalent chronic disorder of childhood. One of the most important factors in caries is the use of sugars. Hidden sugar is known as the simple sugars present in foods that the user is not aware of their existence. The objective of the current study was to evaluate knowledge, attitude and performance of school children parents in Kerman regarding hidden sugar.

**Materials & Method:** A questionnaire designed by the researchers was implemented in the current study and after validation, was filled by 150 students' parents in Kerman. The questionnaire comprised of three parts, knowledge, attitude and performance regarding hidden sugar. SPSS v.16 was used to analyze data and  $p < 0.05$  was considered statistically significant.

**Results:** More than two thirds of the participants were unaware of the hidden sugars. Parents' knowledge regarding cariogenic potential of sugars was good, but most of the subjects did not have a good knowledge of hidden sugar. Attitude of most parents was that they will not buy products with no valid nutrition facts label. There was a significant association between parental education level and knowledge regarding cariogenic potential of sugars.

**Conclusion:** Results of the current study revealed a proper knowledge regarding cariogenic potential of foods. But most of the subjects did not know the meaning of hidden sugar and this implies the necessity of general educations regarding this issue.

**Key words:** Attitude, Hidden Sugar, Performance, School Children Parents.

## Introduction

Dental caries is the most common chronic disease in childhood. Several factors contribute to this phenomenon including heredity and diet. The primary and mixed dentition are the most important dental development period and any changes in these two systems have a significant effect on person's permanent teeth.<sup>1</sup>

Dental caries is a multifactorial disease, that the role of each factor in causing it can be to some extent independent from other factor or it can exacerbate them. Among the most important factors causing dental caries we can point out several factor such as type of nutrition, amount of carbohydrate intake, oral hygiene, controlling of dental plaque, and saliva compositions.<sup>2</sup>

Given the enormous cost that dental treatments will have for children in future, attention to prevention methods are preferred over treatment and therefore, evaluation of parental awareness about factors affecting dental caries, as well as the type of child nutrition are of great importance.<sup>3</sup> The amount of sugar in foods is one of the crucial issues in child nutrition, which directly affect the incidence of caries. In many cases, the amount of sugar in foods has been listed on the product, but there is large amount of sugar available in the child's diet, which people may not be aware of its existence and therefore "hidden sugar" available in foods can be provided to children without knowledge of parents and it may lead to dental caries.<sup>4,5</sup>

Given the importance of sugar and especially hidden sugar in foods, this study aims to evaluate the awareness, attitudes and performances of parents of school children in the city of Kerman in regards to the hidden sugar available in various foods. Therefore, we could acquire an overview

of parents' awareness about hidden sugar and if their awareness about them is below the optimal level, educational programs should be provided to parents to raise their awareness about hidden sugar in foods, so the rate of dental caries due to sugar in foods reduces.<sup>6-8</sup>

## Materials and Method

This study was conducted in qualitative (questionnaire design) and quantitative (cross sectional) stages.

Initial questionnaire was prepared based on consultation with a statistician. More than half of questions were proposed and standardized by project researcher. (In other words, the questionnaire is constructed as Researcher)

At the beginning of this research project, prepared questionnaire was provided to 2 nutritionists and 2 dental specialists who were familiar with the subject to evaluate the questionnaire in terms of content and proximity with the goals of the project. Based on the comments of these experts, necessary changes were applied on the questionnaire.<sup>7,9</sup> Then, the modified questionnaire was provided to a Persian language expert, in order to evaluate the questionnaire in terms of fluency and clarity for study group. Questions of different sections of questionnaire were provided to a designer to design them in correct form and shape, so they could encourage respondents to complete them. After the pilot study was conducted on 30 prototypes (which will be used to determine the final sample size of the study), the results were collected and entered into SPSS software. At this point, the internal validity and reliability of the questionnaire were evaluated and if necessary, the finishing touches were applied on it.<sup>10</sup>

Samples were selected from girl and boys' schools located in the city center. (sample collection using cluster method).

After selecting the samples, the final questionnaire was put in an envelope and was handed to student, so he/she takes the envelope to his/her parents and returns its answer to the school within two days.<sup>11,12</sup> If the questionnaire was not returned after two days, in a short letter, parents were respectfully asked to return the questionnaire the next day or state their lack of informed consent to participate in this study below the letter.<sup>13,14</sup> It is worth mentioning that in each class one student was considered as reserve so if in case of not returning a questionnaire or exit from one of 5 original samples of class, the reserved person information would be use.<sup>15</sup>

The necessary explanations were given to parents. Parents were completely free to participate or not participate in this study. All obtained information were kept, recorded and analyzed confidentially and anonymously. If requested by parents or children, additional explanations about hidden sugar were provided to them after collecting the data.

**Results**

One hundred and fifty peoples participated in the study, of which 63 people (42%) were men and the rest were women. Average age of participants in the study was  $34.54 \pm 8.96$  years. [Table 1] There was no significant difference between average age of women and men. ( $p > 0.05$ , T-Test)

Gender	No. (%)	Average Age	p -Value
Man	63 (42%)	$35.69 \pm 9.02$	> 0.05
Female	87 (58%)	$33.70 \pm 8.87$	

Table 1: Gender distribution and the average age of the participants in the study.

The average age of the subjects spouse was  $34.52 \pm 11.92$  years. Table 2 shows the educational level of participants in the study. The majority of subjects had university education (102 people, 68%). [Table 2]

Also, 84 (56%) of subjects' spouses had university education too. [Table 3]

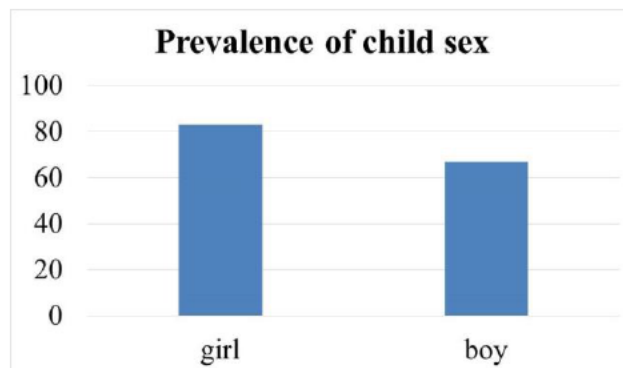
Education	Relative Frequency	Absolute Frequency
Primary	5.3 %	8
Guidance	4.7 %	7
Diploma	22 %	33
Collegiate	68 %	102

Table 2: University education of subjects of the study.

Education	Relative Frequency	Absolute Frequency
Illiterate	6.6 %	10
Primary	2 %	3
Guidance	8.7 %	13
Diploma	26.7 %	40
Collegiate	56 %	84

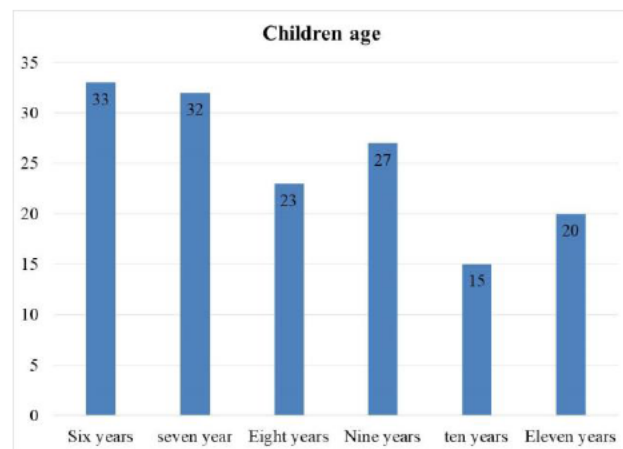
Table 3: University education of subject's Spouses.

Among the subjects, 83 people (55.4%) had a daughter and 67 people (44.6) had a son, whom had given the questionnaire to parents. [Graph 1]



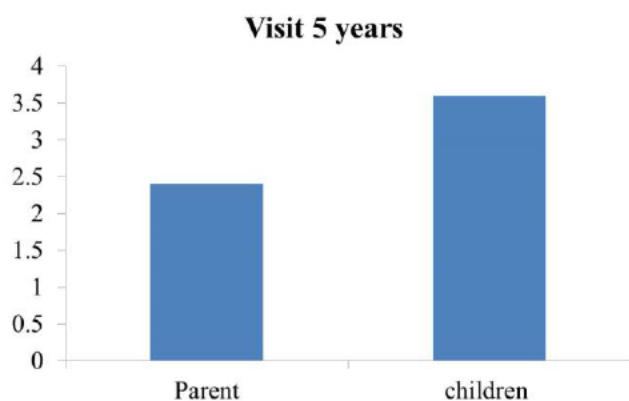
Graph 1: The gender frequency of children of parents who have completed the questionnaire

Thirty three people (22%) were 6 years old and 32 people (21.3%) were 7 years old. The frequency of children based on age. The information about absolute frequency of children in different ages is shown in Graph 2.



Graph 2: The frequency of children based on age.

The average visits to pediatric dentist in last 5 years was  $3.6 \pm 3.08$  times and average visits to dentist for parents was  $2.41 \pm 2.62$  times in last 5 years. [Graph 3]



Graph 3: The average visits to dentists in las 5 years.

The severity of dental caries was also asked from parents so we could determine their awareness about different cariogenic materials. The frequency based on score of awareness about severity of cariogenicity. As it can be seen, the highest frequency belongs to scores of 2 and 3 (32 and 34 people). [Table 4].

Knowledge of the severity of Caries Formation	Absolute Frequency	Relative Frequency	p - Value
0	13	7.8 %	> 0.05
1	32	21.3 %	
2	34	22.7 %	
3	42	28 %	
4	20	13.3 %	
5	6	4 %	
6	3	2 %	

Table 4: The absolute and relative frequency based on score of awareness about severity of cariogenicity of different food items.

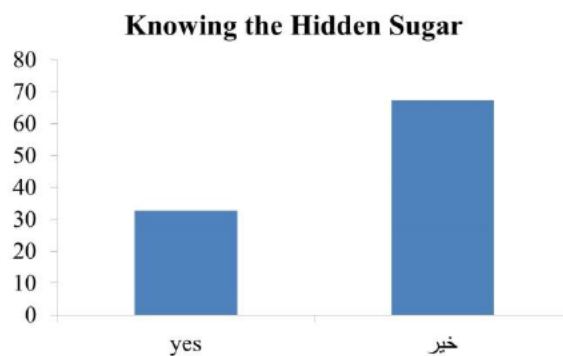
Regarding the relationship between sugar and its effect on oral and dental health, scores of parents is provided in Table 5. According to results of the study, parents' awareness about effects of sugar on oral and dental health is at a relatively high level and almost 70% of parents scored more than half of the scores related to awareness questions in this area. [Table 5]

The average obtained score regarding the awareness about effects of sugar by men was  $3.08 \pm 1.19$  and by women was  $3.22 \pm 1.24$ . Difference between women and men participating in the study in terms of awareness about effects of sugar was not significant. ( $p=0.499$ , T-Test).

Scores	Absolute Frequency	Relative Frequency
0	2	1.3 %
1	12	8 %
2	30	20 %
3	41	27.3 %
4	45	30 %
5	20	13.3 %

Table 5: Awareness scores about effects of sugar on oral and dental health

Forty nine people (32.7%) were aware of the existence of hidden sugar in foods and the rest were unfamiliar with this definition (101 people, 67.3%). [Graph 4]



Graph 4: The relative frequency of awareness about hidden sugar, among participants

Ninty Four people (62.7%) said that they would not buy products without food labeling any more. Also, 49 people believed that sugar content in foods has been correctly stated on them. Average score of people awareness of the hidden sugar in different foods was  $5.11 \pm 2.15$ . There was no significant difference between women and men in terms of amount of awareness in this regard ( $p=0.518$ , T-Test).

Table 6 shows the amount of sugar consumption in children of the study.

Sugar in	At least once a Day	At least once a Week	Less than once a Week
Tea Or Coffee Sweetened	47.3 %	20.7 %	32 %
Shyrtm Of	42.6 %	41.3 %	16 %
Chocolate Or Toffee	47.7 %	40.7 %	14.7 %
Pastry	25.3 %	44 %	30.7 %
Soda	20.7 %	14.7 %	64.7 %
Beverage	19.3 %	38.7 %	42 %
Fruit Juice	48.7 %	41.3 %	10 %
Fresh Vegetables	48.7 %	39.3 %	12 %
Fresh Fruit	78 %	20 %	2 %

Table 6: The amount of consumption of different foods containing hidden sugar.

## Discussion

“Hidden sugar” means the typical sugar content available in foods, which can lead to dental caries, without individual being aware about the existence of this type of sugar in foods. This study aimed to evaluate the awareness, attitude and performances of parents in regards to hidden sugar available in the foods consumed by their children. The results of the study suggested that almost two-thirds of parents are unaware of hidden sugar existence and also, parents’ awareness regarding the cariogenicity of different foods items is at a relatively low level. Dental caries in one of the most common chronic diseases in the childhood and has higher prevalence compare to asthma and allergic rhinitis among children. This disease has a great cost for community and families and leads to loss of many funds. Various studies have been conducted on parents’ awareness about cariogenicity of different substances and also their attitude and performances in regards with various cases in dentistry have been measured. Evaluating awareness of people can be helpful in programming for improving people’s knowledge.<sup>16</sup> In the present study, nearly 60% of parents were aware of hidden sugar existence in children foods. While, nearly two-thirds of subjects had university education.<sup>17</sup> This problem shows the importance of public education in the field of cariogenicity of foods that look safe and it also shows the factors effecting dental caries as well. Previously, Watt and Rouxel in their study examined the role of sugar in dental caries and also general health policies in controlling the available sugars in foods.<sup>14</sup> In their presented model of dental caries, they evaluated the role of typical sugars in dental caries as very important, because the existence of sugar in foods is vital for survival of cariogenic bacteria in the oral cavity and other factors by effecting the growth of bacteria and controlling foods available to them, lead to an increase or decrease in dental caries. In this study, the concept of hidden sugar has been proposed as one of the important cariogenic factors and the interesting thing is that the sugar found in fruits, due to their simplicity, has been proposed as a cariogenic factor. Given that in this study, the majority of people with high level of educations were unaware of hidden sugar in foods, it is recommended that more studies should be conducted on evaluating the effectiveness of public educations in the field of cariogenicity of foods, health policy officials also should pay attention to public education in this area.<sup>18</sup>

Naeni MM *et al*,<sup>7</sup> in their study, the awareness of school children about oral hygiene was evaluated. In the present study, awareness about hidden sugar and sugar available in foods was low and the consumption of foods containing hidden sugar was higher in children which their parents were unaware of hidden sugar compare to children that their parents were aware of hidden sugar and its negative effects.

In the present study, the consumption of foods containing sugar was higher in children that their parents were unaware of hidden sugar compare to the rest. In the study it was shown that consuming sugar by mothers has a direct

relationship with dental caries in children. This shows the importance of parents’ awareness of impact of their health performance in incidence of caries in their children.

Awareness about hidden sugar and also consumption foods containing hidden sugar in children of the present study was not at an optimal level. Boulton *et al*.<sup>4</sup> in their study examined the consistency between food labels and the amount sugar in different drinks and showed that there is a big difference between nutrition label and sugar in drinks. This shows the need for more education about the hidden sugar and harmful effects of sugar on the teeth and it emphasized the education for all parents.

In the present study, there was a direct relationship between parents’ awareness of harmful effects of sugar and severity of their cariogenicity with the parents’ education. Consistent with these results, Park *et al*.<sup>9</sup> also showed that adults awareness about health is associated with their education and also by increasing the awareness about oral and dental hygiene, the consumption of sugars reduces. Also, in this study there was a direct relationship between parents’ education and their awareness about oral health and their performance regarding oral and dental health, which is consistent with the present study.

Al-Omiri *et al*.<sup>19</sup> in their study examined the awareness, attitude and performances of school students of Jordan in regards to oral and dental health. The results of their study showed that the majority of students are aware of the importance of brushing, however about half of them do not brush regularly and also more than 80% of them do not use dental floss and fluoride mouthwash on a regular basis. In this study, parents’ attitudes about oral health of their children was evaluated. About half of the parents advised their children to brush, but they do not monitor their children while brushing and only 20% of parents cared for their children while brushing. The results of the present study also indicate that the majority of parents are unaware of cariogenicity of substances and their performances regarding the cariogenic foods is not on the basis of awareness and many of children have diet containing hidden sugar. Wyne *et al*,<sup>20</sup> in their study examined the prevalence of dental caries in school children in Riyadh of Saudi Arabia and evaluated the awareness, attitude and performance of their teachers in regards to oral health in school children. The amount of dental caries in Saudi children reported as very high, however, the awareness and attitudes of teachers was relatively high and their performance in the field of oral health education was at an acceptable level. This shows the importance of application of oral and dental health trainings. In the present study, parents had a high level of education, but the majority of them did not gain an acceptable score in the field of awareness of cariogenicity of different substances and existence of hidden sugar.

Thus, public and understandable education for all should be a priority of various training programs, which are provided by health policymakers. In relation to visits to the dentist during the last 5 years, average of visits in present study

was very lower than other studies. Perhaps we could compare results of present study with study by Wyne in this respect, because in this study, the number of dental visits during the period of 2 years was about 2 times. This could be due to different factors such as the high cost of dental procedures, dentists lack of awareness of role of preventative as well as lack of awareness of the need for dental treatment in children with deciduous teeth.

### Conclusion

The results of this study indicate that parents' awareness of cariogenicity of sugars is at a desirable level, but the majority of parents were unaware of the existence of hidden sugar in foods. This shows the need for more training in this area and also education to children in order to correct their performance.

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