

THE RELATION BETWEEN SUGAR CONTAINING SNACKS, TOOTH BRUSHING AND DMFT IN CHILDREN AGED 3-12 YEARS OLD ATTENDING QUEEN RANIA CHILDREN'S HOSPITAL, JORDAN

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ABSTRACT

The objectives of this study were: (1) - to assess the relationship between consumption of sugar containing snacks, drinks and DMFT of children aged 3-12 years. (2) - to determine the relationship between frequency of tooth brushing per week and DMFT of children aged 3-12 years.

A total of 100 children aged 3-12-year-old, with no identified medical problem attending Queen Rania Children's Hospital-Jordan were included in the study. Data was collected through a questionnaire completed by interviewing the parents. Questionnaire contained information regarding the gender, age, weekly average consumption of sugar containing snacks and drinks, weekly average number of tooth brushing. DMFT was scored through a clinical examination carried out by a pediatric dentist.

Positive correlation was found between frequency of consumption of sugars containing snacks, drinks and DMFT. There was a negative correlation between frequency of tooth brushing per week and DMFT.

Keywords: *sugar containing snacks, brushing, dental caries.*

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INTRODUCTION

The concerns regarding the increased consumption of sugar containing snacks and drinks have increased in many countries¹⁻³, and it has increased among children of all ages over the past few decades.⁴ Consumption of high amount of sugar provides cariogenic bacteria a substrate to metabolize producing acids which have negative effect on oral health and the dentition.⁴ Currently, dental caries is the greatest global oral health problem with 60-90% of school children affected worldwide.⁵ There are many consequences of dental caries which affect the children's quality of life in addition to high treatment costs.⁶⁻¹⁰

Although the relationship between sugar intake and oral health has been established¹³, there is little information regarding the impact of changes in diet habits and consumption of sugar containing foods on oral health among Jordanian children.

The aims of the study were to determine relationship between consumption of sugar containing snacks, drinks and DMFT among a sample of 100 children aged 3-12 years old and to record relationship between frequency of tooth brushing per week and DMFT among a sample of a 100 children aged 3-12 years old.

METHODS

This was a cross sectional study and the participants were children attending the Pediatric Dentistry Department, Queen Rania Children's Hospital, Jordan. Only healthy children with an age range of 3-12 years were included in the study. Children having a disability or those who were medically compromised were excluded from the study.

The sample size was determined using a pilot study. The effect size was estimated at 0.39. On the basis of a significance level of alpha 0.05, the sample size was calculated to achieve 80% power and it showed that 85.

Among the daily patients visiting the department, 150 children were evaluated based on the inclusion criteria. One hundred patients were found suitable for the research protocol after clinical examination by a pediatric dentist. The other subjects were not suitable

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for recruitment in the study due to reasons related to their medical condition.

Ethical approval was obtained from the Human Research Ethics Committee at the Royal Medical Services under number 54-2-2020. A detailed explanation concerning the study was presented to the patients and their parents. A consent form was signed by the parents.

Data was collected through a questionnaire completed by interviewing the parents. Questionnaire contained information regarding the gender, age, weekly average consumption of sugar containing snacks and drinks, weekly average number of tooth brushing. DMFT was scored through a clinical examination carried out by a pediatric dentist.

RESULTS

There was a high average weekly consumption of sugar containing snacks and drinks by the participants as shown in table-1. The participants of the study brushed their teeth 5.3 times a week on average (table-1) which is less than recommended. A high DMFT with an average of 7.4 for the study participants was recorded (much higher than WHO target).

A positive correlation between weekly average consumption of sugar containing snacks and drinks and DMFT was found with a correlation value shown in table-2. A negative correlation was found between weekly average number of times of tooth brushing and DMFT with a correlation value of - 85.42 % (table-2).

TABLE 1: WEEKLY AVERAGE CONSUMPTION OF SUGAR CONTAINING ITEMS AND ORAL HYGIENE MEASURES

Weekly Average Consumption of Sugar Containing Items		
S. No	Name of Sugar containing Item	Weekly Average Consumption
1	Confectionary	10.49
2	Drinks	7.05
Total		17.54
Weekly Average Oral Hygiene Measures		
S. No	Name of Oral Hygiene Measure	Weekly Average Performance
1	Toothbrushing	5.3

TABLE 2: CORRELATION OF DIFFERENT VARIABLES WITH DMFT

Correlation of Weekly Average Consumption of Sugar Containing Items with DMFT		
S. No	Variable	Correlation Coefficient or Coefficient of Determination (R2)
1	Confectionary	60%
2	Drinks	40%
Correlation of Weekly Average Toothbrushing with DMFT		
1	Toothbrushing	- 85.42%

TABLE 3

Study	Results
Ismail et al, 1984	Positive association between caries risk and soft drinks consumption
Heller et al, 2001	Positive association between DMFT and daily sugared soda consumption
Sayegh et al, 2002	Consumption of confectionary is associated with high caries prevalence
Neha Zahid et al, 2020	Significant associations observed between the significant caries index and dietary consumption of sweets and processed snacks.
Johansson et al, 2010	The proportions of children with caries increased by increasing number sweet items reported to be eaten most days. A significantly higher proportion of children with visible plaque had caries.

DISCUSSION

This study aimed to assess the relation between consumption of sugar containing snacks and drinks and DMFT and also to assess the relation between number of times of weekly toothbrushing and DMFT in a group of Jordanian children.

A positive correlation was found between weekly average consumption of sugar containing snacks and drinks and DMFT in this study. This finding is in agreement with findings of many other studies (table-3). The high-frequency consumption of processed sugars containing food was associated with greater dental caries experience in many prospective studies of children and adolescent population.¹⁶

The present study showed that snacking on sugar products, as well as in the presence of plaque due to low frequency of toothbrushing were associated with increased DMFT among Jordanian children. Table-3 shows other studies that demonstrate the association between confectionary/soft drink consumption and dental caries¹⁷⁻²² and the association between plaque due to lack of tooth brushing and dental caries.²¹

CONCLUSIONS

This study revealed association between high consumption of sugar containing snacks and drinks and a high DMFT in Jordanian children. The study also revealed an association between low frequency of toothbrushing and high DMFT.

Recommendations

The results of this study show that there is a great need for preventive oral health programs nationwide. These preventive programs may be implemented through schools and other oral health care providing services and might involve children as well as parents.

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1 Taghreed F. Jaradat:	Designed and wrote the article
2 Basma K. Sakarneh:	Supervised the work
3 Enas F. Othman:	Collected data and examined the patients
4 Ayman F. Alelaimat:	Analysed and interpreted data
5 Lina K. Obeidat:	Revised the manuscript. Collected references