

Dietary Patterns and Oral Health among School Children Aged 6-12 years Old in Kirkuk City

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Key words

Oral health, children, school, age.

Abstract

Introduction: Oral health is the practice of keeping the mouth & teeth clean to prevent dental problems, like caries and ulcers .For this sake a cross sectional study was conducted to determine the extent and effects of dietary pattern on oral health among school aged children in Kirkuk city's primary schools on a sample.

Material and methods: Sample size of 120 pupils by selecting 5 pupils from each stage from 4 different schools. The duration of the study was 1 month from the 1st of March 2015 to 31th of the same month and was carried out using a questionnaire which was given to the pupils to be filled by their parents.

Results: The most important finding of the study was that there is a relationship between dietary intake and dental problems.

Conclusion: That sweeteners consumer has the highest percentage of dental problems.

Introductio

Good oral health is essential to our school children if they are to take full advantage of the educational services being offered, identify the types of food consumed by the children regarding (dairy products, eggs, vegetables, fruit, soft drinks, sweeteners, and chips).⁽¹⁾.

Oral Health: is the practice of keeping the mouth and teeth clean to prevent dental problem, most commonly, dental caries, gingivitis, and gum disease. There are also oral pathologic conditions in which good oral hygiene is required for healing and regeneration of the oral tissues. These conditions included gingivitis, periodontitis, and dental trauma, such as subluxation, oral cysts, and following wisdom tooth extraction,

Teeth caries is the most common global disease. Over (80%) of caries occur inside pits and fissures on chewing surfaces when brushing cannot reach food left trapped after every meal or snack⁽²⁾.

The relationship between diet and dental disease has been confirmed by many studies worldwide⁽³⁻¹¹⁾.

The intake of extrinsic sugars more than 4 times per day were found to be associated with an increased risk of dental caries⁽⁷⁾. A link was found between higher plaque volumes, increased gingivitis and high sucrose diet⁽¹¹⁾. While other types and dite like Milk, Cheese and yogurt, were inversely associated with carries and therefore may have cariostatic properties⁽⁸⁻¹⁰⁾. In low income African American children aged 3-5 years , the consumption of sweetened drink was a risk factor for dental caries , while the consumption of milk and real fruit juice was linked to decreased severity of dental caries⁽⁷⁾. Low intake of calcium has been found to be associated with periodontal disease, and consequently adequate calcium intakes may have a role in the treatment of periodontal disease⁽³⁾. Current studies have demonstrated a potential protective role of vitamin C in periodontal disease⁽⁴⁾. **Tooth Caries:** is one of the most common chronic conditions of childhood ,untreated tooth decay can cause pain and infections that may lead to problems with eating , speaking , playing and learning ,Fluoride is natural mineral that is found in many foods , and it also added to the drinking

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water in some cities and towns. It can benefit dental health by strengthening the tooth enamel, making it more resistant to acid attacks that can cause tooth decay, it also reduce the ability of plaque bacteria to produce acid⁽¹¹⁾.

Fluoride varnish, a high concentration fluoride coating that is painted on teeth, can prevent about one third (33%) of decay⁽¹¹⁾.

Children who brush daily with fluoride tooth paste will have less tooth decay⁽¹²⁾.

Teeth Discoloration: Teeth are typically off-white or ivory. Teeth can become discolored for many reasons including:

- Inadequate brushing.
- Medications (e.g. medications containing Iron such as supplemental vitamins, the antibiotic tetracycline).
- Tooth or gum injury.
- Weak enamel.
- Excessive fluoride.

If discoloration caused by poor dental hygiene, more through brushing might help⁽¹³⁾.

Teeth Loss: Dental injuries and periodontal illness can cause tooth loss, but the decay continues to be the main villain of high rate of loss.

Mouth Ulcers: are a type of sore inside the mouth which can have several causes. Are of two types: Traumatic ulcers and Aphthous ulcers. There is not a lot that can be done to treat mouth ulcers but the pain can be reduced by avoiding acidic foods and drinks (such as orange and other citrus fruits), making sure children regularly drink water and finally by using a protective gel on the affected area, specially before eating.

Gum Bleeding: Gum bleeding can be a sign of gingivitis which is an infection and swelling of the gums.

A number of beneficial and harmful foods are listed below:

Beneficial food:

Some foods may protect against caries, Fluoride is a primary protector against dental caries, it makes the surface of the teeth more resistant to acids⁽¹⁴⁾.

According to World dental health, these are the top beneficial food for teeth⁽¹⁴⁾.

- 1- Green tea.
- 2- Dairy products.

- 3- Cheese containing calcium, and phosphate.

- 4- Fruits, e.g. apple, strawberries, and kiwis.

- 5- Vegetables.

- 6- Celery.

- 7- Sesame seeds.

- 8- Onions.

- 9- Animal products, e.g. beef, chicken, and eggs.

- 10- Water⁽¹⁴⁾.

Harmful Food:

Sugars are usually associated with dental caries. Other CHO include cooked starches, e.g. Potato chips. Acids contained in fruit juices and vinegar⁽¹⁵⁾.

Materials and method:

Study design and sampling:

This study was conducted to assess the relation between dietary habits and dental problems in school age children, aschool based cross sectional study conducted in Kirkuk city's primary schools during March 2015.

From a collection of (10) primary schools in the center of Kirkuk city, four primary schools have been selected two for females and two for males chosen by convenience method due to the security condition. The sample size was 120 pupils aged between 6-12 years old. Sampling method used was stratified sampling by selecting 5 pupils from each stage from four different schools.

Data Collection and data analysis:

The collection of data was done using an Arabic form of self-prepared questionnaire collected from the parents of the students as a copy of questionnaire sent to them through their children and the questions included in it are shown in a copy of it in the appendix portion of the project.

Assessment of the dental problem done by the research team to diagnose the common and clear dental problems like dental caries, dental loss, gum bleeding, mouth ulcers and discoloration. Data analysis has been done using a master table and the statistical analysis and the result was presented by figures and tables.



Results:

Throughout this study and from a total sample size 120 pupils there were:

- 115 (95.83%) are dairy products, eggs and chips consumers.
- 116 (96.66%) pupils are vegetables consumers.
- 110 (91.66%) are soft drinks consumers.
- 120 (100%) are fruit and sweeteners consumers.

The figure 1 explains the findings.

Also this study found that 93 pupil (77.5%) were consuming fruits daily, 81 pupils (67.5%) were vegetables consumers and other percentages which are shown in the following two figures (2, 3).

Regarding the soft drinks, sweeteners and chips consumption we found that 53 (44.16%), 92 (76.6%) and 87 (72.5%) of pupils were daily consumers of soft drinks, sweeteners and chips respectively and other values are shown in the following three figures (4, 5, 6).

The frequency of dairy products and egg consumption was that 79 (65.83%) and 88 (73.33%) of pupils were dairy products and egg daily consumers respectively, and other fewer percentages were shown in these two figures (7, 8).

Also there are highest percentage of dental problems is for teeth caries which are 84 (34.4%) of total cases of 244 cases of different dental problems and other fewer percentage shown in figure (9).

Throughout this study we there are some children have more than one disease at the same time, so the total number was 244 cases, while the 148 cases were among sweeteners and chips consumers, 76 cases were among soft drinks consumers, and other fewer cases shown in table (1).

The summary of the above relationships is shown in the figure (15), which illustrates the effect of different food types on the total dental problems covered up by the project.

Another finding is that frequency of brushing among school age children was at highest percentage in non-brushing children 45 (37.5%) and lesser percentages shown in figure (16).

The last finding is that dentist visits were irregular and on need in the highest percentage 80 pupils (66.66%) as in figure (17).

Discussion:

Oral health and its relationship with dietary products was and still an important subject. And now an increased attention was paid for it⁽¹⁶⁾.

Many studies were conducted investigating the relationship between dental problems and different types of food⁽¹⁷⁾.

Previous studies have shown that a food frequency questionnaire is a valid tool for this purpose⁽¹⁸⁾.

Nationally more than 1.6 million days of school time are lost every year because of oral related illnesses such as dental caries. In California alone students miss an estimated of 874,000 school days annually due to dental problems. These missed days cost school districts money, as their funding is calculated based on average daily attendance⁽¹⁹⁾.

Regarding this study, there's a significant relationship between dental problems and different food types consumed by primary-school children. This finding is supported by findings in a study conducted in Damascus during 2008, which found that there's a strong relationship between dental caries and daily consumption of sugars, the drop in oral pH and consequent demineralization of the teeth enamel may explain this finding⁽²⁰⁾.

Also in this study the daily consumption of all food types included in this study was very high compared with weekly consumption. This finding can be explained probably by the high income of the children's parents and low level of education about the hazards of sweeteners, soft drinks, and chips.

Throughout this study the highest dental problem percentage was for dental caries (34.40%) followed by color change and teeth loss (25.80%) and (25.40%) respectively. The interpretation of this finding is that basically these problems are more common than others, and have a high risk if it is associated with sugar and other sweeteners consumption. This

finding is supported by a finding in a study conducted in Vietnam telling that (53.1%) of primary-school children have dental caries⁽²¹⁾.

Also found in this study that from total cases of 244, the highest number of cases was among sweeteners and chips consumption 148(60.7%), followed by 76 cases (31.1%) among soft drink consumers. This finding can be explained by that sweeteners and chips cause a drop in oral pH and consequent demineralization of the teeth enamel as mentioned in a study conducted in Damascus during 2008⁽²²⁾. Very small number of cases was for fruit and dairy products 15 which present (6.1%) of total dental problems, and vegetables and egg 5 cases (2.1%). This is supported by what is mentioned in the references about the protective effect of them against dental problems. And it is supported by a study done in USA during 2010 in California primary school children mentioning that less dental cases were among children consuming frequent amounts of dairy products and egg⁽²⁰⁾.

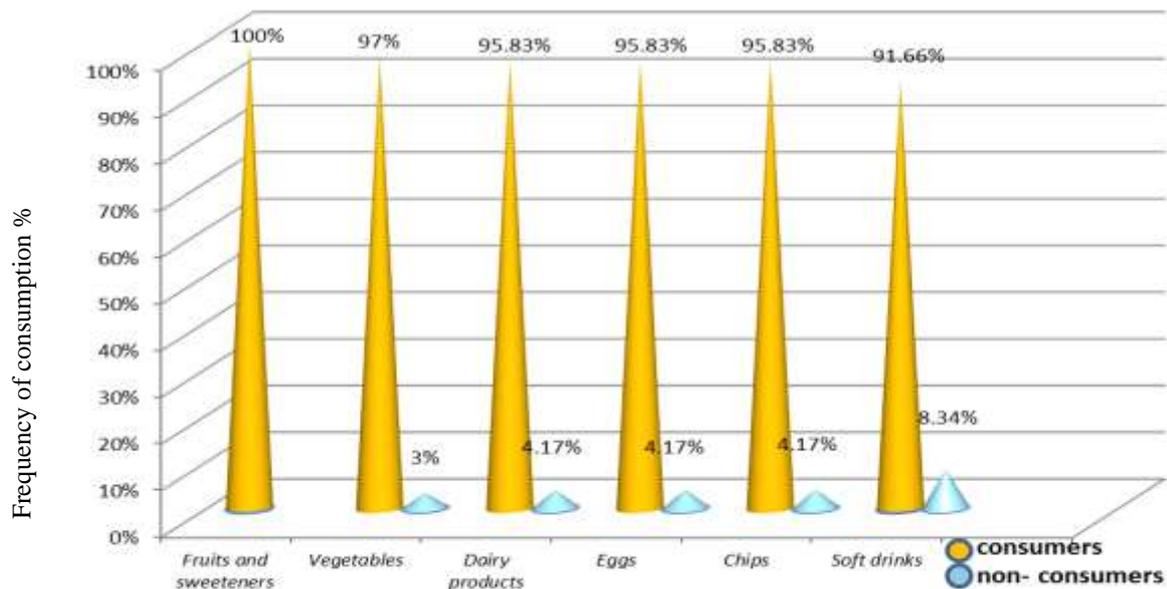
Also the non-brushing children were having the highest percentage (37.5%) followed by those with once daily (29.17%). It is not a surprising finding since the low level of education among the children concerning the importance of brushing in preventing dental problems. Mentioning dentist visits, the highest percentage (66.66%) was for those who

are irregular attendants. The explanation is that the parents don't realize the importance of the regular dental visits in diagnosing and early prevention of dental problems, this is related to low education level, or it may be related to the expensive dental visits, as we see now due to the absence of the observation from the Iraqi Medical Syndicate. This finding when compared with the finding of a study conducted in Vietnam in which (72%) of primary school age children are regularly brought to the dentist⁽¹⁹⁾, it may reflect the difference between the level of education, and financial status between them and us.

Conclusion:

Throughout this study we concluded the followings:

- There's a significant relationship between dental problems and different food types included in this study, daily consumption of all food types has the highest percentage, dental caries had the highest percentage, sweeteners and chips consumers had the highest number of cases, vegetables had the lowest number of cases.
- The non-brushing children were the highest percentage.
- The irregular dental visitors were with the highest percentage.



figure(1): The frequency of dietary consumption by children regarding fruit , sweeteners, vegetables, dairy products, eggs , chips and soft drinks

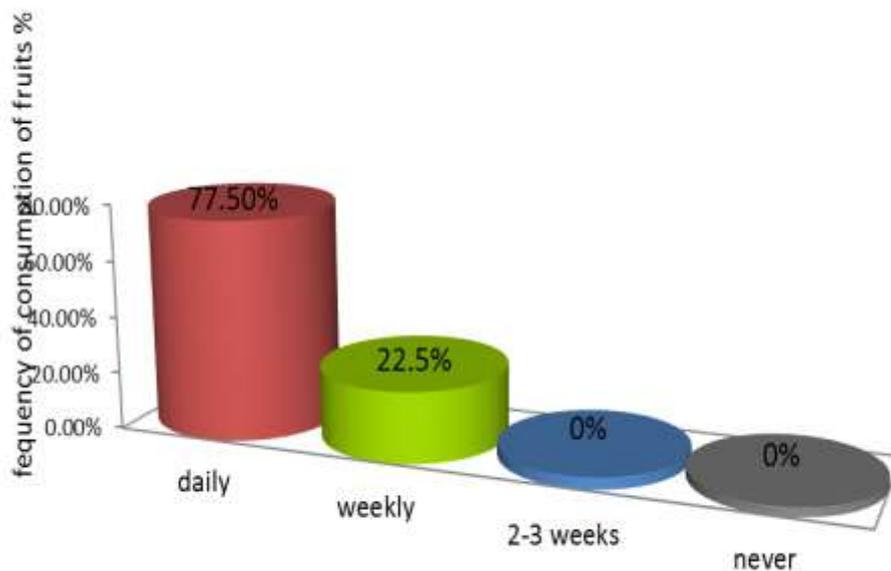


Figure (2): The Frequency of fruits consumption among school age children

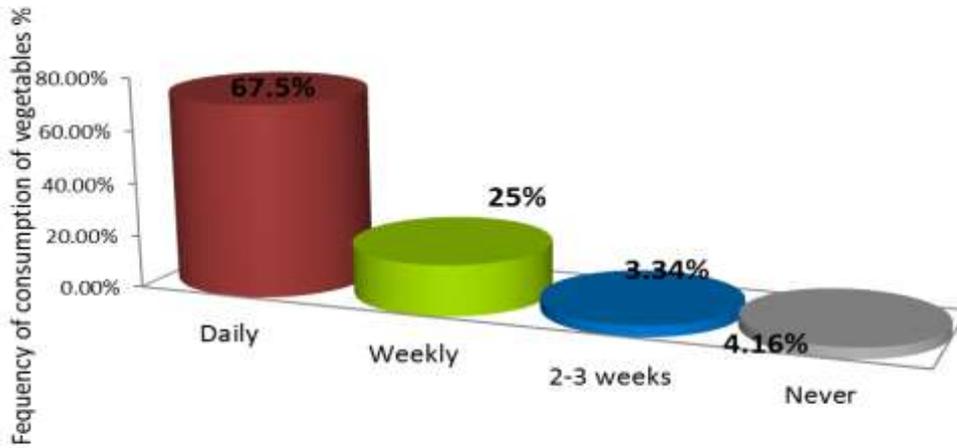


Figure (3): The Frequency of vegetables consumption among school age children

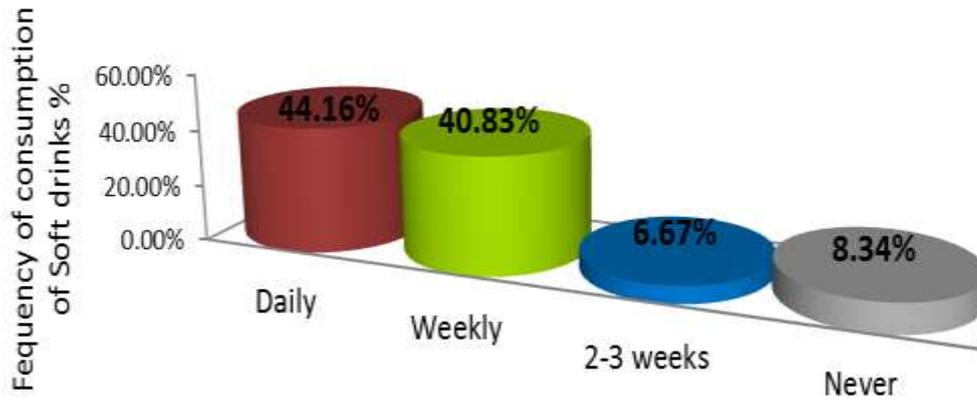


Figure (4):The Frequency of soft drinks consumption among school age children

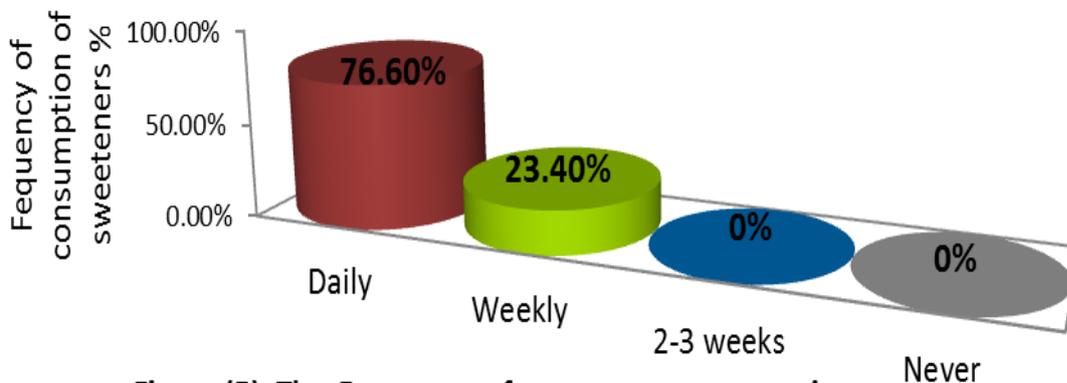


Figure (5): The Frequency of sweeteners consumption among school age children

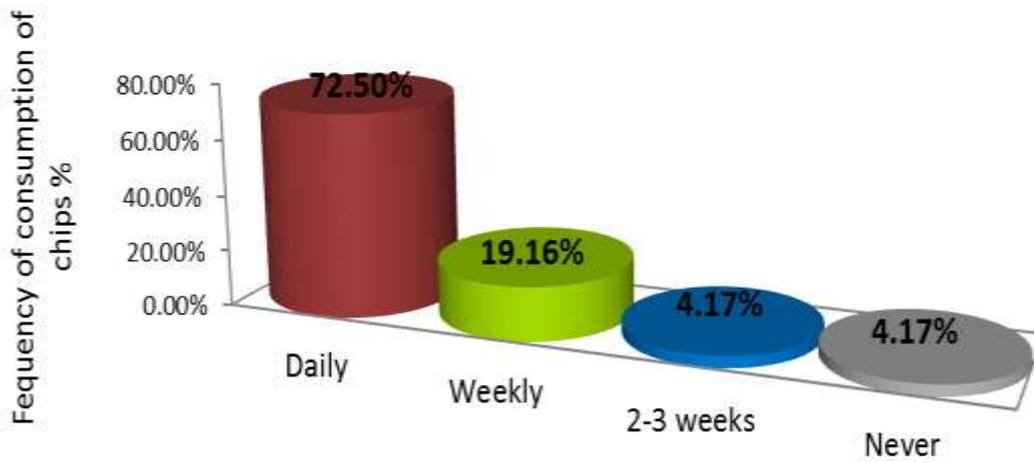


Figure (6): The Frequency of chips consumption among school age children

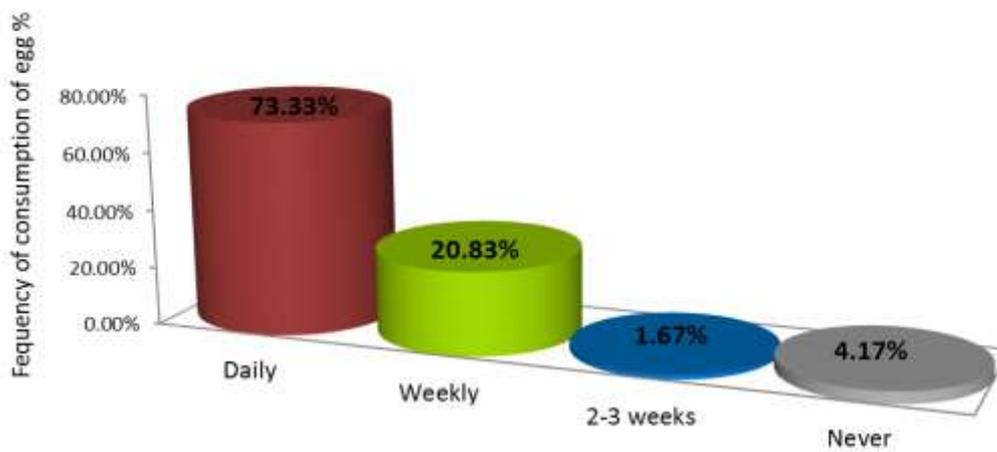
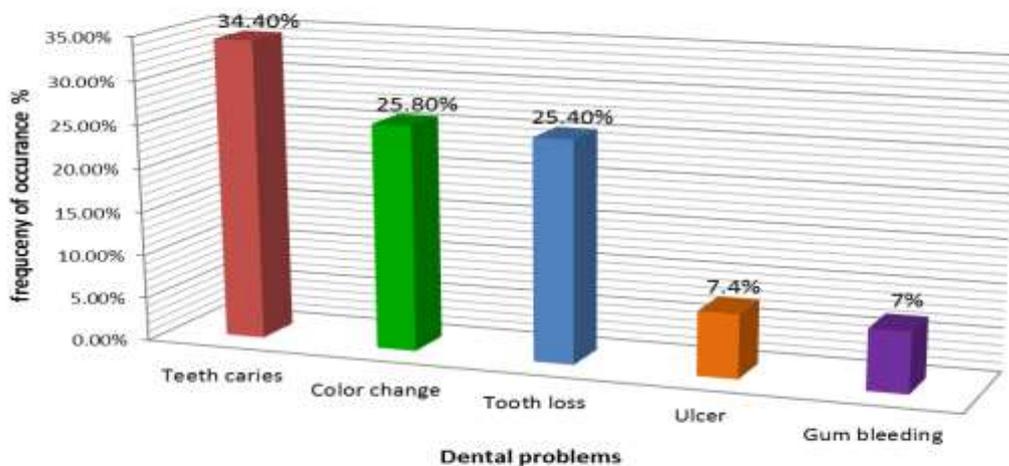


Figure (8):The Frequency of egg consumption among school age children



figure(9): The prevalence of teeth problems among the school age children

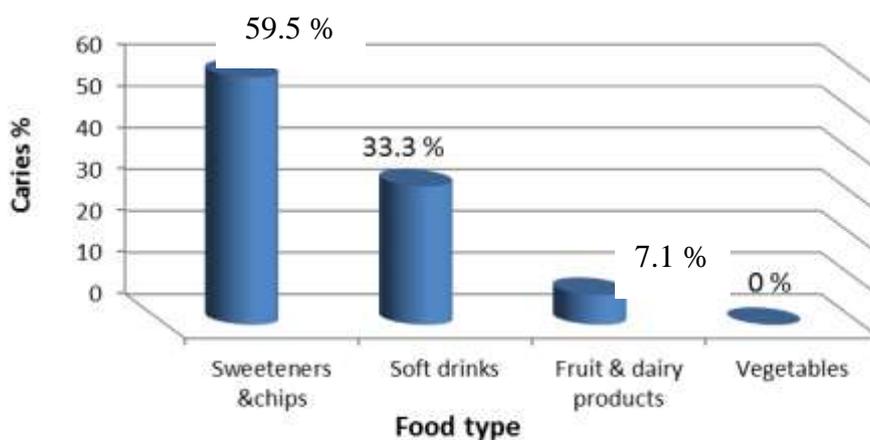


Figure (10): Relationship between food type & caries

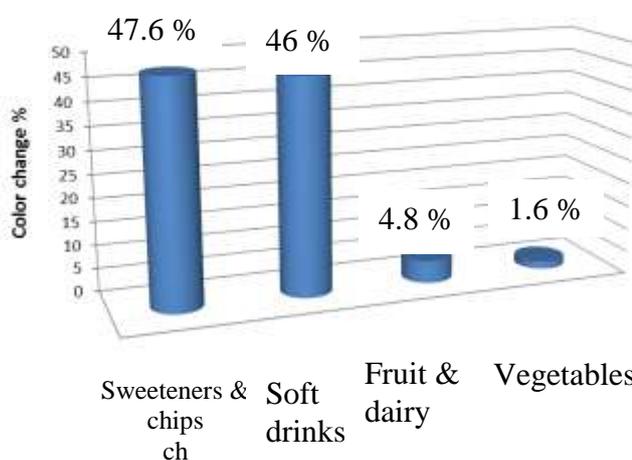


Figure (11): The relationship between food type and color change

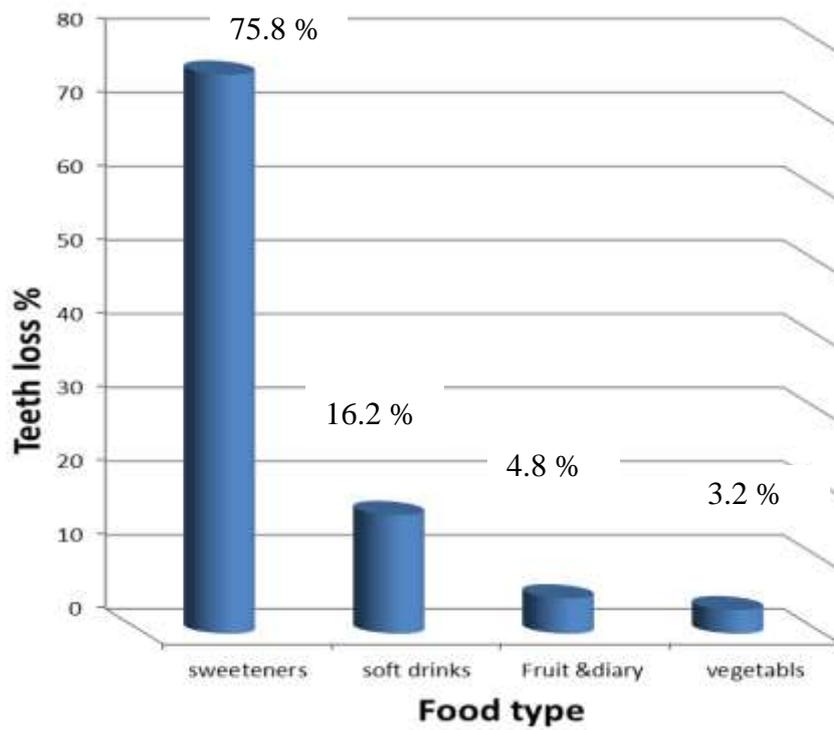


Figure (12): Relationship between food type & teeth loss

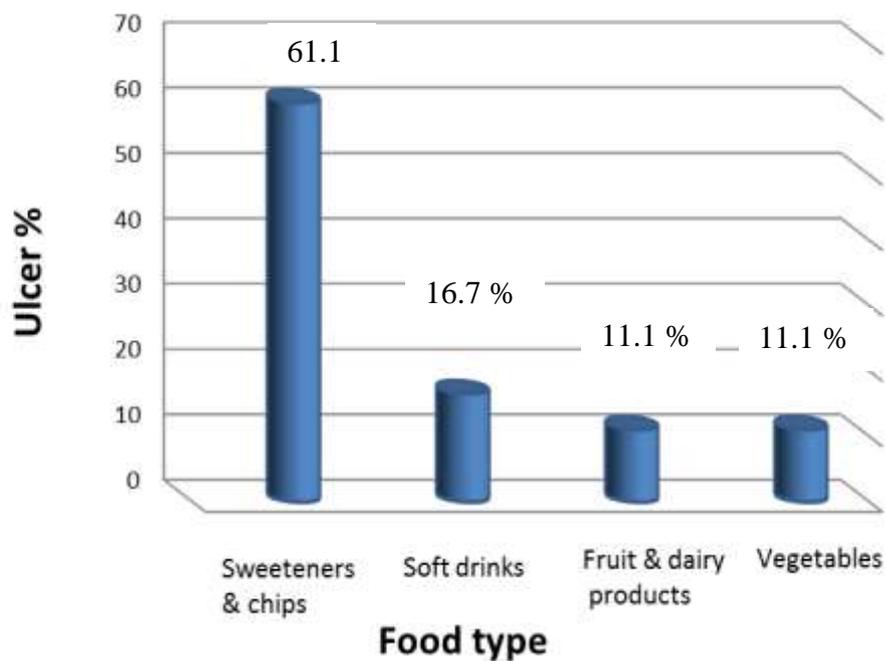


Figure (13): Relationship between food type & ulcer

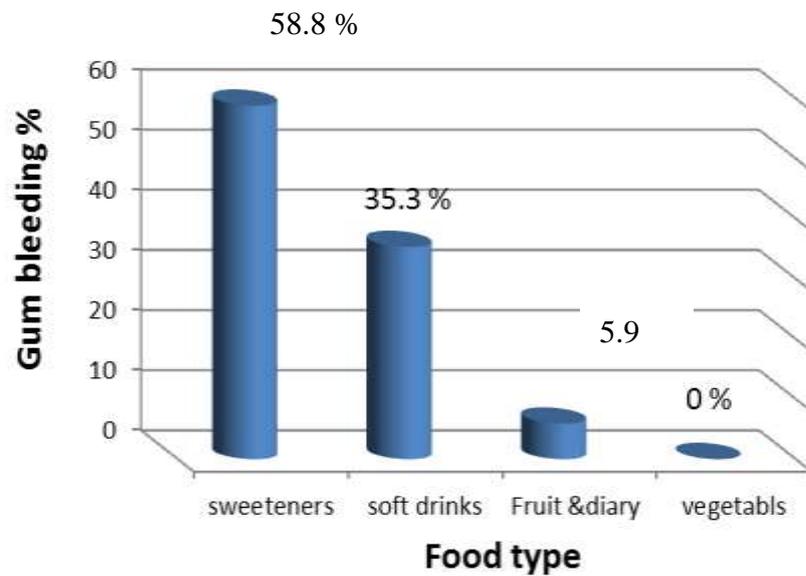


Figure (14): relationship between food type & gum bleeding

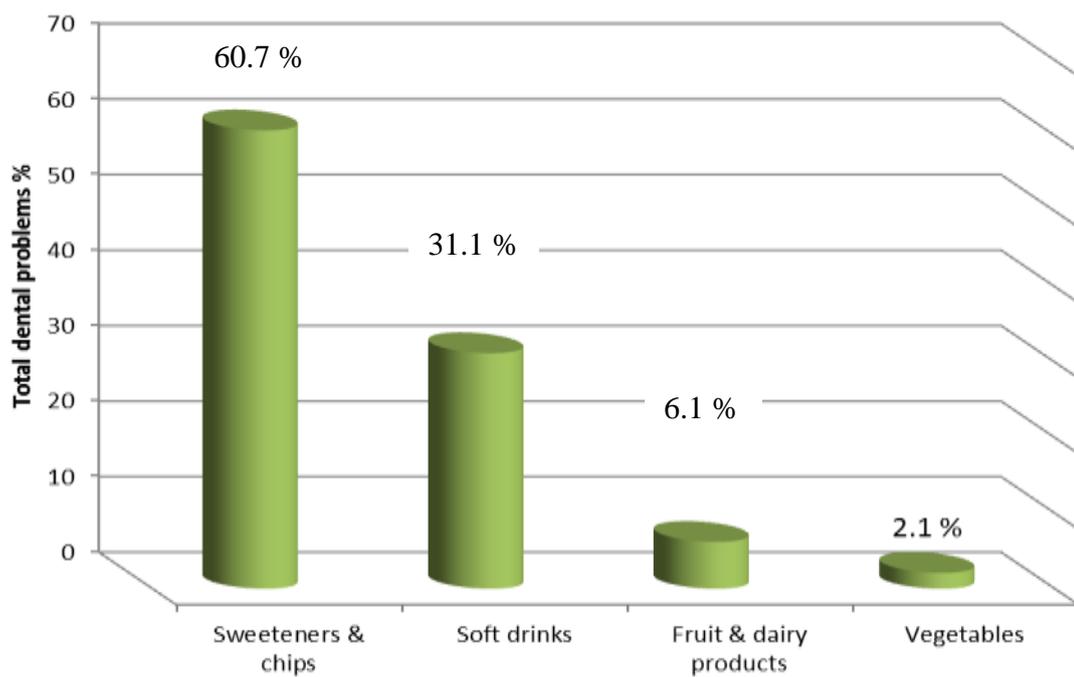


Figure (15): Effect of food type on dental problems

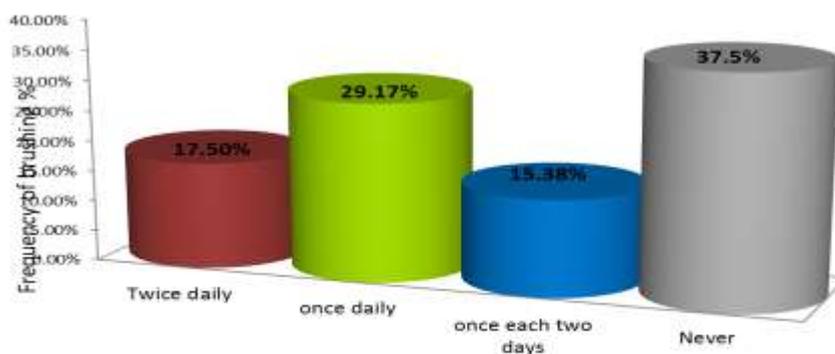


Figure (16): The Frequency of brushing among school age children

Table (1): Relationship between dental problems and food types by drawing the results of the previous table as.

Dental problem	Sweeteners and chips	Soft drinks	Fruit and dairy products	Vegetables	Total
Ulcer	11	3	2	2	18
Caries	50	28	6	0	84
Color Change	30	29	3	1	63
Teeth loss	47	10	3	2	62
Gum bleeding	10	6	1	0	17
Total	148	76	15	5	244

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