



## Endorsement

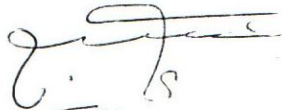
### Thesis Title

*Prevalence of Dental Caries and Its Associated Factors  
in 7<sup>th</sup> Class School Children in Gaza Provinces*

**Supervisor:**

Dr. Yahia Abed

Signature:

  
Feb 28, 2001

**Title:**

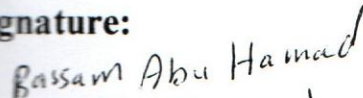
Associate Professor of Epidemiology  
Dean of the School of Public Health  
Al-Quds University

Date

**Advisor:**

Mr. Bassam Abu Hamad

Signature:

  
Bassam Abu Hamad  
Feb 28, 2001

**Title:**

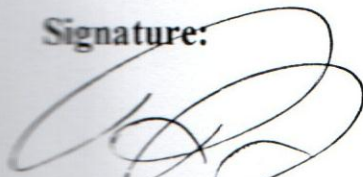
MSc, MPhil  
Lecturer-Programs Coordinator  
Al-Quds University

Date

**External Examiner:**

Dr. Rami Al-Juaidi

Signature:

  
ر. رامى الطعيرى

**Title:**

PHD in Dental Medicine  
Specialist in Oral Pathology-Oral Surgery  
Al-Shifa Hospital

Date

## Abstract

*Dental caries is a diet-dependent infectious disease with an apparent interference of other factors as demographic, socioeconomic status and preventive behavior of children and adult population*

*The aim of this study was to assess the prevalence of dental caries among 7<sup>th</sup> class school children at the scholastic year 1999-2000, through assessing the DMF index and to assess its associated factors. This study was a cross sectional study and the sample was collected through a multi-stage random sampling approach. Data was collected through a self-designed interviewed questionnaire for 420 subjects, enrolled in both UNRWA and Governmental schools in Gaza Provinces. The researcher examined the subjects for decayed, missed and filled teeth to measure the DMFT index. The data was analyzed to investigate the relationships between DMFT index and socioeconomic status, demographic variables, environmental variable, water, dietary habits, and oral hygiene of the children.*

*The mean DMFT index was 2.1 among the subjects. There were a positive association between DMFT index and subjects' residency, school location, fluorosis, gingivitis, health education, visiting the dentist, parents used the tooth-brush and drinking tea. In contrast, there were negative association between DMFT index and gender, school kind, subjects' status, tooth brushing, flossing of teeth, parents' educational level and occupation, economic status, source of water, dietary habits. The study showed that children had highly positive attitudes towards dental health but children still show low performance in practicing healthy dental lifestyle. The physical and mental environments that surround the children and the socioeconomic factor affect the prevalence of dental caries among the children.*

*This bring us to the direction of improving the factors which refer to the accessibility to educational programs as well as the need to improve reinforcing factors linked to peer, family and teachers influence and to improve the dental health services.*

## ملخص الدراسة

إن هدف هذه الدراسة هو قياس نسبة انتشار تسوس الأسنان والعوامل التي تؤثر فيه بين الأطفال في الصف السابع في قطاع غزة.

### خلفية الدراسة:

يعتبر تسوس الأسنان من الأمراض الأكثر انتشاراً بين الأطفال، وكذلك الكبار بالرغم من كون تسوس الأسنان يمكن الوقاية منه وذلك بإتباع التغذية السليمة، واستعمال فرشاة الأسنان، وعدم تناول الحلويات، وشرب المياه التي تحتوي على نسبة مناسبة من الفلور (جزء/مليون). في العشرين سنة الأخيرة قلت نسبة التسوس بين الأطفال نتيجة لزيادة الوعي الصحي وتقديم الخدمات الصحية السننية المناسبة.

لقد بينت الدراسات التي أجريت في قطاع غزة أن نسبة انتشار التسوس بين الأطفال البالغين من العمر ١٢ سنة تبلغ ٤٨,٨% ( DMF index - 1.4 ).

من هذا المنطلق تأتي أهمية الدراسة للإسهام في الكشف المبكر عن تسوس الأسنان ومكافحته، وتقديم العلاج اللازم ووضع السياسات الصحية المناسبة من قبل مقدمي الخدمات الصحية للعمل على تحسين الخدمة الصحية السننية.

### الأهداف الخاصة:

١- قياس نسبة التسوس لدى الأطفال في الصف السابع.

٢- تحديد العلاقة بين تسوس الأسنان والعوامل الاجتماعية والاقتصادية.

٣- قياس العلاقة بين تسوس الأسنان والعوامل الديموغرافية.

٤- فحص العلاقة بين تسوس الأسنان والعادات الصحية.

٥- التعرف على العوامل البيئية كالماء التي تؤثر في تسوس الأسنان.

٦- فحص العلاقة بين تسوس الأسنان وعادات الطعام والتغذية.

٧- استنتاج التوصيات الأكثر ملائمة لصانعي القرار والهيئات الخدمائية لتطوير الطرق الناجعة والفعالة لمنع وتقليل نسبة انتشار المرض وعلاجه.

### منهجية الدراسة:

وصفية مقطعية.

### عينة الدراسة:

تكون جمهور الدراسة من ٤٢٠ طالباً وطالبة في الصف السابع تم اختيارهم عشوائياً من مدارس قطاع غزة الحكومية التابعة لوكالة الغوث في مختلف مناطق القطاع.

تم تصميم استمارة خاصة كأداة استقصاء لجمع المعلومات، وقد صممت الاستمارة بحيث تشمل تفاصيل ديموغرافية وذاتية، وكذلك استفسارات عن عادات الطعام والعادات الصحية السنية، وأيضاً تفاصيل عن الأبوين كالتوظيفة والمستوى التعليمي ومستوى الدخل.

وقد تم تجريب هذه الاستمارة على عدد ٢٠ طالباً، وبناء عليه أجريت بعض التعديلات اللازمة على الاستمارة قبل استعمالها.

### النتائج:

بينت النتائج أن نسبة التسوس بين الأطفال في الصف السابع (عمر ١٢ سنة) هي (DMF = ٢,١)

وأن ١٠% من هذه الأسنان فقط تم معالجته. كما دلت النتائج على وجود العديد من العوامل التي

تؤثر على تسوس الأسنان:

\* لقد بينت الدراسة أن هناك علاقة ذو دلالة إحصائية بين تسوس الأسنان ومكان الإقامة, مكان

المدرسة والمناطق المختلفة في قطاع غزة حيث كانت أعلى نسبة للتسوس في منطقة خان يونس

(٣,٢٨) و أقل نسبة في مدينة غزة (١,٥٢).

\* أثبتت الدراسة وجود علاقة وارتباط سلبى ذو علاقة إحصائية بين تسوس الأسنان وتلون الأسنان،  
التهابات اللثة وشرب الشاي.

\* أثبتت الدراسة وجود علاقة وارتباط إيجابى ذو علاقة إحصائية بين تسوس الأسنان وبرامج التثقيف  
الصحي السني واستعمال الوالدين لفرشاة الأسنان.

\* كانت هناك علاقة بين تسوس الأسنان ونوع المدرسة (حكومة-وكالة) والجنس وكذلك إذا كان  
الطالب مواطن أم لاجى ولكنها لم تكن ذو دلالة إحصائية.

\* كانت هناك علاقة إيجابية بين تسوس الأسنان وبين أنواع الأطعمة كالحليب والخضروات والفواكه  
ولكنها لم تكن ذو دلالة إحصائية.

\* كانت هناك علاقة إيجابية بين تسوس الأسنان وعمل الأب والمستوى التعليمى للأم ولكنها لم تكن  
ذو دلالة إحصائية.

\* لم تكن هناك علاقة بين تسوس الأسنان وعمل الأم والمستوى التعليمى للأب.

## التوصيات:

\* تطوير برامج محلية إقليمية فعالة لعلاج التسوس ومنعه.

\* تطبيق برامج وقائية وعلاجية لتحقيق صحة سنية للأطفال في كل الأعمار.

\* الاستغلال الجيد للمراكز الصحية السنية والقوى البشرية لتقدم أفضل الخدمات وأنجعها.

\* توظيف وسائل الإعلام المختلفة كالراديو والتلفزيون والجرائد لنشر الوعي الصحى السني لكل أفراد

العائلة.

\* تطبيق برامج تعليمية وتدريبية للعاملين في الحقل الصحي السني لتطوير قدراتهم وإمكانياتهم.

\* زيادة عدد العيادات المتنقلة العاملة في برامج الصحة المدرسية.

\* تقديم خدمات صحية سنوية خاصة للأطفال الأكثر عرضة لتسوس الأسنان وذوي الحاجات الخاصة.

\* بذل مجهود لتوصيل مياه الشرب الصحية التي تحتوي على نسب مناسبة من الفلور لكل أفراد المجتمع

(جزء / مليون).

\* توجيه برامج التثقيف الصحي السني لكل أفراد الأسرة وخاصة الأمهات وتعريفهم بأهمية استعمال

الفرشاة والزيارات الدورية لأطباء الأسنان على أن تكون برامج النوعية عملية مستمرة.

\* تأهيل مرشدين صحيين ليقوموا بهذه المهمة.

\* إنشاء بنك للمعلومات خاص بالأسنان.

\* القيام بمزيد من الدراسات الخاصة بدراسة علاقة تسوس الأسنان وسوء التغذية عند الأطفال

واستعمال فرشاه الأسنان وكذلك دراسة تسوس الأسنان بين الفئات العمرية المختلفة.

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# Chapter 1

## Introduction

The title of this study research is; “prevalence of dental caries and its associated factors in the 7<sup>th</sup> class school children in Gaza Provinces”.

Dental caries is a diet-dependent infectious disease with an apparent interference of other factors as demographic, socioeconomic status and preventive behavior of children and adult population (Stamm, 1990). Dental caries is the most prevalent disease affecting teeth. Despite of being preventable, it remains an important problem in children and adolescents (Brown, 1991). Dental caries (tooth decay) is one of the most common of all disorders, second to the common cold (Creanor, 1986). It usually occurs in children and young adults but can affect any person. It is the most important cause of tooth loss in younger people (Ralph, 1989).

Although, the study of prevalence of dental caries and associated factors continues to be of high importance, only few research studies have been undertaken in the Palestinian community. Data of Governmental and United Nations Relief and Work Agency (UNRWA) school oral health services in Gaza Provinces showed that approximate 48.8% of (12 years old students) have caries and the mean DMF index is approximately 1 (governmental schools) and approximately 1.4 (UNRWA schools).

As shown by previous screening and reports, dental caries are the most prevalent oral disease affecting this age group (12 years). Also, in view of the apparently lacking knowledge of the children and their parents towards dental problems among this group this research study about prevalence of dental caries and associated factors in the 7<sup>th</sup> class school children in Gaza Provinces is designed and implemented.

## **Focus of the study:**

The focus of this study research is to assess the prevalence of dental caries and to consider factors affecting dental caries in the Gaza Provinces. Based on his practical orientation, the researcher in this study tries to play a role in assessing and preventing dental caries and to suggest strategies to help in improving the dental health status in the Palestinian Community mainly for the children.

The study was undertaken principally to measure the D.M.F index among 7<sup>th</sup> class school children in Gaza Provinces. Also the researcher aims to assess the association between demographic factors socioeconomic factors, healthy behavior and good oral hygiene, environmental factors and dietary habits. The results of this research study may help decision-makers to put strategies to decrease the D.M.F index and to change its components and to improve the dental health status.

Therefore, *the over all aim* of this study is to assess the prevalence of dental caries among 7<sup>th</sup> class school children, through assessing the DMF index and to assess its associated factors.

## **Specific objectives:**

The study was designed to examine and explore the following:

- \*To assess the D.M.F index among 7<sup>th</sup> class school children in Gaza Provinces.
- \*To assess the association between, socioeconomic factors and dental caries.
- \*To appraise the relationships between, demographic factors and dental caries.

\*To examine the association between dental caries and health behaviors, such as oral hygiene.

\*To identify environmental factors associated with dental caries, such as water.

\*To examine the association between dental caries and dietary habits.

\*To suggest recommendation to policy and decision-makers regarding the opportunities to decrease the D.M.F index and to change its components.

### **Feasibility and cost:**

This research study is self funded, coordinated and supervised by the School of Public Health, Al Quds University. All ethical and administrative requirement was made available. The researcher arranged all the logistics required, such as transportation, papers, photocopying and so on. The researcher also used his personal computer to produce the required work.

## Chapter 6

### Conclusion and Recommendation

The present study has provided baseline information about caries prevalence and experience among 12 years old school children attending Government and UNRWA schools in the Gaza Provinces. Also, it has provided baseline information about demographic and socioeconomic factors associated with dental caries.

The study showed that dental caries still a problem in the Palestinian community in spite that the DMFT index in Gaza Provinces is lower than the DMFT index determined by WHO for the children aged 12 years old by year 2000. The main problem about dental caries which appears in this study that the DMF component mainly formed from D (decayed teeth) component (90%). This mean that great efforts should be done by the dental health provider is to change the D component into F component (filled teeth). Also it is important that the school dental health services should include both preventive and curative measures.

Dental caries is one of the most prevalent infectious diseases of man. It is a localized, progressive demineralization of the hard tissues of the teeth. The demineralization is caused by acids produced by bacteria, particularly mutans streptococci and possibly lactobacilli, that ferment dietary carbohydrates. Thus, caries results from the interplay of three main factors over time: dietary carbohydrates, cariogenic bacteria within dental plaque and susceptible hard tooth surfaces. Dental caries is a dynamic process since periods of demineralization alternate with periods of remineralization through the action of fluoride, calcium and phosphorous contained in oral fluids.

Dental caries is affected by several factors such as, socio-economic factors, environmental factors as water supply, individual variation, culture, oral hygiene practices as tooth brushing and flossing and may be familial factors.

This study shows variation in dental caries experience according to the demographic factors. Dental caries is highly prevalent among subjects who were living in villages than subjects who were living in cities and camps and among refugees subjects than non-refugees. Gender was found to have an effect on dental caries experience, with females having the highest caries prevalence. This means that dental health services and dental health education should be directed towards rural and deprived population and risky groups. Also special efforts should be directed towards water supply such as, the high proportion of fluoride in the drinking water specially at rural areas, act as a risk factor and increase prevalence of dental caries at these areas.

Moreover, the children with high prevalence of decay, in general, are of lower socioeconomic status. The children with high or low-income families are more affected by dental caries. The children with low-income family have poor diet and the subjects from high-income families eat more processed foods, sweets and candy. At the same time, subjects whose fathers are workers or jobless also have high DMFT index.

Variation in DMFT index was associated slightly with the parents' education level. However the caries experience of the children for higher educated mothers have lower DMFT index than less educated. The subjects' caries experience did not affected by the father education level. These differences of the DMFT index did not reach the significance level. Moreover, the children's caries experience is affected by the practice of parents. If the parents use the tooth-brush, the prevalence of dental caries decreases among children. This is due to the fact that bacteria transmitted to the children flora from parents via kissing or via indirect ways. The culture and family habits to great extent affect dental caries. It is so important to direct the health education programs to the family as a whole, especially, mothers.

The study did not show the real effect of diet on dental caries prevalence. Encouragement to reduce sucrose intake and use dentally 'safe' substitutes may be less important now for the majority of persons, if tooth brushing done directly after eating sugary foods. Thus, routine dietary counseling today may be necessary. Similarly, because of the high risk of severe decay to children's teeth, balanced diet rich with calcium, phosphorus and fluoride at early childhood is necessary for remineralization process and to prevent dental caries as dental caries is a diet dependant disease. Further research about the relation between dental caries and diet and malnutrition is recommended for more information.

Bad oral hygiene, calculus and gingivitis increase the prevalence of dental caries. DMFT index is higher among children who have gingivitis and this result reach to the significant level. Moreover the presence of calculus increase the prevalence of dental caries but not to reach the significant level. Oral hygiene procedures of personal plaque removal by tooth brushing and/or flossing as well as the professional prophylaxis that often proceeds a periodic dental examination. Daily personal oral hygiene (tooth brushing and flossing) is recommended in the interest of good oral hygiene and for the control of gingival disease. Tooth brushing and flossing method is very important in reducing the amount of microorganisms in the plaque mainly, streptococcus mutants and through removing of the plaque will reduce the prevalence of decay. It seems that, the DMFT index was not associated with the brushing and this relationships were not significant as the children who use the tooth brush twice have the highest DMFT index. This result may be due to improper use of the tooth brush or using it after a time that the bacteria began its action. Moreover, the flossing of teeth reduce the dental caries prevalence but not reach the significant level. Further research should be applied to study the effect of tooth brushing on dental caries.

In spite of the protective effect of fluoride against dental caries, the high level of fluoride is considered as a risk factor, which leads to fluorosis and increases the prevalence of dental caries. In this study, the subjects who have fluorosis have the highest DMFT index. At the same time, the subjects who live in highly fluoridated area, as rural area, have the highest DMFT index. The prevalence of fluorosis is affected by the geographic location, as well as, by gender, schools' type and subjects' status.

The study showed that children had highly positive attitudes towards dental health. Such information might raise the question; why do children still show low performance in practicing healthy dental lifestyle? The answer might still be bond to the physical and mental environment that surround the children and the socioeconomic factor effect. This brings us to the direction of improving the factors which refer to the accessibility to educational programs, as well as, the need to improve reinforcing factors linked to peer, family and teachers influence.

## **Recommendation:**

- Developing a local and regional dental health program, which should be multidisciplinary. All sectors of the community should participate in the implementation of the campaign. Dental health program should involve the use of a process of care to assess oral health status, develop a dental hygiene diagnosis and implement preventive and therapeutic services to achieve optimum oral health for children. This process of care is utilized to support the oral health status of children in a variety of clinical setting and groups in community education and health care setting.
- Media channels should play an active role in education the community, particularly parents, as regards mouth hygiene and prevention of dental caries.
- The dental health provider should increase the manpower and dental mobile units in the dental school health services. At the same time, good distribution of the health services and man-power is needed. Health providers should apply special preventive and curative programs to the children particularly those with low income families and whose fathers are workers or jobless.
- Great effort should be directed towards provision of healthy water with suitable level of fluoride. Multiple and complex sources of fluorides should be kept in mind to insure a margin of safety that favors caries prevention while limiting fluorosis.
- Efforts should be directed toward instructing mothers on importance of bringing her children in very early years of life to practice the preventive technique. Children in this age can easily acquire good hygiene habits such as, regular tooth brushing, flossing, sweet food control and balanced nutritional diet. Mothers should take her children for periodic visits to the dentist.

- Public health education of the particularly, mothers as regarding mouth hygiene of their kids and their own oral hygiene is essentially needed.
- Health education should be a continuous process. So there is a need for professional dental health educator.
- Health education and screening programs should commence for children at early age. This will help in caries prevention and early detection of the disease
- Encouraging parents to use tooth brush and tooth paste for themselves and for their children. Price of tooth brushes and paste should be as low as possible, so every family can afford to buy it.
- Teaching school children the importance of mouth hygiene, and how to use tooth brush and paste correctly is important, through continuous health education, as they can teach their younger siblings. Free distribution of tooth paste and brushes regularly to school children is of great value.
- It is essential to establish preventive training programs for the dentists particularly with regard to caries control, periodontal diseases and to give support to teaching home care and giving advice about diet control and growth.
- Dentists should be trained to develop more effective therapeutic relationships with children to be a happy one from the start. This will encourage the children to visit the dentist more frequently.
- Conducting further studies to find out the relationships between diet, malnutrition and dental decay.
- Conducting further study to find out the relationships between dental caries and different age groups.
- Data bank for dental diseases should be available in the MoH and UNRWA