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Dental caries among 12 years old students in Bethlehem district

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Abstract

Dental caries is still a major oral health problem in most industrialized countries. In many Arab countries, dental caries is increasing over time, especially since the relatively recent economic growth, which has resulted in an increased consumption of refined sugar (Sheiham, 1984), higher than in other developing countries(Ismail et al,1997).

Determining the prevalence of dental caries is a necessary step for health care planners to identify resources needed for dental services in the community and to provide preventive and curative services to combat dental health problems.

This study was designed to be cross sectional in nature that was conducted in Bethlehem district between 20/4/2004 –15/5/2004 in order to highlight the problem of dental caries among 12 years old school children.

Systematic cluster sampling technique was used define 296 students from 14 governmental schools, seven was of male students and remaining was for female.

All students in the selected classes were informed and educated to fill a self-administrated questionnaire about their socio-demographic factors, oral hygiene factors and diet habits.

Oral clinical examination was performed in the selected classroom under day light by trained dentist using dental mirrors and depending on the WHO standards for caries experience examination (WHO, 1997).

However, several indices such as DMFT (the sum of decayed, missing and filled teeth), the Sic index and OHI-S were all determined. On the other hand, several statistical relationships in relation to the presence of caries were examined.

The results of this study show that the situation of dental health status in Bethlehem district is fillet in the moderate stage. DMFT 3.62, caries prevalence 88.9% which means caries free 11.1%.

The sic index was 6.08 which means that one third of our sample have 58% of total DMFT, that's why health care polices should not be based on total DMFT only .

Care index in Bethlehem district was 8.8%which is very low compared with other countries; with differences between region; 9.68, 6.41 and 10.83 in the middle, west and east regions respectively. Special attention should be made towards treatment planning in addition to prevention planning.

Our study showed that there is a strong relation-ship between DMFT and oral hygiene, considerable steps should be done toward oral care education and prevention measures at school and community levels.

Even though Bethlehem district is a small area, our study showed differences in DMFT between regions (P=0.007), that is why in prevention and treatment planning, consideration of region should take place.

Also, educational level and age of mothers were statistically related with DMFT (P=0.003, P=0.048) more than that of the fathers. This means education, hygienic and care polices will be more effective if provided to community through the mother.

The study showed significant relationship between diet habits and caries (Apple p=0.00, sweet soft drinks p=0.047, toffee p=0.00, diary products p=0.001) that is why preventive measures should be done towards decreasing sugar and sweet consumption, and increasing of milk, dairy products and fruits. Dietary polices could be considered at school level as a part of caries prevention measures.

ملخص

تسوس الأسنان عند الأطفال في سن ١٢ سنة في مدارس محافظة بيت لحم

تسوس الأسنان ما زال مشكلة صحية كبرى في معظم الدول الصناعية ، في العديد من الدول العربية ما زال تسوس الأسنان يزداد مع الوقت اكثر من الدول النامية الأخرى، خاصة مع ازدياد النمو الاقتصادي والذي أدى إلى ازدياد استهلاك المواد السكرية.

تحديد مدى انتشار تسوس الأسنان هو خطوة ضرورية لمخططي الرعاية الصحية لكي يحددوا المصادر اللازمة للخدمات السنية في المجتمع لتقديم الخدمات الوقائية والعلاجية لمشاكل الصحة السنية.

هذه الدراسة خططت لتكون دراسة مقطعية في طبيعتها والتي أجريت في محافظة بيت لحم في الفترة من ٢٠٠٤/٤/٢٠ و ٢٠٠٤/٥/١٥ لتسليط الضوء على مشكلة تسوس الأسنان عند طلاب المدارس في سن ١٢ سنة.

اختيار متعدد المراحل استعمل لتحديد ٢٩٦ تلميذا من ١٤ مدرسة حكومية، سبع مدارس للذكور وسبعة للإناث.

جميع التلاميذ في الصفوف المختارة تم إخبارهم وتدريبهم على تعبئة الاستبيان حول وضعهم الاجتماعي والاقتصادي وحول العوامل المؤثرة في نظافة الفم والأسنان والعادات الغذائية.

كما أنة تم الفحص الطبي للعينة المختارة لتحديد الأسنان المسوسة والمفقودة والمرممة من قبل أطباء أسنان مدربين وباستعمال مرآة الأسنان وتحت ضوء النهار حسب معايير منظمة الصحة العالمية.

كذلك عدة مؤشرات تم تحديدها ودراسة العلاقة بينها وبين تسوس الأسنان، ومن هذه المؤشرات مجموع الأسنان المسوسة والمفقودة والمرممة (DMFT) وعامل التسوس المميز (Sic Index) وعامل نظافة الأسنان (OHI).

و تم دراسة عدة عوامل وعلاقاتها الإحصائية مع تسوس الأسنان، من بينها الوضع الاقتصادي الاجتماعي ونظافة الفم والعادات الغذائية.

نتائج هذه الدراسة أظهرت أن حالة تسوس الأسنان في محافظة بيت لحم تقع في التصنيف المتوسط لمنظمة الصحة العالمية، حيث كان معدل مجموع الأسنان المسوسة والمفقودة والمرممة هو ٣,٦٢ لكل تلميذ وكانت نسبة انتشار التسوس حتى وقت الدراسة ٨٨,٩% وهذا يعني أن نسبة التلاميذ الذين لا يوجد عندهم تسوس هو ١١,١%.

أما عامل التسوس المميز فكان ٦,٠٨ لكل تلميذ وهذا يعني أن ثلث العينة كان عندها ٥٨% من الأسنان المسوسة.
أما عامل العناية بالأسنان وهو نسبة الأسنان المرممة إلى الأسنان المسوسة فكان ٨,٨% وهذه نسبة متدنية إذا ما قورنت بالدول المجاورة.كما كان هناك فرو قات في نسبة العناية بالأسنان بين المناطق

المختلفة (٩,٦٨، ٦,٤١، و١٠,٨٣) في مناطق الوسط والغرب والشرق على التوالي من محافظة بيت لحم). درجة العناية القليلة هذه يجب أن تدعونا لإعطاء قدر اكبر من الاهتمام بعلاج الأسنان بالإضافة إلى وقايتها.

هذه الدراسة بينت أن هناك علاقة قوية بين تسوس الأسنان ونظافتها بوجود دلالة إحصائية (P=0.000) ولذلك يجب اتخاذ خطوات مهمة من اجل زيادة المعرفة بطرق العناية بالأسنان والإجراءات الوقائية في المدارس وفي المجتمع.

وبالرغم من أن محافظة بيت لحم هي محافظة صغيرة نسبيا إلا أن فرو قات في مؤشر التسوس بين المناطق قد تم ملاحظتها وبدلالة إحصائية واضحة(P=0.007).وهذا يؤشر على أن خطط الوقاية والعلاج يجب أن تأخذ بالاعتبار التوزيع الجغرافي.

أيضا مستوى تعليم ألام وعمرها كان له دلالة إحصائية عكسية مع تسوس الأسنان(P=0.048,P=0.003) على التوالي، بمعنى انه كلما زاد المستوى التعليمي للام وزاد عمرها كانت أسنان الابن أفضل، بينما لم تكن هناك علاقة إحصائية مع عمر الأب أو مستوى التعليم لدية.وهذا يقود إلى أن السياسات التربوية والصحية ربما تكون أكثر فاعلية إذا ما وصلت إلى المجتمع من خلال ألام.

الدراسة بينت وجود دلالة إحصائية بين التسوس والعادات الغذائية (التفاحP=0.00، المشروبات السكريةP=0.047، التوفيP=0.00 و الألبانP=0.001) وهذا يقودنا إلى أن الإجراءات الوقائية يجب أن تشمل الإقلال من تناول المواد السكرية و زيادة تناول الألبان والفاكهة.

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CHAPTER ONE

1.1 Introduction

Dental caries is an epidemic public health problem, is one of the most common of all disorders, second only to the common cold. 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 (Larson, 1990).

Dental caries is a highly prevalent chronic sugar dependent infectious disease, affecting calcified tissue of the tooth and causing demineralization of the inorganic portion with subsequent destruction of the organic substance. Caries is a good proxy measure for socioeconomic development. The prevalence of dental caries appears to the highest in countries that are undergoing urbanization. These finding suggest that the prevalence of dental caries, in developing countries increases with the degree of urbanization, should be considered from a sociological perspective (Lalloo, Myburgh & Hobdel 1999).

Dental caries has a worldwide distribution, regardless of sex, age, race and socioeconomic level (Al-Sharabati, Meidan & Sudani, 2000).

It was determined that the socio-demographic characteristics of the adolescents and children were gender, age, tooth brushing and residence/income e.g.(Petridou, Athanassouli, Paragoulos & Revinthi, 1996;Woodward ,Main,& Leake,1996).The most important factor of socio-demographic characteristics was the socioeconomic status of the family (Louie ,Brunalle ,Maggiore & Beck, 1990).

Many factors influence caries development, including the presence of plaque-producing bacteria, innate susceptibility of tooth surfaces, frequency of eating , snaking behavior, oral hygiene practices, fluoride availability, and salivary flow and composition (Gibson & Williams , 1999).

Destroyed tooth structure does not regenerate. However, the progression of dental caries can be stopped by treatment. The goal of treatment is to preserve the tooth and prevent complication (Johanna, 2005).

Due to the fact that dental caries is a multifactorial disease, a number of methods exist to prevent it. Oral hygiene is the primary prevention against dental caries. This consists of personal care (as brushing, rinse the mouth with water after eating and flossing), Gibson & Williams (1999) concluded that brushing twice a day with a fluoride toothpaste may be more effective for decay prevention than restriction of sugary foods and regular professional cleaning. Minimize snacking, which creates a constant supply of acid in the mouth. Avoid constant sipping of sugary drinks or sucking on candy and mints (Gibson & Williams, 1999).

The use of dental sealants is a good means of prevention. Sealants are thin plastic-like coating applied to the chewing surface of the molars. This coating prevents the

accumulation of plaque in the deep grooves on these vulnerable surfaces (Johanna, 2005).

Fluoride is also recommended to protect against dental caries. It has been demonstrated that people who ingest fluoride by fluoride supplements in their drinking water have fewer dental caries. In fact, fluoride ingested when the teeth are developing is incorporated into the structure of the enamel and protects it against the action of acids (Medical Encyclopedia, 2005).

In summary, prevention methods and early treatment of dental caries often preserves the tooth given that early treatment is less painful and less expensive than treatment of extensive decay (Johanna, 2005).

Globally, in the most industrialized countries the prevalence of dental caries in children has decreased over the last two decades. At the same time, total sugar consumption has remained fairly static. Use of the fluorides and improvements in oral hygiene has meant that it is necessary to take another look at the relationships between eating habits and tooth decay (Kandelman, 1997).

Locally, due to the lack of researches this study was conducted to determine the prevalence of dental caries among 12 years school children in Bethlehem district, the conditions of oral hygiene at the individual level, professional treatment of caries and to prepare baseline knowledge on the epidemiologic condition of 12 years old children population.

1.2 Problem Statement

Dental caries is still a major oral health problem in most industrialized countries, affecting 60 – 90 % of schoolchildren and the vast majority of adults. The World Oral Health Report 2003, stated that dental caries among 12 years old children is the most prevalent oral disease in several Asian and Latin American countries, while it appears to be less common and less sever in most African countries (WHO, 2003).

According to the WHO Oral Health Data Bank in 1980(WHO,2002), for 107 of 173 countries DMFT values at age 12 years, 51%had 3 DMFT or less, while the remaining 49% had higher values (WHO, 2002).

In the year 2000, data available for 184 countries as recorded in the WHO Oral Health Country/Area Profile Programme, show that 68% of these countries had less than 3 DMFT (WHO, 2003).

More than $ 40 billion is spent each year on prevention and treatment of dental caries in the U.S. (Caufield & Griffen, 2000). Early treatment is less painful and less expensive than treatment of extensive decay (Medical Encyclopedia 2005).

In many Arab countries, dental caries is increasing over time, especially since the relatively recent economic growth, which has resulted in an increased consumption of refined sugar (Sheiham, 1984), higher than in other developing countries (Ismail, Tanzar & Dingle1997).

1.3 Significance of the Study

Dental caries is a disease that usually can be successfully prevented or controlled (Douglas, 2003). Since the average individual has its first experience with dental caries in childhood, it is particularly important to deal with it from 1st to 12 years of life. For in these years the milk teeth erupt, function, exfoliate and the permanent teeth excluding the 3rd molars erupt into functional pattern. For early treatment of dental caries, it is of utmost important at what age the child gets his first dental checkup. Children must have their first checkup before any extensive cavities are established (Pediatric on Call, 2005).

Information from WHO publication (2005) stated that detailed analysis of the caries situation in many countries throughout the world show that there is a skewed distribution of caries prevalence – meaning that a proportion is totally caries free. Clearly the mean DMFT values do not always accurately reflect this skewed distribution leading to incorrect conclusion that the caries situation is controlled while in reality several individuals still have caries (Bratthl, 2000).

In this study, data obtained will be a base-line and necessary step in Palestine for health care planners to identify reasons needed for dental services in the community and to provide preventive and curative services at the school levels to combat dental health's problem.

The results of the study can be used in supporting a dental policy and planning preventive dental services in Palestine.

1.4 Aim of the study

The aim of this study was to highlight the magnitude of dental caries problem among 12 years old schoolchildren, and provide information to policy makers in Palestine in order to optimize control and preventive methods, and to raise public awareness about dental caries at the community level in general and school level in particular.

1.5 Specific objectives

1-To asses the prevalence of caries among 12 years old school children, in Bethlehem district, as a part of baseline data in Palestine.

2-To asses' oral hygiene condition and care level of 12 years old school children in Bethlehem district, as a part of baseline data in Palestine.

3-To examine relation-ship between socio-demographic, oral hygiene and diet factors with caries prevalence.

1.6 Research Questions

1. What is the prevalence of caries among 12 years old schoolchildren?

2. What is the relation-ship between DMFT, sic and OHI?

3. What is the relation-ship between DMFT and socio-demographic factors?

4. What is the relation-ship between DMFT and diet, preventive measures and hygienic variables?

eckups, that is why the role of the parents mainly the mother as our study show's is ore important at this age than the role of the child himself.

et habitual variables:

ne reported consumption of sweets in different forms showed that there is a statistical ation-ship with dental caries; drinking of sweetened soft drinks(p=0.047) and eating of ffee(p=0.000) while frequency of chocolate with week relation of (P 0.052).Roberts et reported that access to money by children had a direct influence on sweet snacking.

Iilk and dairy products daily consumption gave a strong relation-ship with dental caries =0.001), 23.7% from those children with daily consumption of milk & dairy products e caries free. However frequency of apples and fruits eating show a positive relation ith P value 0.000.

Ve believe that school preventive programs and family care habits should be directed ward minimizing sweets and sugar products in children's daily diet with limiting cess of children to pocket many and access to sweets at school. In the other hand dental re programs and family care habits should be directed towards increasing of fruit and ilk products consumption.

Conclusion

ven though the DMFT among students 12 year old in Bethlehem district was 3.62, the aries prevalence 88.9% and the Sic index was 6.08 which means one third of our sample ave 58% of total DMFT; that means there is a huge dental health problem with poor ental care, that's why health care polices should not be based on total DMFT only.

Care index in Bethlehem district was 8.8%which is very low compared with other ountries, with differences between region; 9.68, 6.41 and 10.83 in the middle, west and ast region respectively. That means special attention should be made towards treatment lanning in addition to prevention planning.

Our study showed that there is a strong relation-ship between DMFT and oral hygiene, ig steps should be done toward oral care education and prevention measures at school nd community levels.

Even though Bethlehem district is a small area, our study showed differences in DMFT etween regions, that is why in prevention and treatment planning, consideration of egion should take place

Also, educational level and age of mothers were statistically related with DMFT more han that of the fathers. This means education, hygienic and care polices will be more effective if provided to community through the mother

The study showed significant relation ship between diet and caries that is why preventive measures should be done towards decreasing sugar and sweet consumption, and increasing of milk, dairy products and fruits.

Dietary polices could be considered at school level as a part of caries prevention measures.

3. Recommendation

- Efforts should be made at all levels to increase oral health awareness and improve oral hygiene practices by utilizing the well-established existing public health and educational system.

- Future surveys should be conducted for all students in the primary grades, with more detailed investigation for dental caries in Palestine considering DMFT, OHI, Care and sic indexes; as the DMFT only doesn't reflect the real condition of oral health status.

-Considerable steps should be done towards elevation of dental care level in Bethlehem as will as Palestine in general; dental care could be provided through schools as educational care units.

-Planning preventive programs and care polices should be conducted in consideration of socio-economic factors, such programs should be directed towards the mother and have region considerations

-School prevention programs should consider education of individual oral hygiene, recommendation of diet and food and controlling the type and time of food consumption at school.