PREVALENCE AND ASSOCIATED FACTORS OF DENTAL CARIES AMONG 8-12 YEAR-OLD CHILDREN IN LIBYAN SCHOOLS IN KLANG VALLEY, MALAYSIA

By

AISHA AGEIL ABDULLAH ABUAISHA

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfillment of the Requirments for the Degree of Master of Science

June 2016

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DEDICATION

To

My mother and father

My dear husband Adel M Hamed and

My children Anes and Aseel

My brother and sisters

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Scienc

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June 2016

Chairman : Huda Binti Zainuddin, PhD
Faculty : Medicine and Health Sciences

Dental caries is the most common oral disease in children and adults in developed and developing countries and is the main cause of loss of teeth in younger people; it continues to be a major public health concern, dental caries are increasing over time. Libya is one of the few countries that have increased caries prevalence among children. This disease is greatly affected by many risk factors. The objective of this study was to determine the prevalence of dental caries and associated factors among Libyan school children in Klang Valley aged 8 to12 years. A cross-sectional study was conducted among three Libyan schools in Klang Valley. Proportionate stratified sampling method was used to select the children. A total of 570 respondents were selected. Dental caries were assessed using the WHO (1987) criteria. Information about dietary habits, socio-demographic and oral hygiene habits were collected through a dental health questionnaire. Dental examination of children was done using mouth mirror and dental explorer. The data were analyzed using IBM (SPSS) Version 20.0. Chi-square test was used to test the association and to determine the risk factors of dental caries, binary multiple logistic regression analyses were applied. The prevalence of dental caries was 55.8%, females have higher dental caries than males. Dental caries was found highly prevalent among; children aged ≤10 years (64.7%), children whose fathers and mothers have a job (58.5% and 58.7% respectively), children whose fathers and mothers have elementary level of education (69.6% and 61.0% respectively), children who have poor oral hygiene (99.0%), children who consume high cariogenic food (91.7%), children who consume high cariogenic drinks (95.2%) and children who preferred to eat sweet snacks and sweet drinks at all times (65.7% and 62.9% respectively). Moreover, there were significant association between dental caries with age group, fathers education level, oral hygiene habits; consumption of cariogenic food, consumption of cariogenic drinks and total score of dietary habits, also, young age (OR=11.78, 95% Cl: 2.30-26.27), high cariogenic drinks (OR=9.95, 95% Cl: 2.44-16.97) and poor oral hygiene (OR=8.97, 95% Cl: 4.76-33.29) were predictors for dental caries among children. In conclusion, dietary habits, oral hygiene habits and socio-demographic characteristic are identified as modifiable risk factors that related to dental caries among Libyan school children at age 8-12 years in Malaysia. Health education on good oral hygiene habits should be emphasized among younger Libyan school children.

Keywords:
Dental caries, Oral hygiene habits, dietary habits, Libyan school children.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Master Sains

PREVALENS DAN BERSEKUTU FAKTOR KARIES GIGI DI KALANGAN KANAK-KANAK 8-12 TAHUN SEKOLAH LIBYA DI LEMBAH KLANG, MALAYSIA

Oleh

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Karies gigi adalah penyakit mulut yang paling biasa pada kanak-kanak dan orang dewasa di negara-negara maju dan membangun dan merupakan punca utama kehilangan gigi pada orang muda; ia terus menjadi satu masalah kesihatan awam yang utama, karies gigi semakin meningkat dari semasa ke semasa. Libya adalah salah satu daripada beberapa negara yang telah menunjukkan peningkatan kelaziman karies di kalangan kanak-kanak. Penyakit ini dipengaruhi oleh banyak faktor-faktor risiko. Objektif kajian ini adalah untuk menentukan kelaziman karies gigi dan faktor yang berkaitan di kalangan kanak-kanak sekolah Libya di Klang di kalangan kanak-kanak kumpulan umur 8 hingga 12 tahun. Satu kajian keratan rentas telah dijalankan di kalangan tiga buah sekolah Libya di Lembah Klang. Perkadaran kaedah persampelan berstrata telah digunakan untuk memilih kanak-kanak. Jumlah saiz sampel adalah 570 responden. Karies gigi dinilai menggunakan criteria WHO (1987). Maklumat mengenai tabiat pemakanan, tabiat kebersihan sosio-demografi dan lisan dikumpulkan melalui soal selidik kesihatan mulut. Pemeriksaan gigi kanak-kanak telah dilakukan dengan menggunakan cermin mulut dan pemeriksa pergigian. Data dianalisis menggunakan ablikasi IBM (SPSS) versi 20.0. Ujian khi-kuasa dua telah digunakan untuk memeriksa pergaulan dan untuk menentukan faktor risiko karies gigi, analisis binari regresi logistik digunakan. Kelaziman karies gigi adalah 55.8%, perempuan mempunyai karies gigi yang lebih tinggi daripada lelaki. Karies gigi, biasanya ditemui di kalangan; kanak-kanak berusia ≤10 tahun (64.7%), bapa kanak-kanak dan ibu-ibu mempunyai pekerjaan (58.5% dan 58.7% masing-masing), bapa-bapa dan ibu-ibu kanak-kanak mempunyai pendidikan peringkat rendah (69.6% dan 61.0% masing-masing), anak-anak yang mempunyai tahap kebersihan mulut yang rendah (99.0%), kanak-kanak yang mengambil makanan berkariogenik yang tinggi (91.7%), kanak-kanak yang mengambil minuman berkariogenik yang tinggi (95.2%) dan kanak-kanak yang lebih suka makan makanan ringan yang manis dan minuman bergula pada setiap masa (65.7% dan 62.9% masing-masing). Di samping itu, terdapat hubungan yang signifikan di antara kerosakan gigi mengikut kumpulan umur, tahap pendidikan ibu bapa, tabiat kebersihan mulut; pengambilan kariogenik makanan, tabiat kariogenik pemakanan dan jumlah skor, juga, umur yang rendah (OR=11.78, 95% Cl: 2.30-26.27), minuman kariogenik tinggi (OR=9.95, 95% Cl: 2.44-16.97) dan kebersihan mulut yang rendah (OR=8.97, 95% Cl: 4.76-33.29) adalah prediktor yang menentukan kerosakan gigi di kalangan kanak-kanak. Kesimpulannya, tabiat pemakanan, tabiat kebersihan mulut dan ciri-ciri sosio-demografi

dikenal pasti sebagai faktor risiko yang boleh diubahsuai yang dikaitkan dengan kerosakan gigi di kalangan kanak-kanak sekolah Libya yang berumur 8-12 tahun di Malaysia. Pendidikan kesihatan tentang tabiat kebersihan mulut perlu ditekankan di kalangan kanak-kanak sekolah Libya di Malaysia.

Kata kunci:
Karies gigi, tabiat Kebersihan mulut, tabiat makan, kanak-kanak sekolah Libya.

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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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CHAPTER 1

INTRODUCTION

1.1 Background

Dental caries or tooth decay is a multi-factorial disease that usually affects people of all ages throughout their lives which – through interacting with food, dental plaque and micro-organisms over a long period of time – leads to final destruction of the proper of the teeth, including dental enamel, dentin and tooth cement (Fejerskov, 2004). Dental caries is a very common and important dental public health problem and it is the mainly prevalent oral disease among children in the world (Featherstone, 2004). Dental caries is five times more common than asthma and seven times as common as hay fever thus, the most common childhood chronic disease. Even in low- risk population decay, dental caries is still a very common childhood illness (Yabao et al., 2005).

Poor oral health is harmful to children because it is affecting their growth, development and nutrition. Oral diseases in childhood, in case if untreated it leads to pain, development of dento-facial anomalies and other serious health problems, such as severe dental pain, dental abscess, damage to the bone, and complicates from infection through the bloodstream (USDHHS, 2000). World Health Organization (WHO, 2013) exposed that oral disease limits the activities of all ages and has caused millions of school and work hours to be lost each year globally. Dental caries in primary teeth can cause a negative impact on the health of children from both long term and short term in their lives (Bader et al., 2004).

In a number of developing countries caries prevalence has been affecting 60-90% of schoolchildren (Petersen, 2005). The prevalence of dental caries is of great interest for long and is a major subject of many epidemiological kinds of research carried out in our country and abroad (Tobias, 2008). This disease causes not only damage to the teeth, but it is also responsible for several diseases for the oral cavity and other systems of the body (Petersen et al., 2005). The pattern of dental caries prevalence different not only with age, gender, socioeconomic status, race, dietary habits, and practices of oral health and geographical location but also within the oral cavity of the person (Bader et al., 2004).

The assessment of dental caries risk factor is very important. It gives a chance to improve oral hygiene, dietary habits, and implement preventive measures in an exposed population. Reisine and Poster (2001) consider that the factors of risk of dental caries contain biological and physical factors (for instance, high number of cariogenic immunological and bacterial components) and behavioural factors (including poor dietary habits, poor oral hygiene, and inadequate use of services of dental health care) and other risk factors (including social status, poverty and

deprivation). In the developed countries, a decline in the prevalence of dental caries has been attributed to population-based preventive programs by use of fluoride, enhanced participation in oral health programs and changes in oral hygiene and dietary habits (Adeniyi Abiola et al., 2009).

Diet was related to the dental caries prevalence; sugar consumption is the main cause of dental caries (Burt, 2001). Dental caries significantly increased between the 17th and 19th centuries where the availability and consumption of the sugar increased (Touger, 2003). Caries prevalence has been increasing in developing countries as a result of a change of diet and increase of sugar consumption. The frequency of sugar consumption is mainly important; with evidence suggesting that consumption more than 4 times each day is likely to produce dental caries. Nevertheless, lower levels of dental caries are found in countries where average sugar consumption is less than 15-20 kg for every year, equating to 6-10% of energy intake (Sohn et al., 2006).

Prevalence of dental caries according to previous studies in Libya, reported that the prevalence of dental caries among Libyan school children the percentage of dental caries was 56.9% (Baccush and Nayak, 1991) and 57.8% (Huew, 2010).On the contrary, comparing the prevalence of dental caries among school children in Libya with school children in other countries was higher than it was in Iran (36.2%) (Momeni et al., 2006), Italy (43.1%) (Campus et al., 2007), Tunisia (48.3%) (Abid , 2004), the United Kingdom (32.7%) (Pitts et al., 2006), India (10%) (Bradley & Wendel, 2009) and Nigeria (35.5%) (Okoye & Ekwueme, 2013). Another study conducted by Elfaki et al., (2014), which found that the prevalence of dental caries was (20.31 %) among 10-11 years whereas among 12-13 years old (13.02 %).

Development of dental caries during the primary dentition frequently results in dental caries development in the permanent and mixed dentition as well. Those aged 8 to 12 years old are at the mixed dentition stage (Kassawara et al., 2010). Consequently, it is important to study this age group of school children for developing essential education and intervention in this area.

1.2 Problem statement

The social impact of dental caries in children is very high. More than 51 million school hours are lost every year to dental-related illness (Li & Wang , 2002). Poor children have almost 12 times more restricted activity days related dental caries than children from high-income families. Children eating habits and nutritional intake could be affected by caries, possibly affecting the development of the early childhood, growth and school willingness (Ghazaryan, 2007). Infection and pain from dental caries are resulting problem in learning, speaking and eating as well as poor school attendance. Dental caries continues to be the most important problem and it should receive special attention (Bagramian et al., 2009).

Early loss of teeth or tooth decay might lead to health problems such as malnutrition. The quality of life is affected by dental caries and its complications, both physiologically and physically (Petersen, 2004). Losing of primary teeth early may lead to a variety of opposing consequences, like psychological and aesthetic problems as well as gastro-intestinal disorders. Caries of early childhood could dramatically raise a child risk for permanent dental caries in future. In the case of non-treatment of dental caries and development to it, leading to inflammation, it may lead to the break and take it off and lose it (Sheiham, 2006).

In many Arab countries, dental caries is still increasing over time, mainly since the relatively recent economic growth, which has led to increased consumption of sugar, easy availability of sweet foods and altered diet. Lack of awareness about oral health practices has also contributed to the increase in dental caries (Gandeh, & Milaat, 2000).

Libya is one of the few countries that have increasing caries prevalence among children though not as dramatic as in the industrialized countries (WHO, 2000). The treatment of dental caries is expensive, sometimes leading to complex procedures of treatment and rehabilitation. Consequently, it imposes a massive financial burden for the individual and society (Ferreira et al., 2007).

There were no known studies done among school children especially for Libyan school children living in another country especially in Malaysia. Also, this study was undertaken to fill the knowledge gap about dental caries among this age group of the population who are not the indigenous population in the country.

1.3 Justification of the study

There was no such data available and published article for dental caries on school children among this age group especially for Libyan resident in Malaysia. Therefore, this study was undertaken to obtain information about risk factors of dental caries and dietary habits and oral hygiene habits. This prevalence can be used as reference data in case of future study related to dental caries. One more interesting outcome is data findings will be useful for planning for the prevention of dental caries.

1.4 Research Questions

1. What is the prevalence of dental caries among Libyan school children aged 8-12 years old who study in Libyan schools in Klang Valley, Malaysia?
2. Is there an association between prevalence of dental caries with socio-demographic characteristics (age, gender, parents' job status and parents' level of education)?
3. Is there an association between prevalence of dental caries with oral hygiene habits?
4. Is there an association between prevalence of dental caries with dietary habits?
5. What are the risk factors of dental caries?

1.5 Objectives

1.5.1 General Objectives

To determine the dental caries prevalence and associated factors among children aged 8-12 years of Libyan schools in Klang Valley.

1.5.2 Specific Objectives

1. To determine the socio-demographic characteristics (age, gender, parents' job status and parents' level of education) among 8-12 years old children attending Libyan schools in Klang Valley.
2. To determine oral hygiene habits (good and poor) and dietary habits (cariogenic food and cariogenic drinks).
3. To determine the prevalence of dental caries.
4. To determine the association between socio-demographic characteristics (age, gender, parents' job status and parents level of education) with dental caries.
5. To determine the association between oral hygiene habits and dietary habits with dental caries.
6. To determine the risk factors for dental caries.

1.6 Research Hypothesis

There is a significant association between socio-demographic characteristics (age, gender, parents' job status and parents' level of education) with dental caries.

There is a significant association between oral hygiene habits and dietary habits with dental caries.

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