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Prevalence of Early Childhood Caries and Associated Risk Factors among Preschool Children in Nablus City, Palestine.

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Prevalence of Early Childhood Caries and Associated Risk Factors among Preschool Children in Nablus City, Palestine.
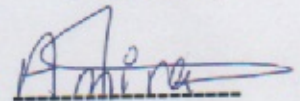
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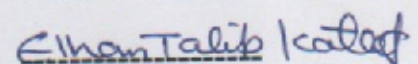This Thesis was Defended Successfully on 4/2/2015 and approved by:

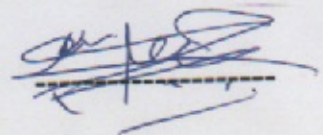<u>Defense Committee Members</u>   <u>Signature</u>

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Dedication

Dictated to:

To my Dad and Mom,

Grateful for your endless support, prayers

and constant love have sustained me throughout my life.

my brothers and my sister

my husband for your courage and support

all the way long.

Acknowledgment

First of all, I am grateful to God the Almighty for giving me the strength to complete this work. I would like to express my sincere appreciation to my supervisor, Dr. Amirah Shaheen. This thesis would not have been complete without her patience and advice. I also would like to thank the Department of Public Health at Al-Najah National University for assisting me throughout this time. I would like to express my sincere gratitude to the members of the examination committee for their valuable comments and discussion.

I wish to express my love and thanks to my family and husband. Without your encouragement and support, I would not be where I am today. Lastly, I would like to thank my friends and colleagues for their support and I wish you all the best of luck in your future.

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الاقرار

انا الموقع أدناه مقدم الرساله التي تحمل عنوان :

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Declaration

The work, which provided in this thesis, is the work of the researcher, unless were referenced, and has not submitted elsewhere for other degree or qualification in Palestine.

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List of abbreviations

ADA   American Dental Association

AAPD   American Academy of Pediatric Dentistry

CDC   Centers for Disease Control and Prevention

dmft   Decayed, Missing and Filled teeth (primary dentition)

DMFT   Decayed Missing Filled Teeth (in permanent dentition)

ECC   Early Childhood Caries

FFQ   Food Frequency Questionnaire

NHANES National Health and Nutrition Examination Survey

QOL   Quality of Life

SSBs   Sugar –Sweetened Beverages

S-ECC   Severe Early Childhood Caries

WHO   World Health Organization

ORI-C   Oral Rating Index

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Abstract

Background: Early Childhood caries (ECC) is one of the most common chronic infectious diseases with a multifactorial etiology that affects children worldwide, and adversely affects the quality of life of children and their families. The aim of this study is to investigate the prevalence of ECC among preschool aged children in Nablus City and the associated risk factors.

Methodology: A cross-sectional study was conducted among 525 Palestinian children aged 3-5 years old in Nablus city, a stratified cluster sampling methods was utilized to choose the kindergartens, then self administered questionnaire and consent form was applied to parents before dental examination is done. The study was approved by the graduate studies scientific board and an Institutional Review Board (IRB) at AN-Najah National University.

Result: The prevalence of caries among preschool aged children in Nablus City was found to be high (79.2%) with mean dmft $\pm$ SD (4.5$\pm$3.98).

Data analysis revealed significant associations between prevalence of ECC and family monthly income [OR=2.11; 95% CI=1.37-3.26, $P = 0.001$] and

drinking soda [OR=1.54; 95% CI 1.12-2.100, P =0.007].

This study also revealed significant associations between mean dmft (decayed, missing, filled tooth) and " age", "family monthly income",

"child teeth brushing", "dental visit" and "father education" were $P=$ 0.003, <.0001, 0.02, .0001, <.0001; respectively.

However no association were found between ECC and gender, child birth weight, mother education, and feeding patterns or its duration.

Conclusion: This study showed that high prevalence of ECC among Palestinian children 79.2% in children aged between three to five years old in Nablus City with mean dmft ± SD (4.5 ± 3.98). ECC prevalence and severity were found to be associated with drinking soda, family socioeconomic status, age and teeth brushing. Results reveal the need for an urgent action to increase awareness about ECC and the importance of primary teeth through preventive strategies to control the ECC in children

Chapter One

Introduction

Dental caries is a term used to describe the signs and symptoms of a localized chemical dissolution of the tooth surface due to metabolic events occurring in the dental plaque that covers the affected area (1). Dental caries is reported to be the most common chronic childhood disease and it is five times more common than asthma (2).

Children aged between 12 to 30 months have a special caries pattern that differs from older children; in young children caries affect the maxillary primary incisors and the first primary molar. The upper primary incisors are more affected while the mandibular incisors are protected by the tongue and saliva from submandibular and sublingual glands (1).

Different names and terminology have been used to describe caries in toddlers and young children, the definition used to describe this caries were related to etiology. The following terms were used: early childhood tooth decay, baby bottle-fed tooth decay, nursing caries, comforter caries, rampant caries, maxillary anterior caries and many others terms (3).

The term " Early Childhood Caries " was suggested in 1994 in a workshop sponsored by Centers for Disease Control and prevention CDC in an attempt to focus on multiple factors other than the feeding practices such as socioeconomic, psychosocial and behavioral statuses that contribute to the onset of the disease (4).

Children who are exposed to sugary liquids frequently and for a long period are at great risk to develop ECC (2). Children with caries in the primary anterior teeth, regardless of their ages generally are regarded as having nursing bottle caries (5).

ECC is a multi-factorial disease; the factors include susceptible host, rich carbohydrate diet, dental plaques, cariogenic microorganism such as *streptococci mutants* and lactobacilli over time. Early Childhood Caries is also associated with many demographic characteristics, socioeconomic status, education status of mother, parental attitudes, and children with chronic illness, feeding practices, oral hygiene habits and maternal nutrition (6, 7, 8). Ethnicity also has been identified as a risk factor as there is an increase in caries prevalence among ethnic minorities. Lack of access to dental care and inadequate preventive measure availability such as fluoridated water, fissure sealants and fluoride supplements and the lack of oral knowledge are contributing factors for declined oral health in young children (9).

Oral health considered as an important component of general health because it affects general health by causing pain, suffering and by changing people eat, speech and their quality of life and well- being (10).

ECC is not self limiting disease, if not treated at the beginning the child's condition will be worsen and increase treatment difficulty and cost. The

first and immediate impact of untreated ECC is pain, which will affect

children's daily activity life including difficulties in eating, sleeping,

speech, playing. Children who had caries on the primary dentition early in life are at greater risk on developing caries in the primary and permanent teeth (11, 12).

The social impact of oral disease in children is very high, more than 51 million school hours lost yearly due to dental related disease. Moreover poor children have almost 12 times more restricted activities due to dental illness than children from high income families (13).

The prevalence of ECC range from 1% to 12% in preschool aged children in developed countries (14), and 50%- 60% in high-risk group (1).

The Prevalence of dental caries is defined as the proportion of children has dental caries in a defined population group. DMFT index (decayed, missing and filled teeth) which is one of the simplest and most commonly used indices in epidemiologic survey of dental caries. It quantifies the dental health status in a community depending on the number of decayed, missing and filled teeth (15).

The use of DMFT scores to establish the prevalence and severity of dental caries is accepted in the dental community and has been used to assess prevalence in National Health and Nutrition Examination Survey (NAHANES) (16).

Problem Statement

ECC is a public health problem worldwide and has several consequences on children lives including pain, eating difficulties and daily activity. Children with ECC are known to be at increased risk of dental caries in permanent dentition and may also experienced malalignment and crowding of permanent dentition.

The study of ECC prevalence is important because it will give important information about the disease in the largest city in northern West Bank, Palestine, furthermore ECC considered a very strong predictor of permanent teeth oral health and caries experience.

This study aims at investigating the prevalence and severity of ECC among preschool children in Nablus City and its associated risk factors.

1.2 Aims and Objective of the study:

1.2.1 Main Objective:

To investigate the prevalence and severity of ECC and the associated risk factors among preschool aged children in Nablus City.

1.2.2 Specific Objectives;

1- To investigate the frequency of caries in preschool children.

2- To assess the parents knowledge regarding the oral health of their children.

3- To determine possible association between ECC, socio-economic status, education status of mothers, family dental knowledge, feeding patterns and oral health practices.

Chapter Two

Literature Review

2.1 Definition of ECC:

The term "Early Childhood Caries" was suggested in 1994 in a workshop sponsored by the Centers for Disease Control and prevention (17).

"Early Childhood Caries "includes all dental caries and non cavitated lesions that affect the primary dentition in children younger than six years of age (18).

The American Dental Association (ADA) defines ECC as " *the presence of one or more decayed (non-cavitated or cavitated lesions) , missing (due to caries) or filled tooth surfaces in any primary tooth surfaces in preschool-age child between birth and 71 months age"*(19).

In children less than 3 years old, "any *sign of smooth surface caries is indicative of severe early childhood caries (SECC) From ages 3 through 5, 1 or more cavitated, missing` (due to caries), or filled smooth surfaces in primary maxillary anterior teeth, or a decayed, missing, or filled score of >4 (age 3), >5 (age 4), or >6 (age 5) surfaces constitutes S-ECC"* (19).

2.2 Prevalence of ECC:

An increase in the prevalence of dental caries among children aged 2-4 years was reported by The Center for Disease Control and Prevention

(CDC) in the United States. The prevalence increased from 24% in 1990-1994 surveys to 28% in 2000-2004 National Health and Nutrition Examination Survey (NHANES) II survey (16).

The results of a cross-sectional survey that was conducted in China on 2007 at 2,014 children aged 3 to 5 years revealed that the prevalence of regular dental caries was 55%. The severity of caries and its prevalence was found to increase with age and the proportion of untreated carious teeth (20).

The Japanese National Survey that was conducted in 2007 reported a prevalence of ECC to be 2.8% among 18-month old children and 25.9% among 3 years old children (21).

Recently, a published study was intended to investigate the prevalence of ECC among preschool children in Lamezia Terme located in southern Italy. The study population was 515 participants aged 36 to 71 months was selected through a two-stage cluster sampling procedure. Thirteen kindergartners were selected randomly and all children aged 36-71 months was considered eligible for the study, self-administered questionnaire was sent to the family first then the dental examination for the child done. The result showed that (19%) had experienced ECC and (2.7%) S-ECC with mean dmft 0.51 (22).

Few studies were found to investigate ECC in the Arab countries. In Ajman, a study published on 2006 was conducted on 1,297 preschool

children aged 5 to 6 years reported a high prevalence of caries (76.1%) with average dmft 10.2. Caries severity was observed to be greater among older children and male children of less educated mothers (23).

Of the 1016 preschool aged children with mean age 54.2 (±10.5) months that were enrolled in a cross-sectional survey in Riyadh, 27.3% were diagnosed with dental caries with mean dmft 8.6. Prevalence was reported to be higher among males (57.4%). Author recommendations were to set-up urgent oral health education for expectant young mothers in Saudi Arabia (24). The results of another study that was conducted among preschool children living in Kuwait revealed a prevalence of 19% of dental caries (25).

In Abu Dhabi a study included 640 children aged 2, 4 and 5 years old in twenty kindergartners and 22 health centers from three administrative region, the mean dmft in 5 years old children was 8.4 (26).

In Jordan Rajab LD et al., conducted a study published in 2002 aimed to describe the prevalence of ECC among preschool Jordanian children, aged 1 to 5 years old children from randomly selected nursery and kindergarten and nursery in Amman city, dental caries were examined according to WHO criteria and the parents were asked to complete a questionnaire to investigate ECC risk factors, dmft score at 1,2,3,4 and 5 years were 0.19, 1.15, 1.7, 2.13 and 3.22 respectively, 52% of children were caries free. Caries level was found to be significantly associated with feeding and

snacking habits, oral habits practices, socioeconomic status and parents education level (27).

In Palestine, upon searching the literature a study published in 2014 conducted in Jenin, Northen Palestine included 1,376 children aged 4 to 5 years old who were visited the dental center in Arab American University, high prevalence of caries was found among children (76%) with mean dmft 2.46 however this study is clinical base study and this is the only study published about prevalence of early childhood caries among preschool aged children in Palestine (28).

Among school aged children a study published in 2014 by Mahfouz et al., this study aimed to measure the caries distribution in a group of Palestinian Adolescents aged between 12-15 years old, the sample size was 677(411 were females and 266 were males) they were randomly selected from schools in northern West Bank, Palestine. The prevalence of dental caries was 54.35% with mean DMFT 5.39 ± 2.85 (29).

Another study conducted by Braa Sabhaa on 2007 to determine dental caries prevalence among 12 years old school children, 357 child were enrolled in the study 84% of children had dental caries experience, high prevalence of caries maybe attributed that most of the schools taken in the sample are from rural areas (30).

These studies revealed high prevalence of dental caries in northern Palestine among preschool and school aged children.

2.3 Risk factors of ECC:

The progression of ECC starts with a diet rich in starch and sugar, high and frequent sugar consumption enhance repetitive acidic production by cariogenic bacteria resulting in acidic oral environment because of decreasing PH level, the acidic environment promotes mineral loss from the enamel, prolonged drop in PH and loss of minerals which leads to breakdown of enamel and cavity formation (31).

Historically, ECC was attributed to prolonged bottle use or breastfeeding especially at bedtime, but this may not be the only factor that leads to development of ECC. Caries lesions are produced from the interaction between fermentable carbohydrate, cariogenic microorganism and susceptible host "tooth" over time (32).

Factors that influence the onset and progression of disease can be divided to demographic, microbiological and dietary factors.

2.3.1 Demographic Risk Factors:

2.3.1.1 Gender:

National survey shows that there is no statistical difference in caries prevalence between males and females, in NHANES III, 1,177 were examined for dental caries (581 males and 596 females). The prevalence rate of ECC was 1.70% in males and 1.60% in females, when questionable

dental caries have been excluded, there was no statistical difference in caries prevalence in males and females (X^2, $P = 0.22$) (33).

Furthermore NHANES survey 1999-2004 showed no statistical differences in dental caries prevalence rate between males and females aged between 2 to 11 years old, the prevalence was 44.43% in males and 39.80% in females (34).

There are studies also conducted to assess the association with many risk indicators including gender. In Taiwan, a cross sectional study was conducted and a dental examination were done for 981 children aged less than 6 years old, ECC prevalence was 56.70 % and 57.22% among girls and boys respectively; no significant difference was found in caries prevalence between males and females (35).

On the other hand, another cross sectional study was conducted to assess the relationship between ECC and several risk factors. In the study 146 children were recruited from San Francisco General Hospital, 45% female and 55% male aged between 3 and 55 months , the result show statically significant   difference in ECC prevalence among males and females (OR= 1.18; 95% CI=0.55- 2.53, P-value not mentioned) (36).

2.3.1.2 Child Age:

Child age is considered one of the factors that have an important effect in the prevalence of ECC; several studies have found that there is an increase in caries prevalence in children with older age.

Nobile et al., in a cross sectional study conducted in Southern Italy, included 515 participants aged between 36 and 71 months found that the prevalence of ECC was (19%) and (2.7%) of S-ECC, researchers found that there is a significant increase in prevalence of ECC with age [OR = 1.95; 95% CI = 1.3-2.91] (37).

Furthermore, a cross sectional study was conducted by Gomez et al., aimed to characterize and compare demographic, behavioral, environmental, and bacterial factors and ECC, the study consisted of 146 children aged between 3 and 55 months with various ECC experience. The result showed that the mean dmft in children increased from 0.19 to 0.94 during three years of follow up (36).

In Ajman, a study published on 2006 was conducted on 1,297 preschool children aged 5 to 6 years reported a high prevalence of caries (76.1%) with average dmft 10.2. Caries severity was observed to be greater among older children and male children of less educated mothers (23).

This association between ECC and age might be explained according to increase time of exposure to factors that increase the risk for dental caries such as dietary and oral health habits.

Child birth weight:

Child birth weight is one of the factors that have been studied in relation to ECC, a cross sectional study conducted in Brazil in 2014 aimed to study the prevalence of ECC and prenatal factors including birth weight, family income and nutritional risk in children, the study included 320 child had dental examination according to WHO criteria, previously validated questionnaire used to obtain information from parents, the result show that prevalence of ECC was 20% and Poisson multivariate analyses indicates that ECC is associated with family income (P=0.009), child birth weight (P >.0001) and infant obesity (P >.0001) (38).

Furthermore a cross sectional study conducted by Prakash et al., in India to study the prevalence of ECC and the associated risk factors including child birth weight. The study sample was 1500 child aged between 8 and 48 months. The prevalence of ECC was 27.5% and found to be associated with age, snacks, breast feeding on demand and bottle feeding at night, but no association were found with low child birth weight (X^2, P=0.76), authors related this to disproportionate sample size between normal birth weight and low birth weight children and recommends further researches (39).

2.3.1.3 Socioeconomic Status (SES):

2.3.1.3.1 Income:

Income is considered a socioeconomic measure related to access or non-access of health services. Income affects people's eating patterns; housing,

and access to health care services; all of them directly affect their exposure to risk or protection from disease (40). Socioeconomic status has been widely studied on older age groups but few report dealing with socioeconomic status and dental caries in preschool children.

A study reporting the prevalence of dental caries in preschool children aged between 5 months and 4 years old in Arizona found that caregivers' socioeconomic status and level of education negatively associated with ECC. The results showed that children with low family socioeconomic status had a mean dmft score four times higher than the children of high socioeconomic status (41).

An Australian cross sectional study of dental caries among children aged 4 to 5 years showed a significant linear increase in the prevalence of caries with decreasing SES (42).

In contrast, other studies showed no statistically significant association between SES and ECC prevalence. For examples, Kumarihamy et al., conducted a cross sectional study included 422 child aged between 1 and 2 years from four urban areas in Colombo district, Sri Lanka. Results showed 32.19% prevalence of ECC with mean dmft 2.01. One- way ANOVA showed that there was no significant difference between dmft and income group. Low income group (mean dmft= 1.52), middle income group (mean dmft = 2.28) and high income group (mean dmft = 1.50) (43).

This may be related that most participants related to middle income group 64.4% in the study sample and this may be affects the association between ECC and income.

2.3.1.3.2 Educational level:

Education is another important social factor for health of adolescence and children whose health care decision depends on their parents.   Parental education will be important; it is found that parental education is inversely related with the prevalence of dental caries in children.

An Australian study found a higher dmft (3.3) in children of parents with a lower educational level than children of parents of a higher educational level; the dmft was only (1.0) (44).

Another study was conducted in an Arab community in Israel to examine if the experience of dental caries in 5 years aged children is associated with their parent's education. The study included 210 kindergarten children in an Arab village. In this study the caries experience was relatively high with the mean dmfs was 17.7 and mean dmft 8.04 with 99.5% caries prevalence. The results of this study found that the children of highly educated parents had a low dental caries experience (45).

In Abu Dhabi a study included 640 children aged 2, 4 and 5 years old in twenty kindergarten and 22 health centers from three administrative regions, the mean dmft in Abu Dhabi in 5 years old children was 8.4.   The

study found that parents education and income to be statically significantly associated with caries experience ($P < 0.05$) (26).

2.3.2 Dietary Risk Factors:

2.3.2.1 Sugar Consumption:

Dental caries is a localized destruction of susceptible dental tissue by acidic by-products from bacterial fermentation of dietary carbohydrates (46).

Diet and nutrition may interfere with the balance of tooth structure mineralization and demineralization. Sugar and fermentable carbohydrate diet which is metabolized by plaque bacteria, result in acidic PH environment which support the growth of acidogenic and aciduric bacteria. In contrast a diet lower in sugar and carbohydrates and high in calcium-rich cheese may strengthen tooth reminerization (47).

Sucrose is the only sugar when metabolized by bacteria that leads to production of dextrans, which result in firmly adherence of bacteria to the tooth surface and inhibit plaque diffusion properties (48).

Sugar consumption is considered one of the most important risk factors for ECC development; many studies have found a significant association between amount of sugar consumption and frequency and ECC development.

In a study conducted recently to determine if the consumption of added sugars, sugar –sweetened beverages (SSBs), 100% fruit juice, and eating

frequency is associated with severe ECC, cross sectional data was collected from a sample of low income, racially diverse children ages 2 to 6 years old; 454 child have S-ECC and 429 free of caries were recruited from three dental clinics in Columbus, OH; Cincinnati, OH; and Washington, DC.

Dietary data was obtained from one parent- completed 24-hour recall and an interviewer food frequency questionnaire (FFQ). To assess the association between ECC and dietary variables, a multivariate logistic regression was conducted, children with highest SSB intake were $2.0 - 4.6$ times more likely to have ECC than children with lower intake (49).

On the other hand, Warren el al. in 2009 published a study aimed to assess factors associated with caries in children aged 6-24 months, who were recruited from Women, Infants and Children clinics in Iowa (WIC), 212 children were followed for 18 months, mothers were asked to answer a questionnaire about their child sweet- beverage consumption at different times (after 4-5 months, 9 months and after 12-13 months), the questions were about frequency and the average amount of consumption. After 18 months of follow up, 128 child remain; the results showed that the odds ratio of caries among children who consumed sweet beverages were 3.04 and it was high as for children who didn't consume sweet beverages at the base line adjusted for age (50).

2.3.2.2 Breast, Bottle Feeding:

Many literatures apply the terms baby bottle decay or nursing caries or case definitions that implies that inappropriate use of baby bottle plays an important role in the development of dental caries.

Current evidence suggests that a sugar containing liquid in a bottle at night may be one of important etiological factors. Therefore it's recommended to use the term Early Childhood Caries (ECC) in describing any pattern of caries in infant (51).

Regarding child nutrition there are controversy exists whether bovine milk or infant formula in bottles and breast feeding given to infants frequently contribute to the onset of ECC. There is a weak evidence of a relationship between caries risk and bottle feeding; two bottles related behaviors got an interest in ECC research, nighttime bottle feeding, and the use of bottle for period longer than one year (52).

Although breastfeeding has many advantages, as it provides optimal infant nutrition, immunological protection, and decreases the economic impact to the family; there is conflicting evidence about the effect of breast feeding on dental health. Prolonged breast feeding obviously has an effect on developing dental caries in infants (53).

The American Academy of Pediatrics reaffirms its recommendation of exclusive breastfeeding for about 6 months, followed by continued

breastfeeding as complementary foods are introduced, with continuation of breastfeeding for 1 year or longer as mutually desired by mother and infant (54).

The AAPD encourage breastfeeding of infants to ensure best possible health, development and psychological outcomes, and state that "Ad libitum breast-feeding should be avoided after the first primary tooth begins to erupt and other dietary carbohydrates are introduced." (55).

Many studies have been conducted to assess the relationship between different dietary practice and ECC. In Nigeria, a study was conducted in 2010 to assess the relationship between infant dietary habits and dental caries in preschool children, 396 child aged between 6 and 71 months were examined according to WHO criteria, and dental caries was categorized as rampant caries, caries or no caries. Rampant caries is defined as the presence of dental caries on one or more maxillary incisors with or without involvement of primary molars at cavitated level only. The result of caries shows that (5.5%) had caries experience (89.2%) had no caries experience, while (0.05%) had no teeth. 53.8% were exclusively breastfeeding, the mean dmft was highest in children who were breastfeeding for longer than 18 months ($P =0.002$), no significant association was found between night feeding and duration of bottle feeding (56).

The result of this study is about the prolonged breastfeeding, longer than 18 months and it's a cross sectional study, furthermore the recall bias of

breastfeeding is possible especially in a place where breast feeding is promoted. In the final model of this study they didn't study other factor that may be confounding.

A study was conducted in the United States to assess the potential of breastfeeding and other factors with risk of ECC among young children. The data was extracted from 1999-2002 National Health and Nutritional Examination Survey about oral health, infant feeding, and other child and family characteristics among children between the ages of two and five years old children *(N= 1576)* . The study concluded that the breastfeeding and its duration are not associated with ECC risk (57). However in 2004, a cross sectional study was conducted in Brazil by Azevedo et al., to determine the association between feeding habits and severe early childhood caries. Female and male preschool children aged 36 to 71 months were randomly selected from a low- income population. A 24 hour diary was use to assess the feeding practices and dietary habits S-ECC prevalence 36%, an association between S-ECC and night time breastfeeding (P= 0.02) and breastfeeding in children older than 12 months of age (P= 0.0004). The author concluded that night time breastfeeding in children older than 12 months of age and the use of a bottle at night as a substitute of a pacifier and the use of the bottle on demand during the day is correlated with the etiology of S-ECC (58).

Mohebbi SZ et al., conducted a cross sectional study which included 504 children from different public health centers in Tehran aimed to investigate

the impact of feeding habits and day time sugar intake. The study found significant association between bottle feeding and ECC (OR=5.5), while no association was found with breastfeeding and its duration (59).

The previous studies which found an association between dental caries in children and breastfeeding were about the prolonged breastfeeding and this is in agreement with AAPD which stated the importance of breastfeeding in child growth and development and ad libitum breast-feeding should be avoided after the first primary tooth begins to erupt and other dietary carbohydrates are introduced.

2.3.3 Behavioral Factors

2.3.3.1 Parental Oral Health Behavior

Parental tooth brushing has been found to have an effect on the child's dental caries experience. In a study conducted in elementary school in Hiroshima which included 259 pairs of parents (mothers or fathers) and their children to examine the interrelationships between parent's oral health behavior and the oral health status of their school children.

Dental examination was done according to WHO criteria. Oral Rating Index for children (ORI-C) was used for child's gingival health examination and Hiroshima University Dental Behavioral Inventory was used for assessment of parent dental behavior. Results show that the oral health of the parents' affects their child's oral health ($P < .001$) and the

parent's oral health behavior has a significant effect on their child dental caries ($P < 0.05$) (60).

In another study conducted in Iran published in 2013 aimed to evaluate the relationship between oral health behavior of parents and their children oral health behavior, about 222 parents and children over age of five were selected as random participants in the study. Parents were asked to answer a questionnaire about demographic information, socioeconomic status, and oral health behavior in parents and family. Results show that there is a significant association between parental tooth brushing frequency and the brushing frequency of children ($P = 0.05$), ordinal logistic regression showed a significant relationship between plaque index in children with educated mother ($P = 0.00$) and history of dental problems in parents ($P = 0.05$) (61).

Other studies were conducted to assess the parent's dental knowledge. In India Suresh et al., conducted a study to assess the mother's knowledge about the oral health in preschool aged children. The study included 406 mothers with mean age children 3.8 years. The results showed that 73.8% of mothers have a good knowledge about dietary practices, while only 27% and 25% of mothers were found to have good knowledge about oral hygiene practices and the primary teeth importance respectively.

The study found that mothers with high education knowledge had a better knowledge about their children's oral health; this study did not compare the result with oral health of children (62).

In Iran, a study was conducted by Moallemi Z et al., to evaluate the influence of oral health knowledge and teeth brushing behavior of mothers regarding their children and compare the maternal effect with child's oral health. The study sample consisted of 457 mothers and child pairs; the study found that mothers with a high level of oral health knowledge were associated with sound dentition ($P < 0.05$), while multivariate analysis show that children's of high score attitude women more likely to brush their teeth twice a day [OR = 2.1; 95% CI= 1.2 - 3.7] and have sound teeth [OR = 12.4; 95% CI= 1.8 - 85.9] the study recommended that mothers should be a focused group in oral health promotion (63).

2.3.3.2 Tooth Brushing and Fluoridated Tooth Paste:

Several studies have shown that frequent tooth brushing and the use of fluoridated toothpaste have significant effect on the ECC prevalence. Hsieh et al. conducted a study published in 2012 aiming to investigate the tooth brushing habits and risk indicators for ECC. The cross sectional survey included 281 aboriginal children between the ages tow and five. Dental examinations were done and questionnaires were completed by the caregivers, 238 children were diagnosed with S-ECC and there was significant association between S-ECC and low frequency tooth brushing

(*P* < .001). The study concluded that low frequency tooth brushing and improper tooth brushing methods were associated with S-ECC (64).

On the other hand, Kolker et al. conducted a study published in 2007 to assess the relationship between dietary habits and severity of ECC in low-income African American children, 436 children aged 3 to 5 years low SES in Detroit, Michigan, Dental Caries in primary teeth were measured by the International Caries Detection and Assessment System criteria (ICDAS) which include detection codes for coronal caries ranges from 0-6 depending on the severity of lesion.The block kids Food Questionnaire was used to obtained dietary intake. Full multinomial logistic regression model with four levels of dmfs as outcome (level 1= 0, level 2= 1-4, level 3= 5-11, level 4= 12- 52) showed that there was no difference in dmfs in children who had different brushing frequency (P- value = 0.55)

Chapter Three

Methodology

This chapter will represent the research steps to reach the study goal including study design, study setting, study population, sampling methods and variable definition, data analysis and ethical issue.

3.1 Study design:

The study design was a cross- sectional survey.

3.2 Study setting:

Study conducted on children attending kindergartens at Nablus city. Nablus is the largest governorate in the Northern West Bank with an estimated total population of 356.129 in 2012 (66).

3.3 Sample size and sampling method:

Sample size was calculated using the following equation*. The prevalence of ECC in our pilot study was 64.3% using a confidence level of 95% and a margin of error (precision) of 5%, the sample size needed will be 350. The design effect was taken in consideration.

$$n= \frac{z^2 * p(1-p)}{e^2}$$

Where: n = required sample size; z = confidence level at 95% (standard value of 1.96); p = estimated prevalence of ECC ; e = margin of error at 5% (standard value of 0.05)

The design effect: 350*1.5 = 525 will be the sample size of our research.

The study sampling was done through two stage cluster sampling procedure. Eight kindergartens were chosen randomly after dividing the city in to four administrative areas two kindergarten from each administrative area, and all children aged between 3 to 5 years old attending these kindergartens were considered as our sample (Appendix III).

Table (3.1): Sample Distribution.

Area	Number of children	Number of kindergarten
South Area	130	2
East Area	128	2
West Area	136	2
North Area	131	2

3.4 Variables Definition:

Table (3.4.1) Dependent Variables Definition:

Variable Name	Type	Definition
Presence of ECC (Prevalence)	Categorical	Determined by a dental examination for each child (caries or no caries) which defined as the proportion of children has dental caries in a defined population group. Dental caries diagnosed when cavitated lesion is detected.
Mean dmft (decayed, missing, filled tooth)	Continuous	dmft index is a standard numerical measure of dental caries the teeth not counted are unerupted and congenitally missing teeth, and supernumerary teeth, dmft calculation is done by sum up of the number decayed, missing due to caries and filled teeth.

Table (3.4.2): Independent Variables Definition:

Variable Name	Type	Definition
Child age	Categorical	Was assessed using the following responses, (3-4) years, (more than 4 years – 5), (More than 5 years)
Child Order in the family	Categorical	Assessed by using the following responses : first, second, third, fourth or more child
Child Birth weight	Categorical	Was assessed using the following responses > 2.5 kg or < 2.5 kg
Education level	Categorical	Mother and father education level was assessed by using the following responses, primary, secondary school, university or post graduate education level for each.
Mother Work Status	Categorical	Mother work status was assessed by responses housewife or employee.
Family Monthly Income	Categorical	Was assessed by the following responses less than 2500, more or equal 2500 NIS (67).
Feeding Patterns	Categorical	Child nutrition was assessed using the following responses Breast , bottle feeding or both.
Oral Habits Practices	Categorical	Assessed by asking whether the child brushes his teeth or not.
Frequency Teeth Brushing	Categorical	Frequency of teeth brushing was assessed by reporting how many times the child brush his teeth .
Parent's Dental Knowledge	Categorical	Two variables were used to describe parents beliefs in the dental care for their children assessed by asking parents" Do you think that child's teeth brushing is important between ages 2-5 years old? Yes or no". Also by asking the parents if the answer is no why in their opinion it is not important.
Pacifier use	Categorical	Assessed by asking parent weather their child used a pacifier (yes or no) response, and do you put sugar on the pacifier responses (yes or no)
Drinking soda and juice	Categorical	Assessed by asking parent's if their child drinks soda or juice frequently, sometimes or No
Child Dental Visit	Categorical	Assessed by asking parent's whether their child visit the dental clinic or not

3.5 Data collection:

Data collection was done beginning from November 15th December 20th of 2013. A Self administered questionnaire was used to collect data from children's family then dental examination was conducted (Appendix II).

1. Self administered questionnaire was applied to the parents:

A self administered questionnaire was sent to each child's family before the dental examination. A two page questionnaire was constructed after taking the permission of the author *Prashanth Prakash* (39). The questionnaire was translated to Arabic then to English via two translators Amer Awwad Hatamleh[1] and Haya Shadid[2]. After preliminary construction of the questionnaire it was distributed to four dentists to insure its validity; their suggestions regarding the design of some questions were taken into account (Appendix II). A Pilot study was conducted by the researcher to test the response for the questionnaire, and the clarity of questions to responders, examination was performed on 15 children and their mother's were asked to fill out the questionnaire. At the time of applying this questionnaire they were visiting the researcher clinic for dental care.

Section 1: includes questions about demographic information (Child age, parents education, family income and the number of children in the family).

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Section 2: includes questions about child feeding practices (type of child feeding duration, the use of a pacifier and bed time bottle feeding)

Section 3: Questions were about tooth brushing, frequency, and oral hygiene habits**.**

Section 4: Questions about dentist visit and the reason for the dental visit.

2- Dental examination:

Dental Examination was performed by the researcher with the help of dental assistant. The children were examined in a separate room in each kindergarten other than classrooms; the child was seated on a normal chair during examination and natural daylight was used for illumination.

Disposable mouth mirrors for indirect vision, and dental probes were used to confirm the presence of caries on occlusal, buccal and lingual surfaces. Gauze pads were also used to clean and dry tooth surfaces before examination. WHO criteria for dental caries examination were used for diagnosis (1997) (68). According to WHO basic criteria caries is diagnosed present when a lesion on bit or fissure are detected or lesion on smooth surfaces characterized by undermined enamel or soften floor , also filled teeth are included. DMFT index decayed (D), missing (M), filled(F), teeth (T) is a method used in most caries screening which is established in 1938 (23).

Materials used in dental examination:

1- Disposable mouth mirrors.

2- Disposable dental probes.

3- Disposable tweezers

4- Disposable mouth masks.

5- Disposable Gloves.

6- Sterile Gauze.

7- Disinfectant Gel

3.6 Data analysis plan:

Through statistical analysis a different techniques were used. First descriptive tables will represent the demographic characteristics of the sample, then later in the second part, Binary Logistic regression was used to test the relation between presence of ECC and the other variables. *Kruskal–Wallis* test were performed because the data was not normally distributed to evaluate whether there is a significant differences in the extent and severity of ECC which measured as dmft and the risk factors. P value of $< .05$ was considered as statistically significant.

The data was subjected to statistical analysis using the statistical package (SPSS) version 16.

3.7 Ethical Consideration:

An Institutional Review Board (IRB) and graduate studies scientific board acceptance was obtained from AN-Najah National University, and permission from the Ministry of Education to conduct the study at kindergartens. Signed informed consent was obtained from the children's parents before conducting the dental examination (Appendix I).

Chapter four
Results

This chapter will present the study results. The first section will present the prevalence and mean dmft among children and the demographic data distribution among participants. The second section will present oral habits practices, parent's knowledge and attitude toward their child's oral health. The third section will represent feeding practices and the final part represent caries distribution among primary teeth.

4.1 Demographic Data distribution among participants:

Dental examination were done for 525 child, 289 (55%) were males and 236 (45%) were females aged between 3-5 years old. 79% of children aged 4-5 years. Results showed that 79.2% of children had dental caries experience, out of 525 children only 109 children were caries free, mean dmft among participants was 4.5 ± 3.98, table (4.1) shows the demographic distribution characteristics among participants.

Table (4.1): Demographic characteristics distribution among the study population.

Characteristics	(n)	%
Gender		
Male	289	55
Female	236	45
Age		
3-4	108	20.6
>4-5	417	79.4
Child order		
1st	171	32.7
2nd	137	26.2
3rd	79	15.1
4th	136	26.0
Education level		
Father		
Primary	86	16.4
Secondary	282	53.8
university	130	24.8
Post graduate	26	5
Mother		
Primary	36	6.9
Secondary	230	43.8
University	242	46.1
Post graduate	17	3.2
Mother work status		
Employee	117	22.3
House wife	408	77.7
Socioeconomic status		
>2500	256	48.8
<= 2500	269	51.2
Child birth weight		
<2.5 kg	46	12.2
>2.5 kg	461	87.8

Prevalence of caries were found to be high in children aged more than 4-5 years old (81.2%) and (18.8 %) in younger children aged 3-4 years old, prevalence of caries significantly increase with age [OR, 0.6 ; 95% CI, 0.37-0.99, P = 0.044] this means the odds of having dental caries is more in children aged 4-5 years old Table (4.2)

Mean dmft was found to be 3.68 ± 0.39 and 4.72 ± 0.19 in children age 3-4 and children aged between 4-5 years respectively significant association was found between child age and mean dmft, (P = 0.003, Kruskal–Wallis test) table (4.3).

Mean dmft were found to be high in males than females 4.64 ± 0.24 and

4.34 ± 0.25 respectively, although no significant association was found between gender and mean dmft (P = 0.56, Kruskal–Wallis test) or presence of ECC (P = 0.38, Binary regression) table (4.2, 4.3).

Results showed that 69.0% of those children who have caries weighed more than 2.5kg at birth. While children who weighed less than 2.5kg at their birth are 10.3% of all children who has caries, no significant association were found between child birth weight and ECC presence (P =0.28, Binary regression) or with mean dmft (P = 0.87, Kruskal–Wallis test), table (4.2,4.3).

When assessing the relationship between family income and the presence of caries among children, the results in table (4.2) show that 35.6% of

children having caries are belong to a family with monthly income more than 2500 NIS while 43.6% of them are with family income less than 2500

NIS.Significant association was found between presence of ECC and family monthly income [OR=2.11; 95% CI=1.37-3.26, P = 0.001], as children who belong to family with low family income have the chance to develop dental caries two times than a child who is living in a high income family table (4.2).

Mean dmft in children reported to be 5.11 ± 0.25 in low income families compared to 3.87 ± 0.23 in high income families, significant association was found between mean dmft and family monthly income (P = >.0001, Kruskal–Wallis test), table (4.3).

According to the percentage distribution of children parents' education as appears in table (4.1), most of the parents have a secondary education with 43.8% of mothers and 53.8% of fathers, followed by the percentage of university degree, 46.1% of the mothers have a university degree while only 24.8% of the fathers have a university degree.

The education of father was found to be significantly associated with mean dmft (P = 0.03, Kruskal–Wallis test), while the level of the education of mother had no association with mean dmft but results show that the mothers with primary education level their children had high mean dmft 5.22 ± 4.6, table (4.3).

The work status of the mother work status also significantly associated with mean dmft ($P = 0.04$, Kruskal–Wallis test), table (4.3).

Table (4.2): Association between presence of ECC and demographic risk factors

Characteristics	Presence of ECC		Binary Logestic Regression	
	Yes ,n (%)	No, n(%)	P- value	OR(95% CI)
Gender				
Male	228 (54.8)	61 (56)		Ref.
Female	188 (45.2)	48 (44)	0.829	1.05[0.69-1.60]
Age				
3-4	78 (18.8)	30 (27.5)		Ref.
<4-5	338 (81.2)	79 (72.5)	**0.044**	0.61[0.37-0.99]
Child order				
1st	131	40 (36.7)		Ref
2nd	107	30 (27.5)	0.08	1.67[0.93-3.00]
3rd	61	18 (16.5)	0.17	1.53[0.83-2.85]
4th	115	21 (19.3)	0.18	1.62[0.80-3.26]
Child birth weight				
<2.5	54 (13)	10 (9.2)		Ref
>= 2.5	362 (87)	99 (90.0)	0.280	1.48[0.73-3.01]
Mother education				
Primary	29 (70)	7 (6.4)		Ref
Secondary	192 (46.2)	38 (34.9)	0.88	1.13[0.25-5.03]
University	181 (43.5)	61 (56.0)	0.90	0.92[0.25-3.37]
Post graduate	14 (3.4)	3 (2.8)	0.49	1.57[0.44-5.66]
Father education				
Primary	72 (17.3)	14 (12.8)		Ref
Secondary	231 (55.7)	51 (46.8)	0.23	0.53[0.19-1.50]
University	93 (22.4)	37 (33.9)	0.27	0.60[0.24-1.50]
Post graduate	19 (4.6)	7 (6.4)	0.87	1.08[0.42-2.73]
Monthly income				
< 2500	229 (55)	40 (36.7)		Ref
>= 2500	187 (45)	69 (63.3)	**0.001**	2.11[1.37-3.26]
Mother work status				
House wife	328 (78.8)	79 (72.5)		Ref
Employee	88 (21.2)	30 (27.5)	0.11	1.47[0.92-2.35]

Table (4.3): Association between demographic factors and mean dmft:

Characteristic	Number	Mean dmft ± SEM	95%CI	*P- value
Gender				
Male	289	4.64 ± 0.24	4.16 – 5.11	0.56
Female	236	4.34 ± 0.25	3.84 – 4.82	
Age (Years)				
3-4	108	3.68 ± 0.39	2.88 – 4.46	**0.003**
4-5	417	4.72 ± 0.19	4.33 – 5.09	
Order				
1st	171	4.56 ± 0.31	3.94 – 5.16	0.70
2nd	137	4.55 ± 0.36	3.82 – 5.26	
3rd	79	4.13 ± 0.43	3.26 – 4.99	
≥4	136	4.64 ± 0.32	4.01 – 5.26	
Weight (kg)				
<2.5	64	4.47 ± 0.47	3.5.2 – 5.41	0.87
≥2.5	461	4.51± 0.19	4.14 – 4.87	
Mothers Education				
Primary	36	5.22 ± 0.77	3.65 – 6.78	0.09
Secondary	230	4.87 ± 0.26	4.35 – 5.39	
University	242	4.06 ± 0.24	3.58 – 4.54	
Post Graduate	17	4.18 ± 1.13	1.77 – 6.57	
Mothers Work Status				
Housewife	408	4.69 ± 0.19	4.29 – 5.08	**0.041**
Employed	117	3.85 ± 0.35	3.16 – 4.54	
Fathers Education				
Primary	86	5.37 ± 0.46	4.43 – 6.31	**0.045**
Secondary	282	4.57 ± 0.23	4.11 – 5.03	
University	130	4.03 ± 0.35	3.34 – 4.71	
Post Graduate	26	3.27 ± 0.60	2.02 – 4.51	
Monthly Income (NIS)				
<2500	269	5.11 ± 0.25	4.61 – 5.60	**< 0.0001**
≥2500	256	3.87 ± 0.23	3.40 – 4.32	

*Kruskal-Wallis test

4.2 feeding patterns and Dietary Habits:

Looking back into the feeding patterns history during babyhood, results show that only 7.2% of the sampled children did not receive natural breastfeeding, while the duration of natural breast feeding of those who received it was about 13.9 months compared to 21.8 months to those who received bottle feeding, table (4.4).

When asking about bottle feeding at bed time, 16.4% answered that they used to give their child the feeding bottle at bedtime, 56.4% of the feeding was milk and 34.3% was both milk and juice as explained in table (4.4)

while 29.8% of the children who received a additional sugar to the bottle. The results of classification of the children by their desire to drink soda and juice are in table (4.4). Only 7.6% of the children do not drink soda and 4.6% don't drink juice.

Table (4.4): feeding patterns and dietary habits distribution among participants.

Characteristics	N	%
Feeding patterns		
Breast feeding	272	51.8
Bottle feeding	37	7
Both	216	41.1
Bottle use at bed time		
Yes	86	16.4
No	439	83.6
Baby bottle content		
Milk	158	56.4
Juice	26	9.3
Milk and Juice	96	34.3
Sugar add to bottle		
Yes	84	29.8
No	198	70.2
Pacifier use		
Yes	36	6.9
No	489	93.1
Sugar add to pacifier of children who use it		
Yes	4	11.8
No	32	88.2
Does your child drink soda		
Sometimes	421	80.2
Always	64	12.2
No	40	7.6
Does your child drink juice ?		
Sometimes	349	66.5
Always	152	29
No	24	4.6

Drinking soda was found to be associated with presence of ECC, [OR=1.54; 95% CI= 1.12-2.1, *P* =0.007], Feeding patterns, bottle feeding, pacifier use not found to be associated with ECC Presence, table (4.5).

Table (4.5): Association between ECC presence and feeding and dietary habits:

Characteristics	Presence of ECC		Binary Logistic Regression	
	Yes, n (%)	No, n (%)	P-value	OR(95% CI)
Feeding patterns				
Breast feeding	214 (51.4)	58 (53.2)	0.66	1.10[0.711.72]
Bottle feeding	28 (6.7)	9 (8.3)	0.33	1.48[0.67-3.28]
Both type	174 (41.8)	42 (38.5)		Ref
Bottle feeding at bedtime				
Yes	69 (16.6)	17 (15.6)	0.23	1.08[0.61-1.13
No	347 (83.4)	92 (84.4)		Ref
Baby bottle content				
Milk	119 (55.1)	39 (60.9)	0.19	1.52[0.81-2.88]
Juice	18 (8.3)	8 (12.5)	0.15	2.07[0.77-5.53]
Milk and juice	79 (36.6)	17 (26.6)		Ref
Do you add sugar to bottle ?				
yes	62 (28.4)	22 (34.4)	0.29	0.73[0.0411.31
No	156 (71.6)	42 (65.6)		Ref
Pacifier use				
Yes	29 (7)	7 (6.4)	0.84	1.09[0.46-2.56]
No	387 (93)	102 (93.6)		Ref
Sugar added to pacifier				
Yes	4 (14.3)	0 (0)	0.99	4.7 [*]
No	24 (85.7)	7 (100)		Ref
Does your child drink soda				
Sometimes	341 (82.0)	80 (73.4)		
always	52 (12.5)	12 (11.0)	**0.007**	**1.54[1.12-2.10]**
No	23 (5.5)	17 (15.6)		
Does your child drink juice ?				
Sometimes	274 (65.9)	75 (68.8)	0.94	1.04[0.38-2.88]
always	123 (29.6)	29 (26.6)	0.84	0.89[0.31-2.59
No	19 (4.6)	5 (4.6)		Ref

*CI were not computing for these variables because the response were less than 5 per cell.

Results show that children who reported to drink soda or juice frequently had high mean dmft 5.05 ± 0.53 and 4.91 ± 0.34 respectively, drinking soda was found to be significantly associated with mean dmft ($P =0.05$, Kruskal-Wallis test) as appears in table (4.6).

Children who had being reported using feeding bottle had high mean dmft 4.67 ± 0.42 compared to children not using the feeding bottle. Furthermore high mean dmft 4.67 ± 0.49 was reported among children with added sugar to the feeding bottle, although no significant association were found between feeding patterns, bottle use or bottle content and mean dmft, ($P =$ 0.49, $P =$0.56, $P =$ 0.26, Kruskal-Wallis test) respectively, table (4.6).

Table (4.6): Association between feeding patterns and dietary habits and mean dmft.

Characteristic	Number	Mean DMFT ± SEM	95%CI	P- value*
Feeding Pattern				
Breast	272	4.58 ± 0.24	4.09 – 5.05	
Bottle	37	3.76 ± 0.54	2.64 – 4.86	0.49
Both	216	4.54 ± 0.28	3.99 – 5.08	
Bottle use at bed time				
Yes	86	4.67 ± 0.42	3.83 – 5.51	0.56
No	439	4.47 ± 0.19	4.09 – 4.84	
Bottle Content				
Milk	158	4.15 ± 0.31	3.52 – 4.76	
Juice	26	4.65 ± 0.98	2.63 – 6.67	0.26
Both	96	5.00 ± 0.43	4.14 – 5.85	
Sugar added to Bottle for children who used bottle feeding				
Yes	84	4.67 ± 0.49	3.68 – 5.64	0.97
No	198	4.39 ± 0.28	3.83 – 4.95	
Pacifier use (total=36)				
Yes	36	3.97 ± 0.63	2.68 – 5.25	0.44
No	489	4.54 ± 0.18	4.18 – 4.89	
Pacifier added Sugar among children who use it				
Yes	4	6.50 ± 1.25	2.49 – 10.50	0.06
No	32	3.61 ± 0.69	2.18 – 5.04	
Soda Drink				
Sometimes	421	4.52 ± 0.19	4.14 – 4.89	
Always	64	5.05 ± 0.53	3.98 – 6.11	**0.05**
No	40	3.43 ± 0.65	2.11 – 4.74	
Juice				
Sometimes	349	4.34 ± 0.21	3.93 – 4.75	
Always	152	4.91 ± 0.34	4.22 – 5.58	0.45
No	24	4.25 ± 0.74	2.71 – 5.78	

*kruskal- wallis test

4.3 Oral habits practices, parent's knowledge and attitude:

Regarding child oral health, the results show that 36.0% of families did receive previous dental advice about their child's oral health while 64.0% did not as explained in table (4.7).

According to teeth brushing habits 77.2% of families reported that their children brush their teeth, while 29.3% of the children do not brush their teeth. Table (4.7) describes in detail the starting age when the child started brushing his teeth, frequency of brushing the teeth, and the presence of the supervision from parents to guide their children. Results show that 85.4% of the children started brushing their teeth after the age of two. Also, 62.9% of those who brush their teeth only brush their teeth once a day. Among those who brush their teeth, results showed that 67.7% of them brush their teeth before sleep. When asking the parents of children if they help their children in brushing their teeth, most of the parents answered yes and 88.2% of the parents consider that brushing their children's teeth is important, Those parents who do not think that brushing a child's teeth is important return that for many reasons. 62.5% think that children's teeth are primary and they will be replaced. While others 17.2% do not find enough time to help their children and other find other reasons, as it appears in the table (4.7).

Table (4.7): oral care practices and parents attitude among their child oral health:

Characteristics	N	%
Child teeth brushing		
yes	372	70.7
no	153	29.3
Age of starting teeth brushing		
6-12 m	4	1.1
13-18 m	27	7.3
19-24 m	23	6.2
>2-3 y	188	50.5
4-5 y	130	34.9
Frequency of teeth brushing		
once	234	62.9
Twice	135	36.3
Three time or more	3	0.8
Teeth brushing at bed time		
Yes	252	67.7
No	120	32.3
Children toothpaste use		
Yes	207	55.6
No	165	44.4
Parent supervision during teeth brushing		
Yes	255	68.5
No	117	31.5
Do u think its important to brush your child teeth ?		
Yes	463	88.2
No	62	11.8
Why do u think its not important to brush your baby teeth ?		
Those teeth will be replaced	40	62.5
No time to help	11	17.2
I don't know its important to brush their teeth at early age	4	7.8
Other reasons(my baby is too young ,he might swallow the toothpaste)	8	12.5
Does your child visit dentist before ?		
Yes	172	32.8
no	353	67.2
Reasons of dental visit		
pain	71	41.8
Dental caries	77	45.3
Other reasons (check up,	22	12.9
Family previous dental advice		
Yes	188	35.8
No	337	64.2

No association was found between the presence of caries and child teeth brushing, age of starting teeth brushing, and parent's supervision during teeth brushing. Presence of caries was found to be associated with child's dental visit (P = > .0001,Bianry Logistic Regression) table (4.8).

Table (4.8) Association between oral care practices and parents attitude toward their child oral health and presence of ECC.

Characteristics	Presence of ECC		Binary Logistic Regression	
	Yes ,n (%)	No, n(%)	P- value	OR (95%C I)
Child teeth brushing				
Yes	288(69.2)	83 (30.8)	0.16	0.71[0.43-1.15]
No	128 (76.1)	26 (23.9)		Ref
Age of starting teeth brushing				
6-12m	3 (1)	1 (1.2)	0.67	1.64[0.16-16.4]
13-18m	21 (7.3)	6 (7.2)	0.51	1.40[0.51-3.88]
19-24m	17 (5.9)	6 (7.2)	0.29	1.73[0.61-4.89]
<2-3 y	140 (48.4)	48(57.8)	0.70	1.68[0.95-2.96]
4-5y	108 (37.4)	22 (26.5)		Ref.
Brushing frequency				
Once	184 (63.7)	50(60.2)	0.99	4.39 [*]
Twice	102 (35.3)	33(39.8)	0.99	5.22 [*]
Three times or more	3 (1)	0 (0)		Ref.
Teeth brushing at bed time				
Yes	191 (66.1)	61 (73.5)	0.2	0.7[0.41-1.21]
No	98 (33.9)	22 (26.5)		Ref.
Children toothpaste use				
Yes	158 (54.7)	49 (59)	0.48	0.83[0.51-1.37]
No	131 (45.3)	34 (41)		Ref.
Parent supervision during teeth brushing				
Yes	203 (70.2)	52 (62.7)	0.19	1.41[0.84-2.35]
No	86 (29.8)	31 (37.3)		Ref.
Do u think its important to brush your child teeth ?				

Yes	364 (87.5)	99(90.8)	0.34	0.71[0.35-1.44]
No	52 (12.5)	10(9.2)		Ref.
Why do you think its not important to brush your baby teeth ?				
Those teeth will be replaced	33 (62.3)	7 (63.6)	1.00	3.42[*]
No time to help	9 (17.0)	2 (18.2)	1.00	3.59[*]
I don't know its important to brush their teeth at early age	4 (7.5)	1 (9.1)	1.00	5.38 [*]
Other reasons(my baby is too young ,he might swallow the toothpaste)	7 (13.2)	1 (9.1)		Ref.
Did you receive an advice regarding your child oral health ?				
Yes	147 (35.3)	42 (38.5)	0.91	0.91[0.59-1.40]
No	269 (64.7)	67 (61.5)		Ref.
Does your child visit dentist before ?				
Yes	156 (37.5)	16 (14.7)	0.000	0.26 [*]
No	260 (62.5)	93 (85.3)		Ref.

*CI was not computing for these variables because the response were less than 5 per cell.

Children who were reported to brush their teeth had a low mean dmft compared to children who didn't mean, dmft 4.25 ± 3.9 and 5.09 ± 4.1 Respectively, significant association was found between mean dmft and teeth brushing ($P = 0.02$, Kruskal-Wallis test), table (4.9).

Results showed that most of children start brushing their teeth at age between 2-3 years old (50.5%) , children who start brushing at earlier age 6- 12 months had low mean dmft 2.25 ± 3.2, no significant association was found between mean dmft and teeth brushing starting age, table (4.9).

Table (4.9):Association between oral care practices and parents attitude among the child oral health and mean dmft.

Characteristic	Number	Mean DMFT ± SEM	95%CI	*P-value
Brush				
Yes	372	4.25 ± 0.20	3.85 – 4.65	**0.029**
No	153	5.09 ± 0.33	4.44 – 5.75	
Age Brush				
6-12 months	4	2.25 ± 1.6	-2.84 – 7.34	
13-18 months	27	4.11 ± 0.83	2.41 – 5.80	
19-24 months	23	3.65 ± 0.78	2.04 – 5.26	0.63
2-3 years	188	4.25 ± 0.29	3.68 – 4.81	
4-5 years	130	4.46 ± 0.34	3.79 – 5.12	
Teeth brushing frequency				
once	234	4.16 ± 0.24	4.63 – 3.67	0.145
twice	135	4.32 ± 0.36	5.02 – 3.61	
Three times	3	9 ± 2.31	18.93 – - 0.93	
Bedtime Brushing				
Yes	252	4.11 ± 0.24	3.62 – 4.59	0.24
No	120	4.56 ± 0.36	3.85 – 5.26	
Tooth Paste				
Yes	207	3.98 ± 0.28	3.43 – 4.52	0.06
No	165	4.60 ± 0.29	4.02 – 5.17	
Parent supervision during teeth brushing				
Yes	255	4.24 ± 0.24	3.76 – 4.71	0.88
No	117	4.29 ± 0.38	3.54 – 5.03	
Do u think its important to brush your child teeth ?				
Yes	463	4.45 ± 0.19	4.07 – 4.81	0.22
No	62	4.91 ± 0.47	3.98 – 5.85	
Why do you think its not important to brush your baby teeth ?				
Those teeth will be replaced	40	5.05 ± 0.60	3.83 – 6.26	
No time to help	11	4,91 ± 1.33	1.92 – 7.89	
I don't know its important to brush their teeth at early age	4	3.60 ± 0.85	- 0.57 – 7.77	0.51
Others (I don't know its important to brush their teeth at early age)	8	4.38 ± 0.82	2.43 – 6.31	
Dental visit				
Yes	172	6.27 ± 0.31	5.65 – 6.88	<
No	353	3.64 ± 0.19	3.25 – 4.02	**0.0001**

*kruskal wallis test

Table (4.10): Association between oral practices and parents attitude among the child oral health and presence of ECC.

Characteristics	Presence of caries		Binary Logistic Regression	
	Yes n(%)	No n(%)	P-value	OR (95% CI)
Child teeth brushing				
Yes	288(69.2)	83 (26.1)	0.16	0.71[0.43-1.15]
No	128(30.8)	26 (23.9)		Ref.
Age of starting teeth brushing				
6-12m	3 (1)	1 (1.2)	0.67	1.64[0.16-16.4]
13-18m	21 (7.3)	6 (7.2)	0.51	1.40[0.51-3.88]
19-24m	17 (5.9)	6 (7.2)	0.29	1.73[0.61-4.89]
<2-3 y	140 (48.4)	48(57.8)	0.70	1.68[0.95-2.96]
4-5y	108 (37.4)	22 (26.5)		Ref.
Brushing frequency				
Once	184 (63.7)	50(60.2)	0.99	4.39 [*]
Twice	102 (35.3)	33(39.8)	0.99	5.22 [*]
Three times or more	3 (1)	0 (0)		Ref.
Teeth brushing at bed time				
Yes	191 (66.1)	61 (73.5)	0.2	0.7[0.41-1.21]
No	98 (33.9)	22 (26.5)		Ref.
Children toothpaste use				
Yes	158 (54.7)	49 (59)	0.48	0.83[0.51-1.37]
No	131 (45.3)	34 (41)		Ref.
Parent supervision during teeth brushing				
Yes	203 (70.2)	52 (62.7)	0.19	1.41[0.84-2.35]
No	86 (29.8)	31 (37.3)		Ref.
Do u think its important to brush your child teeth ?				
Yes	364 (87.5)	99(90.8)	0.34	0.71[0.35-1.44]
No	52 (12.5)	10(9.2)		Ref.
Why do you think its not important to brush your baby teeth ?				
Those teeth will be replaced	33 (62.3)	7 (63.6)	1.00	3.42[*]
No time to help	9 (17.0)	2 (18.2)	1.00	3.59[*]
I don't know its important to brush their teeth at early age	4 (7.5)	1 (9.1)	1.00	5.38 [*]
Other reasons(my baby is too young ,he might swallow the toothpaste)	7 (13.2)	1 (9.1)		Ref.

Did you receive an advice regarding your child oral health ?				
Yes	147 (35.3)	42 (38.5)	0.91	0.91[0.59-1.40]
No	269 (64.7)	67 (61.5)		Ref.
Does your child visit dentist before ?				
Yes	156 (37.5)	16 (14.7)	0.000	0.26 [*]
No	260 (62.5)	93 (85.3)		Ref.

*CI were not computing for these variables because the response were less than 5 per cell.

Result show that only 32.8% of the children had visited the dentist, most of the children did visit a dentist because of toothache or dental caries (87.1%).

Significant association were found between child dental visit and presence of ECC ($P = >.0001$, Binary Logistic Regression test) and with mean dmft.

No significant association was found between the prevalence of dental caries and family dental education, while significant association was found between the child's dental visit and previous family dental advice and education regarding their baby teeth X^2 (1,N= 525) = 22.4, $P >.0001$.

Family dental previous advice was also found to be associated with teeth brushing in children X^2 (1, N= 525) = 8 , $P = 0.005$.

4.4 Prevalence of caries in primary teeth among children:

The most affected teeth in our sample was the lower primary first molars 50.5%, followed by the upper primary molars, and the upper anterior teeth. The lower anterior teeth were the least affected by dental caries. Table (4.10)

Table (4.11): dental caries distribution in primary teeth among participants.

Upper teeth	32.4%	34%	3.6%	14%	28.6%	28.6%	16%	5.9%	34%	35.8%
Teeth NO.	E 2nd primary molar	D 1st primary molar	C canine	B Lateral incisors	A Central incisor (Right)	A Central Incisors (left)	B Lateral incisors	C canine	D 1st primary molar	E 2nd primary molar
Lower teeth	50.5%	49%	2.3%	1.9%	1.3%	1.5%	1.5%	1.9%	44.4%	49.7%

Discussion:

Oral health is a component of general health, and an important factor in a child's normal development. Problems in oral health can affect the quality of the children's life and the daily activity including eating, sleeping, and playing. Dental caries is reported as the most prevalent chronic disease among children.

The aim of this study was to investigate the prevalence of ECC among preschool children in Nablus City and the associated risk factors.

The results of our study showed a high prevalence of dental caries among Palestinian preschool aged children in Nablus city 79.2% with mean dmft score 4.5±3.98, Other study conducted in the Northern Palestine found high prevalence of ECC 76% (28). High prevalence of ECC was reported in Middle East, in Ajman prevalence of caries Found to be 79.1% with dmft 10.2 (23). In Riyadh, KSA and Jordan high dmft score was reported 8.6, 3.22 respectively (22, 24).

In our study group high prevalence of caries was found on the lower, upper primary molars and upper anterior primary teeth (central, laterals, canines). The lower central incisors are the least affected this was explained that the lower primary incisors are protected by tongue and saliva from submandibular glands (1).

The association between family education and ECC has been investigated in many studies, Al-Hosani E et al., Broadbent et al., Holan G et al., (26, 44, 45). These studies reported an association between ECC and family education level (i.e. father, mother). Our study were inline with these studies and a significant association was found between father education level and mean dmft, this may be related that father education affects the family socioeconomic status of the family, which found to be associated with ECC.

Regarding the family monthly income and the caries experience in children our study showed significant association between the dmft and the family monthly income, this result is with agreement of previous studies that found an association between SES including income of the family and dental caries experience in children which mentioned previously conducted by Tang JM et el., Hallet KB et al., in Arizona and Australia respectively (41, 42). This maybe attributed that family low income status affect their socioeconomic status which in turns affects their ability to afford professional health care access and to live in a healthy environment.

Our result revealed significant association between mother work status and mean dmft, as mother work status increase the socioeconomic status of the family which was found to be associated with ECC in our study and previous studies (41, 42).

Several studies have found that age is a risk factor for ECC, Nobel et al., and Gomez et al., reported an association between child age and ECC (36,37). Our study also found that age is significantly association with mean dmft, this may be related as with increasing age children are more exposed to risk factors that increase caries experience such as feeding habits and oral health practices.

Most families in our study reported that their children drinks soda and juice during day, significant association were found between drinking soda with mean dmft and presence of ECC. Back to the literature many studies reported a significant association between the consumption of added sugars, sugar- sweetened beverages (SSBs) and fruit juice, and eating frequency with ECC (49,50), but these studies data collection were depending on Food Frequency Questionnaire (FFQ) which was unable to do in our study, so further detailed studies should be conducted regarding soda drinks and other nutritional habits to emphasis the association with ECC.

The effect of child feeding is complex and remains a controversial issue; this study finds no association between feeding patterns either breast or bottle and ECC.

Regarding breast feeding 51.8% of children were exclusively breast feeding with mean duration 13.9 months, no association were found between ECC and breast feeding, this was in agreement with a studies

conducted by Idia et al., and Mohebbi SZ et al., to assess the potential of breast feeding and other risk factors on ECC, These studies concluded that the breast feeding and its duration is not associated with ECC risk (57, 59).

Other studies found an association between ECC and prolonged breast feeding (58, 56); therefore mothers should be educated to avoid prolonged and ad libitum breast feeding.

This study showed that 7% of children were exclusively depend on bottle Feeding,   no significant association was found between bottle feeding and ECC, this may be related to the small proportion of sample that was exclusively depend on bottle feeding and it was difficult to find such an association. This result was in agreement of study conducted in Nigeria by Folayan MO et al.,Showed that there is no association between night bottle feeding , duration of feeding bottle and ECC (48). This suggest that many factors affect the onset or of ECC and support using Early Childhood Caries term instead of nursing caries since the etiology of disease is multifactorial and not only depend on bottle feeding.

When studying the effect of dental oral habits and its effects on dental caries, significant association were found between mean dmft and teeth brushing, a strong scientific evidence was applied by working groups in Swedish council on technology assessment in health care that daily brushing of fluoridated toothpaste is the most effective and self applied method to prevent caries in all ages groups (69).

Current recommendation for prevention of ECC according to AAPD guidelines include brushing teeth with fluoridated tooth paste twice a day for all children in fluoridated or deficient fluoride communities (62).

Result showed that most children didn't visit a dentist, this may related to many factors as most parents answered that they didn't get any dental education or advice regarding their baby teeth and our study reveled significant association between family previous advice regarding their baby teeth and child dental visit. The AAPD recommends that children should have their first dental visit by the first birthday (70).

Our study revealed significant association between mean dmft and child dental visit, this may be attributed that children with increased number of dental caries tend to visit the dental office due to pain or discomfort.

No association was found between ECC and gender this was in agreement of other studies that found no association, NHANES survey (33, 34) and other study in Tiwan by Tsai AI et al., (35) which mentioned previously, studies found this association significant in older age group but not in this age group (71,72).

1-Limitation of the study:

1- This study aimed to know the prevalence and severity of ECC among Palestinian children and associated risk factors, since the sample size was relatively small this may result in no significant association between ECC and some risk factors.

2- This study was cross –sectional study which make it difficult to determine associations

3- Not using a random sampling method in this study may affect the result of our study.

4- This study was depending on self reported surveys and the answers may be affected by social desirability.

2- Conclusion:

1- The research show that high prevalence of ECC among Palestinian children aged 3-5 years old in Nablus city 79.2% with high mean dmft 4.5 ± 3.98.

2- In our study some of risk factors found to be associated with ECC (age, family socioeconomic status, drinking soda, teeth brushing)

3- Lack of information and studies about ECC in preschool aged children in Palestine

3- Recommendations:

1- Increase awareness about ECC in the community through Oral health program by governmental health institution by starting preventive strategies and control program of ECC among preschool aged children.

2- Dental health insurance should be available for dental health by the ministry of health clinics for treatment of preschool aged children and parents consultation.

3- Primary prevention should be started at prenatal stage and parents should be informed to avoid bad feeding habits and encourage supervising their children during teeth brushing.

4- School oral health program should be available.

5- Using innovative ways to deliver the oral education knowledge.

6- Further studies should be conducted to assess other risk factors in Palestinian community including microbiological, enamel defects, and parent's dental history risk factors.

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(APPENDIX I)

Consent form in English

I am Suad A. Samara, a dentist and a student of Masters of Public Health Program at AN-Najah National University. I am doing a research on " Prevalence of Early Childhood Caries and associated Risk factors among preschool children in Nablus City" .

I will take some information from the child family related to dental health and feeding practices and some information about parents' education and family income, then I will do clinical examination for child teeth.

All the taken information will be confidential and will be used only for research purposes.

Thank you for your cooperation.

Researcher
Suad A. Samara
0599312788

(APPENDIX II)

table of appendices:

انا الباحثه سعاد سماره ، طبيبة اسنان و طالبه في برنامج ماجستير الصحه العامه – جامعة النجاح الوطنيه ، اقوم بعمل بحثي لرسالة الماجستير حول " مدى انتشار تسوس الاسنان المبكر عند الاطفال في مدينة نابلس و العوامل المساعده على ذلك" .

سنقوم بجمع معلومات من الاهل متعلقه بالصحة الفموية لدى الاطفال ، و طريقة الرضاعه و ايضا معلومات عن المستو ى التعليمي لدى الاهل . و سيتم فحص اسنان الاطفال بعد ذلك .

جميع المعلومات ستبقى سريه وستستخدم لاغراض البحث العلمي فقط .

شكرا لتعاونكم

الباحثه

سعاد سماره

بسم الله الرحمن الرحيم

An - Najah
National University

Faculty of Medicine & Health Sciences
Department of Graduate Studies

جامعة النجاح
الوطنية
كليـة الطب وعـلـوم الصـحة
دائرة الدراسات العليا

IRB Approval letter

Study title:
Prevalence of Early Childhood Caries and its Associated Risk Factors among Preschool Children in Nablus City, Palestine

Submitted by:
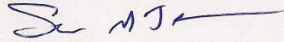Dr. Amira shahin

Date Reviewed:
Sep 23, 2013

Date approved:
Oct 7, 2013

Your study titled " **Prevalence of Early Childhood Caries and its Associated Risk Factors among Preschool Children in Nablus City, Palestine** " Was reviewed by An-Najah National University IRB committee & approved on Oct 7, 2013 .

Samar Musmar,MD, FAAFP

IRB Committee Chairman,
An-Najah National University

(APPENDIX III) kindergartens list)

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(APPENDIX IV) Questionnaire

Questionnaire about dental caries in children

☐ **Parents (mother or father) child dental examination agreement**

Signature_____

The information in this questionnaire is used for academic purposes, research, and will be treated entirely confidentially.

(1) How old is your child?

☐ 3-4 years ☐ more than 4-5 years ☐ more than 5 years

(2) Your child order is?

☐ First child ☐ Second child ☐ Third child ☐ Fourth child

(3) What is your child's weight?

☐ less than 2.5Kgs ☐ More than 2.5Kgs

(4) Education level of mother:

☐ Primary school ☐ Secondary school ☐ University ☐ Postgraduate studies

(5) Work status of mother:

☐ House wife ☐ Employee

(6) Education level of father:

☐ Primary school ☐ Secondary school ☐ University ☐ Postgraduate studies

(7) Monthly family income:

☐ Less than 2500 Shekels ☐ More than 2500 Shekels

(8) Have you received any medical advice about oral and dental health importance?

☐ Yes ☐ No

(9) What is the way your child is being fed?

☐ Breast feeding ☐ Bottle feeding ☐ combined breast and bottle feeding

Length of normal breast feeding _____
Length of bottle feeding_____

(10) Does your child have a feeding from a bottle before bed time?

☐ Yes No ☐

(11) What do you put in your baby bottle?

☐ Milk ☐ fruit juice ☐ milk and juice

(12) Do you add sugar to your baby bottle?

☐ Yes   No ☐

(13) Does your baby use a pacifier?

☐ Yes   No ☐

If your answer is yes; do you put sugar on your child pacifier ?

☐ Yes   No ☐

(14) Does your child brush his teeth?

☐ Yes   No ☐

If your answer is yes; please answer the following questions?

(A) At what age have you started brushing your child's teeth?

☐ 3-6 months   ☐ 7-13 months   ☐ 2-3 years   ☐ 4-5 years

(B) How many times a day does your child brush his teeth?

☐ Once   ☐ Twice   ☐ Thrice

(C) Does your child brush his teeth before bed time?

☐ Yes   No ☐

(D) Does your child use kids dentifrices?

☐ Yes   No ☐

(E) Does your child brush his teeth under your supervision?

☐ Yes I do   ☐ No (he can brush his teeth by himself)

(15) Do you think that brushing your child's teeth is important at the age between 2-5?

☐ Yes   No ☐

If your answer is No; why do you think brushing your child's teeth is not important?

☐ Because it is a primary teeth
☐ Because he cant brush his teeth by himself
☐ I don't have time for helping him
☐ I don't know that brushing is important at this age
☐ Other reasons: (my baby is too young, he might swallow the toothpaste)

(16) Does your baby have soda drinks?

☐ Sometimes   ☐ always   ☐ No

(17) Does your baby have store bought juices?

☐ Sometimes   ☐ always   ☐ No

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(18) Has your child visited a dentist?

☐ Yes   No   ☐

If yes; what was the reason for the visit?

☐ Toothache   ☐I have noticed caries in his teeth   ☐Other reasons(check up, consultation)

Thank you for the

help

(APPENDIX IV)

<u>جامعة النجاح الوطنيه</u>

<u>*استبيان حول تسوس الاسنان لدى الاطفال*</u>

المعلومات في هذا الاستبيان ستستخدم لاغراض البحث العلمي فقط وستبقى سريه :

☐ **اوافق على ان يتم فحص اسنان طفلي** **التوقيع :---------------------**

☐ **(1) كم يبلغ عمر طفلك ؟**

☐ 3-4 سنوات ☐ اكبر من4-5 سنوات ☐ اكثر من5 سنوات

(2) ما هو ترتيب طفلك في العائله ؟

☐ الاول ☐ الثاني ☐ الثالث ☐ الرابع او اكثر

(3) كم كان وزن طفللك عند الولاده ؟

☐ اقل من 2.5 كغم ☐ اكثر من 2.5 كغم

(4) المستوى التعليمي للام: ؟

☐ اساسي ☐ ثانوي ☐ جامعي ☐ دراسات عليا

(5) ما هي وظيفة الام ؟

☐ ربة منزل ☐ موظفه

(6) المستوى التعليمي للاب: ؟

☐ اساسي ☐ ثانوي ☐ جامعي ☐ دراسات عليا

(7) ما هو دخل العائله الشهري ؟

☐ اقل من 2500شيقل ☐ اكبر من2500 شيقل

(8) هل تلقيت اي ارشاد صحي حول كيفية و اهمية العنايه بأسنان طفلك ؟

☐ نعم ☐ لا

(9) ماهي طريقة الرضاع لطفلك ؟

☐ رضاعه طبيعيه ☐ رضاعه صناعيه ☐ رضاعه صناعيه + طبيعيه

مدة الرضاعه الطبيعيه _____

مدة الرضاعه الصناعيه _____

(10) هل يرضع طفلك بزجاجة الرضاعه وقت النوم ؟

☐ نعم   ☐ لا

(11) ماذا تضعين فى زجاجة الرضاعه ؟

☐ حليب دائما   ☐ عصير فواكه   ☐ الحليب و العصير

(12) هل تضيفين السكر الى محتويات الزجاجه ؟

☐ نعم   ☐ لا

(13) هل يستعمل طفلك اللهايه؟

☐ نعم   ☐ لا

اذا كانت اجابتك نعم هل تضعين له محليات على اللهايه ؟

☐ نعم   ☐ لا

(14) هل يقوم طفلك بتنظيف اسنانه بالفرشاه و المعجون ؟

☐ نعم   ☐ لا

اذا كانت اجابتك نعم فاجيبي عن الاسئله التاليه :

(أ) فى اي عمر بدأت تنظيف اسنان طفلك ؟

☐ 6-12 شهر   ☐ 13-18 شهر   ☐ 19- 24شهر   ☐ سنتين – 3 سنوات   ☐ 4- 5 سنوات

(ب) كم مره يقوم طفلك بتنظيف اسنانه يوميا

☐ مره واحده   ☐ مرتين   ☐ ثلاث مرات

(ج) هل يقوم طفلك بتنظيف اسنانه قبل النوم

☐ نعم   ☐ لا

(د) هل يستعمل طفلك معجون اسنان مخصص للاطفال ؟

☐ نعم   ☐ لا

(هـ) هل يقوم طفلك بتنظيف اسنانه تحت اشرافك و بمساعدتك ؟

☐ نعم اساعده   ☐ لا (ان طفلي يقوم بتنظيف اسنانه لوحده)

(15) هل تعتقدين ان تنظيف اسنان طفلك امر مهم فى عمر 2-5 سنوات ؟

☐ نعم   ☐ لا

اذا كانت اجابتك لا فلماذا تعتقدين ان تنظيف اسنان طفلك غير مهم

☐ لان هذه الاسنان لبنيه سوف تتبدل

☐ لانه لايستطيع تنظيف اسنانه لوحده

☐ لا اجد الوقت الكافي لمساعدته

☐ لا اعلم انه من الضروري تنظيف اسنان الطفل في هذا العمر

☐ اسباب اخرى(ما زال طفلي صغيرا، أخاف من ان يبتلع معجون الأسنان)

(16) هل يتناول طفلك المشروبات الغازيه ؟

☐ احيانا   ☐ دائما   ☐ لا

(17) هل يتناول طفلك العصير المحلى

☐ احيانا   ☐ دائما   ☐ لا

(18) هل قام طفلك بزيارة طبيب الا سنان؟

☐ نعم   ☐ لا

اذا كانت اجابتك نعم فما هو سبب الزيارة؟

☐ بسبب شعور طفلي بالالم   ☐ ملاحظتي لوجود تسوس في اسنانه   ☐ اسباب اخرى(للكشف الدوري،للاستشاره)

شكرا لتعاونكم

جامعة النجاح الوطنية

كلية الدرسات العليا

دراسة مدى انتشار تسوس الاسنان المبكر لدى الاطفال في عمر ما قبل المدرسة والعوامل المسببة له في مدينة نابلس ، فلسطين

إعداد

سعاد عايد سماره

إشراف

د.أميره شاهين

قدمت هده الأطروحة استكمالا لمتطلبات درجة على درجة الماجستير في الصحة العامه بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس– فلسطين.

2015

دراسة مدى انتشار تسوس الاسنان المبكر لدى الاطفال في عمر ما قبل المدرسة والعوامل المسببة له في مدينة نابلس، فلسطين

إعداد

سعاد عايد سماره

إشراف

د.أميره شاهين

الملخص

مقدمة : يعد تسوس الاطفال المبكر لدى الاطفال في عمر ما قبل المدرسه من اكثر الأمراض شيوعا حول العالم ويؤثر سلبا على نوعية حياة الطفل وعلى أسرهم، الهدف من هذه الدراسه هو معرفة مدى انتشار تسوس الاسنان المبكر لدى الاطفال في عمر ما قبل المدرسه و بعض العوامل المسببه له في مدينة نابلس.

طريقة البحث: شملت الدراسه 525 طفل في عمر 3 إلى 5 سنوات من عدد من الحضانات من مختلف مناطق مدينة نابلس، حيث قام الأهل بتعبئة استبيان يشمل على بعض المعلومات عن الاسره وعادت الاكل والعنايه الفمويه عند الا طفال، بعد الحصول على موافقة الأهل تم فحص أسنان الاطفال.

نتائج الدراسه : توصلت الدراسه الى ان تسوس الأسنان منتشر بنسبة 79.2%، ومن خلال تحليل البيانات المتاحة، وجدت علاقة بين اصابة أسنان الأطفال بالتسوس ووضع العائلة الاقتصادي، وشرب الأطفال للمشروبات الغازيه. أظهرت الدراسه أيضا أن تنظيف الأسنان، عمر الطفل، ووضع العائله الاقتصادي يوؤثر على مدى شدة تسوس الأسنان.

الخلاصة: هذه الدراسة أظهرت أن نسبه عاليه من الأطفال يعانون من تسوس الأسنان ، وأن هناك حاجه لخطه شامله على مستوى الوطن لزيادة وعي الأهل بأهمية الحفاظ على أسنان الأطفال وطرق الوقايه منه .

أ