# The Impact of Oral Health on the Quality of Life among 8-10 Years Old Primary School Children in Al-Najaf City

A Thesis
Submitted to the Council of College of Dentistry, University of Baghdad in Partial Fulfillment of the Requirements for the Degree of Master of Science in Preventive Dentistry

By
**Zahraa Mohammed Hussein Ali**
(B.D.S)

**Supervised by:**
**Prof. Dr. Athraa Mustafa Al-Waheb**
(B.D.S., M.Sc., Ph.D.)

**2019 A.D.**                                                    **1441 A.H.**

# Certification of the Supervisor

I certify that this thesis entitled "**The Impact of Oral Health on The Quality of  Life of among 8-10 Years Old Primary School Children in Al-Najaf City**" was prepared by **Zahraa Mohammed Hussein Ali** under my supervision at the College of Dentistry/ University of Baghdad in partial fulfilment of the requirements for the degree of Master of Science in Preventive Dentistry.

Signature
Professor
**Dr. Athraa Mustafa Al-Waheb**
B.D.S., M.Sc., Ph.D.
(The supervisor)

# Linguistic certification

This is to certify that the thesis entitled **"The Impact of Oral Health on the Quality of Life among 8-10 Years Old Primary School Children in Al-Najaf City"** was prepared under my linguistic supervision. Its language was amended to meet the style of the English language.

Signature:

**Prof. Dr. Abdulkarim Fadhil Jameel**

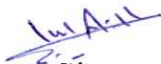Linguistic Reviewer      /      / 2019

# Committee Certification

We are the members of the examining committee, certify that after reading this thesis (**The Impact of Oral Health on the Quality of Life among 8-10 Years Old Primary School Children in Al-Najaf City**), and examining the graduate student **Zahraa Mohammed Hussein Ali** in its contents, and that in our opinion it meets the standards of thesis for the degree of Master of Science in Preventive Dentistry.

Signature
Prof. Dr.Ahlam Taha Mohammed
B.D.S, MSc.Ph.D
(Preventive Dentistry)
(Chairman)

Signature
Assist. Prof. Dr.Aseel Haider M.J.
B.D.S, MSc.
(Pedodontics)
(Member)

Signature
Prof. Dr.Raad S. Shahadha
B.D.S., H.D.D., M.Sc. Ph.D
(Preventive Dentistry)
(Member)

By
The Dean of the College of Dentistry
University of Baghdad

Professor
Dr.Nidhal H.Ghaib
B.D.S, M.Sc. (Orthodontics)
Dean of the College of Dentistry
University of Baghdad

# Certification of the Supervisor

I certify that this thesis entitled "**The Impact of Oral Health on The Quality of   Life of among 8-10 Years Old Primary School Children in Al-Najaf City**" was prepared by **Zahraa Mohammed Hussein Ali** under my supervision at the College of Dentistry/ University of Baghdad in partial fulfilment of the requirements for the degree of Master of Science in Preventive Dentistry.

Signature
Professor
**Dr. Athraa Mustafa Al-Waheb**
B.D.S., M.Sc., Ph.D.
(The supervisor)

# Dedication

To All My Lovely Family....

To beloved mother
A strong and gentle soul who taught me to trust in Allah, believe in hard work and that so much could be done with little and always encourage and motivate me to do the best

To my Father
who I know he is up there, listening, watching over me and sending me his blessings constantly and is my guardian angel

To my dear husband Dr.Haider
for his patience and unwavering support in all my work

To my sisters Dr.Nabaa and Dr.Alaa
for their help,inspiration and support

To my brothers

To my wonderful and lovely sons  Murtada and Mustafa

To every person helped and supported me

With all love and respect

Zahraa

# Acknowledgment

First of all, I thank "**The Greatest Allah**" for granting me strength, willing and patience to accomplish this work.

My most sincere appreciation and deepest thankfulness to **Prof. Dr. Nidhal H. Ghaib**, the Dean, and the Assistant Dean for Scientific Affairs and Students, College of Dentistry, University of Baghdad for her Support in facilitating the performance of this work.

My grateful deep appreciation and thanks to the Head of Department of Pedodontics and Preventive Dentistry **Assist Prof. Dr. Nada Jafer MH. Radhi** for her continuous guidance and support.

I would like to express my deepest gratitude and appreciation to my research advisors, **Prof. Dr. Athraa Mustafa Al-Waheb**, for her encouragement, guidance and continued assistance throughout the execution of this study.

I am very grateful to the **teaching staff** in Department of Pedodontics and Preventive Dentistry, College of Dentistry, University of Baghdad for their continuous scientific guidance, and to all teachers who help me to complete my study.

I would like to greatly thanks to **Dr. Mohammed Ghalib** for his valuable aids in statistical analysis.

I would like to thank all the **school staffs** and children in AL-Najaf Governorate who participated in the survey.

# Abstract

**Background:** The quality of life of children is related to their oral health status, particularly dental caries and periodontal disease which are the most common oral diseases affect human beings throughout the world.

**Aims of the study:** The survey was made to inspect the impact of oral diseases on the quality of life among (8-10) years old primary school children in Al-Najaf city / Iraq ; by measuring the prevalence and severity of dental caries and gingivitis , in addition by evaluate oral hygiene condition (dental plaque and calculus) for children.

**Subjects and Methods:** The total sample composed of 1200 children aged (8-10) years selected randomly from different primary schools in Al-Najaf governorate. Oral Health Related Quality of Life questionnaires (2004) for children was used with modification; using modification of Kuppuswamy's 1976 was applied for socioeconomic measurement. Plaque index of Silness and Loe (1964) was used for plaque assessment and calculus was assessed by Ramfjord, 1959  ; while dental caries experience and the gingival bleeding recorded by using WHO index 2013.

**Results:** Results showed that the prevalence of dental caries for the total sample was 98.00%. The mean dmft was equal to (5.479±0.084) and dmfs (12.954±0.273), while the mean DMFT was (1.860 ±0.040) and DMFS (2.160 ±0.060). The mean values of plaque and calculus indices were (0.501±0.055, 0.029±0.003) respectively and the prevalence of gingivitis was 7.33%. No significant differences were seen between Oral Health Related Quality of Life questionnaires and dental caries experience DMFT of permanent teeth except two questions about the child school was significant. Significant differences were seen between Oral Health Related Quality of Life questionnaires and dental caries experience dmft of primary teeth. No significant differences were

seen between Oral Health Related Quality of Life questionnaires and oral hygien, except for plaque index some Oral Health Related Quality of Life questionnaires was significant and no significant differences were seen between Oral Health Related Quality of Life questionnaires and gingival health.

The effect of socioeconomic status showed that no significant differences were found in caries experience of primary teeth ,plaque, calculus, and gingival condition also the caries experience of permanent teeth was non-significant for decay and missing fraction and was highly significant for filling fraction .

No significant difference were seen between socioeconomic status and Oral Health Related Quality of Life questionnaires except some questions was significant.

**Conclusion:** Prevalence of dental caries among primary schools children in Al-Najaf city was high while the prevalence for gingivitis was low 7.33% , these diseases affect on the quality of life of children, so there is a need to increase the knowledge and attitude towards oral health, as well as provides public and school preventive programs among those children.

# List of contents

# List of tables

# List of figures

# List of Abbreviations

| Symbol | Abbreviation |
|---|---|
| **%** | Percentage |
| **QoL** | Quality of Life |
| **OHRQoL** | Oral Health Related Quality of Life |
| **WHO** | World health organization |
| **ECC** | Early Childhood Caries |
| **COHIP** | Child Oral Health Impact Profile |
| **SES** | Socio-Economic Status |
| **Cr.I** | Crowding index |
| **dmft/dmfs** | decay, missing, filling teeth or surfaces |
| **DMFT/DMFS** | Decay, Missing ,Filling Teeth or Surfaces |
| **MP** | Masticatory Performance |
| **SPSS** | Statistical Package for Social Science |
| **F** | Fisher |
| **Df** | Degree of freedom for paired T test |

# *Introduction*

# Introduction

Oral health conditions may affect the daily activities of individuals. Hence, subjective oral health indicators or Oral Health-Related Quality of Life (OHRQoL) measures had been developed. Such measurements complement clinical indicators and provide a better understanding of the health of individuals and the community (Andrada *et al*., 2011). Specific instruments that consider the child's cognitive, social, and emotional stage had been developed (Pahel *et al*., 2007). In assessing the impact of oral conditions on quality of life, there is growing interest (Marques *et al*., 2006). It had been suggested that the measurement of OHRQoL should be an essential component of oral health surveys (Bianco *et al*., 2010). Oral health abnormalities had been described as an important feature of well-being that negatively affect children's oral health quality of life (Edelstein, 2006; Moure-Leite *et al*., 2011; Krisdapong, 2012).

Studies had shown that dental caries could influence children's quality of life (Torres *et al*., 2009; Foster Page and Thomson, 2012). Dental caries is a prevalent disease among children (Nuttall *et al*., 2003), in addition, it affects young children's growth and well-being (Sheiham, 2006; Gaur and Nayak, 2011). It is essential to evaluate, the impact of dental caries on the quality of life on those children, taking their own perceptions into account. Given that, at the age of eight years, children health considered to be set of somatic and emotional symptoms, they have the ability to report all health aspects, used same criteria, attractive as using with adults (Rebok, 2001).

Toothache affects sleep patterns and the ability to learn so that, it might have a negative impact on a child's emotional status (Schuch, 2014). Dental diseases in children affect their long-term physical, psychological and social development, as difficult chewing, sleeping, or even an aesthetic discomfort in addition, it also affect children's current quality of life (Krisdapong, 2012).

Several Iraqi epidemiological studies reported a high prevalence and severity of dental caries among different age groups as well as in different geographical locations (Mubarak, 2002; Al-Eissa, 2004; Al-Obaidi, 2008; Al-Ghalebi, 2011; Al-Ani, 2013; Al-Hassnawy, 2013; Al-Sadam, 2013; Al-Awadi, 2016; Al-Waheb, 2018).

It is generally accepted that periodontal diseases begin as gingivitis, which progresses, only in some individuals, to periodontitis (Carranza, 2002), gingivitis is the most common form of periodontal disease and starts in early childhood, while sever gingivitis is relatively uncommon in children (Dean *et al.*, 2011). Several Iraqi epidemiological studies recorded high prevalence of gingivitis among different age group (Mubarak, 2002; Al-Eissa, 2004; Jabber, 2008; Al-Obaidi, 2008; Al-Ghalebi, 2011; Al-Ani, 2013; Al-Hassnawy, 2013; Al-Sadam, 2013; Al-Awadi, 2016; Al-Waheb, 2018).

No information was recorded regardinng the quality of life factors concerning the oral health of primary school children  aged 8-10 years in Al-Najaf city, in order to increase the knowledge about oral health for this group of children this study was conducted.

# Aim of the study

The study was conducted among 8-10 years old primary school children in Al-Najaf city / Iraq in order to assess the impact of oral health on the quality of life of children by:
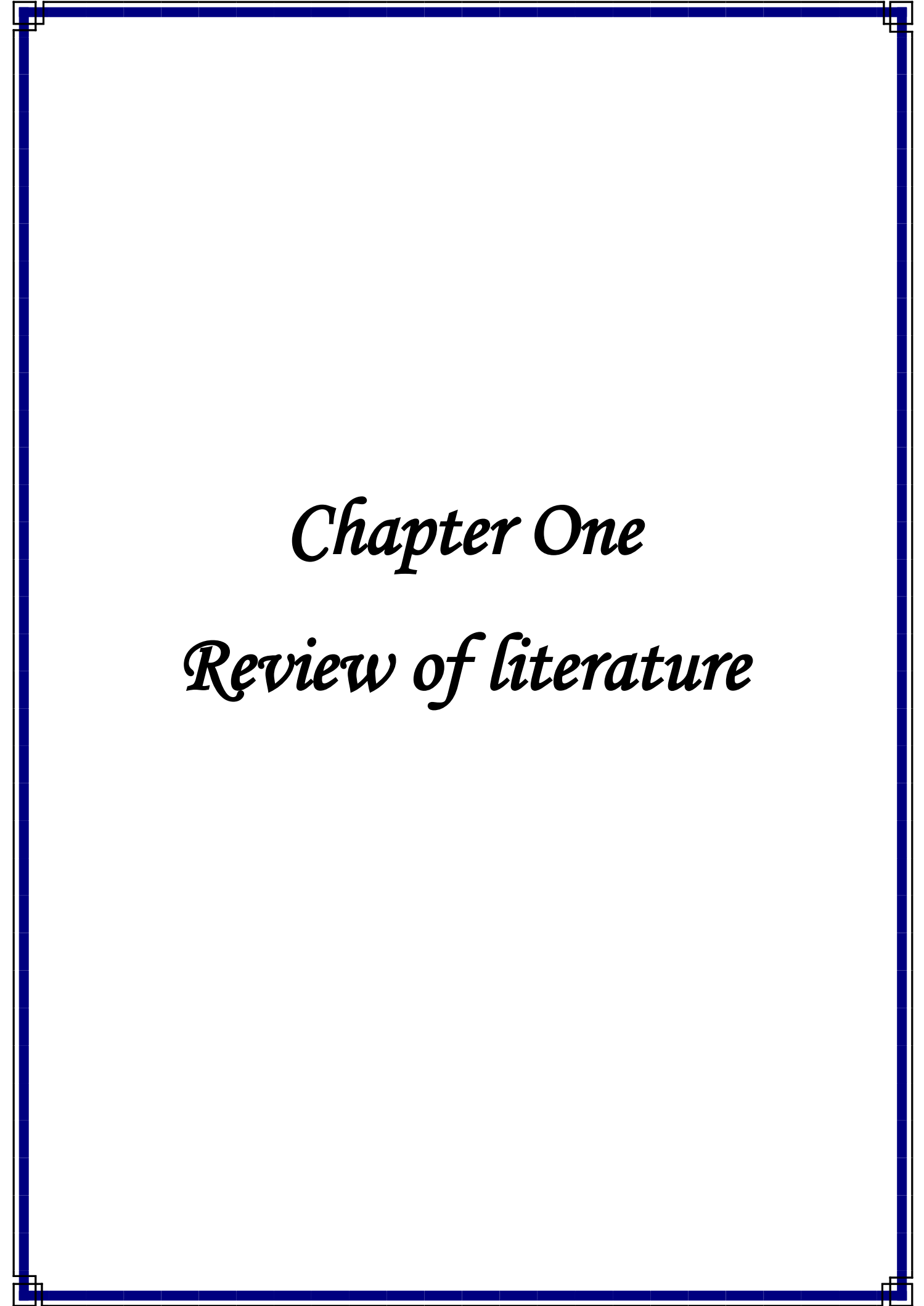
1- Questionnaires about Oral Health Related Quality of Life (OHRQoL).

2- Measuring the prevalence and severity of oral health which include:

A-Dental Caries.

B-Gingival Health condition.

C-Oral Cleanliness.

# Chapter One

# Review of literature

# Review of literature

## 1.1 Quality of life

Quality of life (QOL) is the general well-being of individuals and societies, outlining negative and positive features of life. It observes life satisfaction, including everything from physical health, family, education, employment, wealth, safety, security to freedom, religious beliefs and the environment (Barcaccia and Barbara, 2013). WHO defines Quality of Life as individuals perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns (WHO, 2012). It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment (WHO, 1993).

Quality of life is related to a number of elements such as self-esteem, personal well-being, functional ability, socioeconomic status, emotional state, social interaction, intellectual activity, self-care, family support, one's proper state of health, cultural values, ethics, and religiousness, lifestyle, satisfaction with one's job and / or daily activities, and environment in which one lives (Manuela *et al*., 2011). The use of quality of life indicators has become essential in dental research and clinical studies, especially those that evaluate prevention and seek therapeutic modalities to improve the individual's state of health (Feu *et al*., 2010). Thus, in populations with chronic diseases, various quality of life indices are frequently used in order to determine the impact of health care, especially when no cure exists (Manuela *et al*., 2011).

## 1.1.1 Oral health related quality of life

Oral Health Related Quality of Life (OHRQoL) defined as "a multidimensional construct that reflects (among other things) people's comfort when eating, sleeping, and engaging in social interaction; their self-esteem; and their satisfaction with respect to their oral health" (Rockville, 2000).OHRQoL is associated with: functional factors, psychological factors, social factors, and experience of pain or discomfort (Inglehart, 2002). Oral disease and conditions can "…undermine self-image and self-esteem, discourage normal social interaction, and cause other health problems and lead to chronic stress and depression as well as incur great financial cost, selection eating, swallowing and speaking, and with activities of daily living such as work, school, and family interactions" (Rozier, 2008).

Despite its relatively recent emergence over the past few decades, OHRQoL has important implications for the clinical practice of dentistry and dental research, it has an integral part of general health and well-being and is recognized by the WHO as an important segment of the global oral health program (WHO, 2003). International health campaigns utilize advertising and marketing strategies to enhance well-being by portraying positive oral health images that represent global health values. Efforts range from the elimination of dental pain to illuminations of aesthetic images using 'attractive' smiles with 'white' teeth (DHHS, 2000).

There are some oral conditions that negatively affect quality of life, such as tooth loss, decay, malocclusions, fluorosis, and the use of prosthetics (Manuela *et al.* , 2011). There is a direct relationship between social impact and apparent need for dental care by the patient. Thus, for the planning of dental services, self-perceived oral health condition is used as tool (Almeida and Gonçalves, 2004). Theoretical model for OHRQoL, which incorporates biological, social, psychological, and cultural factors is depicted in figure (1-1). This model, adapted from Wilson and Cleary (1995) is built on psychological

and social science theory and epidemiological findings (Barbosa and Gavião, 2008). This framework links health status or clinical variables (e.g., type/extent of defect), functional status (e.g., speech), oral-facial appearance, psychological status, OHRQoL, and overall QoL. The model recognizes the effects of environmental or contextual factors (e.g., sociocultural factors, education, family structure) and access to care on oral health perceptions and related QoL. Theoretically, OHRQoL is a function of various symptoms and experiences and represents the person's subjective perspective.

**Characteristics of the individuals**

Demographic, Psych ,Medical History

Biological/Genetic → OHRQoL → General QoL

**Symptoms**

Functonal well-being                        Oral health

**Environment**

Access/utilization – payer source, income

Caregiver characteristics

Education, Family Structure
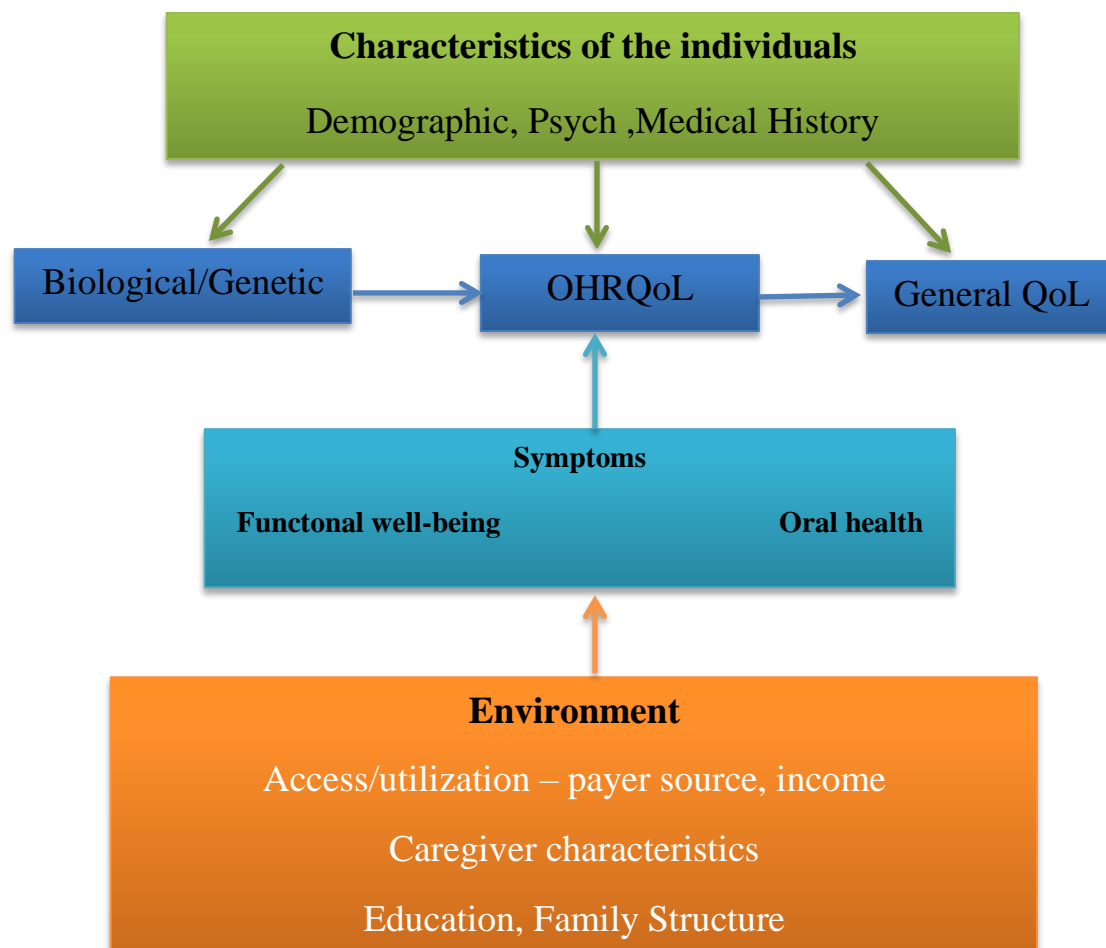
**Figure 1-1: Theoretical model for OHRQoL Applicable for children**

(Wilson and Cleary, 1995)

With increasing focus of health policy to address health promotion and disease prevention, HRQoL and OHRQoL have come to incorporate both

positive and negative perceptions of oral health and health outcomes (Broder and Wilson-Genderson, 2007). This model incorporates positive psychology which has far-reaching implications in health delivery, since human strengths such as coping and social connectedness have been linked to better immunosuppressance, health outcomes, and mortality (Lopez *et al*., 2003).

The face of the child, highlighted the importance of children's oral health to their overall health and well-being and the profound impact that oral health can have on children's QoL (Mouradian, 2001; Wilson-Genderson *et al*., 2007). Oral health can affect anyone's life; OHRQoL research has shown its utility in the study of diverse populations including patients with oral cancer (Ship, 2002), toddlers with early childhood caries (ECC) (Filstrup *et al*., 2003), or children with craniofacial anomalies (Broder, 2007). It is essential to evaluate the impact of dental caries on these children's quality of life, taking into account their own perceptions. Given that, at the age of eight years, children already consider health to be a set of somatic and emotional symptoms, they are able to report all aspects of their health, using the same criterion of attractive as with adults (Rebok *et al*., 2001), therefore, dental caries affects young children's growth and well-being (Gaur and Nayak, 2011).

OHRQoL is important because of its implications for oral health disparities and access to care. Unfortunately, socio-economic and racial/ethnic oral health disparities constitute a major social problem (Petersen *et al*., 2005). Health disparities can be explained, in part, by limited access to care. Locations within developing countries may have minimal dental health professionals, and rural areas often lack facilities offering dental services. In developed countries, treatment access is limited by high costs and sometimes by transportation difficulties (Sisson, 2007). OHRQoL can be useful in measuring the impact of oral health disparities on overall health and QoL, there is growing interest in assessing the impact of oral conditions on quality of life (Marques *et al*., 2006). It is suggested that the measurement of Oral Health-Related Quality of Life

(OHRQoL) should be an essential component of oral health surveys (Bianco *et al.*, 2010).

Common dimensions in OHRQoL instruments are given in Figure (1-2), along with specific examples of items associated with each dimension. While traditional factors like oral health symptoms are illustrated in this figure, factors such as social and emotional well-being incorporate positive health states such as happiness and confidence. Recent OHRQoL instruments, like the Child Oral Health Impact Profile (COHIP), attempt to identify the impact of treatment (*e.g.*, satisfaction) along with the "positive influence of oral health and the appearance of the face and teeth on overall health and well-being among patients and the non-treatment-seeking individuals" (Broder and Wilson-Genderson, 2007).



**Figure 1-2: Dimensions comprising oral health-related quality of life**

(Broder and Wilson-Genderson, 2007)

## 1.1.2 Determinants of Oral Healh-Related Quality of Life

**1.Oral health factor**

Several studies on diverse population comprising of patients with oral cancer, toddlers with early childhood caries (Sara *et al*., 2003), or children with craniofacial anomalies (Sischo and Broder , 2011), are proven to have an impact on QoL. Hence OHRQoL has an obvious role in clinical dentistry which translates into the clinicians claiming that they are not merely treating teeth and gums, but human beings. Malocclusions as example may have consequences that go beyond the functional or aesthetic limitations, causing a negative impact on the individual's quality of life, affecting the self-esteem (Onyeaso and Aderinokun, 2003), the well being (Kiyak, 2008) and the ability to socialize. It has been shown that malocclusions are related to the occurrence of bullying, and that the teasing from others due to the teeth appearance influences the self-reported need for orthodontic treatment (DiBiase and Sandler, 2001).

**2. Social factor:**

Efforts have been invested in developing instruments to measure OHRQoL (McGrath and Bedi, 2002). The subjective evaluation of OHRQoL is the result of an interaction between and among oral health conditions, social and contextual factors and the rest of the body (Atchison *et al*., 2006). Studies have shown positive correlation that considers effects of oral health on social life, including self-esteem, social interaction and job performance, etc. Social factors such as low mother's education and low household income were statistically associated with a higher negative impact on Child Oral Health-Related Quality of Life (COHRQoL) moreover, high family income can be a protective factor for COHRQoL (Piovesan *et al*., 2010 ; Abanto et al, 2011 ; Abanto *et al*., 2012).

**3. Environmental factor:**

Research based on epidemiological survey have examined the swing in OHRQoL (*e.g.*, tooth decay), identified human and environmental properties that affect OHRQoL (*e.g.*, income, education, etc.), and have aided in appraisal

and health planning for population-based policy plans. OHRQoL is important because of its relation with oral health discrepency and access to care. Studies show that children's oral-health status is often related to social dimensions, such as parental income and education (Santhosh *et al*., 2013). Furthermore, childhood circumstances, as indicated by socio-economic status (SES), family structure and parenting quality, have been found to influence psychological and psychosocial attributes in children (Sanders and Spencer, 2005). This is strengthened by findings from recent studies where parental socio-economic factors as well as home environment have been found to impact negatively on children's OHRQoL with children residing in orphanages presenting with poorer OHRQoL than those living with their parents (Paula *et al*., 2012). However, this is not always the case, with conflicting findings from a few studies where parental SES and home environment characteristics were found to be insignificant in predicting children's OHRQoL (Kumar *et al*., 2011).

The father's occupation was singularly significant in unadjusted analysis, with children of unemployed fathers being at greater risk of poor OHRQoL than those who had employed fathers (Piovesan *et al*., 2011). Some studies observed that the perception of OHRQoL deteriorated as the number of children in the family increased. And found that the impact of OHRQoL was poorer in children who had siblings than those who did not have any siblings (Paula *et al*., 2012; de Paula, 2013; Scarpelli *et al*., 2013).

Family economy and parental education were directly proportional to children's OHRQoL in all the studies that have found significant associations. Children of parents with high educational level and family income were more likely to have better OHRQoL. Low educational level may lead to reduced income and lower income is related to material deprivation (Piovesan *et al*., 2010). Children from poor families have limited access to health care and preventive interventions which might lead to a poor quality of life (Paula *et al*., 2012).

**4. Function factor:**

Discriminants of disease like the type, extent, diagnostic and treatment seeking group have also been utilized as determinants of OHRQoL. Research has revealed that ability to carry out routine masticatory function is hampered in individuals with low OHRQoL. For example, women with HIV (Mulligan *et al*., 2008) , individuals with dental anxiety/fear (Mehrstedt *et al*., 2007)  and individuals with periodontal disease (Ng SK; Leung, 2006)  have lower OHRQoL compared with the general population. Difficulty with chewing, resulting from the severity of malocclusion and dental caries in children, as well as the area of occlusal contact and near contact area in adolescents is the most likely mechanism by which poor oral health status affects dietary intake (Hollister and anema, 2004; Toro *et al*., 2006; Magalhaes *et al*., 2010). In this regard, de Morais Tureli found better masticatory performance (MP) among normal-weight children when compared with overweight/obese children and suggested that poor MP might be a factor for weight gain. Thus, it is reasonable to suggest that chewing could affect nutrition and the digestion and absorption of nutrients and directly affects an individual's QoL.OHRQoL appears to be enhanced when masticatory function is improved through dental treatment (Locker *et al*., 2001; de Morais Tureli *et al*., 2010; Nicolas *et al*., 2010).

**5. Treatment expectation factor:**

Studies on OHRQoL that used instrument such as the Child Oral Health Impact Profile (COHIP), tends to assess the impact of treatment (*e.g.*, satisfaction) on overall health and well-being among patients and the non-treatment seeking individuals, have shown positive correlation (Broder; Wilson-Genderson, 2007).

Assessment of OHRQoL allows for a shift from traditional medical/dental standards of assessment and treatment that focus on a person's social and emotional experience and physical functioning to aid in appropriate treatment goals and outcomes (Christie et al., 1993).

Thus, assessments of oral health can reflect both negative impact and enhancement of self and well-being. For example, people may seek oral healthcare for preventive (*e.g.*, cleanings) or elective (*e.g.*, orthodontics) treatment. Health psychologists have recognized that psychological assets such as optimism and resilience correlate with an individual's QoL, particularly how well she or he is able to cope with disease and poor health (Broder, 2001; Strauss, 2001; Lopez *et al.*, 2003).

## 1.2 Oral diseases and Quality of life:

### 1.2.1 Dental caries and Quality of life:

Dental decay is the most common childhood disease worldwide, and most of the decay remains untreated particularly in developing countries (Petersen *et al.*, 2005; Edelstein, 2006). Untreated caries could affect children's ability to eat and, subsequently impairs adequate intake of nutrients (Uauy *et al.*, 2008). Infection from dental caries could also have impact on children growth (Sheiham 2006 and Bhutta , 2006). Furthermore, severe dental caries can affect quality of life including ability to sleep (Ratnayake and Ekanayake, 2000). Oral health-related quality of life (OHRQoL) indicates the impact of oral health on the individual's daily functioning, well-being and quality of life (QoL). Oral diseases during childhood can have a negative impact on the life of a child (Barbosa and Gaviao, 2008). Impact of oral conditions on the life of children include oral pain, difficulty with chewing, anxiety or distress about their mouth and missed school days due to their cumulative dental caries experience as well as changes in emotional e.g being upset and worrying about being different (Foster- Page *et al.*, 2005).

Assessment of the impact of oral diseases on the everyday life of children is important because oral diseases may not only limit their current functioning and psychosocial wellbeing, but may also compromise their future development

and achievements as example difficulty with chewing, resulting from the severity of dental caries in children (Vania *et al*., 2011).

**1.2.1.1 Dental caries Definition**

Dental caries is a demineralization of the inorganic part of the tooth with the dissolution of the organic substance depending on interaction of several factors (Garg and Garg, 2013; Kliegman *et al*., 2015). It is the most prevalent chronic disease affecting persons of both gender in all races and every age group (Masthan, 2011; Marcdante and Kliegman, 2014). The disease may start early in life, if not treated it may progress to involve bulk tissues of the tooth and end up with tooth loss (Peterson *et al*., 2011; Koch and Poulsen, 2013).

**1.2.1.2 Etiology:**

The etiology and pathogenesis of caries of the teeth are well-known to be multifactorial involving many element including; dietary exposure (fermentable carbohydrate), oral microflora (acidogenic bacteria), and susceptible host (physiochemical composition of saliva, quality of tooth) with enough time (Warren et al, 2008; Wakai et al, 2010).

Tooth factor had a role concerning resistance or susceptibility to caries; this is achieved through its morphological and positional characteristic (Clure, 2012). Genetic factors may represent a correlation factors with dental caries as they may affect susceptibility in addition oral immune system and parameters of saliva (Peter, 2004; Ajami *et al*., 2015).

**1.2.1.3 Epidemiology:**

Dental caries is a universal disease affecting 95% of population of all age in addition it varies in its prevalence and severity from community to community (Ditmyer *et al*., 2011). The incidence of dental caries has decreased in developed countries in the past years but remains highly prevalent among low income children this decreasing due to advances in prevention particularly in the use of fluorides (Kliegman *et al*., 2007).

Iraq is one of the developing countries that suffer from increasing in caries prevalence and severity (Jabber, 2008; Hassan, 2010; AL-Ghalabi, 2011). Many studies found that caries prevalence as well as caries severity was increased in developing country while the inverse was seen in industrialized country, this was attributed to the implementation of preventive measure such water fluoridation, introduction of fluoridated tooth paste, mouth rinses, changes in dietary habit and dental education (Brown *et al*., 2000).

The studies found different caries prevalence expressed by proportion of caries free in various areas of Iraq, as in table 1-1, and in various areas of the world as in table 1-2 , which demonstrate some of these studies.

**Table 1.1: Dental Caries Prevalence in some Iraqi Studies**

| Author | Year of publication | Country | Age in years | Findings |
|---|---|---|---|---|
| **Mubarak** | 2002 | Bahgdad | 8 | Caries prevalence=97.16% |
| **Diab** | 2003 | Middle region | 10 | Caries prevalence =74.2% |
| **Baram** | 2007 | Sulaimania | 12 | Caries prevalence =88.1% |
| **Al-Galebi** | 2011 | Thiqar | 9-10 | Caries prevalence =91.04% |
| **Al-Sadam** | 2013 | Kerbala | 12 | Caries prevalence =69.5% |
| **AlHassnawy** | 2013 | Dewanyiah | 12 | Caries prevalence =70.65% |
| **Shubber** | 2014 | Al-Najaf | 4-5 | Caries prevalence =84.7% |
| **Suhail** | 2014 | Al-Ramadi | 4-5 | Caries prevalence =67.12% |
| **Al-Awadi** | 2016 | Al-Diwaniyah | 9 | Caries prevalence =85% |
| **Al-Atiyah** | 2017 | Baghdad | 5 | Caries prevalence = 75.2% |
| **Al-Waheb** | 2018 | Bahgdad | 9-12 | Caries prevalence =76.3% |

**Table1.2: Review of some epidemiological studies concerning prevalence of dental caries in different countries**

| Author | Year of publication | Country | Age in years | Findings |
|--------|--------------------|---------|--------------|----------|
| Peterson et al | 2001 | Thailand | 12 | Caries prevalence =70% |
| Sheiham | 2004 | Thailand | 11-12 | Caries prevalence=56.9% |
| Sudha et al | 2005 | India | 8-10 | Caries prevalence =17.5% |
| Maria | 2008 | Brazil | 12 | Caries prevalence = 45.2% |
| Saldunaite et al | 2009 | Lithuania | 7-12 | Caries prevalence =70.6% |
| Dhar,Bhatnagar | 2009 | India | 6-10 | Caries prevalence =63.2% |
| Gerais | 2014 | Brazil | 8-10 | Caries prevalence =23.1% |
| Sahito et al | 2014 | Pakistan | 8-12 | Caries prevalence = 90% |
| Faraz | 2015 | Saudi | 10-12 | Caries prevalence =78% |
| Hansa | 2015 | India | 12 | Cariesprevalence =43.34% |
| Imran | 2015 | Iran | 6-9 | Caries prevalence = 73% |
| Ballouk and Dashash | 2017 | Syria | 8-12 | Caries prevalence = 79.1% |
| Huda | 2018 | Libya | 8-12 | Caries prevalence = 55.9% |
| Aparna et al | 2018 | India | 8-10 | Caries prevalence = 71.6% |

## 1.2.1.4 Factors affecting caries prevalence:

### 1.2.1.4.1 Age:

Dental caries starts early in life, shortly after tooth eruption and increase with age advancing so the world health organization recommended special age groups (index age) these are 5 years for primary teeth and 12, 15, 35- 44 and 65-74 years for permanent teeth (WHO, 2013). The carious attack is spread out more throughout life and caries has to be viewed as a life time disease, where caries experience is severe, the disease start early and it is common in the young children (Fejerskov and Kidd, 2008; Saldunaite *et al.*, 2009). Many studies reported that dental caries increase with age (Jabber, 2008; Badar *et al.*, 2010; Shubber, 2014; Al-Abbasi, 2015). This may be related to accumulative and

irreversible nature of dental caries (Rao et al., 2000),while other studies showed decreased dental caries with age (Al- Khazaali, 2004; Mahesh *et al*., 2005).

## 1.2.1.4.2 Gender:

A controversy was seen by different studies concerning the relation between gender and dental caries. Some studies showed that boys were higher than girls in caries experience (Sarvanan *et al*., 2005; Al- Obaidi, 2008; Hamza et al, 2010; Khraisat and Al-Qdah, 2012; Chaloob and Qasim, 2013; Suhail, 2014; Al-Awadi, 2016; Al-Atiyah, 2017; Al-Waheb, 2018). Other studies showed that girls were higher than boys in caries experience (Baram, 2007; Al-Ghalabi, 2011; Al-Hassanwy, 2013; ALMughamis, 2014), this may be related to earlier tooth eruption among girls as the risk for dental caries is a function of a time a tooth is exposed to the oral environment (McDonald, 2004). On the other hand, many studies showed no differences between two genders (Al-Khaza,ali, 2004; Hassan and Al-Taai, 2006; Mohammed, 2008).

## 1.2.1.4.3 Oral hygiene:

It can be defined as regular different activities and methods to keep mouth and teeth clean in order to prevent dental and periodontal problems (Safaverdi, 2009). Many studies reported the relationship between the oral hygiene and dental caries and most of them revealed that people with good oral hygiene had a fewer caries occurance than those with poor oral hygiene (Petersen *et al*., 2003; Rwenyonyi *et al*., 2011). John et al. (2017) in his study found that poor oral hygiene increase the prevalence of dental caries.

## 1.2.1.4.4 Geographic location:

The caries experience was varied from one geographical location to another, these variations in prevalence and severity of dental caries between urban and rural area was attributed to the interaction of several factors such as water and fluoride, soil elements, dietary habits, culture, tradition, occupation, educational and socioeconomic levels, genetic and others (Wigen and Wang, 2010). Several studies have shown that the prevalence of dental caries was more

in people resident in urban areas than those residents in rural area (Al-Sadam, 2013), while other studies found that caries experience was higher in the rural area than in urban area (Al-Obaidi, 2008; Al-Hassnawy, 2013; AL-Mughamis, 2014). In 2013, Gerardo et al., suggested a marked association between caries experience (and the treatment of carious lesions) and two markers of a higher degree of urbanization which it socioeconomic status and geographical factors .

**1.2.1.4.5 Fluoride:**

Fluoride plays important role in prevention and declination of dental caries by its effect during development and maturation of the teeth which made them more resistance to caries attack. The exposure to fluride both pre and post-eruptive maximize the caries preventive effects (Singh *et al*., 2003).

In Iraq, several studies were conducted to detect the concentration of fluoride in drinking water. Hilme et al (1971) recorded that the concentration of fluoride was 0.9 ppm in Baghdad drinking water, followed by a study conducted by Nazhat (1973) who illustrated that 0.2 ppm was the value of fluoride in Baghdad, while, Al-Alousi and Khadhim (1983) revealed that fluoride concentration ranged (0.1-0.13) ppm, additionally Al-Azawi (2000) revealed that the concentration of fluoride in drinking water in different governorates in Iraq is ranging from (0.12-0.22) ppm, this level is considered very low, that may explain a high prevalence of dental caries in Iraq.

**1.2.1.4.6 Socioeconomic status (SES):**

The relation between socioeconomic status of individuals and dental caries have been well established for a long time (Safaverdi, 2009). A study reported that the following social factors (socioeconomic level, education, income and occupation) affect the prevalence, severity and type of treatment of the dental caries (Rathod and Nigshen, 2012). Socioeconomic and behavioral factors may act as caries-promoting factors (Pine *et al*., 2004). Some studies showed that there is no significant correlation between SES and dental caries (Al-Azawi, 2000; Casanova-Rosado et al., 2005; Al-Hassnawy, 2013). While

other studies show increase dental caries prevalence among low socioeconomic groups (Gillcrist *et al*., 2001; Mohammed, 2008; Hamza et al., 2010; Shubber, 2014). Other studies showed increased caries prevalence among high socioeconomic groups (Denise *et al*., 2004; Warren *et al*, 2008; Popoola *et al*., 2013).

**1.2.1.4.8 Diet and Nutrition:**

They are important factors in the promotion and maintenance of good oral health throughout the entire life course (WHO, 2003). They can affect tooth either locally (post eruption) or systemically (pre eruption), the post eruption effect is seen to be more important than pre eruption, the post eruptive local effect of diet especially sugar consumption without doubt lead to increase in caries prevalence (Murray, 2003; Damle, 2009). While the deficiency of nutrients impaired immune response and intensify the severity of oral infection including dental caries (Moynihan and Petersen, 2004).

## 1.2.2 Gingival Health

**1.2.2.1 Gingivitis and Quality of life:**

Gingivitis is the most prevalent form of periodontal disease. It begins in early childhood, increases in prevalence and severity into the early teenage years, and then subsides slightly and levels off until approximately 20 years of age (Califano, 2003). The severity of the disease is directly related to the accumulation of biofilm due to poor oral hygiene. The presence of the biofilm for a period of 10 to 21 days is sufficient to establish a condition of gingival inflammation, but it is reversible if methods for controlling the biofilm are established (van der Velden, 2006). It is essential to have a better understanding of the patient's perception of the impact of gingival disease on their lives. The plan of gingival care it is also important, which addresses patient's needs and key concerns. Finally , it is crucial to evaluate the outcomes of gingival treatments from the patients perspective and for drawing attention to the general significance of gingival care (McGrath and Bedi, 1999).

**1.2.2.2 Gingivitis Definition:**

Gingivitis is defined as " inflammatory process of the marginal gingival tissues with no observable loss of bone or connective tissue attachment, caused by local irritation of substance derived from microbial plaque accumulation on the tooth surface" (Damle, 2009). It is a reversible condition and it's the most common kind of periodontal disease that can be seen in children which may begin early in life and may increase in severity with advancing age (WHO, 1997; Okada *et al*., 2004; Rao, 2008). Gingivitis if not treated may progress later to periodontitis and if this progress, it may end with loss of teeth (Chestnutt and Gibson, 2007; Idrees *et al*., 2014).

**1.2.2.3 Prevalence of gingivitis**

Periodontal disease is one of the most wide spread of mankind, no region of the world being free from it (WHO, 1997; Dumitrescu, 2010).  Plaque-induced gingivitis is the most common form of periodontal disease, which is considered to be the second most common oral disease after dental caries, affecting more than 75% of the population worldwide (Petersen, 2003). Epidemiological studies revealed that plaque-induced gingivitis is prevalent among all ages of dentate individuals (Armitage *et al*., 2000). The prevalence of gingivitis varies in different studies and different countries as a result of variations in study populations, age of participants, and the procedure of defining and diagnosing this type of disease (Ababneh *et al*., 2012). Investigations show that marginal gingivitis starts in early childhood and its incidence and degree of severity increases in adolescence, whereas in the next decade, the incidence of gingivitis spreads insignificantly. Considerable differences in the occurrence of periodontal disease are found by urbanization, and the socioenvironmental factors are highly responsible for distinct profiles of periodontal disease observed in populations living in certain geographic regions or locations. In study done in USA. Population, they found that 10% to 20%

difference in periodontal disease prevalence and severity between people of higher and lower socioeconomic status (Hugoson and Norderyd, 2008).

Some studies found different prevalence of gingivitis in different areas of Iraq, as in table 1-3, and in different areas of the world as in table 1-4.

**Table1.3: Gingivitis prevalence in some Iraqi studies**

| Author | Year of publication | Country | Age in year | Findings |
|---|---|---|---|---|
| **Al-Galebi** | 2011 | Bahgdad | 9-10 | Prevalence of gingivitis =99.6% |
| **Al-Sadam** | 2013 | Kerbala | 12 | Prevalence of gingivitis=100% |
| **Shubber** | 2014 | Al-Najaf | 4-5 | Prevalence of gingivitis=65.3% |
| **Al-Abbasi** | 2015 | Al-Basrah | 4-5 | Prevalence of gingivitis=100% |
| **Al-Awadi** | 2016 | Al-Diwaniyah | 9 | Prevalence of gingivitis=100% |
| **Al-Waheb** | 2018 | Bahgdad | 5-12 | Prevalence of gingivitis=35.6% |

**Table 1.4: Several epidemiological studies concerning prevalence of gingivitis in different countries**

| Author | Year of publication | Country | Age in year | Findings |
|---|---|---|---|---|
| **Pourhashemi et al** | 2007 | Iran | 6-10 | Gingivitis prevalence= 95.8% |
| **Azodo and Agbor** | 2012 | France | 12 -13 | Prevalence of gingivitis=26.7% |
| **Awadhesh** | 2014 | India | 8-10 | Gingivitis prevalence= 77.52% |
| **Rodan et al** | 2015 | jordan | 6-11 | Prevalence of gingivitis=70.2% |
| **Adhikari et al** | 2015 | Chine | 8-10 | Prevalenceofgingivitis=56.06% |
| **Ballouk andDashash** | 2017 | Syria | 8-10 | Prevalence ofgingivitis=97.93% |
| **Joshi** | 2018 | India | 4-8 | Prevalence ofgingivitis=51.2% |

## 1.2.2.4 Factors affecting prevalence of gingivitis

### 1.2.2.4.1 Age:

Aging associated with an increase incidence of periodontal disease (Marya, 2011). Many studies were conducted for assessing the relation between age and gingival inflammation and most of them showed that a direct

correlation between them (Mohammed, 2008; Khalifa *et al*., 2012; Al-Hadad *et al*., 2013; Shubber, 2014). While other studies revealed that no statistical significant differences in the prevalence of gingivitis among different group age (Chaloob and Qasim, 2013). Though periodontal disease is often associated with physical maturity, onset may be early in susceptible individuals at or shortly after puberty (Soben, 2004).

**1.2.2.4.2 Gender:**

Regarding the relationship between gingivitis and gender, there are a controversy. Most epidemiological studies indicated that the prevalence and severity of gingivitis is more common among boys than girls within different age groups (Al-Obaidi, 2008; Hiremath *et al*., 2012; Shubber, 2014). The reason for gender differences is not clear, but it is thought to be related to poor oral hygiene level of boys than girls (Marya, 2011). Other studies conducted that girls had a higher prevalence and severity of gingivitis than boys (AL-Obaidi and Jabber, 2008).

**1.2.2.4.3 Oral hygiene:**

Oral hygein is the most important factor in prevalence and intensity of gingivitis, also in reduction of oral disease prevalence (Rao, 2008). The improvement of the oral hygiene in the recent years is one of the obvious reason for the decline in the prevalence and severity of oral diseases in some countries (Szoke and Petersen, 2000; Chestnutt and Gison, 2007). A highly significant relation between oral hygiene and periodontal condition founded by many epidemiological studies (Diab, 2003; Chestnutt and Gison, 2007; Idris, 2010; Al- Hadad *et al*., 2013; Shubber, 2014).

**1.2.2.4.4 Geographical location:**

Periodontal disease varies from one place to another. Many studies correlated between geographical location and periodontal disease and most of them revealed that gingivitis is most common in people living in rural areas than those living in urban areas (Al-Azawi, 2000; Ali, 2001; Al-Obaidi, 2008;

Al- Hassnawy, 2013; AL-Mughamis, 2014). This is due to better use of oral hygiene measures in urban area in comparison to the rural area.

**1.2.2.4.5 Race:**

Higher prevalence of gingivitis was reported in black children compared to white and this may be attributed not only to the better oral hygiene among white people, but also to socioeconomic status as well as better access to dental care   (Bonfim *et al*., 2013). While other study reported that lighter-skinned black children had a lower probability of having severe gingivitis compared with white children (Chiapinotto *et al*., 2013).

**1.2.2.4.6 Diet and nutrition:**

The role of nutritional factors and diet in the development of periodontal diseases remain unclear. Although a nutritionally adequate diet is important to maintain host resistance and maintain the integrity of the periodontal tissues but, many early studies failed to find association between nutritional status and periodontal disease (Moynihan, 2005).

Many Iraqi studies were being conducted and recorded a direct relationship between periodontal disease and malnutrition (Radhi, 2009; Hassan, 2010). While other researchers reported no significant differences between periodontal disease and malnutrition (Jabber, 2008; Al-Ghalebi, 2011).

## 1.2.3 Oral hygiene:

**1.2.3.1 Dental plaque:**

It can be defined as the soft non mineralized bacterial deposit which form and adhere firmly to the tooth, can be recognized clinically when it reaches certain thickness as a whitish or a yellowish layer along gingival margin (Mitchel and Mitchel, 2005; Dumitrescu, 2010; Marya, 2011). The formation of dental plaque may vary from individual to other and from surface to other and this depend on many factors like: diet, age, oral hygiene, systemic disease as well as salivary gland secretion (Haake, 2002; Merchant *et al*., 2002; Okada *et*

*al*., 2004). The main cause of periodontal diseases is bacterial plaque, a sticky, microbial film that constantly forms on the teeth (AAP, 2014).

A clear correlation between the presence of plaque and gingivitis has been found (Kinane *et al*., 2005). Bacterial plaque is generally established as the predominant etiological factor in periodontal disease and is also regarded essential for the initiation of dental caries (Anthony *et al*., 2001). Many researchers found a significant positive association between plaque index and severity of gingival inflammation (Baram, 2007; Al-Obaidi, 2008; Radhi, 2009). Good oral hygiene could reduce both the prevalence and severity of gingivitis (Chestnutt and Gison, 2007).

Many studies found that girls had statistically lower plaque index than boys (Khraisat and Al-Qdah, 2012; Chaloob and Qasim, 2013; Shubber, 2014). While other studies found no significant differences in plaque index between girls and boys (Al-Ghalebi, 2011). A study of Al-Azawi (2000) reported that the rural students had amount of dental plaque more than urban students due to life style, type of food and level of education. Also Al-Hadad et al (2013) and AL-Mughamis (2014) supported this finding.

**1.2.3.2 Dental calculus:**

Calculus is an adherent calcified mass deposits on a natural tooth surfaces that result from mineralization area of dental plaque (Carranza, 2002; Chestnutt and Gison, 2007; Marya, 2011). The surface fixture of calculus could provide further retention of microorganisms and promote new plaque accumulation, thus playing an active role in the inflammatory process in gingival and periodontal tissues (Louis *et al*., 2004; Dumitrescu, 2010). Calculus is mineralized dental plaque results in an adherent calcified mass deposits which forms both above and below the gum line (Chestnutt and Gison, 2007; Dumitrescu, 2010; Marya, 2011).

Calculus is classified into two categories: supragingival and subgingival calculus. While the substrate for subgingival calculus is limited to root surfaces,

supragingival calculus can occur on enamel surfaces, dentin or cementum, depending upon exposure of the latter two surfaces through recession or attachment loss. Calculus does not exert an irritant effect on the gingival tissues. In fact, it has been speculated that calculus may exert adetrimental effect on the soft tissue owing to its rough surface. However, it has clearly been established that surface roughness alone does not initiate gingivitis. The main importance of calculus in periodontal disease seems to be its role as a plaque retentive surface (Dumitrescu, 2010). Concerning age, calculus index was found to be increased with age (Al-Azawi, 2000; Merchant, 2002); on the other hand, studies showed that calculus was more in males than females (Abdul Razzaq, 2007; Al-Obaidi, 2008; Al-Ani, 2013; Al- Hassnawy, 2013) that was attributed to better oral hygiene in females compared to males. Concerning residency, studies found that calculus was higher in rural areas than urban areas (Al-Azawi, 2000; Al-Obaidi, 2008). Several epidemiological studies were conducted in many countries to determine calculus evaluation found that the prevalence of calculus increase as age increased (Lisa *et al*., 2010; Leroy and Declerck, 2013).

# Chapter Two

# Subjects, Materials and Methods

# Subjects, Materials and Methods

## 2.1 The Sample

**Study design:** A cross-sectional random sample.

**Study period:** The data collection extended between the 1st of December 2019 to 22th March 2019.

**Study population:** Primary school children age 8-10 year living in AL-Najaf governorate, Iraq.

**Excluding**: 96 students were excluded from the whole sample because incomplete information.

**Excluding criteria:**

1.Children with systemic diseases

2.Uncooperative children.

3. Children with psychological abnormalities.

## 2.2 Study population

The study received ethical approval from the Research Ethical Approval Committee of the College of Dentistry, University of Baghdad (Appendix I). Permission was obtained from the General Directorate of Education of AL-Najaf governorate to conduct the study without obstacles (Appendix II). The aims of this study were explained to schools authorities to obtain cooperation as much as possible and that was done by a formal document. Also prepared papers of questionnaire were given to children with help of their parents to have their full cooperation in fulfilling the paper of questionnaire (Appendix III). It was conducted among primary school students aged 8-10 years old. The sample from primary schools was selected randomly as they were distributed in different geographical areas in AL-Najaf governorate (centre). The age was recorded according to the criteria of World Health Organization (1997), according to the last birth day. The number of primary school children aged 8-

10 years old living in AL-Najaf city was 63,068. The representative sample was calculated to be 1200 school children (Figure 2. 1) according to the equation n=ZP2(1-P)/d2 (Daniel, 1999) and divided into, 600 girls and 600 boys.

**Al-Najaf City (Center)**

**257 primary schools**

**66730 girls**          **66682 boys**

**The total selected sample 1200**

**18 primary school**

**9 Girl's schools**                    **9 Boy's schools**

**72 child from each school**

**24 child 8 years ,24 child 9 years ,24 child 10 years**

**600 Boys**                                           **600 Girls**

8 years
400

9 years
400

10 years
400
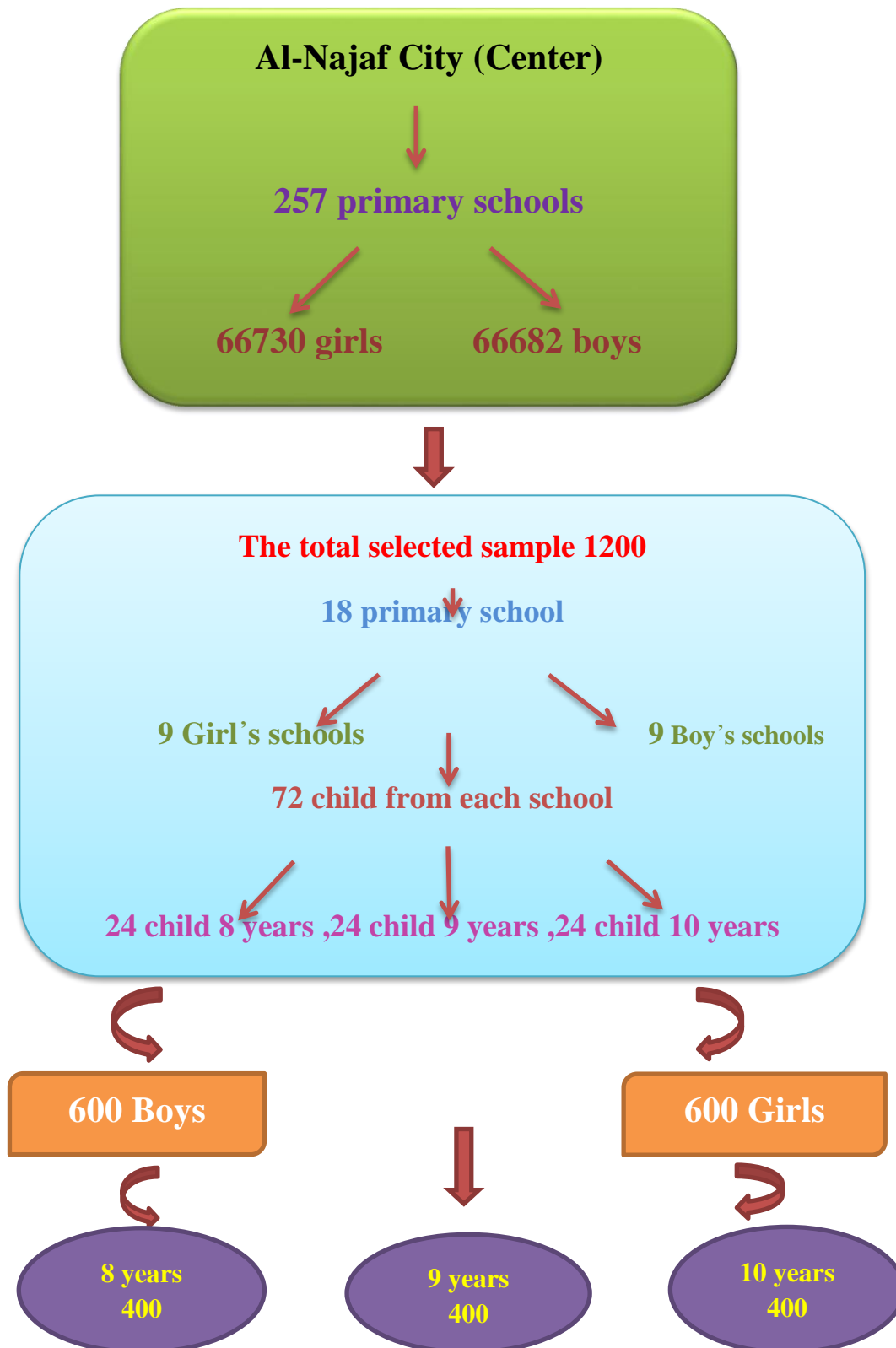
**Figure (2.1): Distribution of the sample**

## 2.3 Materials and Supplies:

Several instruments were used in this study which are:

1- Disposable gloves and mask.

2- Hot air oven.

3- Kidney dishes.

4- Plane dental mouth mirrors (No. 4).

5- Sterilizing solution.

6- Twizers.

7- WHO Probes (Community periodontal probe CPI) with a ball end.

## 2.4 Socioeconomic status assessment

Prior to oral examinations, the following information was taken from the parents of the children by giving them the questionnaires and oral health related quality of life questionnaires (OHRQoL) with the help of the primary school managers, the information include:

a. Birthday

b. level of father and mother education

c. The age of the mother

d. If the mother and/or the father alive

e. family size

f. Rank number of the child

g. Maternal employment

h. Housing

### 2.4.1 Determination of the socioeconomic status

Parent's education was used as one indicator to determine SES; it was divided in this study into 4 levels according to the WHO with modification (1997).

- Score 1: illiterate (neither read nor writes).
- Score 2: who finished primary schools.

- Score 3: who finished secondary and high schools.
- Score 4: who finished college and beyond college organization (Diploma, MSc, Ph.D.).

## 2.4.2 Crowding index (Cr.I)

It is another indicator which was used for S.E.S determination and it is defined as the number of usual residents in a dwelling divided by the number of rooms in the dwelling. This index does not take into account the type of rooms in the dwelling, nor does it make adjustment for the age and sex of the usual residents (American crowding index, United States Census Bureau, 2000).

The U.S Census Bureau classifies dwelling into:

- o Crowded (<2)
- o Moderate crowded (2-4)
- o Severely crowded (>4)

## 2.4.3 Occupation:

**1.The mother**

**According to the job of the mother the criteria was divided into two categories:**

• Score 1: house keeper.

• Score 2: worker.

**2. The father**

**the job of the father the criteria was divided into two categories:**

 • Score 1: Government official.

 • Score 2: Earner.

## 2.4.4 Age and Mortality:

**Concerning the mother and/or the father alive the criteria was divided into four categories:**

• Score 1: mother and father alive.

• Score 2: mother alive and father dead.

• Score 3: mother dead and father alive.

• Score 4: mother and father dead.

## 2.4.5 Income:

**Concerning family income it was divided in this study into 4 levels:**

• Score 1: weak income.

• Score 2: moderate income.

• Score 3: good income.

• Score 4: very good income.

## 2.4.6 Social and family variables:

**1. Concerning the family variables this includes three parts:**

**Part 1**: (If the child's family live with his relatives in the same house) the criteria were divided into two categories:

• Score 1: yes.

• Score 2: no.

**Part 2**: The total members live in the house (whether child's family live with relatives house or not).

**Part 3**: The total members of the child family only which include (the father, the mother, the child, brothers and sisters).

**2. Concerning Rank.of the child.**

According to percentile the scores divided into

• Score 1: first, second, third one.

• Score 2: fourth, fifth, sixth one.

• Score 3: seven or above.

**3. Housing: includes three parts:**

**Part 1**: Homeownership.

• Score 1: who lived in property house.

• Score 2: who lived in rented house.

**Part 2: The number of rooms in the house.**

• Score 1: one or two rooms.

• Score 2: three, four or five rooms.

• Score 3: six or above.

**Part 3: House structure.**

• Score 1: concrete

• Score 2: brick (new model).

• Score3: clay (old model).

And by using the above variables the score of (SES) was evaluated by modification of (kuppuswamy's index, 1976).

According to the quartile categorization, the sample was divided to three quarters 25%, 50% and 75%, representative low, average or middle and high socioeconomic status respectively. The cut of value for the composite index used by this research was as the following:

- Score 1 for children with low socioeconomic status (13-18).
- Score 2 for children with middle socioeconomic status (19).
- Score 3 for children with high socioeconomic status (20-25).

# 2.5 OHRQoL Quesionnaires

They were divided in this study into 4 groupsaccording to Jokovic in 2004:

**A- Questions about the mouth and teeth: Is there any**

**1.** Pain in your teeth or mouth in the past 4 weeks?

**2.** Sore spots in your mouth in the past 4 weeks?

3. Pain in your teeth when you drink cold drinks or eat foods in the past 4 weeks?

**4.** Food stuck in your teeth in the past 4 weeks?

**5.** Bad breath in the past 4 weeks?

**6.** Needed longer time than others to eat your meal because of your teeth or mouth?

**7.** Had a hard time biting or chewing food like apples, corn on the cob or steak because of your teeth or mouth?

 **8.** Had trouble eating foods you would like to eat because of your teeth or mouth?

 **9.** Had trouble saying some words because of your teeth or mouth?

 **10.** Had a problem sleeping at night because of your teeth or mouth?

## B- Questions about the feelings: Have you ..... ?

**11.**Been upset because of your teeth or mouth?

**12.** Felt frustrated because of your teeth or mouth?

**13**. Been shy because of your teeth or mouth?

**14.** Been concerned what other people think about your teeth or mouth?

**15.** Worried that you are not as good-looking as others because of your teeth or mouth?

## C- Questions about the school

**16.**Missed school because of your teeth or mouth?

**17.**Had a hard time paying attention in school because of your teeth or mouth?

**18.** Not wanted to speak or read out loud in class because of your teeth or mouth?

## D- Questions about being with other people

**19.** Tried not to smile or laugh when with other children because of your teeth or mouth?

**20.** Not wanted to talk to other children because of your teeth or mouth?

**21.** Not wanted to be with other children because of your teeth or mouth?

**22.** Stayed away from playing  with children because of your teeth or mouth?

**23.** Other children teased you or called you names because of your teeth or mouth?

**24.** Other children asked you questions about your teeth or mouth?

# 2.6 Oral examination

Examination and dental caries assessment were performed according to the basic methods of the oral health surveys of the World Health Organization (2013) (Appendix IV). Children were examined in a suitable room in their school. Each child was seated in a straight chair with a tall back on which the student's head can be rested. Day light was used for illumination.

## 2.6.1 Oral cleanliness

### 2.6.1.1 Dental plaque

Oral cleanliness was assessed at first by application of plaque index (Silness and Loe, 1964). The examination started with buccal surface followed by mesial, lingual and distal surfaces of the teeth examined, and then the gingival status of the teeth was recorded. Six index teeth were chosen to represent the rest of the dentition, these teeth are for the upper teeth upper permannent first molar or upper deciduous second molar and upper permanent lateral or upper deciduous lateral in the right side and upper permanent first molar or upper deciduous second molar in the left side, while for the lower teeth lower permanent first molar or lower deciduous second molar and lower permanent lateral or lower deciduous lateral in the left side and lower permanent first molar or lower deciduous second molar in the right side. If the tooth was partially erupted or badly carious, it was excluded from recording. The criteria for plaque index (Silness and Loe, 1964) are:

**Score**          **Criteria**

0              No plaque

1              A film of plaque adhering to the free gingival margin and adjacent
              area of the tooth. The plaque may be recognized only by running a
              probe across the tooth surface.

2              Moderate accumulation of soft matter within
              gingival pocket on the gingival margin and/or
              adjacent tooth surface which can be seen with naked

eye.

3          Abundance of soft deposits within the gingival pocket

         and/or the gingival margin and adjacent tooth surface.

**2.6.1.2 Dental calculus**:

the four surfaces of Ramfjord teeth were examined and scored following the criteria of calculus component of the periodontal Index (Ramfjord, 1959). The criteria for calculus index

**Scores**     **Criteria**

0          No calculus.

1          Supragingival calculus extending only slightly below the free

         gingival margin not more than 1mm).

2          Moderate amount of Supra and subgingival calculus, or subgingival

         calculus alone.

3          Abundance of supra and subgingival calculus.

## 2.6.2 Gingival condition

According to WHO (2013), the Community Periodontal Index (CPI) modified is performed by assessment of gingival health through gingival examination of all teeth present in the mouth by inserting the tip of the WHO CPI probe carefully between the gingiva and the tooth and the absence or presence of bleeding response was assessed. The gingival health status of the individuals was reported by giving the number and percentage of individuals who had no bleeding on probing (score 0) and bleeding on probing (score 1) The criteria for gingival index (WHO, 2013) are:

**Scores**     **Criteria**

0          Normal gingiva

1          bleeding on probing.

## 2.6.3 Dental caries

### 1. Dental caries

Clinical examination were performed using plane mouth dental mirrors and CPI probe. Systematic approach of examination for dental caries were performed starting from the upper right side to the upper left side in orderly manner, then to the lower teeth in the same manner. Examinations included all surfaces of teeth. A tooth was considered to be present when any part of the tooth was visible. An alphabetical coding system was applied for primary, and numbers for the permnant teeth (WHO, 2013).

**Criteria and codes of dental caries:**

**0 (A). Sound tooth:** recorded so, when there was no evidence of treated or untreated clinical caries i.e. the stage of caries that precede cavitation. In addition, teeth with following defects in the absence of other positive criteria were recorded as sound tooth:

1 – White or chalky spots.

2 – Discolored or rough spots.

3 – Stained pits or fissures in the enamel that catch the explorer but do not have a detectably softened floor, undermined enamel, or softening of the walls.

4 – Dark, shiny, hard, pitted areas of enamel in the tooth showing signs of moderate to severe enamel fluorosis;and

5 – Lesion that, on the basis of their distribution or history, or on examination, appear to be due to abrasion.

All questionable lesions were recorded as sound.

**1 (B). Decayed tooth:** caries were recorded as present when a lesion in pit, fissure or on a smooth tooth surface had detectable softened floor, undermined enamel or softened wall. A tooth with a temporary filling was also included in this category, for interproximal caries, it was recorded as decade when the explorer had entered the lesion. Any doubt existed; caries lesion was not record as present.

**2 (C). Filled tooth with decay:** a tooth was recorded so, when it contained one or more permanent restorations and one or more areas that are decayed.

**3 (D). Filled tooth with no decay:** recorded so, when one or more permanent restoration was present and no areas of tooth were affected weather by primary or secondary (recurrent) caries. A tooth with a chrome steel crown was recorded in this category.

**4 (E). Tooth missing due to caries:** this score was used for permanent or primary teeth that have been extracted because of caries. For missing primary tooth, it was recorded so, when normal exfoliation would not be a sufficient explanation for its absence. In children Differentiation between unerupted(code 8) and extracted tooth(codes 4 or 5) was made by the evaluation of the status of contra lateral tooth, the appearance of the alveolar ridge in the area of the tooth space in question and the caries status of other teeth in the mouth. Code 4 should not be used for teeth demmed to be missing for any other reason other than caries.

**5 (–) Permanent tooth missing due to any other reason:** this code was used for permanent teeth deemed to be absent congenitally, or extracted for orthodontic reasons or because of periodontal disease, trauma, etc.

**6 (F). Fissure Sealant:** used for teeth in which a fissure sealant has been placed on the occlusal surface.

**8 (–) Unerupted tooth:** this classification is restricted to permanent teeth and used only for a tooth space with unerupted permanent tooth but no primary tooth.Teeth scored as unerupted are excluded from all calculation concerning dental caries. This category does not include congenitally missing teeth ,or teeth lost as a result of truma ect. For differential diagnosis between missing and unerupted teeth.

**9 (–) Not recorded:** this code used for an erupted permanent teeth that cannot be examined for any reason such as orthodontic bands, sever hypoplasia.

**2. Dental caries indices: tooth (DMFT, dmft) and surface levels (DMFS, dmfs)**

Carious lesions were registered for all surfaces of each tooth included. Missing teeth were recorded as five missing surfaces for any posterior tooth, and four missing surfaces for any anterior tooth. Any found retained root was recorded as five decayed surfaces for posterior teeth and four decayed surfaces for anterior teeth.Temporary crowns were recorded as five decayed surfaces for posterior and four decayed surfaces for anterior teeth. The Decayed component (D) included all teeth with codes 1 or 2. The Missing component (M) included teeth coded 4 and teeth coded 4 or 5 (missing due to caries or any other reason). The Filled component (F) included teeth with code 3. For primary teeth, the calculation of the dmft index is similar, by deriving information from data codes A, B, C and D and E in the oral health assessment.

# 2.7 Pilot study:

Was made a pilot study on 20 males and 20 females and by using caries status the percentage of caries among them was 90%, level of confidence is 95%, the specific precision was as d=0.025, then enter the population size for both males and females as 66682 and 66703 respectively, the representative sample size for both of them is 554 then after making maximizing it the sample size is 600 for both of them.

# 2.8 Inter and intra examiner calibration

Inter examiner calibration was carried out among 10 subjects twicely examined, first by the researcher then by a specialists in preventive dentistry.Intra examiner calibration was conducted twicely by the researcher only, the two examinations were separated by two weeks.

**Table (2.1): Inter calibration of caries experience for primary and permanent teeth**

| Dental caries | Inter Calibration | | | | | | Paired T | p-value |
|---|---|---|---|---|---|---|---|---|
| | Examination by student | | | Examination by supervisor | | | | |
| | Mean | SD | SE | Mean | SD | SE | | |
| DS | 4.000 | 2.449 | 0.775 | 4.000 | 2.261 | 0.715 | 0.000 | 1.000 |
| MS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | -- | -- |
| FS | 0.100 | 0.316 | 0.100 | 0.100 | 0.316 | 0.100 | --- | --- |
| DMFS | 4.100 | 2.514 | 0.795 | 4.100 | 2.331 | 0.737 | 0.000 | 1.000 |
| DT | 3.000 | 1.054 | 0.333 | 3.100 | 1.197 | 0.379 | 1 | 0.343 |
| MT | 0.300 | 0.675 | 0.213 | 0.300 | 0.675 | 0.213 | --- | --- |
| FT | 0.100 | 0.316 | 0.100 | 0.100 | 0.316 | 0.100 | --- | -- |
| DMFT | 3.400 | 1.174 | 0.371 | 3.500 | 1.269 | 0.401 | 1 | 0.343 |
| ds | 8.100 | 8.530 | 2.698 | 8.100 | 8.225 | 2.601 | 0.000 | 1.000 |
| ms | 1.700 | 3.592 | 1.136 | 1.800 | 3.824 | 1.209 | 1.000 | 0.343 |
| fs | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | -- | --- |
| dmfs | 9.800 | 8.390 | 2.653 | 9.900 | 8.144 | 2.575 | 0.557 | 0.591 |
| dt | 5.400 | 3.688 | 1.166 | 5.400 | 3.688 | 1.166 | -- | -- |
| mt | 0.400 | 0.843 | 0.267 | 0.500 | 0.850 | 0.269 | 1 | 0.343 |
| ft | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | --- | -- |
| dmft | 5.800 | 3.425 | 1.083 | 5.900 | 3.414 | 1.080 | 1 | 0.343 |

Df=9

**Table (2.2): Inter calibration of oral hygiene**

| Oral Hygiene | Inter Calibration | | | | | | Paired T | p-value |
|---|---|---|---|---|---|---|---|---|
| | Examination by student | | | Examination by supervisor | | | | |
| | Mean | SD | SE | Mean | SD | SE | | |
| PlI | 0.398 | 0.249 | 0.079 | 0.397 | 0.249 | 0.079 | 1.000 | 0.343 |
| CaI | 0.100 | 0.316 | 0.100 | 0.200 | 0.422 | 0.133 | 1.000 | 0.343 |

**Table (2.3): Inter calibration of gingival health**

| Gingival Health | | | GI by supervisor | | Kappa | P-value | Total |
|---|---|---|---|---|---|---|---|
| | | | 0.00 | 1.00 | | | |
| GI by student | 1.00 | N. | 1 | 6 | 0.783 | 0.011 (S) | 7 |
| | | % | 14.29 | 85.71 | | | 100.00 |
| | 0.00 | N. | 3 | 0 | | | 3 |
| | | % | 100.00 | 0.00 | | | 100.00 |
| Total | | N. | 4 | 6 | | | 10 |
| | | % | 40.00 | 60.00 | | | 100.00 |

**S: Significant p<0.05**

**Table (2.4): Intra calibration of caries experience for primary and permanent teeth**

| Dental caries | Intra Calibration | | | | | | Paired t | p-value |
|---|---|---|---|---|---|---|---|---|
| | First Vist | | | Second Vist (After Two weeks) | | | | |
| | Mean | SD | SE | Mean | SD | SE | | |
| DS | 3.900 | 2.424 | 0.767 | 4.000 | 2.261 | 0.715 | 0.557 | 0.591 |
| MS | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | --- | -- |
| FS | 0.100 | 0.316 | 0.100 | 0.100 | 0.316 | 0.100 | --- | --- |
| DMFS | 4.000 | 2.449 | 0.775 | 4.100 | 2.331 | 0.737 | .557 | 0.591 |
| DT | 3.100 | 1.101 | 0.348 | 3.200 | 1.229 | 0.389 | 1 | 0.343 |
| MT | 0.300 | 0.675 | 0.213 | 0.300 | 0.675 | 0.213 | --- | --- |
| FT | 0.100 | 0.316 | 0.100 | 0.100 | 0.316 | 0.100 | --- | -- |
| DMFT | 3.500 | 1.269 | 0.401 | 3.600 | 1.350 | 0.427 | 1 | 0.343 |
| ds | 8.300 | 8.394 | 2.654 | 8.200 | 8.149 | 2.577 | 0.557 | 0.591 |
| ms | 1.900 | 3.542 | 1.120 | 2.000 | 3.771 | 1.193 | 1.000 | 0.343 |
| fs | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | --- | --- |
| dmfs | 10.200 | 8.066 | 2.551 | 10.200 | 7.871 | 2.489 | 0.000 | 1.000 |
| dt | 5.600 | 3.534 | 1.118 | 5.500 | 3.598 | 1.138 | 1.000 | 0.343 |
| mt | 0.500 | 0.850 | 0.269 | 0.600 | 0.843 | 0.267 | 1.000 | 0.343 |
| ft | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| dmft | 6.100 | 3.178 | 1.005 | 6.100 | 3.213 | 1.016 | 0.000 | 1.000 |

# 2.9 Statistical analysis

Data description, analysis and presentation were performed using Statistical Package for Social Science (SPSS version 21) statistical analyses can be classified into two categories:
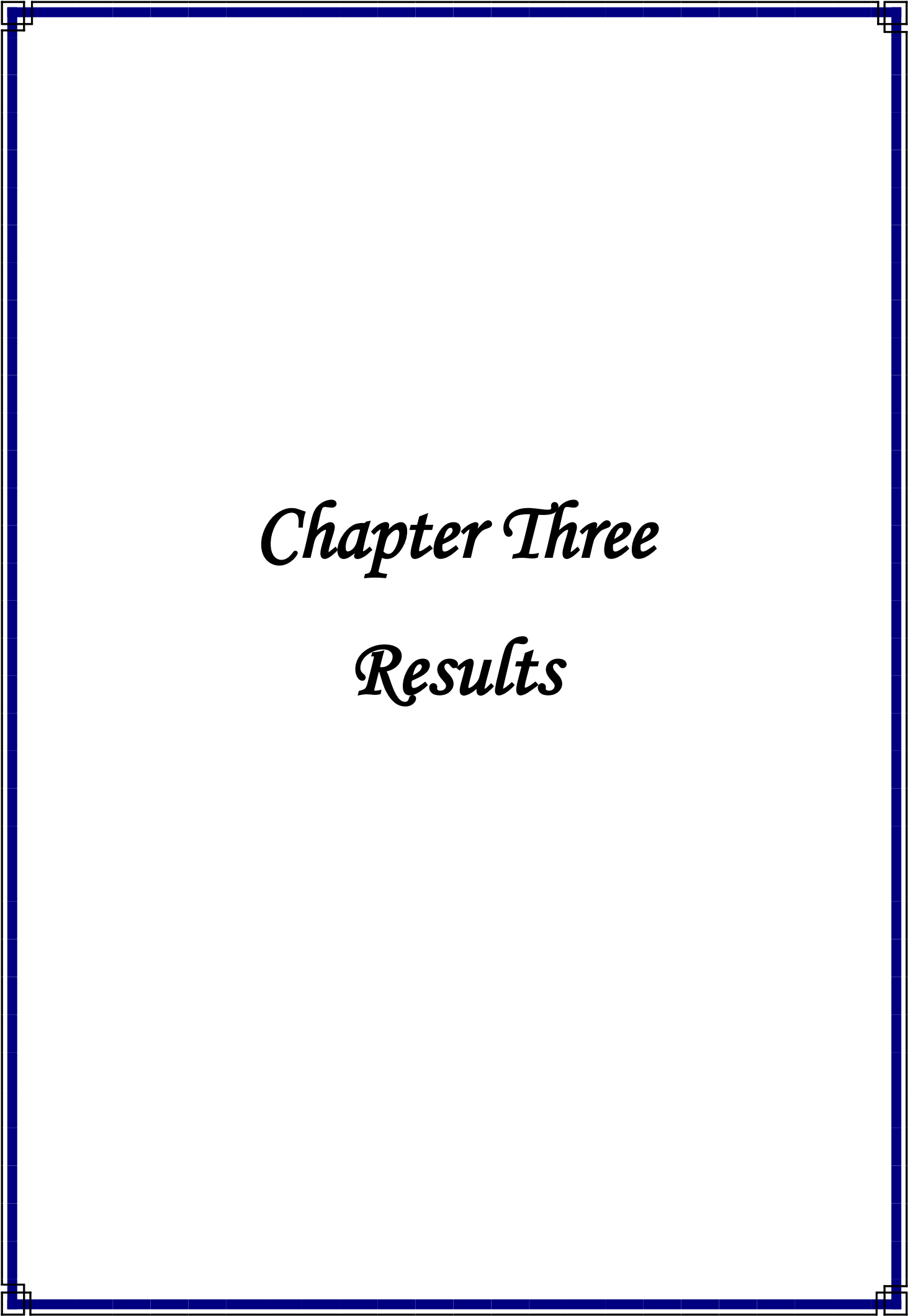
**1-Descriptive Analysis:**

A-  Frequencies, percentage for nominal variables, mean and standard error for quantitative variable.

B-  Graphs: Simple, cluster chart bars, and Pie graphs.

**2- Inferential analysis:**

A.  Levene test: test the homogeneity of variance among groups.

B.  One Way Analysis of Variance (ANOVA): parametric test determine and find difference between K independent samples with Hochberg GT2 (equal variance and unequal sample size) and Games-Howell (unequal variance and unequal sample size) as post hoc tests.

C.  Chi-square: test the association between two categorical variables when the percentage of the expected cell which count less than 5 is not more than 20%.

D.  Paired sample T test: The data may consist of two measurements taken on the same subject or on a matched pair of subjects.

E.  D- Absolute agreement Kappa: measure of inter-rater agreement for categorical scales when there are two raters.

Level of significance as: Not significant $P>0.05$, Significant $P<0.05$, highly significant $P<0.01$.

# Chapter Three

# Results

# Results

## 3.1 The sample

The sample was (1200) school children aged 8-10 years old whom randomly selected from different primary schools in Al-Najaf city. They distributed by equal number according to gender 400 from each age group as shown in figure (3.1) and (3.2).
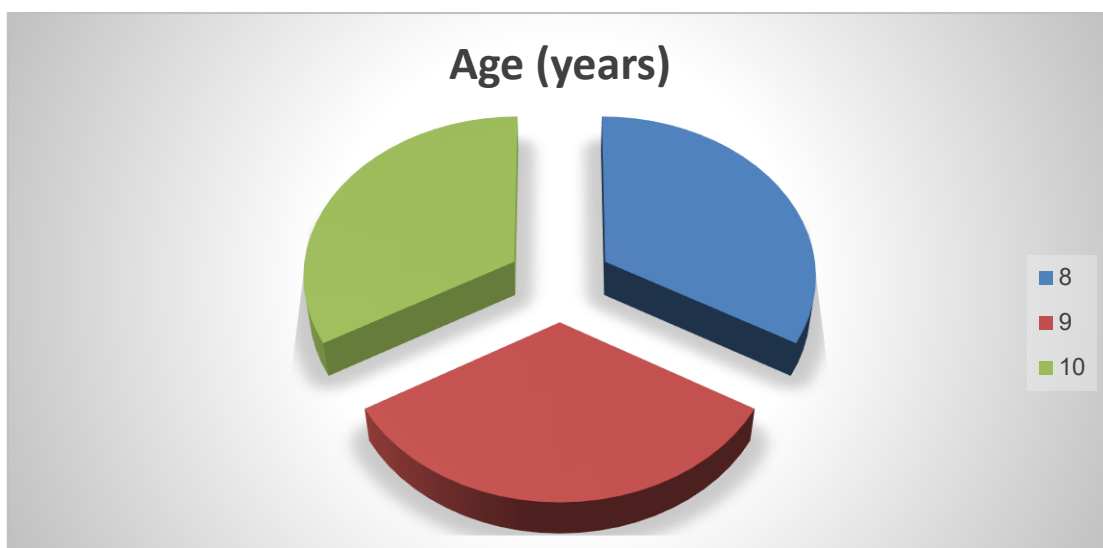


**Figure 3.1: distribution of children according to age**
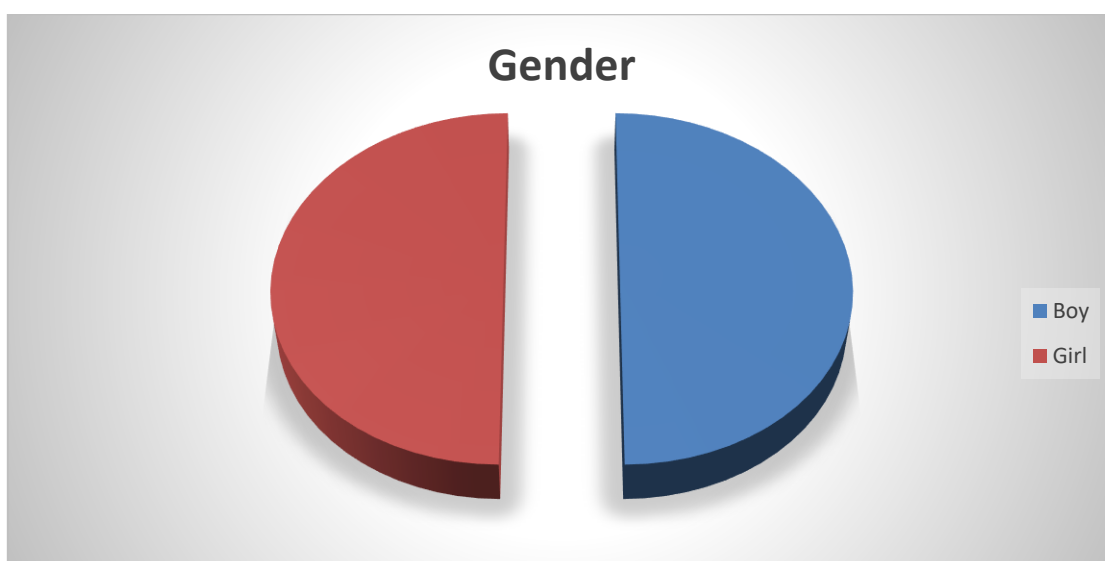


**Figure3.2: Distribution of children according to gender**

Figure 3.3 demonstrates the percentage of some of the socioeconomic factors, the highest percentage of family income was found to be medium which was equal to 47.33 and the most of fathers had an educational level of 37.58 that completed the secondary school while only 9.25% of them did not enter the school.
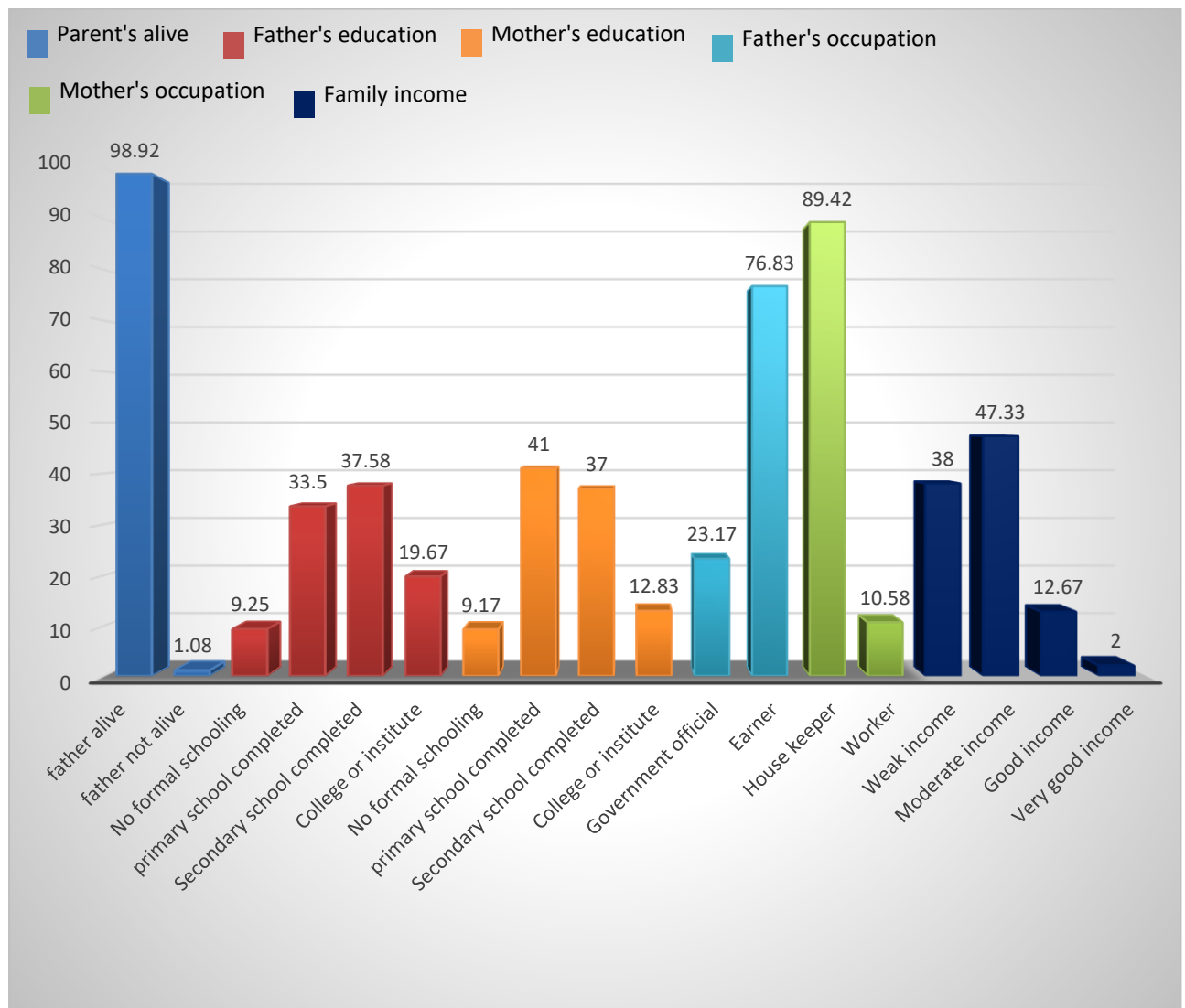


**Figure 3.3: Sociodemographic distribution of children according to socioeconomic factors**

Figure 3.4 demonstrates the percentage of some socioeconomic factors, most of the children mother's were a live (98.83%) and most of the children mother's were in the age group  20-30, ( 72.92%).
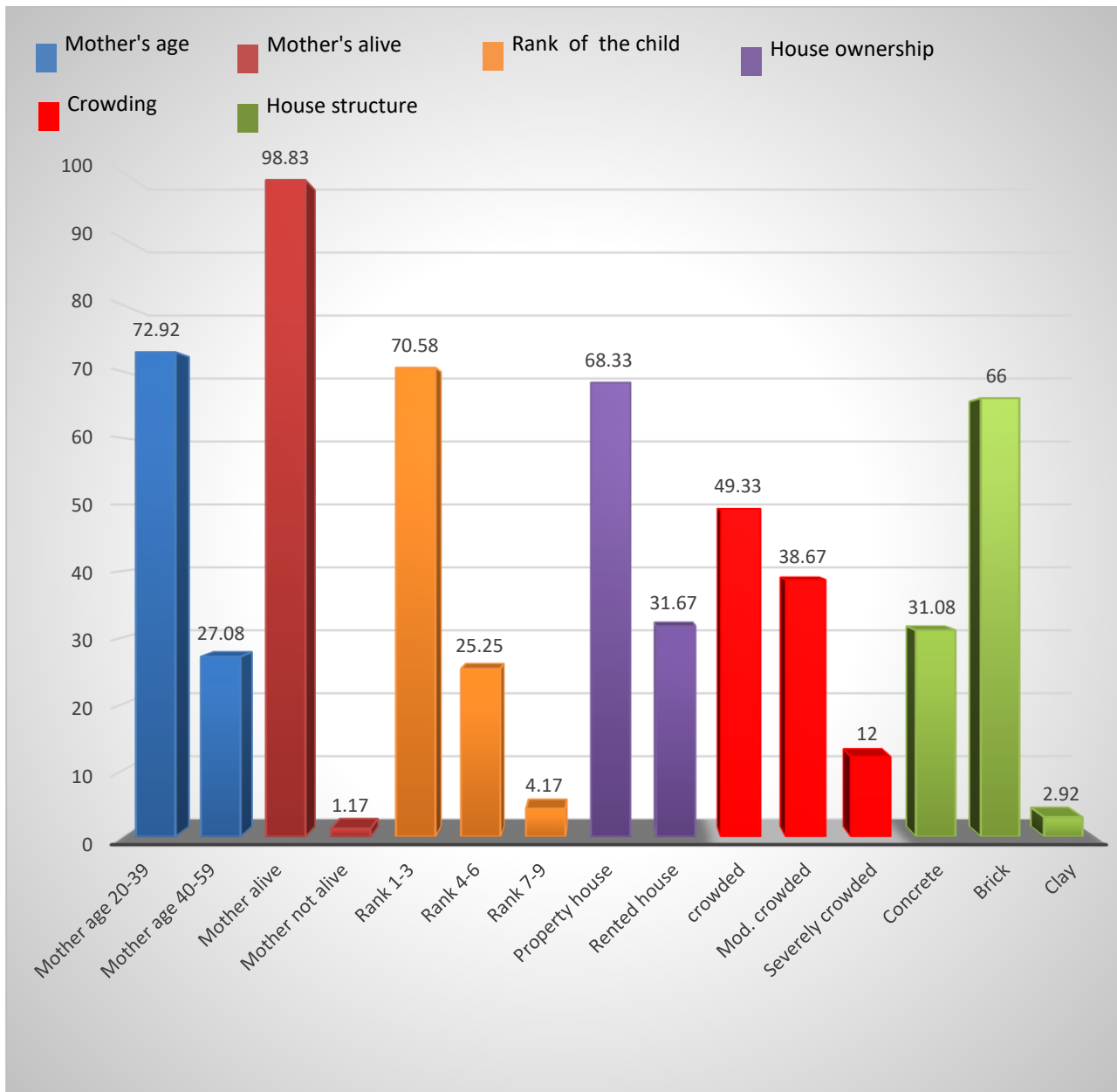


**Figure 3.4:Sociodemographic distribution of children according to socioeconomic factors**

Figure 3.5 shows that the highest socioeconomic status in most of the children was equal to 40.92%
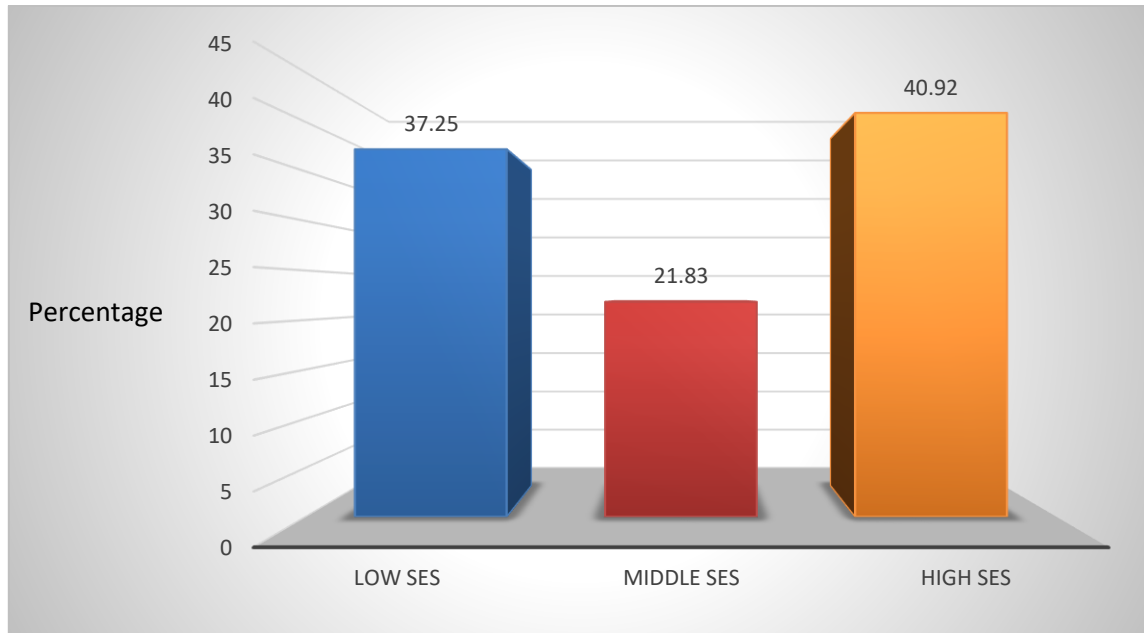


**Figure 3.5: Sociodemographic distribution of Children according to socioeconomic status**

## 3.2 Distribution of Caries experience among children

The results showed that caries prevalence was 98% as shown in figure 3.6.
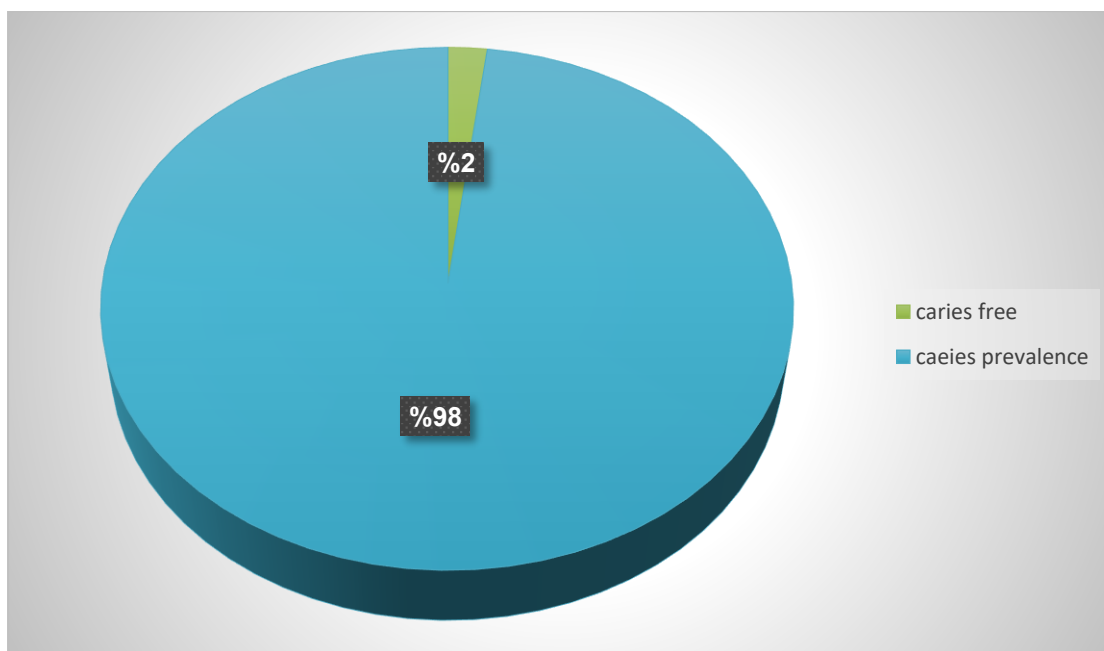


**Figure 3.6: Distribution of caries experience among children**

Figure 3.7 shows the caries experience represented by (DMFT),(DMFS) and its components (DS,MS,FS)for permanent dentition , in this study the mean DMFT was (1.86). Concerning the (DMFS) and its components (DS, MS,FS), the value of (DS) fraction for the total sample was found to be highest followed by that of the (FS) and (MS) values.
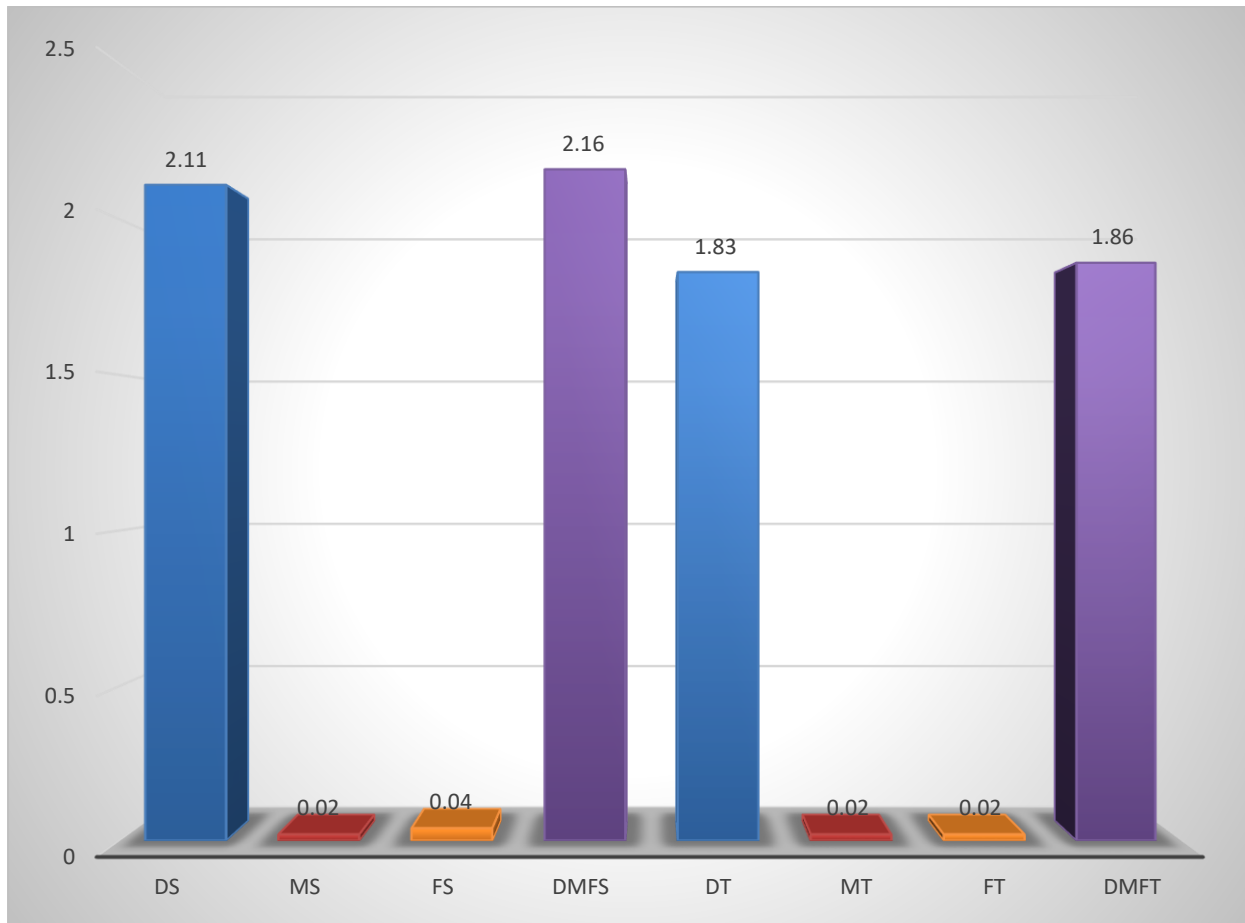


**Figure 3.7: Caries experience of permanent Teeth**

Figure 3.8 demonstrates caries experience of permanent teeth according to gender which shows that girls were slightly higher than boys in caries experience of the permanent teeth.

|      | Ds    | Ms    | Fs    | DMFS  | DT   | MT   | FT    | DMFT  |
|------|-------|-------|-------|-------|------|------|-------|-------|
| Boy  | 2.058 | 0.035 | 0.02  | 2.113 | 1.76 | 0.02 | 0.008 | 1.788 |
| Girl | 2.153 | 0.008 | 0.052 | 2.213 | 1.9  | 0.01 | 0.025 | 1.935 |
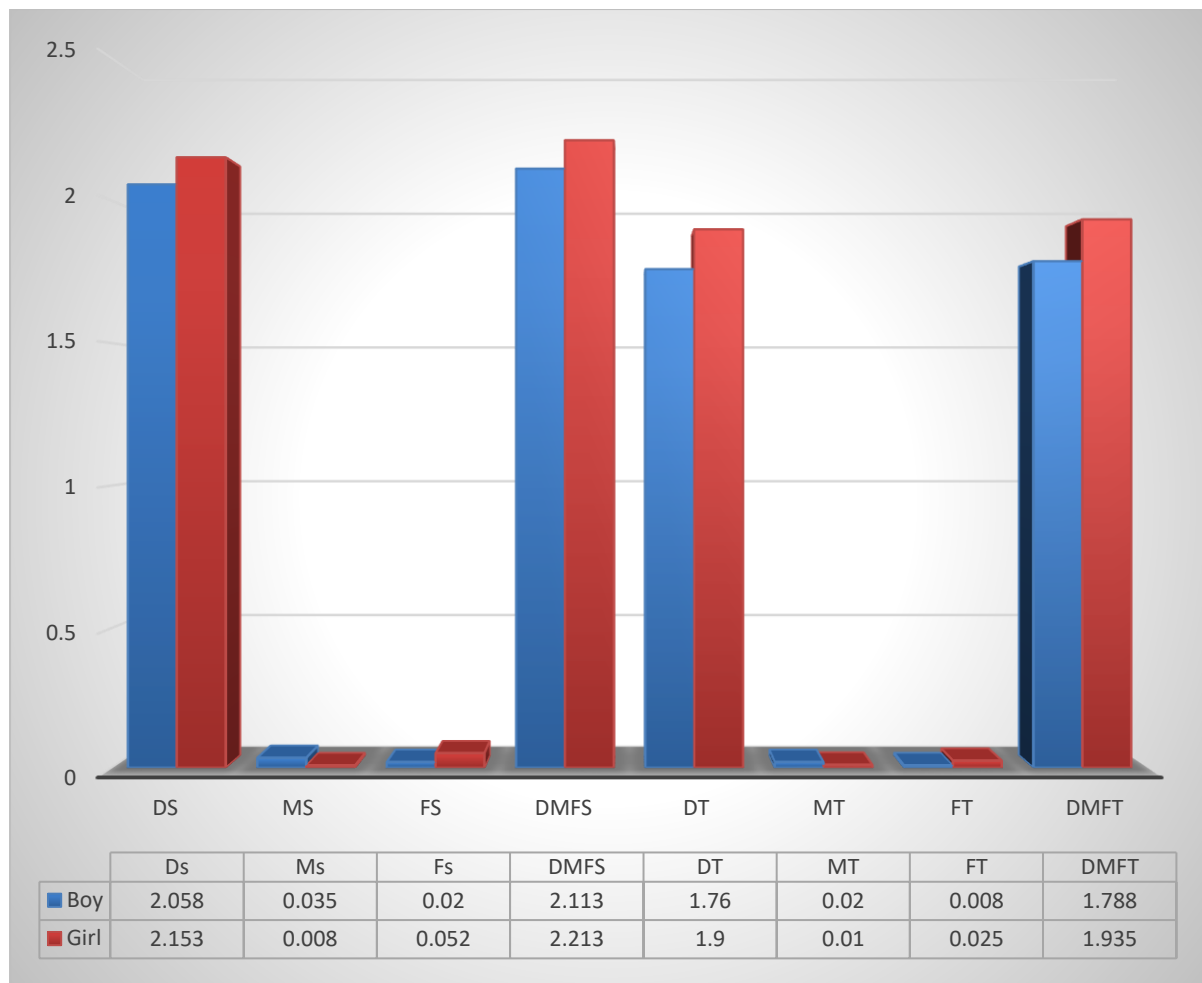
**Figure 3.8: Caries experience of permanent teeth by gender**

Figure 3.9 shows that the caries experience represented by (dmft), (dmfs) and its components (ds, ms, fs) for primary dentition. In this study the mean of dmft was 5.479, concerning the (dmfs) and its components (ds, ms, fs), the value of (ds) fraction for the total sample was found to be the highest followed by that of (ms) and (fs) values.
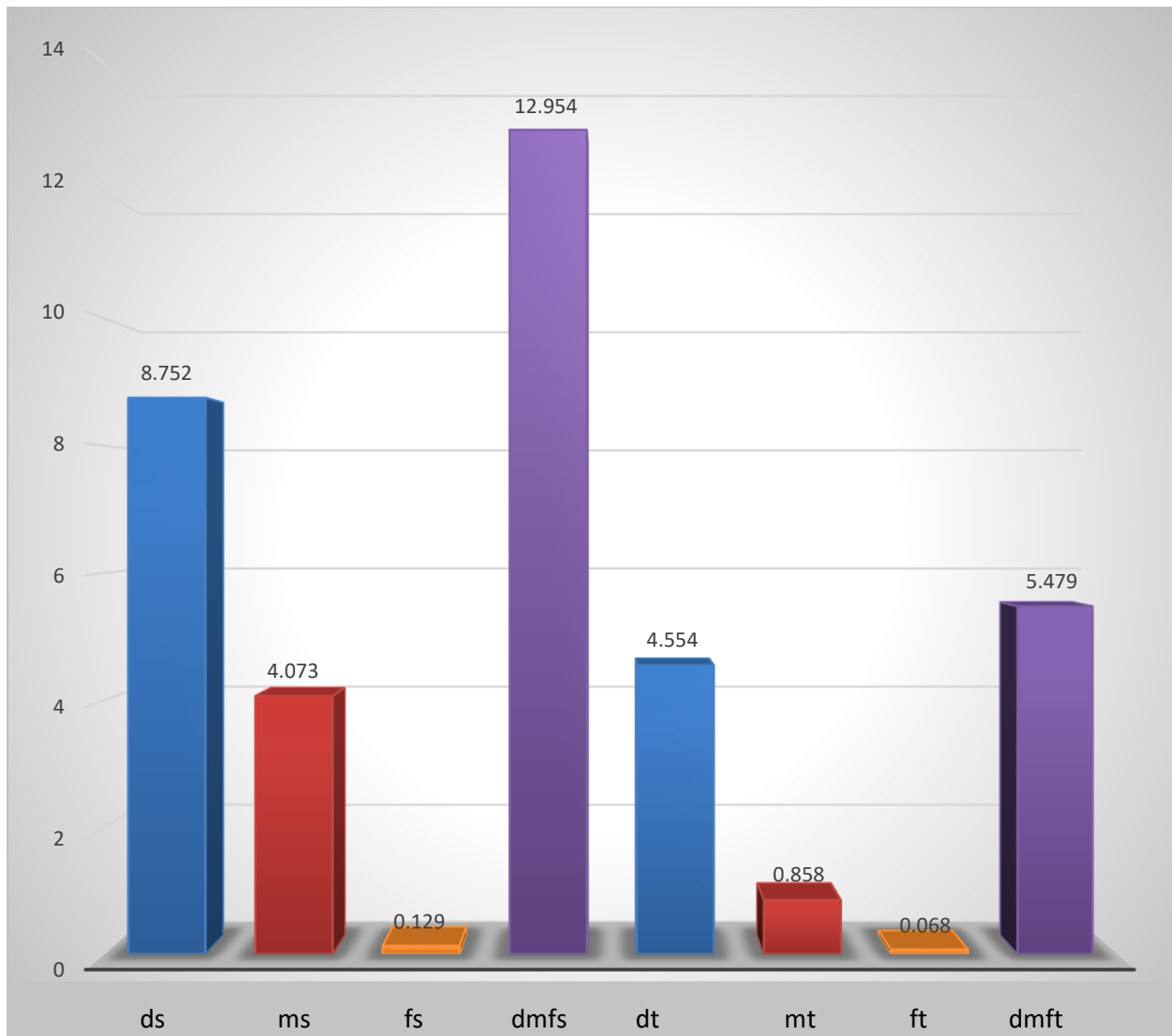
**Figure 3.9: Caries experience of primary Teeth**

Figure 3.10 demonstrates caries experience of primary teeth according to gender and which shows that boys had more caries experience than girls.

| | ds | ms | fs | dmfs | dt | mt | ft | dmft |
|---|---|---|---|---|---|---|---|---|
| Boy | 9.447 | 4.637 | 0.127 | 14.21 | 4.74 | 0.953 | 0.062 | 5.755 |
| Girl | 8.057 | 3.51 | 0.132 | 11.698 | 4.368 | 0.762 | 0.073 | 5.203 |
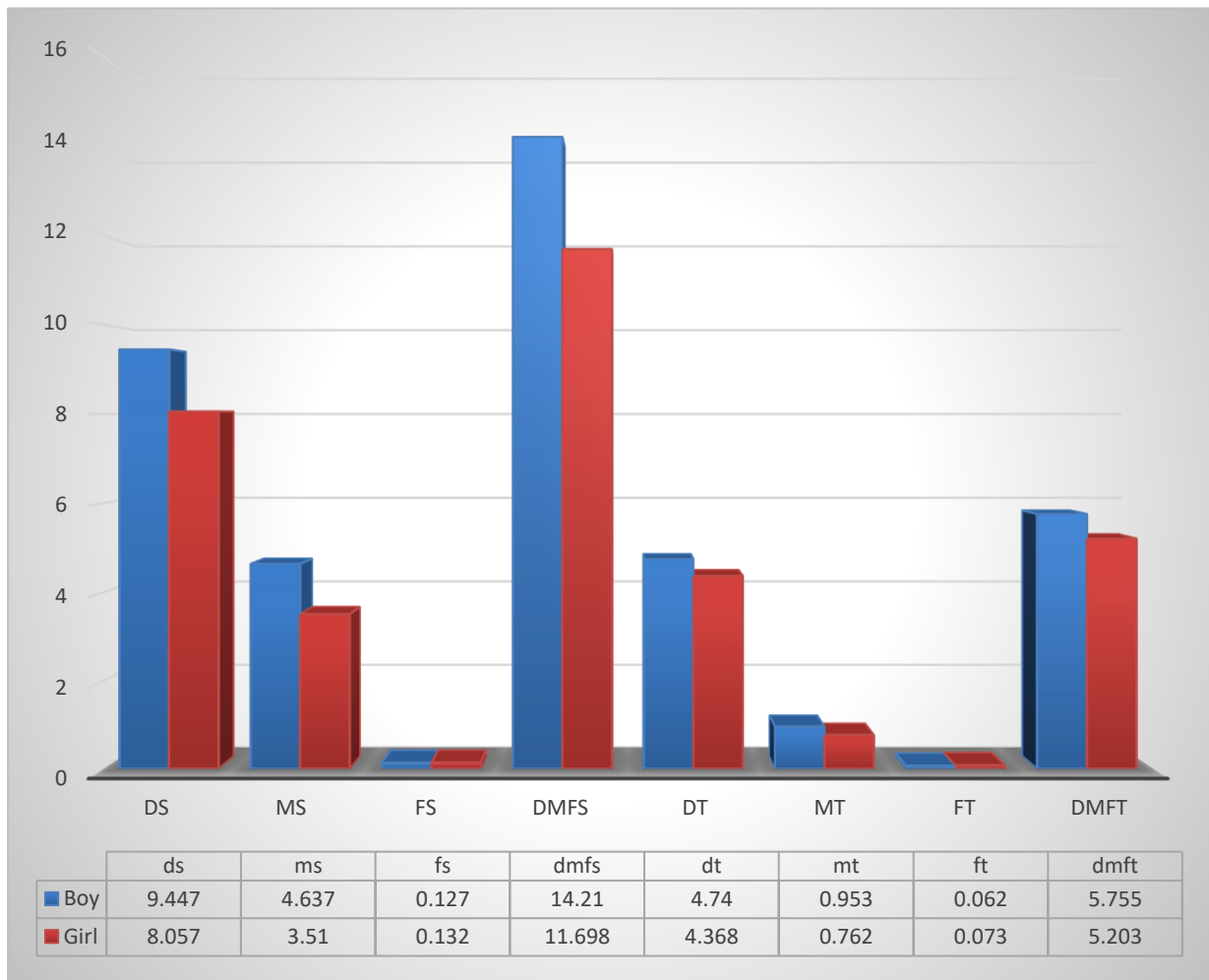
**Figure 3.10: Caries experience of  primary teeth by gender**

Table (3.1) illustrates the distribution of children dental caries according to the socioeconomic status (low, middle, high), from this table it was obvious that middle fraction was occupied the less percentage followed by high and low also this table shown that the middle socioeconomic status occupied the low percentage of dental caries

**Table (3.1): Distribution of caries status in association to socioeconomic status**

| | | | SES | | | Chi-square | p-value | Total |
|---|---|---|---|---|---|---|---|---|
| | | | Low | Middle | High | | | |
| **Dental caries** | **Free** | N. | 10 | 5 | 9 | 0.209 | [NS] | 24 |
| | | % within caries | 41.67 | 20.83 | 37.50 | | | 100.00 |
| | | % within SES | 2.24 | 1.91 | 1.83 | | | 2.00 |
| | | % of Total | .83 | .42 | .75 | | | 2.00 |
| | **With** | N. | 437 | 257 | 482 | | | 1176 |
| | | % within caries | 37.16 | 21.85 | 40.99 | | | 100.00 |
| | | % within SES | 97.76 | 98.09 | 98.17 | | | 98.00 |
| | | % of Total | 36.42 | 21.42 | 40.17 | | | 98.00 |

**NS: Not significant at p>0.05**

The results in table (3.2) shows that among children the association between dental caries in permanent teeth and socioeconomic factors was not significant.

**Table (3-2): Caries experience of primary teeth in association to socioeconomic factors**

| Dental caries | Low | | Middle | | High | | F | P-value |
|---|---|---|---|---|---|---|---|---|
| | Mean | SE | Mean | SE | Mean | SE | | |
| ds | 9.058 | 0.348 | 8.489 | 0.411 | 8.613 | 0.295 | 0.734 | NS |
| ms | 3.911 | 0.276 | 4.519 | 0.402 | 3.984 | 0.278 | 0.906 | NS |
| fs | 0.083 | 0.031 | 0.153 | 0.052 | 0.159 | 0.039 | 1.236 | NS |
| dmfs | 13.051 | 0.441 | 13.160 | 0.590 | 12.756 | 0.429 | 0.195 | NS |
| dt | 4.550 | 0.131 | 4.405 | 0.160 | 4.637 | 0.120 | 0.645 | NS |
| mt | 0.812 | 0.057 | 0.977 | 0.095 | 0.835 | 0.060 | 1.374 | NS |
| ft | 0.047 | 0.016 | 0.084 | 0.028 | 0.077 | 0.019 | 0.993 | NS |
| dmft | 5.409 | 0.139 | 5.466 | 0.179 | 5.550 | 0.132 | 0.274 | NS |

**NS: Not significant at p>0.05**

The results in table (3.3) shows that among children the association between dental caries in permanent teeth and socioeconomic status was not significant for decay and missing (DS, MS) and significant for filling p-value for FS=0.039 , ANOVA=3.258 and p-value for FT=0.036 , ANOVA =3.343.

**Table (3.3): Caries experience of permanent teeth in association to socioeconomic status**

| Dental caries | Low | | Middle | | High | | F | P-value |
|---|---|---|---|---|---|---|---|---|
| | Mean | SE | Mean | SE | Mean | SE | | |
| DS | 2.058 | 0.099 | 2.267 | 0.133 | 2.063 | 0.096 | 0.973 | NS |
| MS | 0.011 | 0.011 | 0.000 | 0.000 | 0.043 | 0.025 | 1.321 | NS |
| FS | 0.007 | 0.005 | 0.031 | 0.017 | 0.065 | 0.023 | 3.258 | 0.039 (S) |
| DMFS | 2.076 | 0.100 | 2.298 | 0.134 | 2.171 | 0.103 | 0.846 | NS |
| DT | 1.794 | 0.078 | 1.950 | 0.098 | 1.798 | 0.073 | 0.925 | NS |
| MT | 0.007 | 0.005 | 0.015 | 0.011 | 0.022 | 0.009 | 1.089 | NS |
| FT | 0.004 | 0.003 | 0.015 | 0.008 | 0.029 | 0.009 | 3.343 | 0.036(S) |
| DMFT | 1.805 | 0.078 | 1.981 | 0.099 | 1.849 | 0.074 | 0.967 | NS |

**NS: Not significant at p>0.05; S: Significant p<0.05**

The results in table (3.4) shows that Hochberg were not significant in the middle SES while it were significant in the high SES.

**Table (3.4): Multiple pairwise comparison of caries experience of permanent teeth in association to socioeconomic status**

| Multiple Comparisons | | | | |
|---|---|---|---|---|
| Hochberg | | | | |
| Filling surfaces/teeth | (I) SES | (J) SES | Mean Difference (I-J) | Significance |
| FS | Low | Middle | -0.024 | NS |
| | | High | -0.058 | 0.033(S) |
| | Middle | High | -0.035 | NS |
| FT | Low | Middle | -0.011 | NS |
| | | High | -0.024 | 0.046(S) |
| | Middle | High | -0.013 | NS |

**NS: Not significant at p>0.05; S: Significant p<0.05**

## 3.2.1: Caries Experience of Permanent Teeth by Age and Gender in Relation to OHRQoL Questionnaires

It was found that the association of OHRQoL questionnaires with dental caries was not significant except for two questions about the child school were the relation was significant with the dental caries experience DMFT, it was 0.016 and 0.049 , respectively.

Results in table (3.5) shows that the association of OHRQoL pain questionnaires were not significant to dental caries experience of primary teeth except the question about sore spot in the mouth , had a hard time chewing food and the question about had trouble eating foods were seen to be highly significant.

**Table (3.5): Caries experience dmfs of primary teeth in association to OHRQoL pain questionnaires**

| Dental caries | Pain questions | Yes | | No | | Don´t know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SE | Mean | SE | Mean | SE | | |
| dmfs | **Pain in teeth** | 14.39 | 0.36 | 10.98 | 0.43 | 11.90 | 1.04 | 0.403 | NS |
| | **Sore spots in mouth** | 15.02 | 0.47 | 11.71 | 0.35 | 11.76 | 0.89 | 5.469 | **0.004(HS)** |
| | **Pain during drinking, eating** | 14.34 | 0.37 | 11.11 | 0.40 | 12.83 | 1.56 | 2.044 | NS |
| | **Food stuck in the teeth** | 13.94 | 0.37 | 11.44 | 0.42 | 14.15 | 1.11 | 0.320 | NS |
| | **Bad breath** | 14.03 | 0.41 | 11.78 | 0.38 | 13.42 | 1.03 | 2.603 | NS |
| | **Needed longer time to eat** | 15.15 | 0.46 | 11.44 | 0.35 | 13.12 | 0.92 | 2.769 | NS |
| | **Hada hard timechewingfood** | 15.08 | 0.43 | 11.12 | 0.35 | 12.89 | 1.12 | 4.753 | **0.009(HS)** |
| | **Had trouble eating foods** | 15.15 | 0.46 | 11.44 | 0.34 | 12.47 | 0.99 | 4.937 | **0.007(HS)** |
| | **Had trouble sayings words** | 15.15 | 0.53 | 12.26 | 0.32 | 11.02 | 1.18 | 0.835 | NS |
| | **Problem during sleeping** | 14.86 | 0.49 | 12.06 | 0.33 | 12.84 | 1.49 | 1.418 | NS |

**HS: Highly significant at p<0.01; NS: Not sig.at p≥0.05**

The result in table (3.6) shows that most of results in Games-Howell are highly significant except in question had trouble eating foods one result is significant and the rest are not significant.

**Table (3.6): Multiple pairwise comparison of caries experience dmfs of primary Teeth in association to OHRQoL pain questionnaires**

| Multiple Comparisons | | | | |
|---|---|---|---|---|
| Dependent Variable:   dmfs | | | | |
| Games-Howell | | | | |
| **Pain questions** | **(I) q** | **(J) q** | **Mean Difference (I-J)** | **Significance** |
| **Sore spots in mouth** | Don't know | Yes | -3.256 | **0.004** |
| | | No | 0.046 | 0.999 |
| | Yes | No | 3.303 | **0.000** |
| **Hada hard timechewingfood** | Don't know | Yes | -2.192 | 0.171 |
| | | No | 1.772 | 0.295 |
| | Yes | No | 3.964 | **0.000** |
| **Had trouble eating foods** | Don't know | Yes | -2.679 | **0.042** |
| | | No | 1.036 | 0.586 |
| | Yes | No | 3.715 | **0.000** |

Results in table (3.7) shows that the association of OHRQoL pain questionnaires highly significant to dental caries experience of primary teeth.

**Table (3.7): Caries experience dmft in association to OHRQoL pain questionnaires**

| Dental caries | Pain Questions | Yes | | No | | Don't know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | **Mean** | **SE** | **Mean** | **SE** | **Mean** | **SE** | | |
| **dmft** | Pain in teeth | 6.03 | 0.11 | 4.75 | 0.14 | 4.88 | 0.32 | 28.94 | **0.000(HS)** |
| | Sore spots in mouth | 6.10 | 0.13 | 5.10 | 0.11 | 5.15 | 0.30 | 16.66 | **0.000 (HS)** |
| | Pain during drinking, eating | 5.95 | 0.11 | 4.85 | 0.13 | 5.44 | 0.48 | 20.92 | **0.000 (HS)** |
| | Food stuck in the teeth | 5.88 | 0.11 | 4.99 | 0.14 | 5.28 | 0.29 | 13.04 | **0.000 (HS)** |
| | Bad breath | 5.74 | 0.12 | 5.17 | 0.13 | 5.75 | 0.31 | 5.74 | **0.003 (HS)** |
| | Needed longer time to eat | 6.15 | 0.13 | 5.03 | 0.11 | 5.42 | 0.29 | 20.75 | **0.000 (HS)** |
| | Hada hard time chewingfood | 6.12 | 0.12 | 4.92 | 0.12 | 5.55 | 0.38 | 24.95 | **0.000 (HS)** |
| | Had trouble eating foods | 6.16 | 0.13 | 5.00 | 0.11 | 5.40 | 0.33 | 22.39 | **0.000 (HS)** |
| | Had trouble sayings words | 6.22 | 0.15 | 5.23 | 0.10 | 5.13 | 0.41 | 13.48 | **0.000 (HS)** |
| | Problem during sleeping | 6.05 | 0.14 | 5.20 | 0.11 | 5.68 | 0.45 | 11.07 | **0.000 (HS)** |

HS: Highly significant at p<0.01

Results in table (3.8) shows that most of results in Games-Howell are highly significant except in question sore spots in mouth one result is significant and the rest are not significant.

**Table (3.8): Multiple pairwise comparison of caries experience dmft of primary teeth in association to OHRQoL pain questionnaires**

| Multiple Comparisons | | | | | |
|---|---|---|---|---|---|
| Dependent Variable:   dmft | | | | | |
| Games-Howell | | | | | |
| **pain questions** | **(I) q** | **(J) q** | | | |
| | | **1** | | **2** | |
| | | MD (I-J) | Sig. | MD (I-J) | Significance |
| **Pain in teeth** | Don't know | -1.149 | **0.003** | 0.131 | 0.924 |
| | Yes | | | 1.280 | **0.000** |
| **Sore spots in mouth** | Don't know | -0.952 | **0.012** | 0.045 | 0.989 |
| | Yes | | | 0.998 | **0.000** |
| **Pain during drinking, eating** | Don't know | -0.513 | 0.549 | 0.591 | 0.460 |
| | Yes | | | 1.103 | **0.000** |
| **Food stuck in the teeth** | Don't know | -0.594 | 0.143 | 0.292 | 0.634 |
| | Yes | | | 0.886 | **0.000** |
| **Bad breath** | Don't know | 0.011 | 0.999 | 0.581 | 0.191 |
| | Yes | | | 0.570 | **0.003** |
| **Needed longer time to eat** | Don't know | -0.733 | 0.059 | 0.395 | 0.418 |
| | Yes | | | 1.128 | **0.000** |
| **Hada hard time chewingfood** | Don't know | -0.565 | 0.337 | 0.633 | 0.256 |
| | Yes | | | 1.199 | **0.000** |
| **Had trouble eating foods** | Don't know | -0.759 | 0.085 | 0.398 | 0.489 |
| | Yes | | | 1.158 | **0.000** |
| **Had trouble sayings words** | Don't know | -1.086 | **0.039** | -0.098 | 0.970 |
| | Yes | | | 0.988 | **0.000** |
| **Problem during sleeping** | Don't know | -0.371 | 0.710 | 0.484 | 0.547 |
| | Yes | | | 0.856 | **0.000** |

Results in table (3.9) showed that the association OHRQoL feelings questionnaires highly significant to dental caries experience of primary teeth**.**

**Table (3.9): Caries experience of primary teeth in association to OHRQoL feelings questionnaires**

| Feelings questions | Dental caries | Yes | | No | | Don't know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SE | Mean | SE | Mean | SE | | |
| Been upset | dmfs | 15.13 | 0.50 | 11.91 | 0.33 | 12.15 | 1.03 | 15.450 | 0.000 (HS) |
| | dmft | 6.22 | 0.15 | 5.11 | 0.10 | 5.42 | 0.38 | 18.944 | 0.000 (HS) |
| Felt frustrated | dmfs | 15.07 | 0.55 | 12.04 | 0.32 | 14.34 | 1.30 | 12.616 | 0.000 (HS) |
| | dmft | 6.24 | 0.17 | 5.16 | 0.10 | 5.88 | 0.35 | 16.440 | 0.000 (HS) |
| Been shy | dmfs | 15.47 | 0.58 | 12.00 | 0.31 | 14.20 | 1.56 | 15.836 | 0.000 (HS) |
| | dmft | 6.33 | 0.17 | 5.18 | 0.10 | 5.42 | 0.41 | 17.956 | 0.000 (HS) |
| Been concerned what other people think about the teeth | dmfs | 15.79 | 0.63 | 12.09 | 0.31 | 13.05 | 1.10 | 15.480 | 0.000 (HS) |
| | dmft | 6.36 | 0.18 | 5.20 | 0.10 | 5.58 | 0.33 | 16.025 | 0.000 (HS) |
| Worried about appearance | dmfs | 15.84 | 0.69 | 12.17 | 0.30 | 13.16 | 1.34 | 14.741 | 0.000 (HS) |
| | dmft | 6.40 | 0.20 | 5.23 | 0.09 | 5.51 | 0.39 | 15.842 | 0.000 (HS) |

**HS: Highly significant at $p < 0.01$**

Results in table (3.10) shows that most of results in Games-Howell are highly significant except in question been upset one result is significant and the rest are not significant.

Results in table (3.11) shows that the association between OHRQoL about the school questionnaires and dental caries experience of primary teeth which was highly significant.

**Table (3.10): Multiple pairwise comparison of caries experience of primary teeth in association to OHRQoL feelings questionnaires**

| Multiple Comparisons | | | | | | |
|---|---|---|---|---|---|---|
| Games-Howell | | | | | | |
| Feelings questions | Variables | (I) q | (J) q | | | |
| | | | 1 | | 2 | |
| | | | MD (I-J) | Sig. | MD (I-J) | Sig. |
| Been upset | dmfs | Don't know | -2.974 | **0.030** | 0.247 | 0.972 |
| | | Yes | | | 3.221 | **0.000** |
| | dmft | Don't know | -0.791 | 0.131 | 0.316 | 0.698 |
| | | Yes | | | 1.108 | 0.000 |
| Felt frustrated | dmfs | Don't know | -0.731 | 0.863 | 2.301 | 0.204 |
| | | Yes | | | 3.032 | **0.000** |
| | dmft | Don't know | -0.358 | 0.632 | 0.720 | 0.130 |
| | | Yes | | | 1.078 | **0.000** |
| Been shy | dmfs | Don't know | -1.267 | 0.728 | 2.201 | 0.356 |
| | | Yes | | | 3.468 | **0.000** |
| | dmft | Don't know | -0.912 | 0.113 | 0.243 | 0.837 |
| | | Yes | | | 1.155 | **0.000** |
| Been concerned what other people think about the teeth | dmfs | Don't know | -2.736 | 0.081 | 0.964 | 0.677 |
| | | Yes | | | 3.701 | **0.000** |
| | dmft | Don't know | -0.784 | 0.099 | 0.378 | 0.521 |
| | | Yes | | | 1.162 | **0.000** |
| Worried about appearance | dmfs | Don't know | -2.682 | 0.183 | 0.984 | 0.755 |
| | | Yes | | | 3.666 | **0.000** |
| | dmft | Don't know | -0.895 | 0.111 | 0.279 | 0.770 |
| | | Yes | | | 1.175 | **0.000** |

**Table (3.11): Caries experience of primary teeth in association to OHRQoL about the school questionnaires**

| Questions about the school | Dental caries | Yes | | No | | Don't know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SE | Mean | SE | Mean | SE | | |
| Missed the school | dmfs | 16.04 | 0.69 | 12.29 | 0.30 | 11.88 | 1.61 | 14.342 | 0.000 (HS) |
| | dmft | 6.25 | 0.19 | 5.31 | 0.09 | 5.23 | 0.50 | 9.292 | 0.000 (HS) |
| Had a hard time paying attention | dmfs | 16.13 | 0.75 | 12.40 | 0.29 | 12.46 | 1.55 | 12.036 | 0.000 (HS) |
| | dmft | 6.49 | 0.21 | 5.29 | 0.09 | 5.50 | 0.42 | 13.005 | 0.000 (HS) |
| Not speak out loud in class | dmfs | 15.90 | 0.73 | 12.40 | 0.30 | 12.89 | 1.34 | 10.766 | 0.000 (HS) |
| | dmft | 6.28 | 0.21 | 5.32 | 0.09 | 5.53 | 0.43 | 8.322 | 0.000 (HS) |

**HS: Highly significant at p<0.01**

Results in table (3.12) shows that most of results in Hochberg GT2 are highly significanct except in question had a hard time paying attention one of the results was significant in dmfs and the rest are not significant.

**Table (3.12): Multiple pairwise comparison of caries experience of primary teeth in association to OHRQoL about the school questionnaires**

| Multiple Comparisons | | | | | |
|---|---|---|---|---|---|
| Hochberg | | | | | |
| Questions about the school | Dependent Variable | (I) q | (J) q | MD (I-J) | Sig. |
| Missed the school | dmfs | Don't know | 1 | -4.157 | 0.094 |
| | | | 2 | -0.406 | 0.995 |
| | | Yes | 2 | 3.751 | **0.000** |
| | dmft | Don't know | 1 | -1.020 | 0.247 |
| | | | 2 | -0.082 | 0.999 |
| | | Yes | 2 | 0.938 | **0.000** |
| Had a hard time paying attention | dmfs | Don't know | 1 | -3.671 | **0.047** |
| | | | 2 | 0.060 | 1.000 |
| | | Yes | 2 | 3.731 | **0.000** |
| | dmft | Don't know | 1 | -0.994 | 0.100 |
| | | | 2 | 0.207 | 0.948 |
| | | Yes | 2 | 1.202 | **0.000** |
| Not speak out loud in class | dmfs | Don't know | 1 | -3.011 | 0.106 |
| | | | 2 | 0.494 | 0.974 |
| | | Yes | 2 | 3.505 | **0.000** |
| | dmft | Don't know | 1 | -0.751 | 0.252 |
| | | | 2 | 0.203 | 0.942 |
| | | Yes | 2 | 0.954 | **0.000** |

Results in table (3.13) shows that the association between OHRQoL questionnaires and dental caries experience of primary teeth was found to be with highly significant difference**.**

**Table (3.13): Caries experience of primary teeth in association to OHRQoL about being with other people questionnaires**

| Questions about being with other people | Dental Caries | Yes Mean | SE | No Mean | SE | Don't know Mean | SE | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| Avoid smiling | dmfs | 16.142 | 0.742 | 12.296 | 0.293 | 12.408 | 1.393 | 14.326 | 0.000 (HS) |
| | dmft | 6.353 | 0.222 | 5.299 | 0.092 | 5.327 | 0.401 | 11.195 | 0.000 (HS) |
| Not talk to other children | dmfs | 16.074 | 0.812 | 12.358 | 0.292 | 14.462 | 1.376 | 11.727 | 0.000 (HS) |
| | dmft | 6.442 | 0.244 | 5.319 | 0.091 | 5.500 | 0.379 | 10.509 | 0.000 (HS) |
| Not be with other children | dmfs | 16.467 | 0.844 | 12.347 | 0.292 | 14.183 | 1.218 | 13.196 | 0.000 (HS) |
| | dmft | 6.440 | 0.247 | 5.324 | 0.092 | 5.633 | 0.364 | 9.739 | 0.000 (HS) |
| Not playing with children | dmfs | 17.180 | 0.844 | 12.460 | 0.293 | 11.818 | 1.166 | 15.471 | 0.000 (HS) |
| | dmft | 6.571 | 0.249 | 5.353 | 0.091 | 5.164 | 0.375 | 10.748 | 0.000 (HS) |
| Other children teased you | dmfs | 16.257 | 0.774 | 12.369 | 0.293 | 12.902 | 1.486 | 12.849 | 0.000 (HS) |
| | dmft | 6.497 | 0.230 | 5.296 | 0.091 | 5.537 | 0.493 | 12.835 | 0.000 (HS) |
| Other children asked you questions | dmfs | 15.632 | 0.724 | 12.369 | 0.295 | 12.596 | 1.443 | 10.535 | 0.000 (HS) |
| | dmfs | 6.288 | 0.213 | 5.319 | 0.093 | 5.043 | 0.398 | 10.229 | 0.000 (HS) |

**HS: Highly significant at p<0.01**

Results in table (3.14) shows that most of the result in Games-Howell were with highly significanct difference except in question other children asked you questions one result is significant in dmft and the rest are not significant.

**Table (3.14): Multiple pairwise comparison of caries experience of primary teeth in association to OHRQoL about being with other people questionnaires**

| Index1 | Dependent Variable | (I) q | (J) q 1 MD (I-J) | (J) q 1 Sig. | (J) q 2 MD (I-J) | (J) q 2 Sig. |
|---|---|---|---|---|---|---|
| Avoid smiling | dmfs | Don't know | -3.734 | 0.053 | 0.112 | 0.997 |
| | | Yes | | | 3.846 | 0.000 |
| | dmft | Don't know | -1.026 | 0.071 | 0.028 | 0.998 |
| | | Yes | | | 1.054 | 0.000 |
| Not talk to other children | dmfs | Don't know | -1.612 | 0.573 | 2.103 | 0.301 |
| | | Yes | | | 3.715 | 0.000 |
| | dmft | Don't know | -0.942 | 0.097 | 0.181 | 0.888 |
| | | Yes | | | 1.123 | 0.000 |
| Not be with other children | dmfs | Don't know | -2.283 | 0.276 | 1.836 | 0.314 |
| | | Yes | | | 4.119 | 0.000 |
| | dmft | Don't know | -0.807 | 0.164 | 0.309 | 0.690 |
| | | Yes | | | 1.116 | 0.000 |
| Not playing with children | dmfs | Don't know | -5.362 | 0.001 | -0.642 | 0.855 |
| | | Yes | | | 4.720 | 0.000 |
| | dmft | Don't know | -1.408 | 0.006 | -0.189 | 0.876 |
| | | Yes | | | 1.219 | 0.000 |
| Other children teased you | dmfs | Don't know | -3.355 | 0.120 | 0.534 | 0.934 |
| | | Yes | | | 3.888 | 0.000 |
| | dmft | Don't know | -0.961 | 0.190 | 0.241 | 0.881 |
| | | Yes | | | 1.201 | 0.000 |
| Other children asked you questions | dmfs | Don't know | -3.036 | 0.152 | 0.227 | 0.987 |
| | | Yes | | | 3.263 | 0.000 |
| | dmft | Don't know | -1.245 | 0.020 | -0.276 | 0.778 |
| | | Yes | | | 0.969 | 0.000 |

*Column group header: Multiple Comparisons Games-Howell*

## 3.3 Prevalence of gingival health among children

The results shows that only 7.33 % of children with in gingivitis and the rest 92.67% was free of gingivitis as shown in figure 3.11.
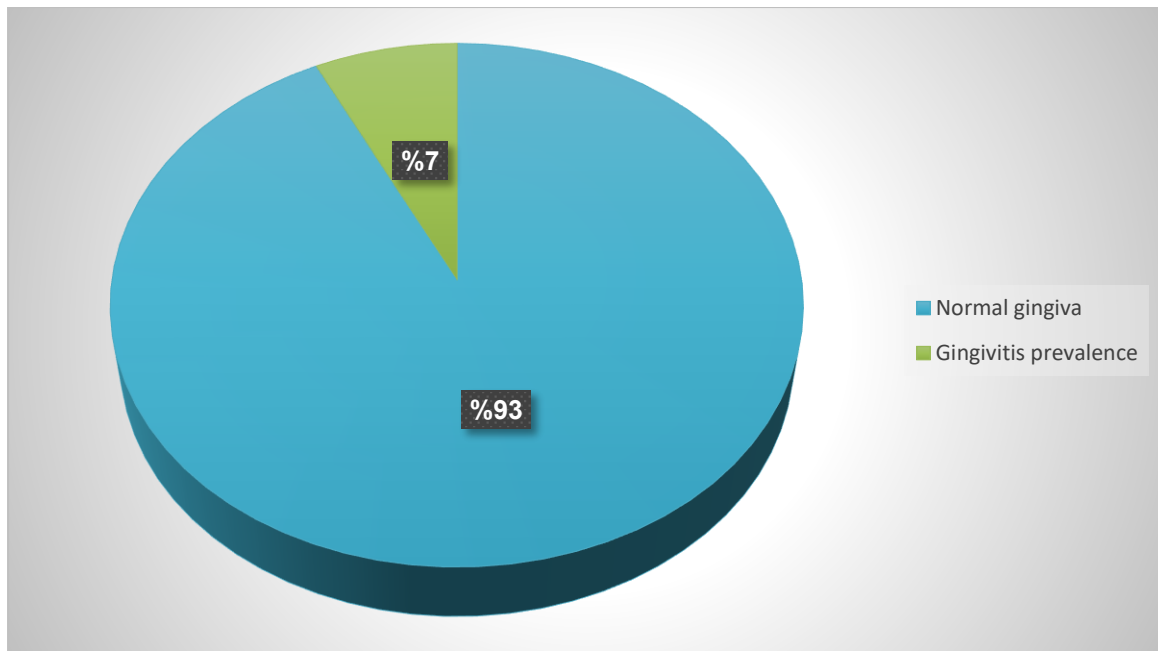
**Figure 3-11: Prevalence of gingival health among children**

Figure 3-12 shows the prevalence of gingivitis according to gender, the boys were found to be more than girls concerning gingivitis.
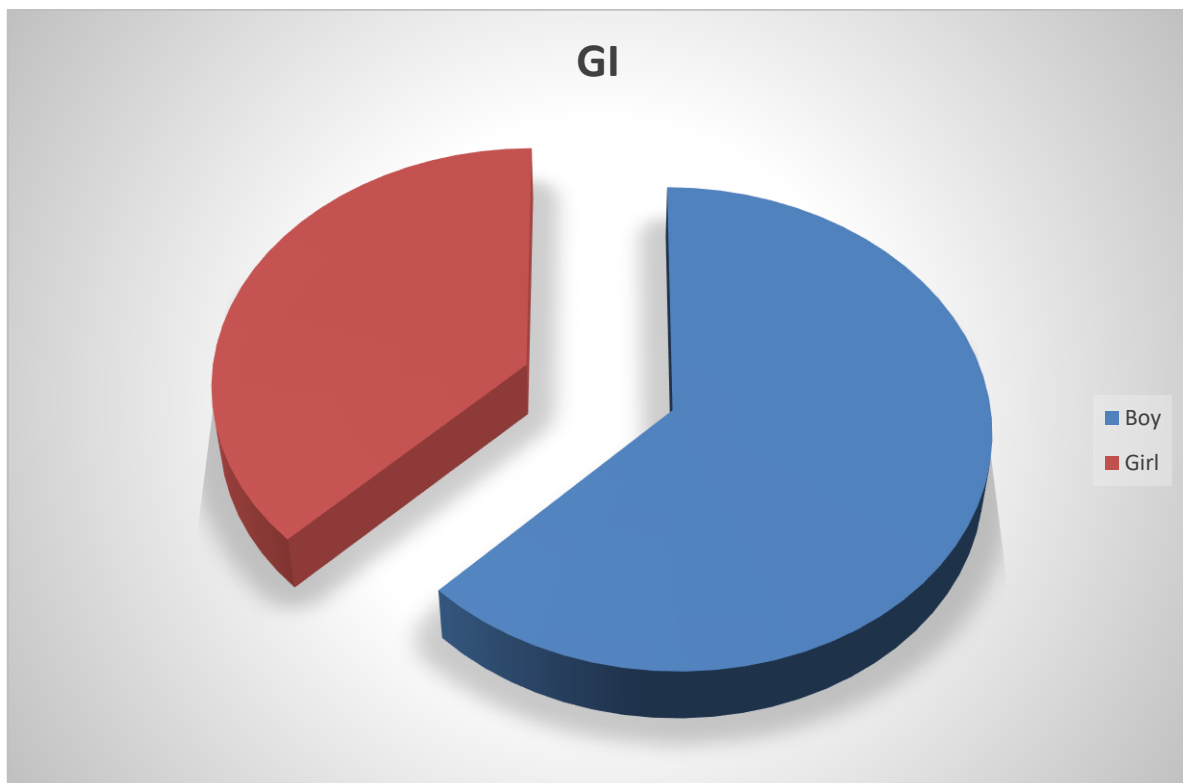


**Figure 3-12: The prevalence of gingivitis according to gender**

59

Table (3.15) illustrates the association between gingival health and socioeconomic status (low, middle, high), from this table it is obvious that low socioeconomic status occupied the higher percentage of gingivitis and the relation of children gingival health with socioeconomic status was non-significant.

**Table (3.15): Association between gingival condition and socioeconomic status**

| Gingival Health | | SES | | | Chi-square | p | Total |
|---|---|---|---|---|---|---|---|
| | | Low | Middle | High | | | |
| Normal gingiva | N. | 411 | 243 | 458 | | | 1112 |
| | %GI | 36.96 | 21.85 | 41.19 | | | 100.00 |
| | %SES | 91.95 | 92.75 | 93.28 | | | 92.67 |
| | %T | 34.25 | 20.25 | 38.17 | 0.615 | [NS] | 92.67 |
| Bleeding gingiva | N. | 36 | 19 | 33 | | | 88 |
| | %GI | 40.91 | 21.59 | 37.50 | | | 100.00 |
| | %SES | 8.05 | 7.25 | 6.72 | | | 7.33 |
| | %T | 3.00 | 1.58 | 2.75 | | | 7.33 |

NS: Not significant at p>0.05

The results in table (3.16) showed that the association of children gingival health with OHRQoLpain questionnaires was non-significant.

The results in table (3.17) shows that the association of children gingival health with OHRQoL feelings questionnairs was not significant.

The results in table (3.18) shows that the association of children gingival health with OHRQoL about school questionnairs was not significant .

**Table (3.16): Children gingival health in association to OHRQoL pain questionnaires**

| Gingival Health | Pain Questions | Yes | | No | | Don't know | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | N. | % | N. | % | N. | % | | |
| Normal Gingiva | Pain in teeth | 625 | 56.21 | 422 | 37.95 | 65 | 5.85 | | NS |
| | Sore spots in mouth | 409 | 36.78 | 617 | 55.49 | 86 | 7.73 | | |
| | Bad breath | 525 | 47.21 | 511 | 45.95 | 76 | 6.83 | | |
| | Needed longer time to eat | 424 | 38.13 | 611 | 54.95 | 77 | 6.92 | | |
| | Had ahard time chewing food | 491 | 44.15 | 568 | 51.08 | 53 | 4.77 | | |
| Bleeding Gingiva | Pain in teeth | 52 | 59.09 | 34 | 38.64 | 2 | 2.72 | 1.995 | |
| | Sore spots in mouth | 40 | 45.45 | 46 | 52.27 | 2 | 2.27 | 5.108 | |
| | Bad breath | 42 | 47.73 | 38 | 43.18 | 8 | 9.09 | 0.735 | |
| | Needed longer time to eat | 28 | 31.82 | 54 | 61.36 | 6 | 6.82 | 1.470 | |
| | Had ahard time chewing food | 39 | 44.32 | 46 | 52.27 | 3 | 3.41 | 0.345 | |
| Total | Pain in teeth | 677 | 56.42 | 456 | 38.00 | 67 | 5.58 | | |
| | Sore spots in mouth | 449 | 37.42 | 663 | 55.25 | 88 | 7.33 | | |
| | Bad breath | 567 | 47.25 | 549 | 45.75 | 84 | 7.00 | | |
| | Needed longer time to eat | 452 | 37.67 | 665 | 55.42 | 83 | 6.92 | | |
| | Had ahard time chewing food | 530 | 44.17 | 614 | 51.17 | 70 | 4.67 | | |

**NS: Not significant at p>0.05**

**Table (3.17): Children gingival health in association to OHRQoL feelings questionnaires**

| Gingival Health | Feelings questions | Yes | | No | | Don't know | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | N. | % | N. | % | N. | % | | |
| **Normal Gingiva** | concerned what other people think | 237 | 21.31 | 788 | 70.86 | 87 | 7.82 | | |
| | Worried about appearance | 224 | 20.14 | 842 | 75.72 | 46 | 4.14 | | |
| **Bleeding gingiva** | concerned what other people think | 19 | 21.59 | 61 | 69.32 | 8 | 9.09 | 0.196 | **NS** |
| | Worried about appearance | 18 | 20.45 | 65 | 73.86 | 5 | 5.68 | 0.499 | |
| **Total** | concerned what other people think | 256 | 21.33 | 849 | 70.75 | 95 | 7.92 | | |
| | Worried about appearance | 242 | 20.17 | 907 | 75.58 | 51 | 4.25 | | |

**NS: Not significant at p>0.05**

**Table (3.18): Children gingival health in association to OHRQoL about the school questionnaires**

| Gingival Health | Question about the school | Yes | | No | | Don't know | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | N. | % | N. | % | N. | % | | |
| **Normal gingiva** | Not speak out loud in class | 166 | 14.93 | 894 | 80.40 | 52 | 4.68 | | **NS** |
| **Bleeding gingiva** | | 17 | 19.32 | 68 | 77.27 | 3 | 3.41 | 1.415 | |
| **Total** | | 183 | 15.25 | 962 | 80.17 | 55 | 4.58 | | |

**NS: Not significant at p>0.05**

The results in table (3.19) shows that the association between children gingival health and OHRQoL was not significant**.**

**Table (3.19): Children gingival health in association to OHRQoL about being with other people questionnaires**

| Gingival Health | Questions about being with other people | Yes | | No | | Don't know | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | N. | % | N. | % | N. | % | | |
| **Normal gingiva** | Avoid smiling | 186 | 16.73 | 881 | 79.23 | 45 | 4.05 | | NS |
| | Not talk to other children | 150 | 13.49 | 913 | 82.10 | 49 | 4.41 | | |
| | Not be with other children | 138 | 12.41 | 918 | 82.55 | 56 | 5.04 | | |
| | Not playing with children | 121 | 10.88 | 939 | 84.44 | 52 | 4.68 | | |
| | Other children teased you | 160 | 14.39 | 914 | 82.19 | 38 | 3.42 | | |
| | Other children asked you questions | 192 | 17.27 | 876 | 78.78 | 44 | 3.96 | | |
| **Bleeding gingiva** | Avoid smiling | 18 | 20.45 | 66 | 75.00 | 4 | 4.55 | 0.901 | |
| | Not talk to other children | 13 | 14.77 | 72 | 81.82 | 3 | 3.41 | 0.287 | |
| | Not be with other children | 12 | 13.64 | 72 | 81.82 | 4 | 4.55 | 0.143 | |
| | Not playing with children | 12 | 13.64 | 73 | 82.95 | 3 | 3.41 | 0.866 | |
| | Other children teased you | 15 | 17.05 | 70 | 79.55 | 3 | 3.41 | 0.465 | |
| | Other children asked you questions | 20 | 22.73 | 65 | 73.86 | 3 | 3.41 | 1.690 | |
| **Total** | Avoid smiling | 204 | 17.00 | 947 | 78.92 | 49 | 4.08 | | NS |
| | Not talk to other children | 163 | 13.58 | 985 | 82.08 | 52 | 4.33 | | |
| | Not be with other children | 150 | 12.50 | 990 | 82.50 | 60 | 5.00 | | |
| | Not playing with children | 133 | 11.08 | 1012 | 84.33 | 55 | 4.58 | | |
| | Other children teased you | 175 | 14.58 | 984 | 82.00 | 41 | 3.42 | | |
| | Other children asked you questions | 212 | 17.67 | 941 | 78.42 | 47 | 3.92 | | |

**NS: Not significant at p>0.05**

# 3.4 Oral hygiene among children

The result reveales that the mean of the plaque index for children was 0.501± 0.055 while the mean of calculus index was 0.029±0.003 as shown in figure (3.13).
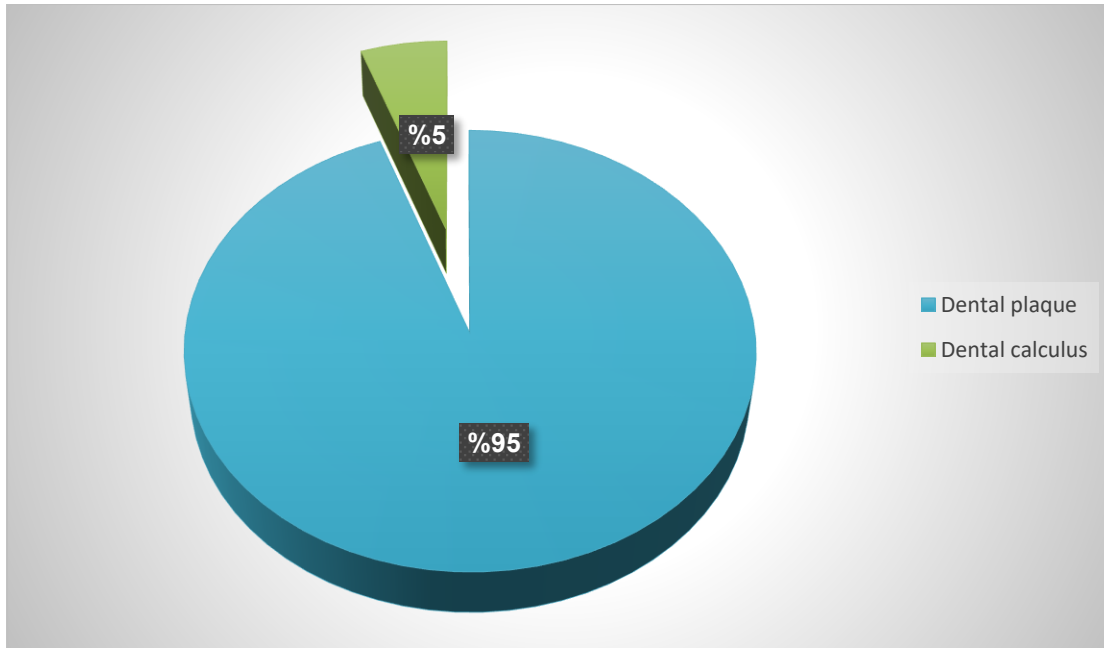
**Figure 3-13: Distribution of oral hygiene among children**

Figure (3-14) demonstrate the prevalence of oral hygiene according to gender ,which showed that girls more than boys.



| | PII | CII |
|---|---|---|
| Boy | 0.442 | 0.027 |
| Girl | 0.561 | 0.031 |
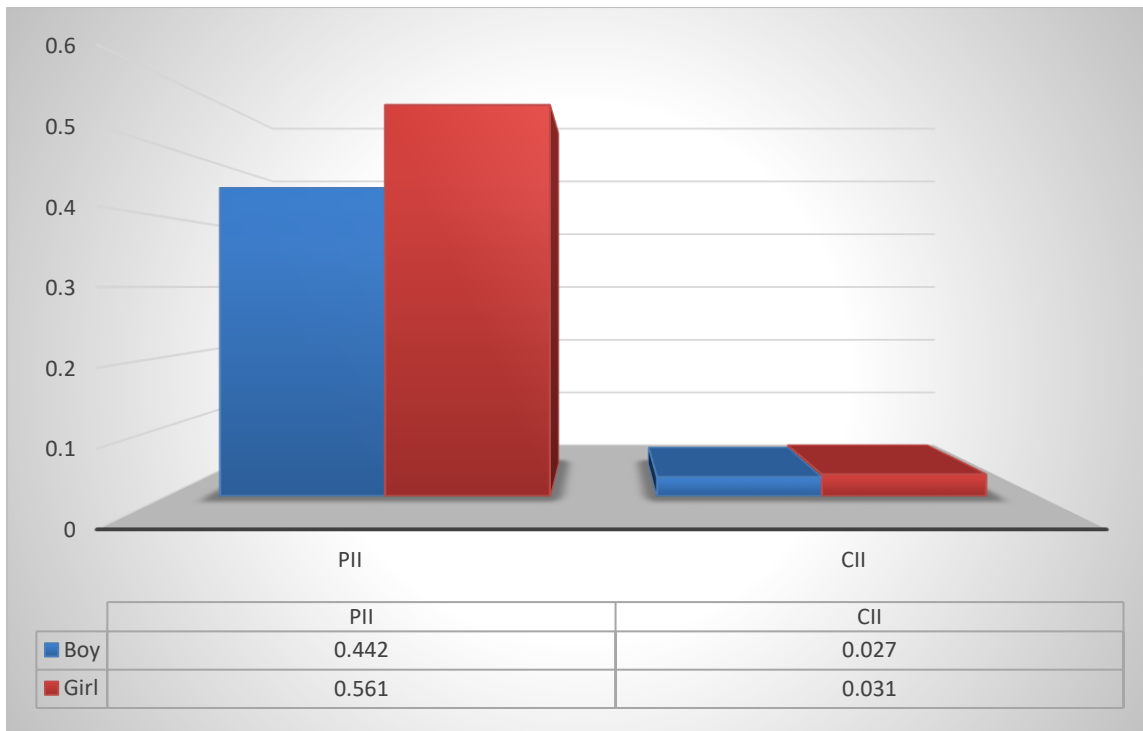
**Figure 3-14: The prevalence of oral hygiene by gender**

The results in table (3.20) shows that the association between oral hygiene and socioeconomic status was not significant.

**Table (3.20):Children oral hygiene in association to Socioeconomic status**

| Oral hygiene | Low | | Middle | | High | | F | p-value |
|---|---|---|---|---|---|---|---|---|
| | Mean | SE | Mean | SE | Mean | SE | | |
| PlI | 0.610 | 0.147 | 0.441 | 0.018 | 0.435 | 0.013 | 1.136 | NS |
| CalI | 0.031 | 0.006 | 0.029 | 0.006 | 0.028 | 0.004 | 0.103 | NS |

NS: Not significant at p>0.05

The results in table (3.21) shows that the association between children oral hygiene with  OHRQoL pain questionnaires was not significant, except for plaque index PlI for question about bad breath in the mouth and the question about had a hard time chewing food which with highly significant difference.

**Table (3.21): Children oral hygiene in association to OHRQoL pain questionnaires**

| Oral hygiene | Pain questions | Yes | | No | | Don't know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SE | Mean | SE | Mean | SE | | |
| PlI | Pain in teeth | 0.558 | 0.097 | 0.429 | 0.014 | 0.421 | 0.038 | 0.679 | NS |
| | Sore spots in mouth | 0.464 | 0.014 | 0.542 | 0.100 | 0.385 | 0.032 | 0.422 | NS |
| | Bad breath | 0.568 | 0.116 | 0.444 | 0.013 | 0.427 | 0.035 | 6.244 | 0.002(HS) |
| | Needed longer time to eat | 0.468 | 0.014 | 0.435 | 0.012 | 1.213 | 0.791 | 0.270 | NS |
| | Had ahard timechewingfood | 0.461 | 0.013 | 0.541 | 0.107 | 0.448 | 0.042 | 7.797 | 0.000(HS) |
| CalI | Pain in teeth | 0.025 | 0.003 | 0.035 | 0.006 | 0.032 | 0.011 | 1.405 | NS |
| | Sore spots in mouth | 0.023 | 0.004 | 0.032 | 0.005 | 0.041 | 0.010 | 0.174 | NS |
| | Bad breath | 0.025 | 0.004 | 0.036 | 0.005 | 0.010 | 0.004 | 1.921 | NS |
| | Needed longer time to eat | 0.022 | 0.004 | 0.034 | 0.005 | 0.026 | 0.008 | 0.575 | NS |
| | Hada hard timechewingfood | 0.029 | 0.005 | 0.030 | 0.004 | 0.015 | 0.009 | 1.700 | NS |

HS: Highly significant at p<0.01; NS: Not sig.at p≥0.05

Table (3.22) shows the association between children oral hygiene and OHRQoL feelings questionnaires which was not significant except for plaque index for question been concerned what other people think about the teeth or mouth which was highly significance.

**Table (3.22): Children oral hygiene in association to OHRQoL feelings questionnaires**

| Feelings questions | Oral Hygiene | Yes | | No | | Don't know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SE | Mean | SE | Mean | SE | | |
| Been concerned what other people think about the teeth | Pl | 0.47 | 0.47 | 0.44 | 0.01 | 1.11 | 0.69 | 5.332 | 0.005(HS) |
| | Cal | 0.02 | 0.00 | 0.03 | 0.00 | 0.02 | 0.01 | 2.834 | NS |
| Worried about appearance | Pl | 0.72 | 0.27 | 0.45 | 0.01 | 0.39 | 0.05 | 2.058 | NS |
| | Cal | 0.03 | 0.01 | 0.03 | 0.00 | 0.02 | 0.01 | 0.478 | NS |

HS: Highly significant at p<0.01; NS: Not sig.at p≥0.05

The results in table (3.23) shows that the association of children calculus index with OHRQoL about school questionnaires which was not significant, while the plaque index was found highly significance.

**Table (3.23): Children oral hygiene in association to OHRQoL about the school questionnaires**

| Questions about the school | Oral Hygiene | Yes | | No | | Don't know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SE | Mean | SE | Mean | SE | | |
| Not speak out loud in class | PI | 0.478 | 0.022 | 0.440 | 0.010 | 1.653 | 1.192 | 10.604 | 0.000(HS) |
| | CaI | 0.022 | 0.005 | 0.030 | 0.004 | 0.039 | 0.014 | 0.738 | NS |

HS: Highly significant at p<0.01; NS: Not sig.at p≥0.05

The results in table (3.24) shows that the association between children oral hygiene and  OHRQoL was not significant except for plaque index for question of not be with other children which was highly significant, p-value=0.000.

**Table (3.24): Children oral hygiene in association to OHRQoL about being with other people questionnaires**

| Questions about being with other people | Oral Hygiene | Yes | | No | | Don't know | | F | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SE | Mean | SE | Mean | SE | | |
| Avoid  smiling | PI | 0.808 | 0.322 | 0.444 | 0.010 | 0.324 | 0.035 | 3.256 | NS |
| | CaI | 0.021 | 0.005 | 0.031 | 0.004 | 0.030 | 0.013 | 0.721 | NS |
| Not talk to other children | PI | 0.460 | 0.023 | 0.513 | 0.067 | 0.408 | 0.043 | 0.117 | NS |
| | CaI | 0.020 | 0.005 | 0.031 | 0.004 | 0.016 | 0.008 | 1.198 | NS |
| Not be with other children | PI | 0.480 | 0.024 | 0.446 | 0.010 | 1.462 | 1.094 | 8.050 | **0.000(HS)** |
| | CaI | 0.019 | 0.005 | 0.030 | 0.004 | 0.033 | 0.012 | 0.856 | NS |
| Not playing  with children | PI | 0.468 | 0.026 | 0.514 | 0.065 | 0.353 | 0.037 | 0.207 | NS |
| | CaI | 0.015 | 0.005 | 0.031 | 0.003 | 0.030 | 0.011 | 1.371 | NS |
| Other children teased you | PI | 0.837 | 0.375 | 0.449 | 0.010 | 0.336 | 0.045 | 3.225 | NS |
| | CaI | 0.022 | 0.006 | 0.031 | 0.004 | 0.020 | 0.010 | 0.706 | NS |
| Other  children asked questions | PI | 0.453 | 0.021 | 0.519 | 0.070 | 0.360 | 0.045 | 0.236 | NS |
| | CaI | 0.023 | 0.005 | 0.032 | 0.004 | 0.007 | 0.005 | 1.595 | NS |

**HS: Highly significant at p<0.01; NS: Not sig.at p≥0.05**

The results in table (3.25) showed that the association of children socioeconomic status with OHRQoL pain questionnaires which were not significant except for some questions about pain in the teeth or mouth, about needed longer time than others to eat the meal because of the teeth and the question about had trouble saying some words because of the teeth, they were with significance difference.

The results in table (3.26) showed that the association between children socioeconomic status with OHRQoL feelings questionnaires which was not significant except for some questions about felt frustrated because of the teeth or mouth and about been concerned what other people think about the teeth or mouth which was significant.

The results in table (3.27) showed that the association between children socioeconomic status and OHRQoL about school questionnaires which was not significant except for the question about not wanted to speak or read out loud in class because of the teeth or mouth that was significant, p-value=0.035.

The results in table (3.28) shows that the association between children socioeconomic status and OHRQoL about being with other people questionnaires which was not significant except for the questions about not wanted to talk to other children because of the teeth or mouth and the question about stayed away from playing with children because of the teeth or mouth that were highly significant, p- value=0.006 and 0.000 respectively.

**Table (3.25): Socioeconomic status in association to OHRQoL Pain Questionnaires**

| Pain questions | Low | | | | | | Middle | | | | | | High | | | | | | Chi-square | p-value |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | Yes | | No | | Don't know | | Yes | | No | | Don't know | | Yes | | No | | Don't know | | | |
| | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | | |
| Pain in Teeth | 258 | 38.11 | 155 | 33.99 | 34 | 50.75 | 157 | 23.19 | 96 | 21.05 | 9 | 13.43 | 262 | 38.70 | 205 | 44.96 | 24 | 35.82 | 10.631 | 0.031(S) |
| Sore spots in mouth | 171 | 38.08 | 239 | 36.05 | 37 | 42.05 | 97 | 21.60 | 145 | 21.87 | 20 | 22.73 | 181 | 40.31 | 279 | 42.08 | 31 | 35.23 | 1.884 | NS |
| Pain in Eating | 249 | 37.50 | 177 | 35.76 | 21 | 51.22 | 156 | 23.49 | 98 | 19.80 | 8 | 19.51 | 259 | 39.01 | 220 | 44.44 | 12 | 29.27 | 7.792 | NS |
| Food stuck in teeth | 233 | 36.93 | 179 | 37.21 | 35 | 39.77 | 147 | 23.30 | 99 | 20.58 | 16 | 18.18 | 251 | 39.78 | 203 | 42.20 | 37 | 42.05 | 2.091 | NS |
| Bad breath | 217 | 38.27 | 193 | 35.15 | 37 | 44.05 | 125 | 22.05 | 116 | 21.13 | 21 | 25.00 | 225 | 39.68 | 240 | 43.72 | 26 | 30.95 | 5.671 | NS |
| longer time to eat | 166 | 36.73 | 244 | 36.69 | 37 | 44.58 | 103 | 22.79 | 134 | 20.15 | 25 | 30.12 | 183 | 40.49 | 287 | 43.16 | 21 | 25.30 | 10.731 | 0.030(S) |
| hard time chewing | 197 | 37.17 | 227 | 36.97 | 23 | 41.07 | 124 | 23.40 | 127 | 20.68 | 11 | 19.64 | 209 | 39.43 | 260 | 42.35 | 22 | 39.29 | 1.948 | NS |
| trouble eating | 178 | 37.79 | 244 | 37.03 | 25 | 35.71 | 116 | 24.63 | 132 | 20.03 | 14 | 20.00 | 177 | 37.58 | 283 | 42.94 | 31 | 44.29 | 5.003 | NS |
| troublesaying words | 126 | 41.18 | 298 | 35.10 | 23 | 51.11 | 66 | 21.57 | 183 | 21.55 | 13 | 28.89 | 114 | 37.25 | 368 | 43.35 | 9 | 20.00 | 12.745 | 0.013(S) |
| Problem in sleeping | 155 | 42.01 | 271 | 34.70 | 21 | 42.00 | 84 | 22.76 | 167 | 21.38 | 11 | 22.00 | 130 | 35.23 | 343 | 43.92 | 18 | 36.00 | 9.058 | NS |

**NS: Not significant at p>0.05; S: Significant p<0.05**

**Table (3.26) Socioeconomic status in association to OHRQoL feeling questionnaires**

| Feelings Question | SES | | | | | | | | | | | | | | | | | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Low | | | | | | middle | | | | | | High | | | | | | | |
| | Yes | | No | | Don't know | | Yes | | No | | Don't know | | Yes | | No | | Don't know | | | |
| | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | | |
| Been Upset | 148 | 38.34 | 268 | 35.50 | 31 | 52.54 | 84 | 21.76 | 167 | 22.12 | 11 | 18.64 | 154 | 39.90 | 320 | 42.38 | 17 | 28.81 | 7.363 | NS |
| Felt Frustratd | 127 | 40.97 | 285 | 34.63 | 35 | 52.24 | 59 | 19.03 | 193 | 23.45 | 10 | 14.93 | 124 | 40.00 | 345 | 41.92 | 22 | 32.84 | 11.608 | 0.021(S) |
| Been Shy | 124 | 41.06 | 299 | 35.05 | 24 | 53.33 | 62 | 20.53 | 191 | 22.39 | 9 | 20.00 | 116 | 38.41 | 363 | 42.56 | 12 | 26.67 | 10.458 | NS |
| Concerned people think | 111 | 43.36 | 300 | 35.34 | 36 | 37.89 | 57 | 22.27 | 177 | 20.85 | 28 | 29.47 | 88 | 34.38 | 372 | 43.82 | 31 | 32.63 | 12.366 | 0.015(S) |
| Worriedabout appearance | 100 | 41.32 | 322 | 35.50 | 25 | 49.02 | 49 | 20.25 | 200 | 22.05 | 13 | 25.49 | 93 | 38.43 | 385 | 42.45 | 13 | 25.49 | 8.180 | NS |

**S: Significant p<0.05 ; NS: Not a significant t p≥0.05**

**Table (3.27) Socioeconomic status in association to OHRQoL about the school questionnaires**

| Question about the school | SES | | | | | | | | | | | | | | | | | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Low | | | | | | Middle | | | | | | High | | | | | | | |
| | Yes | | No | | Don't know | | Yes | | No | | Don't know | | Yes | | No | | Don't know | | | |
| | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | | |
| Missed the school | 88 | 40.93 | 347 | 36.18 | 12 | 46.15 | 45 | 20.93 | 211 | 22.00 | 6 | 23.08 | 82 | 38.14 | 401 | 41.81 | 8 | 30.77 | 2.988 | NS |
| hard timepaying attention | 75 | 42.13 | 352 | 36.14 | 20 | 41.67 | 40 | 22.47 | 213 | 21.87 | 9 | 18.75 | 63 | 35.39 | 409 | 41.99 | 19 | 39.58 | 3.580 | NS |
| Notspeakout loud in class | 80 | 43.72 | 343 | 35.65 | 24 | 43.64 | 46 | 25.14 | 204 | 21.21 | 12 | 21.82 | 57 | 31.15 | 415 | 43.14 | 19 | 34.55 | **10.377** | **0.035(S)** |

**NS: Not significant at p>0.05; S: Significant p<0.05**

**Table (3.28) Socioeconomic status in association to OHRQoL about being with other people questionnaires**

| Question about being with other people | SES | | | | | | | | | | | | | | | | | | Chi-square | p-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Low | | | | | | Middle | | | | | | High | | | | | | | |
| | Yes | | No | | Don't know | | Yes | | No | | Don't know | | Yes | | No | | Don't know | | | |
| | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | N. | % | | |
| Avoid Smiling | 83 | 40.69 | 349 | 36.85 | 15 | 30.61 | 44 | 21.57 | 201 | 21.22 | 17 | 34.69 | 77 | 37.75 | 397 | 41.92 | 17 | 34.69 | 6.344 | NS |
| Not talk to otherchildren | 73 | 44.79 | 346 | 35.13 | 28 | 53.85 | 38 | 23.31 | 215 | 21.83 | 9 | 17.31 | 52 | 31.90 | 424 | 43.05 | 15 | 28.85 | 14.353 | 0.006 (HS) |
| Not be with otherchildren | 68 | 45.33 | 354 | 35.76 | 25 | 41.67 | 31 | 20.67 | 212 | 21.41 | 19 | 31.67 | 51 | 34.00 | 424 | 42.83 | 16 | 26.67 | 11.983 | NS |
| Not playing with children | 65 | 48.87 | 352 | 34.78 | 30 | 54.55 | 28 | 21.05 | 220 | 21.74 | 14 | 25.45 | 40 | 30.08 | 440 | 43.48 | 11 | 20.00 | 22.590 | 0.000 (HS) |
| Otherchildren teased you | 77 | 44.00 | 352 | 35.77 | 18 | 43.90 | 37 | 21.14 | 214 | 21.75 | 11 | 26.83 | 61 | 34.86 | 418 | 42.48 | 12 | 29.27 | 7.232 | NS |
| Otherchildren Askedquestions | 86 | 40.57 | 337 | 35.81 | 24 | 51.06 | 45 | 21.23 | 205 | 21.79 | 12 | 25.53 | 81 | 38.21 | 399 | 42.40 | 11 | 23.40 | 8.297 | NS |

**HS: Highly significant at p<0.01; NS: Not significant at p≥0.05**

# Chapter Four

# Discussion

# Discussion

Epidemiology is the study of health and disease distribution in groups (population) and related determinants (Peter, 2004). Oral health surveys provide a sound basis for estimation of the present oral health status of a population and its future needs for oral health care. They produce reliable baseline data for development of national or regional oral health programs and for planning for appropriate numbers and types of personal for oral care (WHO, 1997).

This oral health survey was designed to investigate the oral health status of primary school children aged (8-10) years this age allows studying oral and dental status for primary and permanent dentition. There is no previous epidemiological Iraqi study concerning primary school (8-10) years children in Al-Najaf city, so results of the present study can be considered as a base line data for comparison with other studies in Iraqi governorates and different parts of the world. The comparison of data with other studies, however, may not be completely valid due to variation in methods of examination used by different researchers and variation in the environment of other countries while comparison with other Iraqi epidemiological studies may give more accurate results because the majority of studies follow criteria of WHO in the diagnosis and dental health recording and living opportunity in the same environment.

Several methods had been developed to minimize the complexity, socials and cultural relative aspect of quality of life, as well as to provide indecies capable to capture data beyond the biological and pathological disease process. The most common approach, is usually based on questionnaires that emphasize the subject's perception on physical and psychological health and functional capacity (Wallander, 2001; John et al., 2004 and Jokovic, 2004), these measurement tools help to assess the outcomes of treatments or actions and further they develop guidelines for evidence-based clinical practice (McGrath et al., 2004). Information on quality of life to evaluate the feeling and perceptions

in the individual level, leading to increase the possibility of efficient communication between the dentists and the patients to understand the effect of oral health on the lives of the subject and family, and assess the clinical results of services provided, in addition it help to indicate the population needs; priority of care; and evaluation of adopted treatment strategies; thus helping in making the decision process for the research.

In this survey, the prevalence of dental caries was found to be (98%) for primary school (8-10) year children. This percentage was higher than that reported by many studies (Mubarak, 2002; Diab, 2003 Al-Galebi, 2011; Martins-Júnior et al., 2012; Al-Awadi, 2016). This high prevalence may partly be attributed to the lower fluoride level in drinking water in Iraq that was ranging between 0.12-0.22 (Al-Azawi, 2000), and it may also related to other factors related to the socioeconomic condition and living style of the families. For the diagnosis and recording of caries-experience; DMFS, dmfs indices were used in the present study. These indices allows the measurement of the past caries-experience indicated by missing and filled fraction, and the present caries by the decayed fraction. In addition, they allow the measurement of dental caries by severity. The mean DMFS value was (2.16 ±0.063) and the mean dmfs value was ( 12.954±0.273) which were higher than that recorded by some studies (Mubarak , 2002; Diab , 2003 Al-Galebi, 2011; Martins-Júnior et al., 2012) while were lower than that recorded by other studies (Mohammed, 2004; Hussein, 2010). Variation in socioeconomic status, dietary habits, oral hygiene measurements as well as dental health services between governorates can explain the variation in caries-experience between the present study and others. It is worth to mention that values DMFS and dmfs may be underestimated as bitewing radiograph was not taken, for the detection of interproximal caries.

The study showed that the mean of  DS fraction (2.11) was higher than Ms and FS components of DMFS index and the mean of ds fraction (8.752) was higher than ms and fs components of dmfs index, which is an indication of a

poor dental treatment, ms fraction (4.07%) was higher than fs fraction (0.1%), which mean that even if treatment was present, it is directed toward extraction rather than restoration which reflects the lack of awareness toward the importance of deciduous teeth. This result was in agreement with other studies (Baram, 2007; Al-Ghalebi, 2011; Al-Waheb, 2018).

Regarding caries experience of primary teeth (dmfs) boys had higher caries experience than girls which was in agreement with Mubarak (2002) and in disagreement with several other studies (Al-Azawi, 2000; McDonald et al., 2004; Baram, 2007; Al-Ghalebi, 2011; Al-Awadi, 2016). While caries experience of permanent teeth (DMFS) girls had slightly higher caries experience than boys .

Regarding the socioeconomic status of children, there was no significant difference with dental caries for both dentition except filling fraction of permanent teeth the association was significant.

In this study, the OHRQoL had no significant difference with caries experience of permanent teeth except for two quesions about the child in the school (had a hard time paying attention in school because of the teeth or mouth and not wanted to speak or read out loud in class because of the teeth or mouth) which had a significant difference with caries experience of permanent teeth. Also the study showed that there was a significant difference in the association between OHRQoL questionnaires and dental caries experience of primary teeth, this in agreement with Iraqi study by Al-Waheb (2018) and with Eisalhy, et al., (2015) and Goettems et al., (2018) and several authors (Bianco, 2010; Leal, 2012; Clementino, 2015; Freire, 2018) who stated that dental caries can lead to pain and chewing problems , may be several reasons for that such as difficulty with eating due to oral problems and led to more severe oral impacts on children's quality of life than impacts on other performances, oral ulcers and exfoliating primary teeth contributed to eating difficulties (Goes, 2001; Sheiham *et al*., 2001; Astrom and Okullo, 2003), difficulty with smiling was another

important aspect of children's OHRQoL. The most prevalent cause was position of teeth, dissatisfaction with position of teeth (Drotar *et al*., 1998), some studies found that psychological impacts of oral health, such as avoiding laughing and being teased about teeth, were more prevalent in children than in adults and elderly (Chen and Hunter, 1996).

Regarding oral hygiene condition, the mean plaque index was (0.501±0.055) which was less than that reported by some studies ( Mubarak, 2002; Diab, 2003; Al-Galebi, 2011), and the mean calculus index was (0.029±0.003) which was less than that reported by previous studies (Al-Galebi, 2011) these discrepancies may be due to differences in sample size, residency, knowledge and attitude, method and time of brushing before the examination or the usual brushing. The prevalence of gingival index was (7.33%) it was less than that reported by some studies (Al-Galebi, 2011; Al-Awadi, 2016; Al-Waheb, 2018), this difference due to the variations in indices used the gingival index measures the slight changes in gingiva to the spontaneous bleeding while for the WHO (2013) depend on presence or absence of bleeding gingiva and all teeth were examined instead of sextant.

Concerning gender, the boys had greater prevalence of gingivitis than girls which is in disagreement with Al-Sadam, 2013; Pari et al, 2014, which is probably because the girls care about their oral hygiene more than boys, and in agreement with Mubark, 2002; Al-Galebi, 2011, while the prevalence of oral hygiene (plaque index and calculus index) were greater in girls than boys this in agreement with Al-Azawi, 2000.

Also this study showed no significant difference between socioeconomic status and oral hygiene also no significant difference between socioeconomic status and gingival health.

There was no statistically significant differences were found between OHRQoL questionnaires and gingival health, also no statistically significant differences were found between OHRQoL questionnaires and oral hygiene

except plaque index of five OHRQoL quesstionaire was significant (bad breath in the past 4 weeks , had a hard time biting or chewing food because the teeth or mouth , been concerned what other people think about the teeth or mouth , not wanted to speak or read out loud in class because of the teeth or mouth, not be with other children), there may be caused by gum problems were the other important oral conditions affecting children's OHRQoL. More than one fifth of children observed that bleeding gums caused oral impacts on their life, particularly in relation to difficulty cleaning, children with difficulty cleaning their teeth because of gum inflammation are unlikely to achieve good levels of oral hygiene because brushing may lead to bleeding, and their gum problems would undoubtedly remain or even get worse. This problem would not be solved by the traditional dental treatment without understanding the affects of oral impacts on behaviour (Schor, 1998).

No statistically significant differences were found between genders regarding the impact on OHRQoL unlike other studies on children from different age groups. There may be several reasons for that, including the fact that most of the children in this study were in the mixed dentition phase. The recently erupted anterior permanent teeth did not have enough time to exhibit signs of the disease and the anterior primary teeth most affected by early childhood caries and more related to facial appearance had already exfoliated. Perhaps, the result could be different if esthetic had been affected by dental caries in the anterior region of the mouth, as shown by other studies with older children (Moure-Leite *et al*. and Kumar *et al*., 2011).

Regarding the children socioeconomic status showed that the relation with OHRQoL was non-significant except some questions was significant such pain questions ( pain in the teeth or mouth in the past 4 weeks, needed longer time than others to eat meal because of the teeth or mouth , had trouble saying some words because of the teeth or mouth, and the feeling questions ( felt frustrated because of the teeth or mouth, been concerned what other people

think about the teeth or mouth also not wanted to speak or read out loud in class because of the teeth or mouth this about child school and two question about the child being with other people was highly significant (not wanted to talk to other children because of the teeth or mouth and stayed away from playing  with children because of the teeth or mouth, studies suggested that children's social performances rely more on their physical and psychological performances than adults (Schor, 1998).

For all the above, the not significant results which were found between groups may be attributed to the intervals classification of the data, Further studies are needed with small intervals classification to verify the results.

Most of children in this study were in need of preventive programs that is to say in need for recall for regular visits and the prophylactic application of fluoride therapy and fissure sealant to prevent initiation of dental caries. The high prevalence of dental caries and gingivitis among primary school children in Al-Najaf city recomend the need for a public and school preventive programs for those children, involving dental health education and improvement of dental knowledge and attitude towards oral hygiene.

# Chapter Five

# Conclusions and Suggestions

# Conclusions and Suggestions

## 5.1 Conclusions

From the present oral health survey, which was conducted among 8-10 years-old primary school children in Al-Najaf governorate, it was concluded that:

1. High caries prevalence was recorded, as only 2% of the total sample were caries-free. dmfs/DMFS values were of 12.9±0.273, 2.16±0.063 respectively and dmft/DMFT values of 5.479±0.084, 1.86±0.047 respectively.

2. ds/DS fraction contributed to be the major component of dmfs/DMFS followed by missing then by filled surface.

3. The prevalence of gingivitis was recorded 7.33%.

4. No associations were recorded between caries experience for both dentition with the socioeconomic status, except filling fraction of permanent teeth the associations was significant.

5. No associations were recorded between quality of life questionnaires and caries experience in permanent teeth.

6. An association was recorded between quality of life questionnaires and caries experience in deciduous teeth.

7. Highly significant associations were recorded between socioeconomic status, OHRQoL and gingival health.

8. No significant associations were recorded between socioeconomic status, OHRQoL and  gingival health.

## 5.2 Suggestions

**The following topics are suggested for further studies:**

1. This study was the first one concerning 8-10 years old school children in Al-Najaf city, it needs to be repeated after several years for the evaluation of oral health condition and monitor any changes in oral health.

2. This study needs to be extended to involve rural area of Al-Najaf city to obtain data for comparing with urban area.

3. Studies to evaluate the prevalence and severity of malocclusion, dental anomalies and its impact on the quality of life.

4. Further studies concerning factors related to nutritional status and dietary habits, genetic and other variables are needed to be evaluated, to increase the knowledge concerning the causes behind the prevalence and severity of dental caries and periodontal diseases.

# References

# References

## (A)

- AAP (AMERICAN ACADEMY OF PERIODONTOLOGY). 2014. Gum diseases in children.p74.

- ABABNEH KT., ABU HWAIG ZM., KHADER YS. 2012. Prevalence and risk indicators of gingivitis and periodontitis in a multi-centre study in North Jordan: a cross sectional study. BMC Oral Health, 12:1.

- ABANTO J, CARVALHOTS, MENDES FM, WANDERLEY MT., BONECKER M, RAGGIO DP.2011. Impact of oral diseases and disorders on oral health-related quality of life of preschool children. Community Dent Oral Epidemiol. 39(2):105-14.

- ABANTO J, PAIVA SM, RAGGIO DP, CELIBERTI P, ALDRIGUI JM., BONECKER M.2012. The impact of dental caries and trauma in children on family quality of life. Community Dent Oral Epidemiol. 40(4): 323-31.

- ABDUL RAZZAQ Q. 2007. Oral health status among 15 year-old school students in Sulaimania city-Iraq. Master thesis submitted to college of Dentistry, University of Baghdad.

- AJAMI B., ABOLFATHI G., MAHMOUDI E., AND MOHAMMADZADEH Z. 2015.Evaluation of Salivary Streptococcus mutans and Dental Caries in Children with Heart Diseases. J Dent Res Dent Clin Dent Prospects. Spring, 9: 105–108.

- AL-ABBASI, S. 2015. Nutritional status in relation to oral health condition and treatment needs among kindergarten children in Al-Basrah Governorate/Iraq. A master Thesis, College of Dentistry, University of Baghdad.

- AL-ALOUSI, WS. & KHADHIM, AL. 1983. Flouride content of drinking water in Iraq. Iraq Dent Assoc, 10, 8-14.

- AL-ANI N.2013.Oral Health Status, Treatment Needs and Dental Anomalies in Relation to Nutritional Status among 12 year-old School Children in Heet city/Al-Anbar governorate/Iraq. Master thesis submitted to the College of Dentistry, University of Baghdad.

- Al-ATIYAH I. 2017. The Impact of Oral Health Knowledge, Attitude and Practices of Kindergarten Teachers towards Oral Condition in Al-Rusafa Sector/ Baghdad-Iraq.

- AL-AWADI Z. 2016. Oral Health Status in Relation to Nutritional Status among 9 Years- old School Children in Al-Diwaniyah City/Iraq.

- AL-AZAWI L.2000. Oral health status and treatment needs among Iraqi five-years old kindergarten children and fifteen-years old students (A national survey) Ph.D. thesis submitted to College of Dentistry, University of Baghdad.

- AL-GALEBI S. AND EL-SAMARRAI S.2012.Oral health status and treatment needs in relation to nutritional status among 9-10 year-old school children in Nassiryia City/Iraq. J Bagh College Dentistry Pages. 24(1).

- AL-GALEBI S.2011. Oral health status and treatment need in relation to nutritional status among 9-10 year-old School Children in Nassirya City/Iraq. Master thesis submitted to College of Dentistry, University of Baghdad.

- AL-HADAD KA., IBRAHIM YT., AL-HADAD AM., AND AL-HEBSHI NN.2013.Assessment of gingival health status among 5- and 12- year-old children in Yemen: A crosssectional study. Inter Scho Res Not,7:1-7.

- AL-HASSNAWI A. AND ALWAHEB A.2014. Socioeconomic status in relation to dental caries in Dewanyiah governorate among 12 years old school students. J Bagh College Dentistry Pages 26(2).

- AL-HASSNAWY A.2013. Socioeconomic and Nutritional Status in Relation to Oral Health Status and Treatment Needs in Dewanyiah Governorate among 12 Years Old School Students. Master thesis submitted to the College of Dentistry, University of Baghdad.

- ALI D.2001.Oral health status and treatment needs among 12 year-old school children in Urban and Rural areas of Baghdad-Iraq. Master thesis submitted to College of Dentistry, University of Baghdad

- AL-KHAZA'ALI A.2004.Oral health status and treatment needs among (6-12) school children in Irbid city (Jordan). Master thesis submitted to college of Dentistry, Baghdad University.

- ALMEIDA AM., GONCALVES JR. 2004. Avaliação do impacto percebido da saúde bucal utilizando o instrumento OHIP-14 (oral health impact profile)-forma simplificada. UFES Revista de Odontologia 6: 11-16.

- AL-MUGAMIS A.2014.Oral health status and treatment needs among fifteen years old students in Maysan governorate/Iraq. Master thesis submitted to College of Dentistry, University of Baghdad.

- AL-OBAIDI E.2008. Oral health status and treatment needs among 15 year-old students in Al-Diwania Governorate-Iraq. Master thesis submitted to College of Dentistry, University of Baghdad.

- AL-SADAM N.2013. Oral health status in relation to nutritional and social status in Kerbal'a Governorate for primary school students aged 12 years old. Master thesis submitted to the College of Dentistry, University of Baghdad.

- AL-WAHEB A. and ALHUWAIZI A.2018. Assessment of Dental Caries among Internally Displaced Children in Baghdad. Bagh Coll Dentistry 30(3): 28-31.

- AL-WAHEB A. and ALHUWAIZI A.2018. Gingival Health of Internally Displaced Children living in Baghdad Camps.International Journal of Medical Research and Health Sciences, 7(8): 122-129.

- AL-WAHEB A.AND ALHUWAIZI A.2018. The Effect of Oral Health Status and Intervention Uregency on the Quality of life of Internally Displaced Children.

- ANDRADA LHR., BUCZYNSKI AK., CASTRO GF., SOUZA IPR.2011.Impacto de la salud oral em la calid de vida de los niños pre-escolares: percepción de los responsables. Acta Odontol Venez.; 49(4):1-9.

- ANTHONY L., NEELY R., THENDORE R., HDFORD L.2001.The natural history of periodontal disease in Man. Risk factors for progression of attachment loss in individual receiving no oral health care. J eriodontal, 72:1000-1015.

- ARMITAGE GC., WU Y., WANG HY., SORRELL J., DI GIOVINE FS., DUFF GW.2000. Low prevalence of a periodontitis-associated interleukin-1 composite genotype in individuals of Chinese heritage. JPeriodontol.71(2):164-171.

- ARORA G., MACKAY D., CONWAY D., and PELL J. 2017.Ethnic differences in oral health and use of dental services: cross-sectional study using the 2009 Adult Dental Health Survey. BMC Oral Health, 17: 1.

- ASTROM AN, OKULLO I. 2003. Validity and reliability of the Oral Impacts on Daily Performances (OIDP) frequency scale: a cross-sectional study of adolescents in Uganda. BMC Oral Health.

- ATCHISON KA., SHETTY V., BELIN TR., DER-MARTIROSIAN C., LEATHERS R., BLACK E., ET AL.2006. Using patient self-report data to evaluate orofacial surgical outcomes. Community Dent Oral Epidemiol 34: 93-102.

# (B)

- BADAR S., CHANNAR S., BHUTTA N., ARSHAD S.2010. Dental caries; frequency and determinants among patients attending dentaloutpatient department in Bahawal Victoria Hospital

- BAHAWAPUR AND BRODER HL.2007. Children's oral health-related quality of life. Community Dent Oral Epidemiol 35(Suppl 1):5-7.

- BARAM A.2007. Oral health status and treatment needs among primary school children in Sulaimani city. Master thesis submitted to College of Dentistry, University of Baghdad.

- BARBOSA TS., GAVIAO MB.2008. Oral health-related quality of life in children: part II. Effects of clinical oral health status. A systematic review. Int J Dent Hyg 6:100-107.

- BARCACCIA, BARBARA 2013. "Quality Of Life: Everyone Wants It, But What Is It?". Forbes/ Education. Retrieved 10 May 2016.

- BENZIAN H., MONSE B., HEINRICH-WELTZIEN R., HOBDELL M., MULDER J., VAN PALENSTEIN HELDERMAN W.2011. Untreated severe dental decay: a neglected determinant of low body mass index in 12-year-old Filipino children. BMC Public Health.

- BHUTTA ZA.2006. Effect of infections and environmental factors on growth and nutritional status in developing countries. Journal of Pediatric Gastroenterology and Nutrition.43(3):S13–S21.

- BIANCO A., FORTUNATO L., NOBILE CG., PAVIA M.2010. Prevalence and determinants of oral impacts on daily performance: results from a survey among school children in Italy. Eur J Public Health. 20(5):595-600. doi:10.1093/eurpub/ckp179.

- BONFIM M., MATTOS F. FERREIRA E. CAMPOS A. & VARGAS A.2013. Social determinants of health and periodontal disease in Brazilian adults: a cross- sectional study. BMC Oral Health, 3, 22.

- BRODER HL. 2001. Using psychological assessment and therapeutic strategies to enhance well-being. Cleft Palate-Craniofac J 38:248-254.

- BRODER HL., WILSON-GENDERSON M. 2007. Reliability and convergent and discriminant validity of the Child Oral Health Impact Profile (COHIP Child's version). Community Dent Oral Epidemiol 35(Suppl 1):20-31.

- BROWN LJ., WALL TP., LAZAR V.2000.Trends in untreated caries in primary teeth of children 2 to 10 years old. JADA, Jan; 131: 93-99.

## (C)

- CALIFANO JV.2003. Research, Science and Therapy Committee American Academy of Periodontology. Position paper: periodontal diseases of children and adolescents. J Periodontol Nov;74(11):1696- 704.

- CARRANZA F.2002. Clinical periodontology. 9th ed. Philadelphia WB, Saunders Company.

- CASANOVA-ROSADO A., MEDINA-SOLIS C., CASANOVA-ROSADO J., VALLEJOS-SANCHEZ A., MAUPOME G., AVILABURGOS L.2005.Dental caries and associated factors in Mexican schoolchildren aged 6-13 years.Rev Salud Publica (Bogota). Jan-Apr, 7(1):56-69.

- CHALOOB E., AND QASIM A.2013. Nutritional status in relation to oral health status among patients attending dental hospital. J Bagh Coll Dent Jun, 25:114-119.

- CHEN MS, HUNTER P.1996. Oral health and quality of life in New Zealand: a social perspective. Soc Sci Med.43:1213–1222. doi: 10.1016/0277-9536(95)00407-6.

- CHESTNUTT IG., AND GISON J.2007. Clinical dentistry. 3rd ed. ChurchillLivingstone Elsevier.

- CHIAPINOTTO FA., VARGAS-FERREIRA F., DEMARCO FF., CORREA FO., MASOTTI AS. 2013.Risk factors for gingivitis in a group of Brazilian schoolchildren. J Public Health Dent Winter; 73(1):9-17.

- CHRISTIE M, FRENCH D, SOWDEN A, WEST A. 1993. Development of childcentered, disease-specific questionnaires for living with asthma. Psychosom Med; 55: 541-548

- CLEMENTINO MA, GOMES MC, PINTO-SARMENTO TCDA, MARTINS CC, GRANVILLE-GARCIA AF, PAIVA SM .2015. Perceived Impact of Dental Pain on the Quality of Life of Preschool Children and Their Families. PLoS ONE 10(6).

- CLURE F. 2012. Flouride and other trace element in nutrition. JAMA, 193(11).

# (D)

- DAMLE SG.2009. Text book of pediatric dentistry. 3rd ed. p102-109. Darya Ganj, New Delhi.

- DANIEL WW.1999.Biostatistics: Afoundation for Analysis in the Health Sciences.7th edn.New York: John Wiley and Sons.

- DE PAULA JS LI, DE ALMEIDA AB, AMBROSANO GM, MIALHE F.2013.The impact of socioenvironmental characteristics on domains of oral health-related quality of life in Brazilian schoolchildren. BMC Oral Health. 28:13:10.

- DEAN J., AVERY D., MCDONALD R.2011. Dentistry for the child and adolescent, 9th ed. Mosby, Elsevier, China.

- DENISE M., SPOLIDORIO F., JANANINA A. MARCELO FG., BORIOLLO AR.2004.Dental topography and molar wear in Alouatta palliate from Costa Rica. Am J Phys Anthrop, 125:152-161.

- DHHS. 2000. Oral health in America: a report of the Surgeon General. US Department of Health and Human Services and National Institute of Dental and Craniofacial Research Rockville, MD: National Institutes of Health

- DIAB B.2003.Nutritional status in relation to oral health condition among 6-10 years primary school children in the middle region of Iraq. Journal of Baghdad College of Dentistry 18 (1), 69-71.

- DIBIASE AT., SANDLER PJ.2001. Malocclusion, orthodontics and bullying. Dent Update 28:464-466.

- DITMYER M., DOUNIS G., MOBLEY C., SCHWARZ E.2011.Inequalities of caries experience in Nevada you the xpressed by DMFT index vs.(SiC) over time.BMC Oral Health, 11:12.

- DROTAR D, LEVI R, PALERMO TM, RIEKERT KA, ROBINSON JR, WALDERS N.1998. Recommendations for research concerning the measurement of pediatric health-related quality of life. In: Drotar D, editor. Measuring health-related quality of life in children and adolescents implications for research and practice. Mahwah, NJ, Lawrence Erlbaum Associates; pp. 341–349

- DUMITRESCU AL.2010.Etiology and pathogenesis of periodontal disease.p25. New York: Springer.

## (E)

- EDELSTEIN BL.2006. The dental caries pandemic and disparities problem. BMC Oral Health. 6(Suppl 1):S2. doi:10.1186/1472-6831-6-S1-S2.

- EISALHY, M., ALSUMAIT, A., BEHZADI, S., AL-MUTAWA, S. AND AMIN, M., 2015. Children's perception of caries and gingivitis as determinants of oral health behaviours: a cross sectional study. *International journal of paediatric dentistry*, 25(5), pp.366-374.

# (F)

- FEJERSKOV O. AND KIDD E.2008. Dental caries: the disease and its clinical management. 2nd ed. p58-72. Blackwell Munksgaard, 2008.

- FEU O., QUINTAO CCA., MIGUEL JAM.2010.Indicadores de qualidade de vida e sua importância na Ortodontia. Dental Press J Orthod 15(6): 61- 70.

- FILSTRUP SL., BRISKIE D., DA FONSECA M., LAWRENCE L., WANDERA A., INGLEHART MR.2003. Early childhood caries and quality of life: child and parent perspectives. Pediatr Dent 25:431-440.

- FOSTER PAGE LA., THOMSON WM., JOKOVIC A., LOCKER D.2005. Validation of the Child Perceptions Questionnaire (CPQ 11–14). Journal of Dental Research 84(July (7)):649–52.

- FOSTER PAGE LA., THOMSON WM.2012. Caries prevalence, severity, and 3-year increment, and their impact upon New Zealand adolescents' oral-health-related quality of life. J Public Health Dent. 72(4).

- FREIRE MDCM , CORRÊA-FARIA P, COSTA LR.2018. Effect of dental pain and caries on the quality of life of Brazilian preschoolchildren. Rev Saude Publica. Apr 9;52:30.

# (G)

- GARG N., AND GARG A.2013. Text book of preventive dentistry. 2nd ed. 28-30. New Delhi; JP Medical Ltd.Kliegman RM, Behrman RE, Jenson HB, Stanton BF.2007. Nelson Textbook of Pediatrics. 18th ed. p65-85.

- GAUR S, NAYAK R.2011. Underweight in low socioeconomic status preschool children with severe early childhood caries. J Indian Soc Pedod Prev Dent. 29(4).

- GERARDO M., ANGELES M., ALANNA H., CARLO E., ANDRES M., BRITTANY C.2013. The association between geographical factors and dental caries in a rural area in Mexico. Cad. Saúde Pública, Rio de Janeiro, 29(7):1407-1414.

- GILLCRIST J., BRUMLEY D., AND BLACKFORD J.2001. Community socioeconomic status and children's dental health. J Am Dent Assoc, 132:216-222.

- GOES PSA.2001. The prevalence and impact of dental pain in Brazilian schoolchildren and their families. PhD Thesis. University College London, Department of Epidemiology and Public Health.

- GOETTEMS M, SHQAIR A, BERGMANN V.2018. Oral health selfperception, dental caries, and pain: The role of dental fear underlying this association. International Journal of Paediatric Dentistry 28(3) March.

## (H)

- HAAKE S.2002. Etiology of periodontal diseases. In: Carranza's clinical periodontology by Newman M, Taki H, Carranza F. 9th ed. Part 3, Saunders Elsevier, China, pp:95-112.

- HAMZA B, HUSSEIN M, AND MUKHTAR S.2010. Socio-economic condition in relation to oral and dental health status through the study of 184 Iraqi pupils. Must Dent J, 7:15-22.

- HASSAN Z, AL-TAAI A.2006.Pattern, severity of dental caries and treatment needs among five years kindergarten children in Baghdad Iraq. Iraqi Journal of Community Medicine, 19.

- HASSAN Z.2010. The effect of nutritional status on dental health, salivary physiochemical characteristics and odontometric measurement among five years old kindergarten children and fifteen years old students. Ph.D. thesis submitted to College of Dentistry, University of Baghdad.

- HILME, M. JALEELI, S. & SULAIMAN, B. 1971. Fluoride levels in communal water in Iraq. J Iraqi Dent Assoc, 5, 8-14.

- HIREMATH V., MISHRA N, PATIL KG., SHEETAL A., KUMAR SH.2012. Prevalence of gingivitis among children living in Bhopal. J Oral Health Comm Dent, 6:118-120.

- HOLLISTER MC., ANEMA MG. Health behavior models and oral health: a review. Journal of Dental Hygiene 2004;78(3):6.

- HUGOSON A. AND NORDERYD O.2008. "Has the prevalence of periodontitis changed during the last 30 years?" Journal of Clinical Periodontology, vol. 35, no. 8, pp. 338–345.

- HUSSEIN H.2010. The effect of Post-trumatic stress disorder on school performance among adolescent students in Baghdad. Athesis Submitted To The Scientific Council Of Psychiatry In Partial Fulfillment For The Degree Of Fellowship Of The Iraqi Board Of Medical Spwcializations In Psychiatry.

## (I)

- IDREES M., AZZEGHAIBY S., HAMMAD M., AND KUJAN O. 2014. Prevalence and severity of plaque-induced gingivitis in a Saudi adult population. Saudi Med J, 35: 1373–1377.

- IDRIS F.2010. Periodontal disease prevalence and some related factors among 15 years old school children in Khartoum State, Sudan. Sudanese Journal of Public Health, 5:187-192.

- INGLEHART MR, BAGRAMIAN RA.2002. Illinois: Quintessence Publishing Co. Inc; Oral Health Related Quality of Life.

## (J)

- JABBER W.2008. Oral health status in relation to nutritional status among kindergarten children 4-5 years in Al-Kut city/ Iraq. Master thesis submitted to College of Dentistry, University of Baghdad.

- JOHN J., DANIEL B., PANEERSELVAM D., AND RAJENDRAN G.2017. Prevalence of Dental Caries, Oral Hygiene Knowledge, Status, and Practices among Visually Impaired Individuals in Chennai, Int J Dent.

- JOHN MT., HUJOEL P., MIGLIORETTI DL., LERESCHE L., KOEPSELL TD., MICHEELIS W.2004. Dimentions of oral health-related quality of life. J Dent Res 83:956-60.

- JOKOVIC A.,LOCKER D., GUYATT G.2004. Questionnaire for measuring oral health-related quality of life in eight- to ten-year-old children. Pediatr Dent 2004; 26: 512–518 with modification.


# (K)

- KHALIFA N., ALLEN P., ABU-BAKER N., ABDEL-RAHMAN M., ABDELGHAFAR K.2012.A survey of oral health in a Sudanese population. BMC Oral Health, 12:5.

- KHRAISAT HM. AND AL-QDAH MA.2012.Oral hygiene, caries prevalence and oral health knowledge among 12 to 15 year old school children in Al Karak, Jordan. JRMS Dec, 19:31-36.

- KINANE DF., SHIBA H., HART TC.2005. The genetic basis of periodontitis. Periodontology 2000, 39: 91–117.

- KIYAK HA.2008. Does orthodontic treatment affect patients' quality of life? J Dent Educ 72:886-894.

- KLIEGMAN R., STANTON B., GEME J., SCHOR N.2015.Nelson Textbook of Pediatrics, Vol 2:p100-120. 20th Edition.

- KOCH G. AND POULSEN S.2013. Pediatric dentistry: A clinical Approach. 2nd.p43-55.

- KRAMER PF, FELDENS CA, FERREIRA SH, BERVIAN J, RODRIGUES PH, PERES MA.2013. Exploring the impact of oral diseases and disorders on quality of life of preschool children. Community Dent Oral Epidemiol. 41(4):327-35.

- KRISDAPONG S., SOMKOTRAT., KUEAKULPIPAT W.2012. Disparities in early childhood caries and its impact on oral health-related quality of life of preschool children. Asia Pac J Public Health 26:285-294.

- KUMAR SGA., TADAKAMADLA J., TIBDEWAL H., DURAISWAMY P., KULKARNI S.2011. Oral health related quality of life among children with parents and those with no parents. Community Dent Health.28:227–231.

- KUPPUSWAMY B.1976. Manual of Socioeconomic Status (Urban) 1st ed. Delhi: Manasayan pp., 66–72.

## (L)

- LEAL SC, BRONKHORST EM, FAN M, FRENCKEN JE. 2012 .Untreated cavitated dentine lesions: impact on children's quality of life.Caries Res. 46:102–106.

- LEROY R. AND DECLERCK D.2013.Objective and subjective oral health care needs among adults with various disabilities. Clin Oral Investig,17:1869-1878.

- LISA M., SUSAN M. AND KAYE F.2010. Clinical oral health outcomes in young Australian Aboriginal adults compared with national-level counterparts. Med J Aust, 192: 558-561.

- LOCKER D., JOKOVIC A., TOMPSON B.2005. Health-related quality of life of children aged 11 to 14 years with orofacial conditions. Cleft Palate Craniofac J 42:260-266.

- LOCKER D., MATEAR D., STEPHENS M., LAWRENCE H., PAYNE B.2001.Comparison of the GOHAI and OHIP-14 as measures of the oral health-related quality of life of the elderly. Community Dentistry and Oral Epidemiology29(5):373–81.

- LOPEZ SJ., SNYDER CR., RASMUSSEN NH.2003. Striking a vital balance: developing a complementary focus on human weakness and strength through positive psychological assessment. In: Positive psychological assessment: a handbook of models and measures. Lopez SJ, Snyder CR, editors., editors. Washington, DC: American Psychological Association, pp. 3-20

- LOUIS F., ROSE, BRIAN L., MEALEYX, ROBERT J., GENCOX D., WALTUE C.2004.Periodontics, Medicine, Surgery and Implants. Mosby.

# (M)

- MAGALHA ES IB., PEREIRA LJ., MARQUES LS., GAMEIRO GH.2010. The influence of malocclusion on masticatory performance. A systematic review. Angle Orthodontist 80(5):981–7.

- MAHESH KP., JOSEPH T., VERMA RB., AND JAYANTHI M. 2005. Oral health status of 5 years and 12 years school going children in Chennai city – An epidemiological study. J Indian Soc Pedod Prev Dent Mar. 23:17–22.

- MANUELA WANDERLEY FLOPESI, ESTELA SANTOS G., RENATO DE VASCONCELOS A., RENATA CIMOES 2011. Impact of periodontal diseases on quality of life. RGO, Rev gaúch odontol 59(1): 39-44.

- MARCDANTE K., AND KLIEGMAN RM. 2014. Essentials of Pediatrics, 7th Edition. Saunders Medical Publishers.

- MARQUES LS., RAMOS-JORGE ML., PAIVA SM., PORDEUS IA.2006. Malocclusion: esthetic impact and quality of life among Brazilian schoolchildren. Am J Orthod Dentofacial Orthop. 129(3):424-7. doi:10.1016/j.ajodo.2005.11.003.

- MARTINS MT., FERREIRA FM., OLIVEIRA AC., PAIVA SM.,VALE MP., ALLISON PJ. ET AL.2009. Preliminary validation of the Brazilian version of the Child Perceptions Questionnaire 8-10. Eur J Paediatr Dent.10(3):135-40

- MARTINS-JUNIOR PA., OLIVEIRA M., MARQUES LS., RAMOS-JORGE ML.2012. Untreated dental caries: impact on quality of life of children of low socioeconomic status. Pediatr Dent.34(3):49-52.

- MARYA A.2011. Textbook of public health dentistry.1st ed. Jaypee Brothers, New Delhi.

- MASTHAN K. 2011. Textbook of pediatric oral pathology. 1st ed. Jaypee Brothers Medical Publishers.

- MERCHANT A, PITIPHAL W, DOUGLASS C. 2002. Oral Hygiene Practices and periodontitis in health care professionals. J periodontal, 73: 531- 532 •

- MCDONALD R., AVERY D., AND DEAN J.2004. Dentistry for the child and adolescent. 8th ed. p87-99. Philadelphia, PA, USA. Mosby.

- MCGRATH C, BEDI R.1999.The value and use of 'quality of life' measures in the primary dental care setting. Prim Dent Care Apr;6(2):53-7.

- MCGRATH C, BRODER H, WILSON-GENDERSON M.2004. Assessing the impact of oral health on the quality of life children: implications for research and practice. Community Dent Oral Epidemioln32:81-5

- MCGRATH C., BEDI R.2002. Measuring the impact of oral health in life quality in two national surveys – functionalist versus hermeneutic approaches. Community Dentistry Oral Epidemiol.30:254–259. doi: 10.1034/j.1600-0528.2002.300403.x.

- MEHRSTEDT M., JOHN MT., TONNIES S., MICHEELIS W.2007. Oral health-related quality of life in patients with dental anxiety. Community Dent Oral Epidemiol 35: 357-363.

- MITCHEL L., AND MITCHEL D. 2005. Oxford handbook of clinical dentistry.4th ed. Oxford university press, New York.

- MOHAMMED G.2008.Oral Health Status and Treatment Needs among13-15 yearold Students in Sulaimani City. Master thesis submitted to college of Dentistry, Suleimani University.

- MOHAMMED I J.2004. Oral health status ,treatment needs and dent facial anomalies among (5-14) years patient with B-thalassemia major syndrome in comparision to school children inBagdad provine. Master thesis, College of Dentistry, University of Baghdad.

- MOURADIAN WE.2001. The face of a child: children's oral health and dental education. J Dent Educ 65:821-831.

- MOURE-LEITE FR., RAMOS-JORGE J., RAMOS-JORGE ML., PAIVA SM., VALE MP., PORDEUS IA.2011. Impact of dental pain on daily living of five-year-old Brazilian preschool children: prevalence and associated factors. Eur Arch Paediatr Dent. 12(6):293-7. doi:10.1007/BF03262826.

- MOYNIHAN P., AND PETERSEN PE.2004. Diet nutrition and the prevention of dental diseases. Public Health Nutrition: 7, 201-226.

- MOYNIHAN PJ.2005. The role of diet and nutrition in the etiology and prevention of oral disease. Bull World Health Organ, 83:694-699.

- MUBARAK D.2002. Oral health status and treatment need among eight years old school children in urban and rural areas in Baghdad –Iraq. Master thesis submitted to College of Dentistry, University of Baghdad.

- MULLIGAN R., SEIRAWAN H., ALVES ME., NAVAZESH M., PHELAN JA., GREENSPAN D, ET AL.2008. Oral health-related quality of life among HIV-infected and at-risk women. Community Dent Oral Epidemiol 36: 549-557.

- MURRAY J., NUNN J., STEEL J.2003. The prevention of oral disease. 4thed.96-121. Oxford, New York.

### (N)

- NAZHAT, N. & AL-MAKADSI, F. 1983. Oral hygiene, periodontal health status and treatment needs among Iraqi dental students. *Iraqi Dent J,* 10, 54-61.

- NG SK., LEUNG WK.2006. Oral health-related quality of life and periodontal status. Community Dent Oral Epidemiol; 34: 114-122

- NICOLAS E, VEYRUNE JL, LASSAUZAY C.2010. A six-month assessment of oral health-related quality of life of complete denture wearers

using denture adhesive: a pilot study. Journal of Prosthodontics ;19(August (6)):443–8.

- NUTTALL NM., STEELE JG., EVANS D., CHADWICK B., MORRIS AJ., HILL K.2003 .The reported impact of oral condition on children in the United Kingdom, Br Dent J. 2006;200(10):551-5. doi:10.1038/sj.bdj.4813586.

## (O)

- OKADA K., KATO T., ISHIHARA K.2004. Involvement of periodontopathic biofilm in vascular diseases. Oral Dis, 10:5-12.

- ONYEASO CO., ADERINOKUN GA. 2003.The relationship between dental aesthetic index (DAI) and perceptions of aesthetics, function and speech amongst secondary school children in Ibadan, Nigeria. Int J Paediatr Dent 13:336-341.

## (P)

- PAHEL BT., ROZIER RG., SLADE GD.2007. Parental perceptions of children's oral health: the Early Childhood Oral Health Impact Scale (ECOHIS). Health Qual Life Outcomes ;5 (6): 1-10.

- PARI A,ILANGO P,SUBBAREDDY V,KATAMREDDY V, PARTHASARTHY H.2014 Gingival Diseases in Childhood – A Review. Journal of Clinical and Diagnostic Research. Oct, Vol-8(10)p:1-5

- PAULA JS., LEITE IC., ALMEIDA AB., AMBROSANO GM., PEREIRA AC., MIALHE FL.2012. The influence of oral health conditions, socioeconomic status and home environment factors on schoolchildren's self-perception of quality of life. Health Qual Life Outcomes. 10:6. doi: 10.1186/1477-7525-10-6.

- PETER S.2004. Essential of preventive and community dentistry. 2nd ed. p135-225. New Delhi, Darya Ganj.

- PETERSEN PE., BOURGEOIS D., OGAWA H., ESTUPINAN-DAY S, NDIAYEE C.2005. The global burden of oral diseases and risks to oral health. Bull World Health Org 83:661-669.

- PETERSEN PE.2003. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century-the approach of the WHO Global Oral Health Programme. Community Dent Oral Epidemiol; 31:3–23.

- PETERSON SN., SNESRUD E., SCHORK NJ., AND BRETZ WA.2011. Dental caries pathogenicity: a genomic and metagenomic perspective. Int Dent J, 61 :11-22.

- PINE CM., ADAIR PM., PETERSEN PE., DOUGLASS C., BURNSIDE G., ET AL. 2004.Developing explanatory models of health inequalities in childhood dental caries. Comm Dent Health, 21:86-95.

- PIOVESAN C., ABELLA C., ARDENGHI TM.2011. Child oral health-related quality of life and socioeconomic factors associated with traumatic dental injuries in schoolchildren. Oral Health Prev Dent.9:405–411.

- PIOVESAN C., ANTUNES JL., GUEDES RS., ARDENGHI TM.2010. Impact of socioeconomic and clinical factors on child oral health-related quality of life (COHRQoL). Qual Life Res.19(9):1359-66. doi:10.1007/s11136-010-9692-7.

- POPOOLA B., DENLOYE O., AND IYUN O.2013.Influence of parental socioeconomic status on caries prevalence among children seen at the university college hospital, Ibadan. Ann Ibd Pg Med, 11:81-86.

- POVESAN C., BATISTA A., VARGAS FERREIRA F., ARDENGHI T. 2009. Oral health- related quality of life in children: Conceptual issues. Rev. Odonto cienc;24(1):81-85.

# (R)

- RADHI NJ.2009. Oral health status in relation to nutritional analysis and salivary constituents among a group of children with Down's syndrome, in comparison to normal children. Ph.D. thesis submitted to the College of Dentistry, University of Baghdad.

- RAO A.2008. Principle and practice of pedodontics. 2nd ed. New Delhi.

- RAO A., SEQUEIRA S., AND PETER S.2000. Prevalence of dental caries among school children of moodbidri.,: J. Indian Soc Pedod Prev Dent; 17: 4548.

- RATHOD G., AND NINGSHEN A.2012. Measuring the socioeconomic status of urban below poverty line families in Imphal city, Manipur; A livelihood study. Int J of marketing, financial services and management research, 12(1):2277-3622.

- RATNAYAKE N., EKANAYAKE L.2005.Prevalence and impact of oral pain in 8-year-old children in sri lanka. International Journal of Paediatric Dentistry.15(2):105–112.

- REBOK G., RILEY A., FORREST C., STARFIELD B., GREEN B., ROBERTSON J. et al. 2001.Elementary school-aged children's reports of their health: a cognitive interviewing study. Qual Life Res.10(1):59-70. doi:10.1023/A:1016693417166.

- ROCKVILLE, MARYLAND 2000: US Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institute of Health. DHHS Oral health in America: A report of the Surgeon General; p. 7.

- ROZIER RG., ADAIR S., GRAHAM F.ET AL.2010. Evidence-based clinical recommendations on the prescription of dietary fluoride supplements for caries prevention: A report of the American Dental Association Council on Scientific Affairs. J Am Dent Assoc. 141(12):1480-1489.

- ROZIER RG., PAHEL BT.2008. Patient- and population-reported outcomes in public health dentistry: Oral health-related quality of life. (vi-vii).Dent Clin North Am.52:345–65.

- RWENYONYI CM., MUWAZI LM., BUWEMBO W.2011. Assessment of factors associated with dental caries in rural communities in Rakai District, Uganda. Clin Oral Invest, 15:75–80.

# (S)

- SAFAVERDI A.2009. Oral health in Iran, A comparison between Tehran and Pardis. Master thesis submitted to Umea International school of Public health. Umea University

- SALDUNAITE K., PURIENE A., MILCIUVIENE S., BRUKIENE V., KUTKAUSKIENE J.2009.Analysis of dental caries prevention program in 7-12-year-old Lithuanian school children. Medicina Kaunas, 45(11):887-895.

- SANDERS AE., SPENCER AJ.2005. Childhood circumstances, psychosocial factors and the social impact of adult oral health. Community Dent Oral Epidemiol.33:370–377. doi: 10.1111/j.1600-0528.2005.00237.x.

- SANTHOSH KJT., PRABU D., SUHAS K.2013. Socio-behavioral variables effecting oral hygiene and periodontal status of 12 year-old schoolchildren of Udaipur district. Odontostomatol Trop.36:27–33.

- SARA L. FILSTRUP, DAN BRISKIE, MARCIO DA FONSECA, LAWRENCE L., WANDERA A., MARITA ROHR INGLEHART.2003. Early Childhood Caries and Quality of Life: Child and parent perspectives. Pediatr Dent.25: 431- 440.

- SARVANAN S., MADIVANAN I., SUBHASHINI B., FELIX J.2005. Prevalence pattern of dental caries in the primary dentition among school children. Indian J Dent Res, 16: 140-146.

- SCARPELLI AC., PAIVA SM., VIEGAS CM., CARVALHO AC., FERREIRA FM., PORDEUS IA.2013. Oral health-related quality of life

among Brazilian preschool children. Community Dentistry Oral Epidemiol.41:336–344. doi: 10.1111/cdoe.12022.

- SCHOR EL.1998. Children's health and the assessment of health-related quality of life. In: Drotar D, editor. Measuring health-related quality of life in children and adolescents implications for research and practice. Mahwah, NJ, Lawrence Erlbaum Associates. pp. 25–37.

- SCHUCH HS, DOS SANTOS COSTA F, TORRIANI DD., DEMARCO FF., GOETTEMS ML.2014. Oral health-related quality of life of schoolchildren: impact of clinical and psychosocial variables. Int J Paediatr Dent.

- SHEIHAM A. 2006. Dental caries affects body weight, growth and quality of life in pre-school children. *British Dental Journal*. 201(10):625–626.

- SHEIHAM A, STEELE JG, MARCENES W, TSAKOS G, FINCH S, WALLIS AW. 2001.Prevalence of impacts of dental and oral disorders and their effects on eating among older people; a national survey in Great Britain. Community Dent Oral Epidemiol. 2001;29:195–203. doi: 10.1034/j.1600-0528.290305.x.

- SHIP JA.2002. Oral health-related quality of life in patients with oral cancer. In: Oral health-related quality of life. Inglehart MR, Bagramian RA, editors. , editors. Carol Stream, IL: Quintessence Publishing Co., Inc., pp. 153-168.

- SHUBBER S.2014. Oral Health Status among Kindergarten Children in Relation to Socioeconomic Status in Al-Najaf Governorate-Iraq. Master thesis submitted to the College of Dentistry, University of Baghdad.

- SILNESS J., LOE H.1994. periodontal disease in pregnancy. Correlation between oral hygiene and periodontal condition. Acta Odont Scand 22: 121-35.

- SINGH KA., SPENCER AJ., ARMFIELD JM.2003. Relative effects of pre- and post-eruption water fluoride on caries experience of permanent first molars. J Pub Heath Dent, 63:11-19.

- SISCHO L., BRODER HL.2011. Oral health-related quality of life: what, why, how, and future implications. J Dent Res.90(11): 1264-70.

- SISSON KL.2007. Theoretical explanations for social inequalities in oral health. Community Dent Oral Epidemiol 35:81-88.

- SOBEN P.2004. Essential of Preventive and community Dentistry. 2$^{nd}$ edition, Reprint, Darya, Ganj, New Delhi- 10002, 416-446.

- STRAUSS RP.2001. "Only skin deep": health, resilience, and craniofacial care. Cleft Palate Craniofac J 38:226-230.

- SZOKE J., AND PETERSON P.2000. Evedence for dental caries decline among children in an East European Country (Hungary).Comm. Dent. Oral Epidemiol, 28:155-160.

## (T)

- TORO A., BUSCHANG PH., THROCKMORTON G., ROLDAˊN S.2006. Masticatory performance in children and adolescents with Class I and II malocclusions. European Journal of Orthodontics 28(2):112–29.

- TORRES CS., PAIVA SM., VALE MP., PORDEUS IA, RAMOS-JORGE ML, OLIVEIRA AC. ET AL.2009. Psychometric properties of the Brazilian version of the Child Perceptions Questionnaire (CPQ11-14) - short forms. Health Qual Life Outcomes. 7(7):43. doi:10.1186/1477-7525-7-43.

## (U)

- UAUY R., KAIN J., MERICQ V., ROJAS J., CORVALAN C.2008. Nutrition, child growth, and chronic disease prevention. Annals of Medicine. 40(1):11–20.

- UNITED STATES CENSUS BUREAU 2000.Indicator 2C: American Crowding Index: People per Room.P:1-4.

# (V)

- VAN DER VELDEN U.2006. The significance of supragingival plaque accumulation in periodontal disease. Int J Dent Hyg Sep;4 Suppl 1:11-4.

- VANIA A., PARISELLA V., CAPASSO F., DI TANNA GL., VESTRI A., FERRARI M., POLIMENI A.2011. Early childhood caries underweight or overweight, that is the question. European Journal of Paediatric Dentistry 12(December (4)):231–5.

# (W)

- WAKAI K, NAITO M, NAITO T, KOJIMA M, NAKAGAKI H, UMEMURA O,YOKOTA M, HANADA N, KAWAMURA T. 2010. Tooth loss and intake of nutrients and foods: a nationwide survey of Japanesdentists. Comm Dent Oral Epidemiol BLJV J, 38: 43-49.

- WALLANDER JL., SCHMITT M., KOOT HM. 2001. Quality of life measurement in children and adolsents: issues, instruments, and applications. J Clin Psychol;57:571-85.

- WARREN F., JOHN J., WEBER-GASPARONI, KARIN, MARSHAL L., TERESA A., DRAKE, DAVID R., DEHKORDIVAKIL, FARIDEH, KOLKER, JUSTINE L., DAWSON, AND DEBORAH V.2008. Factors associated with dental caries experience in 1-year-old children. Journal of Public Health Dentistry, 68: 70-75

- WHO.2003. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century—the approach of the WHO Global Oral Health Programme. Geneva, Switzerland: World Health Organization.

- WIGEN T., AND WANG N.2010. Caries and background factors in Norwegian and immigrant 5-year-old children. Community Dent Oral Epidemiol, 38: 19-28.

- WILSON IB., CLEARY PD.1995. Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. J Am Med Assoc 273:59-65.

- WILSON-GENDERSON M., BRODER HL., PHILLIPS C.2007. Concordance between caregiver and child reports of children's oral health-related quality of life. Community Dent Oral Epidemiol 35(Suppl 1):32-40.

- WORLD HEALTH ORGANIZATION (WHO).1997 Oral Health Surveys. Basic Methods. 4th ed. Geneva (CH): World Health Organization.

- WORLD HEALTH ORGANIZATION (WHO).2003. Diet, Nutrition and the Prevention of Chronic Diseases. Report of a Joint WHO/FAO

- WORLD HEALTH ORGANIZATION 1993. *Report of WHOQOL Focus Group Work*. Geneva: WHO (MNH/PSF/93.4).

- WORLD HEALTH ORGANIZATION (WHO)1997. Oral Health Surveys. Basic Methods. 4th ed. Geneva (CH): World Health Organization.

- WORLD HEALTH ORGANIZATION (WHO) 2003. Diet, Nutrition and the Prevention of Chronic Diseases. Report of a Joint WHO/FAO.

- WORLD HEALTH ORGANIZATION (WHO) 2013.Basic Survey methods.5th edition.

# Appendices

# Appendix I

<div dir="rtl">

العدد: ٧٨
التاريخ: ١٣/ ٢٠١٩/١
رمز البحث: ٠٧٨٣١٨

م/ قبول بحث

إلى الزميلة الدكتورة **زهراء محمد حسين علي** المحترمة

والزميلة الدكتورة **عذراء مصطفى** المحترمة

نود اعلامكم بأن لجنة اخلاقيات البحوث في كلية طب الأسنان – جامعة بغداد اطلعت على مشروع البحث المقدم
من قبلكم والموسوم:

</div>

**The Impact of Oral Health on The Quality of Life among 8-10 years old Primary
School Children in Al-Najaf City .**

<div dir="rtl">

ولا ترى اللجنة ما يمنع من القيام بالبحث من الجانب الاخلاقي.

مع التقدير.

د. أكرم فيصل الحويزي
رئيس لجنة اخلاقيات البحوث

</div>

105

# Appendix II

THE REPUBLIC OF IRAQ
ALNAJAF ALASHRAF GOVERNMENT
GENERAL DIRECTORATE FOR
EDUCATION IN NAJAF

جمهورية العراق
محافظة النجف الاشرف
المديرية العامة للتربية في محافظة النجف الاشرف

قسم: التخطيط التربوي
العـدد: ٥٨٥٤٢
التاريخ: ١٧/١٢/٢٠١٨

الى / ادارات المدارس

| الامير الابتدائية | الوطن الابتدائية | التهذيب الابتدائية | العفة الابتدائية | الانصاف الابتدائية | صفين الابتدائية |
|---|---|---|---|---|---|
| الطبرسي الابتدائية | المهاجرين الابتدائية | سعيد بن جبير الابتدائية | المرتضى الابتدائية | التوحيد الابتدائية | عبد المطلب الابتدائية |
| بلاط الشهداء الابتدائية | الامام زين العابدين الابتدائية | طه الرسول الابتدائية | الشرقي الابتدائية | خير البرية الابتدائية | الشريعة الابتدائية |
| الخصال الحميدة الابتدائية | التسنيم الابتدائية | النسمات الابتدائية | المزمل الابتدائية | عطاء النجف للبنين | عطاء النجف للبنات |

م / تسهيل مهمة

تحية طيبة .....

اشارة الى كتاب جامعة بغداد/ كلية طب الاسنان/ الدراسات العليا المرقم ١٠١١٦ في ٢٠١٨/١٢/١٦

نرجو تسهيل مهمة السيدة ( زهراء محمد حسين علي ) احدى طالبات الدراسات العليا / قسم طب الاسنان / جامعة بغداد وذلك لإكمال بحثها الموسوم بـ :

( تأثير صحة الفم والاسنان على نوعية الحياة لأطفال المدارس الاولية للأعمار (٨ـ١٠سنوات) في مدينة النجف )

شاكرين تعاونكم معنا مع التقدير .

دنيا موسى جعفر
مدير قسم التخطيط التربوي
١٧ / ١٢ / ٢٠١٨

نسخة منه الى /

- السيد المعاون الفني / للتفضل بالاطلاع مع التقدير .
- قسم التخطيط التربوي / للحفظ مع الاوليات .
- الحفظ .

Address: Iraq - Najaf - Kufa Street

106

# Appendix III

<div dir="rtl">

الاستبانة

يرجى ملئ الفراغ او وضع علامة صح او دائرة حول الاجابة المناسبة:

١-اسم الطالب الثلاثي :----------------------------------------

٢-اسم المدرسة :----------------------------------------

٣-الجنس : ذكر --------- انثى ---------

٤-تاريخ الولادة للطالب : اليوم ------ الشهر ------ السنة ------

٥-المستوى التعليمي للاب : امي ------ ابتدائية ------ متوسطة او اعدادية ------ كلية او دراسات عليا ------

٦-المستوى التعليمي للام : امية ------ ابتدائية ------ متوسطة او اعدادية ------ كلية او دراسات عليا - ------

٧-دخل الاسرة ------

٨-هل الام : ربة بيت ------ موظفة ------

٩-تاريخ الولادة للام : سنة ------

١٠-هل (الاب على قيد الحياة) ------ (الام على قيد الحياة) ------

١١-هل اسرة الطفل تسكن مع بيت الجد :نعم ------ كلا ------

١٢-عدد كل من يسكن بالبيت فيما اذا كانت اسرة الطفل تسكن مع بيت الجد او لا : ------ فرد

١٣-عدد افراد اسرة الطفل فقط : ------ فرد

١٤-تسلسل الطفل بالعائلة : ------

١٥-هل البيت : ملك ------ ايجار ------

١٦-عدد غرف البيت كلها (غرف النوم ، غرف الجلوس، غرف الاستقبال، المطبخ ) : ------

١٧-بناء البيت : كونكريت مسلح (صبابة) او اعكادة ------ طين ------

١٨-منطقة السكن : مركز ------ ناحية ------

استبانة عن الصحة الفموية المتعلقة بنوعية الحياة

اسئلة عن الاسنان او الفم :

١-هل يوجد الم في الاسنان او الفم خلال الاسابيع الاربعة الماضية؟ نعم ،كلا ، لااعلم

٢-هل توجد بقع مؤلمة في الفم خلال الاسابيع الاربعة الماضية؟ نعم ، كلا ، لااعلم

</div>

107

3-هل يوجد الم في الاسنان اثناء الاكل او شرب المشروبات الباردة في الاسابيع الاربعة الماضية؟ نعم , كلا , لااعلم

4- تعاني من التصاق الطعام في الاسنان خلال الاسابيع الاربعة الماضية؟ نعم , كلا , لااعلم

5-رائحة الفم الكريهة في الاسابيع الاربعة الماضية؟ نعم , كلا , لااعلم

6-هل تحتاج وقت أطول من الاخرين في اكل الوجبات بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

7-هل تواجهه صعوبة في عض او مضغ الاطعمة مثل التفاح, الذرة ,اللحم بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

8- هل تواجهه مشكلة في اكل الاطعمة التي ترغب ان تأكلها بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

9-هل عندك مشكلة في قول بعض الكلمات بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

10-هل عندك مشكلة في النوم ليلا بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

## اسئلة عن مشاعرك :

11-هل كنت مستاء او منزعج بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

12-هل تشعر بالاحباط بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

13- هل كنت خجول بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

14-هل انت قلقا باعتقادك معرفة الاخرين عن حالة اسنانك او فمك؟ نعم , كلا , لااعلم

15-هل انت قلق لانك ليس جميل المظهر كالاخرين بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

## اسئلة عن مدرستك :

16-هل غبت عن المدرسة بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

17-هل تواجهه صعوبة في اعارة الانتباه في المدرسة بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

18-لا تريد التكلم او القراءة بصوت عال في الصف بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

## اسئلة عن وجودك مع اشخاص اخرين :

19-هل تحاول عدم الابتسامة او الضحك عندما تكون مع الاطفال الاخرين بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

20- لا تريد التحدث مع الاطفال الاخرين بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

21-لا تحب ان تكون مع الاطفال الاخرين بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

22-هل تبقى بعيدا عن اللعب مع الاطفال بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

23-هل الاطفال الاخرين يثارون لك او يلقبوك بأسماء بسبب اسنانك او فمك؟ نعم , كلا , لااعلم

24-هل الاطفال الاخرين يسئلونك اسئلة عن اسنانك او فمك؟ نعم , كلا , لااعلم

# Appendix IV

**جامعة بغداد/ كلية طب الاسنان 2018**

الاسم ......................  المواليد ..................... الجنس ......... تاريخ الفحص ..........

**اسم المدرسة ................. المنطقة ...............**

## Dentition status

| | | | E | D | C | B | A | A | B | C | D | E | | | Primary T.  Per.teeth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | A       0=sound |
| **Occ** | | | | | | | | | | | | | | | B       1=caries |
| **M** | | | | | | | | | | | | | | | C       2=filledw/C. |
| **B** | | | | | | | | | | | | | | | D       3=filled no C. |
| **D** | | | | | | | | | | | | | | | E       4=missing due to caries |
| **Oral** | | | | | | | | | | | | | | | -       5=missing for any other reason |
| **Occ** | | | | | | | | | | | | | | | F       6=fissure sealant |
| **M** | | | | | | | | | | | | | | | G       7=fixed dental prosthesis/crown Abutment,veneer |
| **B** | | | | | | | | | | | | | | | -       8=un erupted |
| **D** | | | | | | | | | | | | | | | -       9= not recorded |
| **Oral** | | | | | | | | | | | | | | | |

**Periodontal Status**

| | | | E | D | C | B | A | A | B | C | D | E | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **7** | **6** | **5** | **4** | **3** | **2** | **1** | **1** | **2** | **3** | **4** | **5** | **6** | **7** |
| **Up** | | | | | | | | | | | | | | |
| **Lo** | | | | | | | | | | | | | | |

**Gingival bleeding**

**Scores**

0=Absence of condition      9= Tooth excluded

1= Presence of condition      x= Tooth not present

**Plaque -index**

| $_R$E (6) | $_R$A(1) | $_L$E(6) |
|-----------|----------|----------|
|           |          |          |
| $_R$E (6) | $_L$A(1) | $_L$E(6) |
|           |          |          |

| Intervention urgency |
|----------------------|
| 0= no treatment needed |
| 1= preventive or routine treatment needed |
| 2= Prompt treatment (including scaling) needed |

**Calculus-index**

| $_R$E (6) | $_R$A(1) | $_L$E(6) |
|-----------|----------|----------|
|           |          |          |
| $_R$ E (6) | $_L$A(1) | $_L$E(6) |
|           |          |          |

لم يلاحظ أي فرق كبير بين الحالة الاجتماعية والاقتصادية واستبيانات الصحة الفموية المتعلقة بنوعية الحياة  (OHRQoL) باستثناء بعض الأسئلة كانت كبيرة.

**الاستنتاجات:** وجد أن أطفال المدارس الابتدائية في النجف يعانون من ارتفاع معدلات الإصابة بتسوس الأسنان والتهاب اللثة ، وهذه الأمراض تتأثر بنوعية حياة الأطفال ، وهناك حاجة إلى زيادة المعرفة والموقف تجاه صحة الفم ، وكذلك  توفير برامج وقائية عامة ومدرسية لهؤلاء الأطفال.

# الخلاصة

**المقدمة:** ترتبط جودة حياة الأطفال بوضعهم الصحي عن طريق الفم ، وخاصة تسوس الأسنان وأمراض اللثة التي تعد أكثر أمراض الفم شيوعًا التي تصيب البشر في جميع أنحاء العالم.

**اهداف البحث:** تم إجراء المسح لفحص تأثير امراض الفم على نوعية الحياة لدى أطفال المدارس الابتدائية (8-10) سنوات في مدينة النجف / العراق ؛ عن طريق قياس مدى انتشار وشدة تسوس الأسنان و التهاب اللثة ، وتقييم حالة صحة الفم (الصفيحة الجرثومية والتراكمات الكلسية) للأطفال.

**المواد وطرائق البحث :**العينة الكلية تتألف من 1200 طفل تتراوح أعمارهم بين (8-10) سنوات تم اختيارهم عشوائيا من مدارس ابتدائية مختلفة في محافظة النجف. تم تطبيق استبيانات الصحة الفموية المتعلقة بنوعية الحياة (OHRQoL) على الأطفال ؛ تم تطبيق تعديل Kuppuswamy لعام 1976 على القياس الاجتماعي والاقتصادي. تم استخدام مؤشر الصفيحة الجرثومية من Silness and Loe (1964) لتقييم الصفيحة الجرثومية ؛ تجربة تسوس الأسنان ونزيف اللثة باستخدام مؤشر منظمة الصحة العالمية 2013.

**النتائج:** أظهرت النتائج أن انتشار تسوس الأسنان كان 98.00% للعينة الكلية. كان متوسط قيم تسوس الاسنان (dmft) للأسنان اللبنية يساوي (5.479±0.084) و(dmfs) يساوي (12.954 ± 0.273) ، بينما فيما يتعلق بالأسنان الدائمية كان متوسط قيم تسوس الاسنان (DMFT) (1.86 ± 0.047) وDMFS) 2.16± 0.06) كانت القيم المتوسطة للصفيحة الجرثومية ، مؤشرات التهاب اللثة (0.501± 0.055 ، 0.137 ±0.017) على التوالي. لم يلاحظ وجود فروق ذات دلالة إحصائية بين استبيانات الصحة الفموية المتعلقة بنوعية الحياة (OHRQoL) وتجربة تسوس الأسنان (DMFT) للأسنان الدائمية باستثناء سؤالين عن مدرسة الطفل كان كبيرا. وشوهدت فروق ذات دلالة إحصائية بين استبيانات الصحة الفموية المتعلقة بنوعية الحياة (OHRQoL) وتسوس الأسنان تجربة dmft من الأسنان الأولية. لم يلاحظ أي فروق ذات دلالة إحصائية بين استبيانات الصحة الفموية المتعلقة بنوعية الحياة (OHRQoL)وصحة الفم واللثة. باستثناء مؤشر الصفيحة الجرثومية (PLI) لبعض استبيانات الصحة الفموية المتعلقة بنوعية الحياة (OHRQoL ) كان كبيرا.

أظهر تأثير الحالة الاجتماعية والاقتصادية أنه لا توجد فروق ذات دلالة إحصائية في (dmfs PII، و Call ، و GII) ، كما أن DMFS غير مهم للتسوس والمفقود ( DS، MS ) ، وهو ذو أهمية كبيرة في الحشوات.

# تأثير صحة الفم على نوعية الحياة لدى أطفال المدارس الابتدائية بعمر 8-10 سنوات في مدينة النجف

رسالة مقدمة

الى مجلس كلية طب الأسنان/جامعة بغداد كجزء من متطلبات نيل درجة الماجستير في طب الأسنان الوقائي

مقدمة من قبل الطالبة

**زهراء محمد حسين علي**

بكالوريوس طب وجراحة الفم والأسنان

بأشراف

الاستاذ الدكتور

**عذراء مصطفى الوهب**

دكتوراه طب الاسنان الوقائي

1441هـ                                    2019م