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Bad Oral Habits

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B.D.S

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Declaration

This is to certify that the organization and the preparation of this thesis had been made by graduate student **Mustafa Abbas Abed** under my supervision in the College of Dentistry, University of Baghdad in partial fulfillment of the requirement for the 5th grade.

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Dedication

To my heart family who stand with me at every step and never let me alone till this moment of my life and have the most role in my success, they gave me the power to stay strong and never fall down.

To my father, I want to tell him that I did it, I promise him that I will make him proud of me, thank you for all you have done throughout my life, you raised me, protected me and taught me all you know.

To my all friends thank you for being by my side today and always. Finally to my supervisor who encourage me to keep going on in my study life.

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List of Abbreviations

%	Percentage
NNS	non-nutritive sucking
NSH	nutritive sucking habit
NNSH	non-nutritive sucking habit
NB	Nail biting

Introduction

Oral habits in children usually initiate as normal reflex which may be pleasant or unpleasant, most habits disappear when the child reaches school, but may also be the result or the cause of physical or psychological problem if these habits are practiced with more frequency and for longer duration, the muscle imbalance of the growing dental structures will cause malocclusion, facial mal-development and speech defects (Jyoti and Pavanalakshmi, 2014). Sucking habits could be nutritive (breast and bottle feeding) or non-nutritive. The commonest form of non-nutritive sucking (NNS) is digit sucking (Misbah, 2005; Quashie-Williams et al., 2010). Harmful oral habits are the common issue of pediatricians which influences the quality of life and result in loss of tooth structure, and their impact is dependent on the nature, onset and term of habits (Piteo et al., 2011). Because some of oral habits such as thumb sucking and nail biting not only distort the oro-facial harmony and damage the mouth's structures but also provide a way for the spread of infectious disease (Srinath and Satish, 2015). The association between digit sucking and dental caries has been studied but results have been inconclusive. Yonezu and Yakushiji ,(2008) found that children with finger-sucking habits were more likely to be free of caries by age three years.

Their finding was associated with increased inter-dental spacing which resulted from flaring of teeth due to digit sucking. On the contrary, a study conducted in Baghdad reported an increase in caries severity with NNS (Misbah, 2005).

Oral habits are among the most evident examples of environmental etiol-ogy of malocclusion (Klocke et al., 2002; Mistry et al., 2010). The severity of changes in dentition due to finger sucking is related to the duration and times of doing the habit. Also, the position of finger in mouth, dental arches relation and child’s health affect the severity of changes (Maguire, 2000; Yemitan et al., 2010). The majority of malocclusions are principally caused by external factors, such as acquired functional conditions, soft diet, harmful oral habits and breathing problems, as has been observed by many authors (Marcomini et al., 2010). As poor oral habits may be predisposing factors for formation of malocclusion (Mummolo et al., 2018).

Aims of the study

Areview about bad oral habits according to age, gender and it's effect on oral health.

1 Oral habits

Deleterious oral habits are the common problem of pediatricians which affects the quality of life. A habit is a recurrent, repetitive, often unconscious pattern of behavior (Shahraki et al., 2012). Oral habits are repetitive behavior in the oral cavity that result in loss of tooth structure and they include digit sucking, pacifier sucking, lip sucking and biting, nail-biting, bruxism, self-injurious habits, mouth breathing and tongue thrusting. Their effect is dependent on the nature, onset and duration of habits (Piteo et al., 2011; Garde et al., 2014). Children at a school-age period are in a new environment, school environment, and they begin to adjust to social, language, emotional, moral, and motoric developments, through these developments sometimes they feel that they have many shortcomings and unable to overcome their problems, resulting in psychological tension that can lead them to have bad oral habit problem (Motta et al., 2012). Indeed, probably due to lack of knowledge and awareness of the deleterious effects of oral habits on the occlusion, some children may continue to indulge in these habits even up to adolescence (Thomaz et al., 2013).

Malocclusions resulting from these habits vary and are expressed in particular as increased overjet, anterior open bite, posterior crossbite, constricted arches and deep palatal vault (Grippaudo et al., 2016). Oral habits should be diagnosed in the initial stages if not will progress to very complex problems challenging to correct it at a later stage. Sometimes, in severe cases, even it requires orthognathic surgery to correct the jaw position altered with such habits (Ferreira et al., 2015).

2 Prevalence of oral habits according to the gender

The Prevalence of oral habits in the literature shows differences based on population, ethnicity and location or geography (Khan and Singaraju, 2015; Sharma et al., 2015). Research from Garde showed that the prevalence of bad oral habits was more common in females (31%) than males (20.1%) (Garde et al., 2014). Females tend to be more anxious and sensitive, while males tend to be more active and explorative (Saputra and Widayanti, 2014). A significant gender difference was also observed with more males involved in oral habits such as finger sucking, lip sucking, cheek biting, tongue thrusting, while more

females were involved in thumb sucking and chewing gum (Aikins and Onyeaso, 2017).

3 Adverse effects of oral habits

Oral habits are among the foremost apparent cases of natural etiology of malocclusion (Klocke et al., 2002; Mistry et al., 2010). It is well accepted that nonnutritive sucking habit persisting beyond 3 years of age are implicated in the development of anterior open bite (Dimberg et al., 2013). Improper oral habits can interfere not only with the position of the teeth, especially with the normal skeletal growth pattern (Vazquez et al., 2006). Bad oral habits in children can cause serious effects on the growth of the face and teeth (Urzal et al., 2013). Some of the negative the effect of prolonged sucking habit in children may result in anterior open bite, increased over jet, lingual inclination of lower incisor and labial inclination of maxillary anterior, posterior cross-bite, deep palate, compensatory tongue thrust, and sometimes speech defect (Shahraki et al., 2012).

4 Classifications of oral habits

-Oral habits fall into 2 main categories (Moimaz et al., 2014):

1_Acquired oral habits: include behaviors which are learned and can be readily stopped when the child grows up and acquire a new behavior.

2_Compulsive oral habits: include behaviors which appeared to be constant. The child feel safety with this habit when there is intolerable emotional pressure and he became anxious and worried when prevented from these habits.

-Also, oral habits classified as (Shahraki et al., 2012):

1_Physiological habits (Functional): such as nasal breathing, chewing, articulation and swallowing.

2_Non-physiological habits (Parafunctional): which are often called harmful or parafunctional such as thumb or lip sucking, mouth breathing and tongue thrust.

4.1 Mouth breathing

It is well documented that mouth breathing adults are more likely to experience sleep disordered breathing, fatigue, decreased productivity and poorer quality of life than those who nasal-breathe(Muliol et al., 2008; Lunn et al., 2011). In children, the harmful effects of mouth breathing are far greater, since it is during these formative years that breathing mode helps to shape the orofacial structures and airways, Children whose mouth breathing is left untreated for extended periods of time, can set the stage for lifelong respiratory problems and including, a less attractive face to name a few. As a result, malocclusions such as a skeletal Class II or Class III, along with a long lower face height (characterized as "long face syndrome"), and high palatal vaults may also be noted(Jefferson et al., 2010).

In mouth breathing there was a higher prevalence of posterior crossbite, anterior open bite and Class II malocclusion (Laganà et al., 2013).

A mouth breather carries the tongue in a low downward position, creating an airspace which allows the person to breathe more freely; and as a result it can lead to abnormal tongue activity. This abnormal tongue activity, can exert an excessive force upon the dentition during swallowing, contributing to malocclusions in children; and leading to periodontal disease and atypical myofascial pain in adulthood(John et al., 2010).

4.2 Suckling

During suckling process, the child will set the tongue under the breast nipple touching the lower lip, and swallow with the jaw away and the lips together this is called infantile swallowing which differs from the adult swallowing in which the teeth together, the lips relaxed while the tongue against the palate. The transition from infantile to adult swallowing occurs gradually and normally the suckling begins to discontinue during the first year of age (Proffit et al., 2012) Breastfeeding activates normal craniofacial growth and development and prevents non-nutritive sucking habit and modifications of the occlusion in the deciduous dentition (Larsson, 2001). Nutritive sucking habits are breast and bottle feeding, whereby the infant obtains food. Bottle feeding is another form of nutritive sucking habit. It is the practice of feeding an infant use as a substitute for breast milk. The effects of bottle feeding on the dentofacial development vary according to the type of the nipples used (Jyoti and Pavanalakshmi, 2014). With

the use of artificial nipples, there is lack of palatal support from the tongue and increased activity of the cheeks. The dynamic balance between the influence of the tongue and that of the cheeks is disturbed, resulting in a broader mandibular arch, (Ovsenik, 2009).

4.3 Sucking

Babies start sucking as a normal refluxes and it could be for a

purpose other than to get nutrients, it usually stopped at 12 to 42 months (Jyoti and Pavanalashkmi, 2014). Sucking reflux begins around the 29th weeks of intra uterine life so it is one of the first sophisticated patterns of behavior in new-born (Srinath and Satish, 2015). Some fetuses suck their digits in utero while the vast majority of infants do so during the first 6–24 months of life (Proffit et al., 2012). Infants grasp and put objects in their mouth during the first year of life to gain a sense of its size and shape, the sensory-motor stage of cognitive development (Berger, 2008). Sucking habits become detrimental to oral health when it persists beyond infancy. Sucking and other habits are associated with short- and long-term dental and orthodontic problems (Silva and Manton, 2014). They often have a negative impact on the developing occlusion (Lagana et al., 2013; Correa-Faria et al., 2014; Silva and Manton, 2014).

4.3.1 types of sucking habits:

1- Nutritive sucking habit: is the type of sucking that is usually used

to get nutrients via two ways breast feeding and bottle feeding (Jyoti and

Pavanalashkmi,2014). Although some nutritive habits when prolonged can also have undesirable effects on the occlusion (Warren et al., 2001).

2- Non-nutritive sucking habit: that ensures a feeling of well-being, warmth and a sense of security and is not related to providing nutrition. Digit sucking, thumb sucking, pacifier sucking are examples of the non-nutritive form. it's unnecessary as well as detrimental not only to the primary but also to the permanent occlusion of children if continued after the age of four years (Warren et al., 2001).

4.3.2 Non- nutritive sucking (NNS)

NNS is an involuntary response elicited when a tactile input is given in or around the mouth (Sohn et al., 2011). Resulting in the infant closing the mouth around the stimulus, developing an intraoral pressure system, and engaging in rhythmical compression and suction on the stimulus (Medoff-Cooper et al., 2002). Non-nutritive sucking behaviors are considered normal in infants and young children and usually are associated with their need to satisfy the urge for contact and security but disappears between the ages of 1 and 3½ years (Maguire, 2000). Non-nutritive sucking habits are among the etiological local factors that many cause malocclusions. The commonest form of non-nutritive sucking (NNS) is digit sucking. Several studies suggested that fatigue, boredom, excitement, hunger, fear, physical and emotional stress, and insufficient satisfaction of sucking need in infancy, are situations that could stimulate digit sucking habits (Quashie-Williams et al., 2010). In a long term follow up, non-nutritive sucking habits prolonged beyond 4 years caused narrow maxillary arch widths, greater over jets and greater prevalence of open bite and cross bite compared to controls (Dimberg et al., 2013). The activity of non-nutritive sucking should be diagnosed in a timely manner in order to reduce the development of posterior cross bite, anterior open bite, and Class II molar relationship (Jyoti and Pavanalakshmi, 2014).

4.3.2.1 Factors associated with nonnutritive sucking habits

4.3.2.1.1 Feeding duration

Feeding duration is the very important factor that lead to the origination of NNSH and has a vital role in the orofacial growth (Medeiros et al., 2009). Researches showed that bottle feeding or breast feeding duration of less than six months would lead to the development of thumb sucking while children with breast feeding duration of more than six months were less subjected to thumb sucking (Scavon Jr et al., 2008; Holanda et al., 2009).

4.3.2.1.2 Passage to sleep

Some children sucking a pacifier as a way during going to sleep pacifier produce more feeling of security and act as a stress relieving tool (Al-Assadi, 2004). Pacifier sucking improves sleep quality especially in children aging from one to four years old (Castilho and Rocha, 2009).

4.3.2.1.3 Psychological factor

Some children are use a pacifier as a way to relief stress ,upset, relief boredom, gain attention or as a way to sleep (Al-Assadi, 2004). The child need to feel more secure and safe especially in families whose their conditions unsafe and unstable so the child go for sucking either a pacifier or a thumb to feel more stable and more secure (Murrieta Pruneda et al., 2014). If this habit last and noticed at the adult age that means the child has a psychological disturbances boredom, stress hunger, hyperactivity, sadness and pleasure (Jyoti and Pavanalakshmi, 2014).

4.3.2.1.4 Child's gender

The prevalence of NNSH was reported to be lower among boys than in girls (Garde et al., 2014). Emotional factor plays a vital role in thumb sucking habit in girls as compared with boys (Santos et al., 2009;; Padure et al., 2012).

4.3.2.1.5 Mother's occupation

Some researches had been showed that there was a reduction in the information and decreasing in the visits of the working mothers to the health care units that leading to NNSH among their children, in addition to the separation of the child from his/ her mother during the working time who need affection especially after three years of age, so there will be a continuation of NNSH to feel more secure (Tomito et al., 2000; Leite Cavalacanti et al., 2007). A high prevalence of pacifier sucking was found

among children of the working mother (Santos et al., 2017). Pacifiers were offered by 89% of the working mothers during the first six months of age (Eldeq, 2002).

4.3.2.1.6 Parental education

There are a controversy between the development of NNSH and the parents education (Shahraki et al., 2012). Warren et al. in(2000)showed that mothers with high educational level, their children were more susceptible to develop nonnutritive sucking habits.

4.3.2.1.7 Genetic background

Onyeaso in (2004) in a study on the monozygotic and dizygotic twins reported that thumb sucking was last after three years old due to a genetic basis.

4.4 Thumb sucking habit

Thumb sucking is one of various types of nonnutritive sucking habit that is considers normal during the first years of life of children and must be stopped at four years of age but if this habit last after that age, it would lead to occlusal discrepancies due to interactions and powerful sucking of the thumb with the powerful contraction of the buccal and lip muscles (Shetty et al., 2015). Thumb-sucking is forceful and repeated sucking of thumb with associated contraction of lip and buccal musculature. It is considered normal in infants and young children below the age of 3 years and 6 months (Maguire, 2000). If the child chooses this habit in the first year of his or her life, the parents should move away his or her thumb smoothly and attract the child's attention to other things such as toys. After the second years of age, thumb sucking will decrease and will be appear just in child's bed or when he/she is tired (Maguire, 2000). The severity of changes in dentition due to finger sucking is related to the length and times of doing the habit. Too, the position of finger in the oral cavity, dental arches relation and child's wellbeing influence the severity of changes (Maguire, 2000; Yemitan et al., 2010). During active phase of permanent tooth eruption, there is a high risk for dental arches deviation (Maguire, 2000).

4.4.1 Prevalence of thumb sucking habit according to the age

Hand sucking is naturally developed in 89% of infants in the second month and in 100% of them in the first year of age (Shouq et al., 2017); The prevalence of digit sucking habits decreases with age and most children give up this activity by 3.5 to 4 years of age. On occasions, individuals may continue to exhibit a digit habit throughout childhood (Jyoti and Pavanalakshmi, 2014).

4.4.2 The prevalence of thumb sucking in Iraq

The prevalence of thumb sucking habit as recorded by many authors in Iraq is illustrated in (Table1).

Table (1): Prevalence of thumb sucking habit as recorded by many authors in Iraq.

Author	Year	City	Age	Sample size	Prevalence
Misbah	2005	Baghdad	5-15 year	500	42.8%
Jabur and Nisayif	2007	Baghdad	6-13 year	110	34.55%
Al-Atabi	2014	Sammawa	6-18 year	3300	18.7%
Al-Kinane	2016	Hilla	3-5 year	780	8.46%

4.4.3 Types of thumb sucking

Shahraki et al., (2012) showed two forms of thumb sucking

1-Active thumb sucking: Thumb sucking is associated with powerfulmuscles contraction during sucking that if persist for a long time, it will affect the positions of the teeth and the shape of the jaws.

2- Passive thumb sucking: Thumb sucking without any force on the

positions of the teeth and no alteration to the shape of the jaws.

4.4.4 Thumb sucking adverse effects

1-Anterior open bite (Yemitan et al., 2010): This Oral habit can cause change field of incisors teeth, which retroclination on the lower incisor teeth and

teeth proclination on the upper incisor thus increasing overjet and creating a unilaterally buccal crossbite as it relates to the shift of the mandible. It can also change the ratio between the upper and lower anterior facial height. As a result, anterior teeth position is much more proclined than the lower teeth, and going on an open bite (Stuani et al., 2006). (

2-Increased overjet: several studies reported, a greater prevalence of children with increased overjet who had finger sucking practice(Yemitan et al., 2010; Luzzi et al., 2011; Taha, 2019).

3-Retroclination of lower incisor and proinclination of upper incisor (Proffit et al., 2012).

4-Posterior cross bite (Warren et al., 2001; Al-Assadi and Al-Dahan, 2015; Taha, 2019).

5-Compensatory tongue thrust (Warren et al., 2001).

6-Speech defect (Bishara, 2001).

7-Finger defects (Eczema) of the finger due to alternate dryness and moisture that occurs and even angulations of the finger and Paronychia (Durdu and Ruocco, 2014).

4.5 Pacifiers

Pacifiers are objects used by newborns babies to explore the things or as a nonnutritive sucking habits (Al-Assadi, 2004).

In infants and toddlers, non-nutritive sucking habits are used to satisfy their psychological needs. A pacifier (dummy) sucking is one of the most common nonnutritive sucking habits. It is a nursing object that has an imperforated nipple such a device used by many infants and children to provide a sense of comfort, security and pleasure(Warren et al., 2000; Maguire et al., 2000; Maia-Nader et al., 2014). Prolonged pacifier sucking habit may produce deleterious effects (Warren et al., 2002). especially if it persists beyond 3 years of age (Maia-Nader et al., 2014).

there are many sizes of pacifiers, According to Al-Assadi (2004) the types of pacifiers were:

Premature pacifiers: small.

0-6 months: oval, round or natural shape.

6-8 months: oval, natural.

18 months to 3 years of age: natural.

Iraqi study conducted by (Al-Assadi et al., 2016) to investigate the

relation of pacifier sucking habit to caries activity and the type of feeding among children aged 1-5 years old in Baghdad city.

according to this study Concerning dental caries, 90% for the non- pacifier sucking group were caries free whereas only 44%was found among pacifier sucking group. Although the number of caries free

children was higher among non-pacifier sucking group in all ages, there was no statistical difference between the two groups, meanwhile the prevalence of dental caries was 56% for the total pacifier sucking children and 10% for the non-pacifier sucking children.The mean dmft value for the pacifier sucking children was higher than that of non – pacifier sucking children in all ages, Fig. (1).

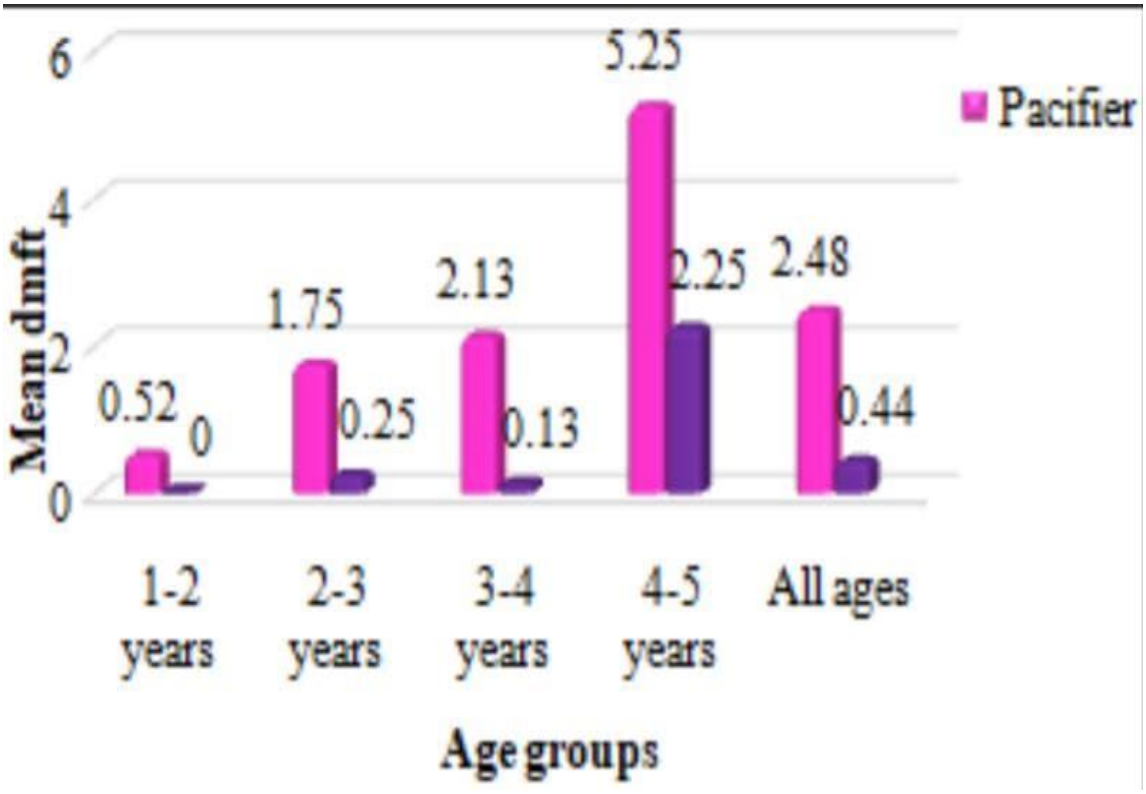


Figure 1 : Caries experience (dmft) among pacifier and non pacifier suking children by age group.

4.6 Nail biting

The passing of any finger from the lips of an individual is called Nail biting (NB) (Dufrene et al., 2008; Ghanizadeh, 2008) or it is "placing one or more digits in the mouth and biting on nail with teeth" (Teng et al.,2002).

An operational definition of NB is “putting one or more fingers in the mouth and biting on nail with teeth” (Teng et al., 2002). This habit starts after 3 to 4 years of age and is in its peak in 10 years of age. Its rate increase in adolescence, while it declines later. This problem is not gender dependent in children less than 10 years of age, but its incidence in boys is more than girls among adolescents (Tanaka et al., 2008). More than half of parents of children with nail biting, have a kind of psychological disorders such as depression (Ghanizadeh and Mosallaei, 2009). This problem is a reaction in response to psychological disorders and some children will shift their habits from thumb sucking to nail biting (Tanaka et al., 2008).

4.6.1 Classifications of Nail Biting

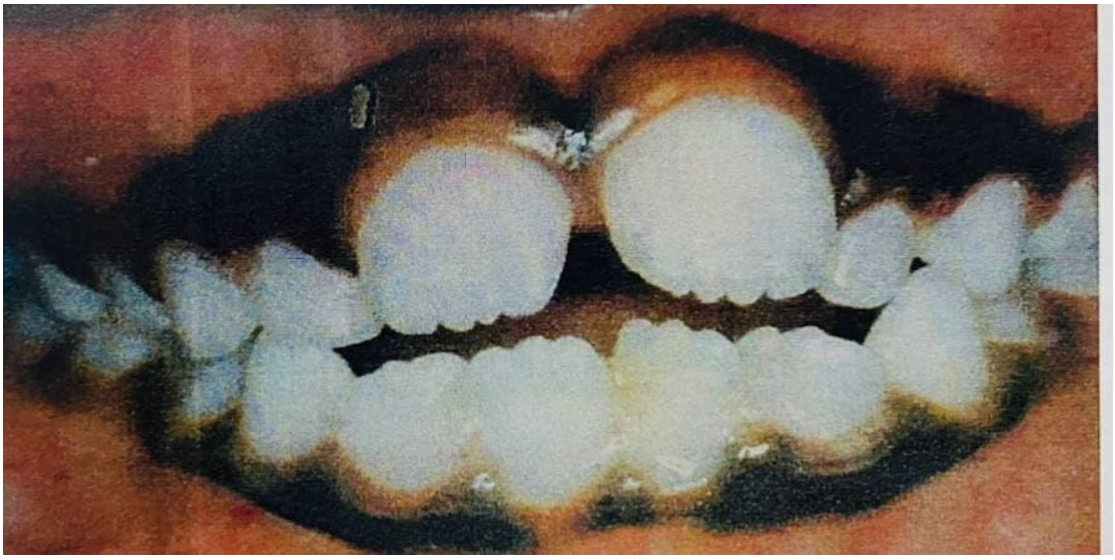
According to Ghanizaden (2011) it classified to:

1_Non-Pathological NB: It is a temporary behavior that is performed by healthy individuals and it does not persist very long.

2_Pathological NB: The intensity, duration, and frequency of pathological NB are greater than those in normal children.

4.6.2 Adverse effects of nail biting

Nail biting moreover cause dental complications, as the NB force may be exchanged to the root of the tooth, causing root resorption, alveolar bone destruction, malocclusion, and temporomandibular joint problems (Vyas, 2017). There are known cases where nail biting can lead to painful injuries of the finger nails (Chevitarese et al., 2002). It can cause damage to the tissues surrounding the nail, infection, and nail bed disappearance (Ghanizadeh, 2011). The majority of people who suffered from acute paronychia (infection of the nail fold) reported nail biting. When nail biters are severely, persistently and frequently biting the nails, they are more prone to suffering acute paronychia, which involves painful inflammation, infection and awful pus formation of the tissues surrounding the nails. Treatment for acute paronychia usually requires painful surgical treatment (Fuqua and Brosh, 2006). Gastrointestinal infections are more likely to develop in nail biters due to the transmission of diseases. Furthermore, a research study found that hygienic measures such as hand washing could reduce the spread of respiratory viral infections (Jefferson et al., 2001). Nail biting could be associated with joint problems when approximately 25.0% of the patients with temporomandibular joint pain and dysfunction have been shown to suffer from this habit (Saheeb, 2005). Fig. (2).



(Figure, 2) (Baydas et al, 2007)

5 Malocclusion

Malocclusions are believed to be caused by a combination of inherited and environmental factors acting together. Oral habits are among the most evident examples of environmental etiology of malocclusion (Mistry et al., 2010). The aetiologic factors include socioeconomic determinants, breastfeeding and feeding practices, nutritive sucking habits (NSH) and non-nutritive sucking habits (NNSH), respiratory and functional factors such as environmental, behavioral and biological-genetic intrinsic factors (Peres et al., 2007). Malocclusion is common in children and prevalence in different age groups ranges from 20% to 93% , It was high (70%_80%) at 3 years of age (Dimberg et al., 2013). Nonnutritive sucking habits in the early childhood were lead to the origination of improper occlusion of the deciduous teeth and this would be carried to the permanent teeth as the growth of the permanent arches influenced by the deciduous dental arches (Aznar et al., 2006). Many studies stated that deleterious effects may arise

From the nonnutritive sucking habits that may lead to the development of malocclusion (Melink et al., 2010). As poor oral habits may be predisposing variables for arrangement of malocclusion (Mummolo et al., 2018). Vertical malocclusion develops as a result of the interaction of many different etiologic factors including thumb and finger sucking, lip and tongue habits, airway obstruction, and true skeletal growth abnormalities (Kanellis, 2001). Malocclusion is one of the most common dental problems in mankind, together with dental caries, gingival disease, and dental fluorosis (Dhar et al., 2007).

Disturbances of oral function, such as mastication, swallowing, and speech (Proffit et al., 2012), and greater susceptibility to trauma and periodontal disease (Grimm et al., 2004). The most common malocclusion are anterior open bite and posterior cross bite (Melink et al., 2010). If digit sucking causes malocclusion and the habit is discontinued between the ages of 4-5 years, self-correction of malocclusion can be expected. Self-correction also depends on the severity of the malocclusion, anatomic variation in the perioral soft tissue and the presence of other habits such as tongue thrusting, mouth breathing and lip habits.

When digit sucking continues after 6 years or into the mixed dentition, there is an increased probability that the habit induced malocclusion will not self-correct (Jyoti and Pavanalakshmi, 2014). Laresson and Bishara (2007) stated that the malocclusions developed as a result of thumb sucking habit were more harmful than those produced by other NNSH such as pacifier sucking as the thumb used in the sucking habit will act as a lever producing a force displacing maxillary teeth anteriorly causing greater increase in the overjet, elongation and proclination of anterior maxillary base than those caused by the pacifier. The harmful effect of thumb sucking habit on development of occlusion was found to be the main reason behind mothers attempts to stop this habit in their children (Chopra et al., 2015).

5.1 Type of Malocclusion:

5.1.1 Increased overjet

Overjet is the overlapping of the upper anterior teeth over the lowers in the horizontal plane. Specifically, the extent of horizontal (anterior–posterior) overlap of the maxillary central incisors over the mandibular central incisors. Overjet of 2–3 mm is considered normal (Singh, 2015). Common etiological factors associated with an increased overjet include non-nutritive sucking behaviors (NNSB), a soft tissue lip trap or a Class II skeletal relationship (Doğramacı and Rossi-Fedele, 2016; Doğramacı et al., 2017). Thumb sucking habit in addition to hereditary factor are important etiological factor for class II/ 1malocclusion development (Padure et al., 2012). Several authors stated that increased overjet attributed to thumb sucking habit resulted from elongation and advancement of anterior segment of maxillary arch in addition to the proclination of the upper incisors (Kato et al., 2009).

5.1.2 open bite

Anterior open bite defined as the gap between upper and lower incisors when the teeth in centric relationship (Wong et al., 2008). Class I Angle of anterior open bite occurs because of upper jaw narrowing, forward inclination of anterior teeth, and supra-occlusion of anterior teeth, whereas division of class II angle caused by bad habits or hereditary and There is apparent positive relationship between oral habit and anterior open bite with a higher predisposition toward class II molar relationship in those with initial class I (Warren et al., 2005). Anterior open bite is one of the most prevalent malocclusions among preschool children (Silvestrini-Biavati et al., 2016).

Anterior open bite is a common dental malocclusion, especially in preschool children, characterized by a deficiency in normal vertical contact between the incisal edges of the upper and lower anterior teeth (De Sousa et al., 2014; Germa et al., 2016). Additional features are lip incompetence, profile convexity, marked incisors labial inclination and crowding (Zecca et al., 2016). For these reasons, anterior open bite is a major cause of masticatory and phonatory function impairment and also causes considerable esthetic issues to the affected patients (Farronato et al., 2013).

Patients with open bite may present: loss of contact between teeth, deficient lip contact, oral breathing, atypical phonation, constriction of the maxillary arch, inflamed gums (this feature can be localized), enlargement of the lower 1/3 of the face, mandibular ramus open, inclined mandibular plane, long clinical crowns, thin and elongated symphysis, enlarged occlusal plane, small mandibular body, maxillary retrusion and tendency to be Angle class II (Freitas et al., 2003).

The adverse effect of anterior open bite includes aesthetic problems, speech problems represented by atypical phonation affect the production of the following phonetic sounds: /t/, /d/, /n/, /l/, /r/, lingual inter-positioning during swallowing, difficult biting on the incisors (Ize-Iyamu and Isiekwe, 2012). Open bite malocclusion is considered one of the most difficult orthodontic problems to correct because it appears as a result of the interaction of numerous etiological factors (genetic, dental, skeletal, functional, soft tissue, and habit) that contribute to its development (Baek et al., 2010).

Etiology involves the interaction of environmental factors such as prolonged sucking habits, mouth breathing, tongue or lip thrusting, and eruption

disturbances with a genetically determined vertical facial grow pattern (Fastuca et al., 2014). According to its etiology anterior open bite classified into pathologic, neurologic or iatrogenic, while according to clinical classification it could be dental, asymmetrical if affect one side of the jaw, or symmetrical if affect both sides of the jaw which mostly seen during transitional and mixed dentition stage (Wong et al., 2008).

5.1.3 Posterior cross bite

Posterior crossbite is defined as the presence of one or more teeth of the posterior group (from canine to second molar) in an irregular (at least one cusp wide) bucco-lingual or bucco-palatal relationship, with one or more opposing teeth in centric occlusion (Daskalogiannakis, 2000). A posterior crossbite is one of the most frequent malocclusions occurring in both childhood and adulthood (Posnick, 2013).

The posterior cross bite is due to a low position of the tongue due to sucking, with lack of thrust of the tongue on the palate and increased activity of the muscles of the cheeks that causes an alteration of muscle pressure on the upper arch (Ovsenik, 2009). Posterior cross bite malocclusion directly associated with the presence of deleterious oral habits with a reported prevalence of 23.9% (Miotto et al., 2015). Posterior cross bite may be results from thumb sucking habit practice if the habit continues after the age of 36 months and it is persistent and not a self- corrected if the habit ceases (Warren and Bishara, 2002; Duncan et al., 2008).

Al-Dawoody (2004) in his study stated that posterior cross bite in thumb sucker developed as a result of decrease in the width of maxillary arch and increase in the mandibular arch width and that the widening of mandibular arch resulted from positioning of tongue as it displaced by the thumb.

The major common risk factor is nonnutritive sucking habits, such as pacifier or thumb sucking (Duncan et al., 2008). The tongue, retained in a low position by pacifier or thumb, may be prevented from applying the pressure needed against the palate for transverse maxillary arch growth. It has been shown that tongue posture on the floor of the mouth is more frequent in children with posterior crossbite (Volk et al., 2010).

6 Effect of bad habits on oral health

Various manifestations of poor dental health including dental caries, periodontal disease, malocclusion, poor oral seal, speech defects etc.; could occur depending on the nature of an oral habit, onset of the habit as well as its duration (Joelijanto, 2012). Those who practice these habits for more than six hours in a day generally tend to develop more serious dental health problems than those who do so for lesser amounts of time in a day (Shahraki et al., 2012; Giugliano et al., 2014; Jyoti and Pavanalakshmi, 2014).

Detrimental effects of digit sucking include disturbances in arch form, recurrent otitis media, the possibility of accidents, development of latex allergy, tooth decay, oral ulcers and sleep disorders and the association between digit sucking and dental caries has been studied but results have been inconclusive (Cinar, 2004).

The children with finger-sucking habits were more likely to be free of caries by age three years and related with increased inter-dental spacing which come about from flaring of teeth due to digit sucking (Yonezu and Yakushiji, 2008). The studies postulated that finger sucking could cause abnormal pressure on teeth and surrounding structure thereby causing malocclusion, difficulties in tooth cleaning, accumulations of dental plaque and gum irritation. Gingivitis associated with digit sucking may also arise through other mechanisms. Proclination of the upper incisors as a result of the horizontal force created by the digits could lead to incompetent lips and gingival exposure resulting in hyperplastic gingivitis. Exaggeration of the over bite, or a deep bite could also predispose to gingivitis either from traumatic injuries (Krejci, 2000).

The candidal infections and upper airway infection were increased among children who had been used a pacifier due to easy contaminations (Freire and Forte, 2011). Pacifier sucking was a risk factor for dental caries (Martinez et al, 2000). Using a pacifier at 1 ½ years of age was a risk factor for tooth decay development (Yonezu and Yakushiji, 2008).

Conclusions

1. The habit of sucking thumb may cause malocclusion; so that a preventive action must be taken to eliminate the habit during the development and growth stage, stopping the bad oral habits can be considered as an important first step for the prevention of dental and oral disease.

2. Bad oral habits were more prevalent among girls as well as the younger age.

3. one of the important conclusions related to the present study is that there is no doubt that bad oral habit can act as an important predisposing factor aid in increasing the severity of dental caries.

4. mouth breathing specially at night may lead to dry mouth, due to decrease secretion of saliva which contains antibacterial agents and continuously washes a way bacteria from oral surface, this may provide a good environment for growth of bacteria and increase the risk of periodontal disease and dental caries.

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