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Digit Sucking Habit: A Review of Literature

Otaren NJ[a], Umweni A.A[a], Otuyemi O.D[b]., Ogbeide E[c].

Abstract

Objective: Digit sucking (thumb and finger sucking) is one of the most common forms of non-nutritive sucking. Due to different dentofacial manifestations, it has become of great interest to dentists and specialists in the field.

Methods: This article examined the development and prevalence of the habit, including the dentofacial effects in situations where it is prolonged. The approach to management were highlighted.

Results: Appropriate mode of treatment and timing of treatment should be decided upon, considering the age and level of maturity of the child, severity of malocclusion, psychological status of the child and presence of any other habit, such as tongue thrusting and mouth breathing. No active intervention should be attempted before three years of age due to emotional immaturity of the child.

Conclusion: This article presents a detailed review of the aetiologic basis and treatment options in the management of the digit sucking habit.

Key words: Digit sucking, habit.

Authors' Affiliations
[a] Department of Preventive Dentistry, University of Benin and University of Benin Teaching Hospital[1], Benin City, Nigeria.
[b] Department of Child Oral Health, Obafemi Awolowo University Teaching Hospital[2] Ile-Ife Osun State.
[c] Department of Radiology, University of Benin Teaching Hospital[3], Benin City

Correspondence
Dr. N.J. Otaren
Department of Preventive Dentistry
University of Benin

ORIGINAL ARTICLE

Introduction

Sucking behavior in infants and young children are mainly derived from their psychologic need for nutrients. Current understanding of child development suggests that sucking behavior also arises and persists in part because of psychologic needs, as normally developed infants have an inherent biologic drive for sucking.[1,2,3] This sucking urge can be satisfied through nutritive sucking, including breast and bottle feeding or through non-nutritive sucking on objects such as digits, pacifiers or toys .[4]

Digit sucking (thumb and finger sucking) is one of the most common forms of non-nutritive sucking.[1,2,5] It is a topic of interest in many fields including psychology, paediatrics, speech therapy and Dentistry.[6] Due to different dentofacial manifestations, the digit sucking habit has become of great interest to dentists and specialists in the field.[6,7]

At birth, non-nutritive sucking is related to rooting and sucking reflexes (up to 12 months of age).[6,8] Up to the age of 2 to 3 years, sucking is considered a normal developmental response.[9,10,11,12] After this, it is considered a learned habit.[1,8] The habit is considered prolonged when it is continued up to the age of 7 years and beyond.[6,13] In a previous study,[4] digit sucking at fourty eight months and beyond is considered prolonged. Although it is mostly believed that sucking habit begins as an adaptive response which eventually becomes a learned habit, there still exists some evidence in the minority of patients that prolonged sucking habit is maintained by some underlying psychological or emotional disturbances.[3,11]

Prevalence of Digit Sucking Habit

The prevalence of digit sucking habits in children has been suggested to vary from one population to another, with reports of prevalence ranging from 8% to 23%[14-19], and between 2% and 23% in Nigerian children.[15,20,21] As many as 19% of children in the United States of America continue the habit after their 5th birthday.[22] Prevalence rate is 17% among Indian children[23] and 30% among Swedish children.[23] A low prevalence rate of 1% is observed in Eskimo children.[23]

Isiekwe[20] in 1984 carried out a study on thumb-sucking habit in a group of 10-15 year old children in Lagos, Nigeria and results showed a prevalence of 2.1%. Nnachetta[24] conducted a similar study among 6-12 year old school children in Lagos State, Nigeria and recorded a prevalence of 24.3%, which was the most common habit recorded. Quashi-Williams[21] reported a prevalence of digit sucking as 44.2% in 4-5 year old children in Eti-Osa local government area of Lagos State, Nigeria. Onyeaso and Sote[25] carried out a study on the prevalence of oral habits in Lagos and Ibadan, Nigeria. The sample consisted of 563 pre-school children aged 3-5 years. Results from the study showed prevalence of oral habit was 13.14%, digit sucking was 10.66% (5.86% in males and 4.86% in females).

Uwaezuoke et al[18] carried out a prospective cross-sectional study on 100 pre-school children under 5 years old in Enugu, Eastern Nigeria. Results showed a prevalence of digit sucking of 23% with a slight male preponderance. Onyeaso[15] carried out a study among primary schools from different parts of Ibadan, Nigeria. The study consisted of 493 school children aged 7-10 years old. Results showed that 49 (9.9%) indulged in oral habits, prevalence of digit sucking was 40(8.1%), males 21(52.5%), females 19 (47.5%). More males indulged in digit sucking, though it was not statistically significant (P>0.05).

Kerosuo[26] reported the prevalence of sucking habits in an African group (Tanzanians) as 10%, Asian/Arab group as 4% while it was 10% among Finnish children. Pacifier sucking was much more common (77%) than digit sucking (6%) in Finnish children, and girls were slightly more often digit suckers (9%) than boys (4%). Ngom et al[27] carried out a study on 443 Senegalese children aged 5-6 years. The aim of the study was to determine the prevalence and factors associated with non-nutritive sucking behavior. Information on the feeding patterns of the children when they were infants was breast feeding, bottle feeding, or a combination of both. Results indicated a prevalence of 16.5 % and 17.2 % respectively for digit and pacifier sucking. Omer et al[28] carried out a study among 489 pre-school Sudanese children, 3-5 years old. Prevalence of oral habits was 30.3 %, thumb sucking was the most prevalent at 56 (11.5 %). No significant associations were found between oral habits, age, and gender. The study conducted by Larsson[29] on the prevalence of digit-sucking habits among 415 Zimbabwean children aged 1-2 years showed digit sucking as 2% and dummy sucking as 0%.

Another study on sucking habits was carried out by Farsi and Salaman17 among 583 Saudi children aged 3-5 years. The prevalence of sucking habits was 48.36%, where dummy sucking was the dominant habit at 37.90% while digit sucking was 10.46%. Kharbanda et al[30] also carried out a study on oral habits among school children in Delhi, Northern India, 5554 children aged 5-13 years were assessed. Results showed prevalence of oral habits as 25.5%, but digit sucking was relatively less common (0.7 %). There was no significant difference between boys and girls in prevalence of oral habits, digit sucking was more common in girls (1.0 %) compared to boys (0.4 %), and was statistically significant (P<0.001).

Furthermore, Bliss[31] carried out a study in New Zealand on the prevalence of digit sucking among 300 2-4 year olds and results showed a prevalence of digit sucking of 17%, while prevalence of dummy sucking was not recorded. Zadik[14] conducted a study on the prevalence of digit sucking among 333 Israeli

children from birth to 7 years old. Results showed the prevalence of digit sucking as 23% and dummy sucking, 70%.

Bishara et al[4] carried out a prospective cohort study on changes in the prevalence of nonnutritive sucking patterns in the first 8 years of life among children in Iowa, United States of America. The objectives of the study was to determine prospectively the duration of nonnutritive sucking behaviours of children between 1 and 8 years of age and the effects of persistent habits on selected occlusal characteristics in the late primary dentition. Sucking behaviour data were initially collected from 797 children who were followed longitudinally from birth through a periodic questionnaire completed by their parents. In addition, study models were obtained for 372 children at 4 to 5 years of age and assessed for posterior crossbite, anterior open bite, and overjet. The subjects were grouped according to the duration and type of habit (pacifier or digit), for less than 12 months or more than 48 months. Children with nonnutritive sucking of less than 12 months were further grouped according to the duration of breastfeeding.

Results showed there was a significant (P=0.001) decrease in the incidence of pacifier habits between 1 and 5 years, from 40% to 1%. There was a significant (P=0.01) decrease in the incidence of digit habits between 1 and 4 years of age, from 31% to 21%. Between 4 and 7 years of age, the decrease in the incidence continued, but at a slower rate. Between 7 and 8 years of age, there was an additional significant (P=0.008) decrease in the incidence of digit habits, but 4% of the children were, to various extents still sucking fingers. Children who had pacifier or digit habits lasting less than 12 months did not have significantly different occlusal characteristics than children who were breast-fed for 6 to 12 months.

Prolonged pacifier and digit habits caused significant change in the occlusal characteristics in the late primary dentition, and the effects of pacifiers were different from those of digit sucking. Children with prolonged sucking habits had significantly greater anterior open bites and posterior crossbites, and excessive overjets, but had the same incidence of class II canine relationships as children with minimal habits. There was significantly (P=0.044) greater incidence of posterior crossbites in children with pacifier habits ≥ 4 years (41.7 %) than those with digit habits (15.2 %). The incidence of excessive overjets (≥ 4.0 mm) was significantly (P=0.012) greater in children with digit habits (39.1 %) than in those with pacifier habits (0 %), incidence of anterior open bites and class II canine relationships were not significantly different between the two groups.[4]

Tricia et al[32] studied 156 children aged 4 to 16 years in Trinidad. There was a high prevalence of oral habits (91.6 %) with 63.9 % having two or more habits. Oral habits, such as pacifier use, digit sucking, tongue sucking, lip biting and sucking, nail biting, and object chewing were recorded. The most common oral habit was nail biting (52.9 %) and ice crunching was most commonly found in females. Tongue sucking was predominant in children of African ethnicity.

Aetiology/Predisposing Factors in Digit Sucking Habit

Digit sucking is defined as placement of the thumb or one or more fingers in varying depths into the mouth. Thumb and finger sucking is one of the commonly seen habits that most children indulge in. Thumb and finger sucking may be practiced even during intrauterine life. The presence of this habit is considered quite normal till the age of $3^{1}/_{2}$ to 4 years. Persistence of the habit beyond this age can lead to various malocclusions.[7]

The cause of oral habits is not fully understood, but various theories have been put forward.[10,21] Controversies prevail in the origin of sucking habits, the two most important being the psychoanalytic theory of Freud and the learned habit theory.[10] Various psychosocial factors such as age, sex, social class, infant feeding pattern as well as stress factors such as

parental belovedness, overprotection, strictness and negligence have been associated especially with digit suckers.[33]

A shorter duration of breast-feeding can predispose to digit sucking since breast-feeding fosters close maternal and child bonding, as well as emotional satisfaction for both mother and child.[23,34] It has been reported that bottle-feeding is a major predisposing factor.[1] The severity of displacement of the teeth and investing tissues depends on the trident conditioning factors.[35,37] Duration is the amount of time spent on sucking, the longer the duration of each sucking period, the greater the damage. Frequency of indulgence is the number of times the habit is practiced. Frequent and continuous sucking is more damaging than occasional, short time practice. Amount of force is the force exerted on the teeth while practicing the habit, the more the force applied, the greater the damage.

A number of theories have been put forward to explain why thumb and finger sucking occurs.[35] Freudian theory was proposed by Sigmund Freud in the early part of the 19th century. He suggested that a child passes through various distinct phases of psychological development of which the oral and anal phases manifest in the first three years of life. In the oral phase, the mouth is believed to be an oro-erotic zone. The child has the tendency to place his/her fingers or any other object into the oral cavity. Prevention of such an act is believed to result in emotional insecurity and poses the risk of the child diversifying into other habits.

The oral drive theory of Sears and Wise of 1950 proposed that prolonged nursing (breast feeding) could lead to thumb and finger sucking.[35] Benjamin suggested in his theory that thumb and finger sucking arises from the rooting or placing reflex seen in all mammalian infants.[7] Rooting reflex is the movement of the infant's head and tongue towards an object touching his cheek. The object is usually the mother's breast but may also be a finger or pacifier. This rooting reflex disappears in normal infants around 7 to 8 months of age.[35] Psychological aspects is a theory which suggests that children deprived of parental love, care, and affection are believed to resort to this habit due to a feeling of insecurity. Learned pattern theory suggests that thumb/finger sucking is merely a learned pattern with no underlying cause or psychological bearing.[35]

Phases of Development of Digit Sucking Habit

An infant is born with some elementary reflexes whose pattern and order are inherited. Sucking is an innate reflex in humans. On the other hand, a habit whose pattern and order are acquired develops from constant repetition of the act. Lateral tongue thrusting habit develops due to extraction space in the posterior segment.[35,36] At the beginning, the infant makes an effort through frequent learning and practice, later on, the muscles start responding more readily. It has been observed that the unconscious pattern of a habit develops in response to five sources namely, instinct, insufficient/incorrect outlet of energy, pain or discomfort, abnormal physical size of anatomic parts, imitation of/imposition by parents or others.[35,36]

The phases of development of digit sucking habit have been described.[35,36] Phase I (Normal and Sub-clinically significant) is the first phase seen during the first three years of life. The presence of thumb/digit sucking during this phase is considered quite normal and usually terminates at the end of phase I. Phase II (Clinically significant, sucking) is the second phase and extends between 3 to $6^{1/2}$ years of age. The presence of sucking during this period is an indication that the child is under anxiety. Treatment to solve these dental problems should be initiated during this phase. Phase III (intractable sucking) is the third phase and suggests that any thumb/finger sucking persisting at this phase is a symptom of a more significant problem than that associated with malocclusion. A psychologist may have to be consulted during this phase.[35]

Effects of Prolonged Thumb and Finger Sucking

There is considerable controversy regarding the potential deleterious effects of thumb and finger sucking and their treatment modalities.[9,37-38] However, most agree that if the habit is discontinued well before the permanent incisors erupt, no residual damage to the alignment or occlusion of the teeth is likely to result.[9,38] In the first 3 to 4 years of life, the damage to the occlusion is largely confined to the anterior segment. This damage is usually temporary, provided the child starts with a normal occlusion. Following the cessation of the habit, there is generally some spontaneous correction in the form of reduction in open bite and maxillary incisor proclination. The extent to which malocclusion self-corrects varies and depends on the age of the patient at the time of habit cessation, as well as the severity of the malocclusion resulting from the habit. Due to emotional immaturity of the child under four years of age, in most cases, it is advisable to intercept the habit between the age of four years and eruption of permanent incisors at ages 6 to 7 years.[9,37-38] The severity of displacement of the teeth and investing tissues depends on the trident conditioning factors, duration, frequency of indulgence and intensity of force.[9,34,35,37,38]

Apart from these conditioning factors, the type of malocclusion produced also depends on a number of variables which includes, the position of the digit in the mouth, associated orofacial muscle contractions, mandibular position during sucking, and facial skeletal pattern.[9,37-38] Prolonged digit sucking can produce effects on the maxilla, mandible, interarch relationship, lip placement and function, tongue placement and function, and other effects.[38]

Effects on the Maxilla

Proclination of upper anteriors occurs because during the habit, a finger is placed at an angle such that a labial and apical force is applied on the maxillary incisors, producing a pronounced labial flare. The effects are increased maxillary arch length, anterior placement of the maxillary apical base, increased SNA angle, increased clinical crown length of maxillary incisors, counter-clockwise rotation of the occlusal plane, and decreased palatal arch width/constriction of maxillary arch. Constricted maxillary arch occurs due to lowering of the tongue and increased activity of the buccinators muscle during sucking which creates an imbalance between the pressure of the tongue and cheek, thus causing constriction of the maxilla with a "V"-shaped palate. Other effects on the maxillae include; increased risk of trauma to the maxillary incisors due to their proclination and atypical root resorption of primary central incisors.[38]

Effects on the Mandible

The main effect of thumb and finger sucking on the mandible is the retroclination of mandibular incisors. The lower incisors are often used for fulcrum/leverage by applying a lingual and apical forces on them, thus causing their retroclination. Another effect on the mandible is decreased SNB angle.[38]Narrow mandibular widths and reduced mandibular molar arch depth have been reported.[7]

Effects on Inter-Arch Relationship

Some of the effects the habit of thumb and finger sucking has on the inter-arch relationship include an increased overjet, which is due to the flaring of the upper incisors and retroclination of the lower incisors, decreased overbite, and anterior open bite.[39] Anterior open bite is caused by a combination of the following factors; interference of normal incisor eruption by the interposed thumb, excessive eruption of the posterior teeth due to separation of the jaws, and opening up the bite further.[100]

Similarly, posterior crossbite occurs as a consequence of maxillary arch constriction. The force exerted by the cheek muscles on the maxilla is not balanced by the tongue musculature due to lowered tongue posture, thus resulting in maxillary constriction.

While there is no restriction of mandibular growth, this eventually leads to bilateral posterior crossbite and increased chances of developing class II molar and canine relationship[39].

Moore et al[41] carried out a study on a species of monkeys, the study was designed to assess the influence of digit sucking on growth, development, the morphology of dental and facial skeletal structures, and to evaluate the mechanism of changes associated with cessation of digit sucking. Changes in the dentofacial structures of four Macaca mulatta monkeys with non-nutritive digit sucking habits (as a result of maternal deprivation) were evaluated through the use of serial cephalometric radiographs with metallic implants and histologic studies with invivo bone markers.

Control data for cephalometric comparison were obtained from the studies of facial growth in normal rhesus monkeys by Erickson[40] and Pihl.[41] Two M mulatta specimens with ages comparable to the experimental animals served as histologic controls. The monkeys were aged 42 to 54 months or the equivalent of 13 to 17 years of human growth. The investigation was conducted in two stages of 94 and 70 days respectively to permit observation of the effects of continued digit sucking (animal A-stage 1; animal B-stages 1 and 2); cessation of digit sucking (animal C-stage 1 and 2; animal D-stage 1); resumption of sucking after a period of non-sucking (animal D-stage 2), and the effects of restraining procedures (animal A-stage 2).

Tantalum implant markers for serial cephalometric analysis were placed on the left side of the facial skeleton of each animal under thiopental (Pentothal Sodium) anaesthesia through a nonsurgical technique modified after Bjork. Cephalometric radiographs were made before the experimental period and at the end of stages 1 and 2. Tracings of successive lateral radiographs were superimposed on the middle and anterior cranial base landmarks to assess the positional changes of maxilla and mandible, relative to the cranial base. Superimposition of metallic implant images was used to assess shape changes and anteroposterior tooth movement within the maxilla and mandible. Oxytetracycline and Procion dyes were used as in vivo-bone markers during the experiment. At the conclusion of stage 2, the animals were killed and perfused with 10% formalin.

After fixation, tissue was selected from the fronto-maxillary, pterygo-maxillary and premaxillo-maxillary sutures for histologic examination. Tissue blocks in the left side of the head were used for undecalcified sections. They were embedded in bioplastic, machine cut into 150µ sections, hand ground to 50µ to 60µ, and viewed under ultraviolet light. Blocks from the right were decalcified and selective sections were prepared with hematoxylin and eosin, Mallory's connective tissue stain, and Verhoeff's stain. Other sections were deparaffinised to permit examination for procion under ultraviolet light. Visual observation during the experimental period revealed that continuation of the digit sucking habit resulted in maintenance of anterior open bite (animal B), whereas cessation of the sucking habit resulted in bite closure (animal C-stage 1 and 2; animal D-stage 1). Reinstitution of the sucking habit after cessation resulted in the reopening of the anterior open bite (animal D-stage 2). Comparable observations were made from superimposed cephalometric tracings.

The maintenance of anterior open bite with continued sucking is in sharp contrast to the anterior bite closure observed with cessation of the sucking habit. With continued cessation of the sucking habit, the direction and amount of forward maxillary and mandibular growth and tooth movement were similar to those changes observed in the control animal. With cessation of digit sucking, the maxilla was found to have rotated in a downward and backward direction. This, in conjunction with rotation of the premaxilla and maxillary incisor teeth, resulted in closure of the open bite. Concomitant downward and backward mandibular movement paralleled rotation of the premaxillo-maxillary complex. Changes in the

mandibular dentition were not considered to be distinguishable from those in the control animal. Histologic study of midfacial articulations confirmed the clinical and radiographic observations. With continued sucking, successive tetracycline marks on the premaxillary side of the premaxillo-maxillary suture indicated a pattern of bone deposition consistent with forward adjustment of the premaxilla relative to the maxilla.

In contrast, with cessation of sucking, no mineralization was observed along either premaxillary or maxillary suture margins. Adjacent sections stained with hematoxylin and eosin showed evidence of resorptive remodeling along both suture borders. Tetracycline markings in the preparation of the pterygomaxillary region of digit-sucking animals showed that mineralisation had occurred along the posterior aspect of the maxillary tuberosity and along the anterior surface of the pterygoid process. This suggested anterior displacement of the entire maxillary process, relative to the pterygoid plates. During non-sucking periods, the interruption of tetracycline markers within the pterygoid process and the lack of tetracycline uptake along the periosteal surface of the tuberosity were indicative of posterior maxillary movement. It is apparent from this study that digit sucking has significant effects on the growth pattern and resultant facial morphology of the M mullata. During the sucking period, the facial skeleton grew in a generally forward direction. After cessation of the habit, there was a downward and backward rotation of the maxillary complex, accomplished by compensatory adjustments in the circum-maxillary suture system. The presence of the premaxillo-maxilla suture permitted the adaptation of the premaxilla. Closure of the open bite took place primarily by this independent premaxillary movement. In humans, self-correction of open bite malocclusion after cessation of digit sucking is more likely to take place by adaptive changes in tooth position because of lack of patency of the premaxillo-maxilla suture. The study concluded that cessation of digit sucking resulted in closure of the open bite through downward and backward rotation of the maxillary complex. Significant remodeling in the maxillary tuberosity-pterygoid plate region indicated that digit sucking has more far-reaching effects than has been reported previously.[40,41] Diouf et al[42] carried out a study on 226 Senegalese children aged 5-6 years. The aim of the study was to determine the influence of the mode of nutritive and non-nutritive sucking on the dimension of primary dental arches. Results showed that children who had enjoyed mixed feeding (breast/bottle combination) had longer lengths of anterior maxillary arch and significantly deeper of the palatal arches, than children receiving breast alone. The children with antecedents or a current non-nutritive sucking habit had a longer anterior maxillary arch than subjects with no non-nutritive sucking habit (P=0.01). Regarding inter-arch relationship, the children with antecedents or a current digit-sucking habit had reduced overbite than their peers who had no non-nutritive sucking habit (P=0.04).

Effects on Lip Placement and Function

On the lip placement and function, the effects of thumb and finger sucking include lip incompetence, short, and hypotonic upper lip. Here, the upper lip is passive during swallowing. Other effects are hyperactive lower lip which occurs due to hyperactive mentalis activity during swallowing. Puckering of the chin can be noted, lower lip placement is lingual to upper anteriors, marked mentalis contraction which causes sealing of lower lip lingual to upper anteriors, rather than labially, during swallowing. Another effect is that the lower lip contacts the lingual surface of upper anteriors with some force, thus accentuating the upper anterior proclination and overjet.[38]

Effects on Tongue Placement and Function

During thumb and finger sucking habit, the effect on tongue placement and function includes lowered posture of the tongue, increased chances of developing tongue thrust in which lack of lip seal and flaring of upper anteriors often causes the development of compensatory tongue thrust in order to create a partial vacuum required during the swallowing act.[38]

Other Effects

These includes, risk to psychological health, deformation of the offending digit, speech defects (lisping) due to increased overjet and anterior open bite.[38]

Prolonged or chronic digit or pacifier sucking may predispose to dental conditions such as dental caries[105] and malocclusion,[17,38,44] and is associated with acute otitis media[45] and with some psychological disorders, including depression as well as colic.[46-48] It is also associated with self-mutilating behaviour, for example hair pulling, which leads to alopecia (hair loss).[49]

Diagnosis of Digit Sucking Habit

The parents should be questioned on the frequency and duration of the habit. The child's emotional status should be assessed by enquiring into such things as; feeding habits, parental care of the child, whether the parents are employed. An intraoral clinical examination should record all the features seen, such as proclination and open bite. The child's fingers should be examined. The presence of clean nails with callus on the fingers is commonly associated with thumb and finger sucking.[9,35]

Management of Digit Sucking Habit

A wide range of treatment modalities have been used in the management of thumb and finger-sucking habits. An appropriate mode of treatment and timing of treatment should be decided upon, keeping with the age and level of maturity of the child, severity of malocclusion, psychological status of the child and presence of any other habit, such as tongue thrusting, mouth breathing.[38] No active intervention should be attempted before age 3 years due to emotional immaturity of the child.[7] Most children discontinue the habit by 4-5 years of age.[38] In most cases, it is advisable to initiate the treatment for prolonged digit-sucking habit between the age of 4 to 5 years and the eruption of the permanent incisors.[35] Generally, malocclusion is self-corrected if the habit is stopped before the eruption of permanent incisors.[35] Before attempting treatment, the patient should express a desire to stop the habit. Without patient cooperation, treatment of digit-sucking habit may not be successful. When indicated, habit breaking appliances should act as reminders encouraging the patient to stop the habit, rather than punishing the child.[37] Cooperation of the parents and an understanding of potential consequences of prolonged habit is also important.[6] Parents should be advised not to rebuke or criticize the child, which will only aggravate the problem. Positive reinforcement and encouragement of the child is recommended.[9,38] In the presence of a psychological problem associated with digit sucking habit, psychological consultation and necessary management are recommended before appliance therapy.[9,38]

The management of thumb/finger sucking habits include: psychological approach, mechanical aids, chemical approach.

Psychological Approach

It is usually said that children lacking parental care, love and affection resort to this habit. Thus the parents should be counseled to provide the child with adequate love and affection. The parents should also be advised to divert the child's attention to other things such as play and toys. The success of any habit-interception procedure largely depends upon the subject's cooperation and willingness to be helped to discontinue his/her sucking habit. Thus, the parents and the dentist should seek to motivate the child. Dunlop put forward a theory called “Beta hypothesis” which states that the best way to break a habit is by its conscious, purposeful repetition.[35] He suggested that the child should be asked to suck his/her thumb/finger observing himself/herself as he/she indulges in the habit. This procedure is very effective if the child is asked to do the same at a time when he/she is involved in an enjoyable activity.[35]

Mechanical Aids

These basically are reminding appliances that assist a child who is willing to quit the habit but is not able to do so as the habit has entered a subconscious level. These appliances usually consist of a crib placed

palatal to the maxillary incisors. Habit breakers can be of two types; removable habit breakers which are passive removable appliances that consist of a crib anchored to the oral cavity by means of clasps on the posterior teeth, and fixed habit breakers made of heavy gauge stainless steel wire that can be designed to form a frame soldered to bands on the molars. Other aids that can be used to intercept the habit include bandaging the digit or bandaging the elbow.[35]

Chemical Approach

The use of bitter tasting or foul smelling preparations placed on the digit that is sucked can make the habit distasteful. The medicaments that can be used include, pepper dissolved in a volatile medium and quinine.[9,35]

Conclusion

This article presents a detailed review of the aetiological basis, clinical effects, treatment options and management of the digit sucking habit.

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