

# Deleterious Oral Habits and Management in Pediatric Patients: A Review

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## Abstract

Habit is the constant and unconscious repetition of an act. Children (usually infants) frequently acquire oral habits that can be temporary, if continued can be permanent & harmful to dental occlusion and supporting structures. This article aims to throw lights on harmful habits, its cause, side effect and treatment available, as ignorance of these habits can cause facial abnormality; hence Dentists play an important role in the identification and removal of habits.

**Keywords:** oral habits, Bruxism, Digit Sucking, Nail Biting, Tongue Thrusting, Mouth Breathing, Lip Sucking.

## Introduction

Oral Habit most commonly seen during infancy as it is part of normal development. It usually fades away with time. If not, then it is a matter of great concern as it can cause serious dentoalveolar changes. It is usually associated with several etiologies out of which psychology is common and important. Hence, if a patient complains of habit understanding the associated deep-rooted psychology and management is very important for Dentist.<sup>1</sup>

Oral habits is justified as a frequent or constant practice which is fixed due to frequent repetition

**Oral Habits are classified in several headings by following scientist:**

**According to William James (1923):** Useful habits such as nasal breathing/harmful habits such as thumb sucking.

**According to Kingsley (1956):** Functional Oral Habit like mouth breathing/Muscular Habit like tongue thrusting/Combined Muscular Habit like thumb and finger habit/Postural Habit like chin propping.

**According to Morris and Bohanna (1969):** Pressure Habit like lip sucking/Non Pressure Habitlike mouth breathing/Biting habit like lip biting.

**According to Finn (1987):** Compulsive/Noncompulsive.

**According to Klein (1971):** Empty or unintentional Habit/Meaningful or intentional habit.<sup>2</sup>

**Bruxism:** The word bruxism is derived from the word 'la bruxomaine' coined by Marie Pietkiewicz (1907). It is a repetitive movement disorder of mandible which is characterized by unconscious clenching and grinding of teeth. This type of Parafunctional movement is important for dentist's knowledge as it is used to detect the reason behind broken restoration, tooth damage such as tooth fracture or any temporomandibular disorders. Bruxism is of two types Nocturnal bruxism/Sleep Bruxism which occurs in sleep and Diurnal Bruxism/Awake Bruxism which occurs when the patient is awake. Sleep bruxism is of two types of primary or idiopathic (occurs without any medical reason), secondary or iatrogenic (may be caused due to use of the drug).

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**Etiologies** associated with bruxism are psychosocial factor (emotional stress), pathophysiology factor (illness, trauma, smoking, medication), genetic factor (offspring of people with bruxism have more chances), local factor (faulty restoration, calculus, malocclusion), systemic factor (a nutritional deficiency, intestinal parasite infection).<sup>3-6</sup>

**Clinical Feature:** Bruxism affects the anatomy, morphology and dental occlusion. It causes mobility of teeth, hypersensitivity, pain in facial muscle, restricted mouth opening, pain in the temporomandibular region (frequent headache), tooth fracture, damage to the dental prosthesis and dental fillings.<sup>3-6</sup>

**Treatment:** There is no such accepted treatment available for bruxism as it is not life-threatening hence conservative treatment is recommended. Eliminate the causative factor. Awake Bruxism can be reduced by habit modification training or use of small chewing gum as a reminder in the molar region. Sleep bruxism can be reduced by sleeping without pillow i.e. flat on back, occlusal splint and dental guards can be used. Medication such as benzodiazepines, beta-blockers, dopamine agents, antidepressants, anticonvulsants, muscle relaxants can be used to treat Bruxism.<sup>3-6</sup>

**Digit Sucking:** Digit (Thumb, finger) sucking is the most common type of non-nutritive sucking habit. It is defined as positioning of digits at varying depths of the oral cavity. This habit started during the 29<sup>th</sup> week of gestation continues till 2-3yrs of age after which children usually stop this habit on their own. If this habit continues it can cause malocclusion and can also alter the shape of a digit.

Two theories are involved to explain the etiology of digit sucking, emotional theory and learned behavior theory. Emotional theory is explained by Sigmund Freud according to him finger sucking is a type of pleasure in which a child derives from excitation of oral erogenous routes. If infants sucking needs are not fulfilled this habit become fixation, later continuation is known as regression. Fixation and regression are features of emotional disturbances. In recent times learned behavior theory is the most favored theory, according to this theory sucking is a natural desire in infant and digit sucking is caused due to excess sucking urge because of efficient breast/bottle feeding by nutritionally proficient mother. Emotional and physical stimuli, such as hunger, boredom, stress, pleasure and other disability are

the main cause behind the continuation of this habit.<sup>7-11</sup>

**Classification:** Subtelny (1973) has classified types of digit sucking into 4 types:-

Type A-(50%) of children place the entire thumb or digit inside the oral cavity with a pad of the thumb is a place such that is pressing the palate. Anterior teeth of the maxillary and mandibular region are in contact.<sup>7-11</sup>

Type B-(25%) of children place the whole thumb inside the mouth but it is not in contact with the vault of the palate. Only anterior teeth mandibular and maxillary region are in contact

Type C- (18%) of children place thumb just beyond its first joint, there is no mandibular contact thumb is in contact with maxillary incisor.

Type D-(6%) of children doesn't fully place thumb inside the mouth, only thumbnail is in approximate contact with mandibular incisors.<sup>7-11</sup>

**Etiology:** Type of malocclusion during digit sucking depends on several factors such as the position of the digit, related oro-facial muscle, the position of the mandible during sucking, facial and skeletal design, intensity frequency and duration of force applied.

**Clinical feature:** Prolong Digit sucking can cause damage to facial structure, dental structure and digits involved in sucking. Maxillary changes due to a long time sucking habit are overjet of the maxilla, increased maxillary arch length, reduced width of palatal arch, increased angle of sella-nasion-point A. Effects on the mandible include proclination of the mandibular incisors, increased distance in intermolar region and reduced angle of sella-nasion-point B. Other dental deformity includes increased overjet, reduced overbite, and crossbite in posterior tooth region. Digit deformity can be caused in chronic sucking patients.<sup>7-11</sup>

Removal of psychological reason, engagement of the child in various activities to divert the mind, adequate duration of breastfeeding, use of dummy or pacifiers can reduce the thumb sucking habit.<sup>7-11</sup>

**Management** of thumb sucking involve following therapy according to Pinkham:

**Preventive therapy (Hughes):** Feed the child enough in a natural way such that his feeding needs are fulfilled.

**Psychological Therapy:** This habit usually acquire by those children who lack parental care, love and proper care. Hence dentists and parents need to carefully handle the situation with proper understanding and without shaming and punishment. Positive reinforcement or positive reward system should be used to modify behavior. Dunlop's beta hypothesis is the best way to break the habit. According to this hypothesis conscious and purposeful repetition can stop the habit. The child is asked to stand with the mirror and suck his/her digit looking at self, this procedure is very productive when a child is repeatedly asked to perform this act whenever he sucks thumb. Dr. Dragan Antolo's book named 'The Little Bear Who Sucked His Thumb' is also a positive and pressure less way of removal of habit as a child relates himself to bear and willingly quit the habit.<sup>7-11</sup>

**Reminder Therapy:** They are of two types chemical and mechanical. Chemical therapy includes the use of bitter-tasting or bad odor chemicals such as quinine, asafetida, castor oil, red pepper in volatile liquid, commercially available femite (Denatonium benzoate) in thumb. Mechanical therapy includes mechanical restrains applied to hand, wrist, thumb to quit habit examples of mechanical restrainers are Thermoplastic thumb post (Allen in 1991), ace bandage system, use of long sleeves nightgown, three-alarm system introduced by Northan and Gellin (1968). According to them when the child puts a finger in mouth and feels the tape its first alarm when a child feels the pin which is tied with a bandage in the elbow is second alarm lastly when bandage gets tightened serves as a third alarm.

**Appliance Therapy:** They are of two types

**Removable Appliance:** Palatal crib, oral screen, hay rakes.

**Fixed Appliance:** Quad helix, bluegrass appliance, modified bluegrass appliance.<sup>7-11</sup>

**Nail Biting:** Nail-biting is also known as onychophagia is the most common stress-relieving oral habit seen in both children and adults. Nail-biting habit is due to anxiety which usually develops after sucking age. It includes biting of nail or its surrounding soft tissue and cuticle. This habit starts after the age of 4 and attains its peak in 4-6 yrs and get stable during 7-10yrs of age again triggers in adolescence. It is not a pernicious habit hence it does not cause malocclusion. Somehow, attrition of lower incisors can be seen in rare cases as the force applied in nail-biting is similar

to mastication yet quitting this habit is necessary as this habit is socially unacceptable. Operational definition of Nail Biting is "putting one or more fingers in the mouth and biting on the nail with teeth"

**The etiology** of nail-biting is controversial some studies believe it is due to behavioral disorder or anxiety while others deny this theory. It occurs due to boredom, emotional stress or successor of thumb sucking.

**Clinical features** include attrition of incisal edge, rotation of teeth, crowding, resorption of apical root, gingivitis, fracture (in severe cases). Other feature includes damage to the cuticle, inflammation of nail bed, bacterial infections.

**Management** includes behavioral modification and physical barriers. The patient must be treated with a little more attention, love, affection, and comprehension. Chewing bubble gum can be an alternative when patients feel the urge to bite nails. The application of olive oil or bitter-tasting preparation might annoy the young patient. Educating the child and creating awareness is the best way to quit this habit.

**Tongue Thrusting:** Tongue thrust is defined as the movement of the tongue tip in the forward direction between the teeth to touch the lower lip during swallowing and speaking, so that the tongue becomes interdental. This habit is most commonly seen during infancy and subsides after a certain age. It can be Physiologic (normal tongue thrust swallow during infancy), Habitual (presence of habit even after the rectifying the malocclusion), Functional (adaptive behavior developed to achieve an oral seal), and Anatomic (person with macroglossia).<sup>12, 13</sup>

**Etiology:** According to Fletcher following factor may cause development of tongue thrusting

*Genetic factor:* anatomic or neuromuscular deformity in head and neck region e.g.: macroglossia, hypertonic orbicularis oris activity, position of lingual frenum *Learned behavior:* It is an acquired habit hence following condition such as improper bottle feeding, prolonged thumb sucking, prolong tonsillar infection and upper respiratory tract infection, prolong tenderness of gums or teeth can alter the swallowing pattern and can cause tongue-thrusting habit.<sup>12, 13</sup>

**Classification** of tongue thrust according to James. S. Barner and Holt:

**Type 1:** Non-deforming tongue thrust

**Type 2:** Deforming anterior tongue thrust. (2a) anterior open bite, (2b) proclination of anterior teeth, (2c) posterior crossbite.

**Type 3:** Deforming lateral tongue thrust. (3a) posterior open bite, (3b) posterior crossbite, (3c) deep overbite

**Type 4:** Deforming anterior and lateral tongue thrust. (4a) anterior and posterior open bite, (4b) proclination of anterior teeth, (4c) posterior crossbite.<sup>12, 13</sup>

**Clinical feature:** Intraoral clinical feature includes: proclined upper anterior, retrocline lower anterior, anterior open bite, posterior crossbites, bimax protrusion (complex tongue thrust)

**Extraoral feature includes:** Doligocephalic face, increase lower anterior facial height, incompetent lip seal, speech deformity can also be seen

**Management:** This habit is vanishes once permanent teeth erupt by age of 8-9 yrs. may functional therapy, speech therapy, subconscious therapy or orthodontic treatment is required to correct this habit. Several exercises can also be performed such as lemon candy exercise, 4s exercise, whistling, counting from 60-69, yawning, gargling, water holding exercise, lip exercise.

**Following Removable orthodontic appliances are used:**

**Modified Hawley's Appliance:** acrylic is cut on anterior hard palate region, crib or rake is attached on the anterior side this increases anchorage and cribs act as a reminder to the tongue.

**Oral screen:** it acts as a barrier to the tongue, corrects open bite, arranges the maxillary anterior teeth. Ring attached in oral screen helps in Lip muscle exercise.

A fixed orthodontic appliance includes Nance palatal arch (acrylic button type).<sup>12,13</sup>

**Mouth Breathing:** Breathing is the vital function of the human body, usually done through the nose. Breathing through the mouth instead of the nose is considered as abnormal breathing habit. Merle suggested the name oro-nasal breathing. It's the most common habit among children as well as adults. Mouth breathing due to an acute illness, cold is not of main concern. Chronic mouth breathers who completely depend on their mouth

or people with medical conditions like sleep apnea are of main concern. It shows the child needs additional medical involvement or retraining on breathing easily through the nose. According to Finn mouth breathing can be obstructive, habitual, and anatomical.<sup>15,16</sup>

**Etiology:** Airway obstruction (enlarged turbinate), defect on the intranasal region (tumors, deviation of the intranasal septum, bony spurs), hypertrophy of pharyngeal lymphoid tissue, infection or inflammation in the nose (nasal polyps, chronic allergic steatitis), birth abnormality (cleft lip, cleft palate, tongue tie), abnormal facial musculature due to former habit like thumb sucking.<sup>15, 16</sup>

**Clinical Feature:** General side effects include pigeon chest deformity, hoarseness voice, poorly developed sinuses, decrease sense of smell. Extraoral features like adenoid face, gummy smile, short upper lip, narrow nostrils, dryness and crack in lips can be seen. Intraoral symptoms are proclination of maxillary anterior, generalized spacing, gingivitis, posterior crossbite.<sup>15, 16</sup>

**Treatment** for mouth breathing depends on its underlying cause. It should be treated as early as possible patients with nasal congestion should use nasal spray. Surgery like Tonsillectomy, Septoplasty, and Adenoids removal is advised. Dentists prescribe the use of orthodontic appliances such as oral screen, chin cap and activator.<sup>15, 16</sup>

**Lip Sucking/Lip Biting:** Child might occasionally suck their lip when anxious but some suck and bite their lip as deleterious habit which might cause soreness and redness of lip below the vermilion border. This case occurs almost in all cases of lower lip.<sup>17,18</sup>

**Etiology:** It is caused due to physical causes such as malocclusion, TMJ disorder. Physiological disorder includes fear, stress, anxiety or body-focused repetitive behavior (BFRB). This is also caused due to hyperactivity oh mentalis muscle.<sup>17,18</sup>

**Clinical Feature:** It causes protrusion of maxillary incisor, retrusion of mandibular incisor, generalized spacing in the upper arch, crowing in the lower anterior arch. Lip will appear red, chapped, irritated below vermilion border. Vermillion border will become hypertrophic.

**Treatment** depends on the cause physiological

causes can be treated with habit modification counseling and therapies such as Cognitive Behavioral Therapy, Habit Reversal Training, Dialectical Behavior Therapy while physical cause requires clinical treatment such as correction of the underlying cause. Medications prescribed are antidepressant and anti obsessive medicine such as clomipramine or selective serotonin reuptake inhibitors.<sup>17,18</sup>

### Conclusion

Habits are increasing day by day due to stress and poor attention from parents. Child needs proper care for good behavior development. Habits once developed are hard to break because repeated action becomes imprints in our neural pathway. Abnormal oral habit can cause great destruction to both dental and facial structure; it also affects the general health. Hence, Dentist plays an important role in habit modification. Dentists not only repairs tooth and dentofacial structure but also identify unnoticed habits (due to parents unawareness) and helps in the prevention and treatment of the underlying cause. To replace bad habits with a good habit integrated approach is required between parents and patients, behavior modification technique, physical exercise, habit breaking appliance and orthodontic treatment are required. But most importantly parents should be educated about harmful oral habits their etiology and side effects to stop habit in early age for healthy dentition and good health.

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