



DELETERIOUS ORAL HABITS: A PEDIATRICIAN PERSPECTIVE

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ABSTRACT:

Oral habits are associated with a very complex nature. They may act as a inane behavior for infants, so that they can collect information from the environment and considered as a part of normal development in children. More or less they are always associated with anger, release of mental tension, hunger, sleep, fear, fatigue, boredom, excitement, physical stress, tooth eruption and sometimes insufficient satisfaction of sucking during infancy. Digit sucking, lip and nail biting, tongue thrusting, mouth breathing etc. are some common habits seen in children. If these habits are continued for a long time beyond certain developmental age, then it may lead to malformation in developing teeth, occlusion and surrounding oral structures. Since, pediatricians observe child's development throughout years from infancy to adolescence, it also becomes their key responsibility to recognize these habits along with pediatric dentists and play a crucial role in spreading awareness among parents.

KEYWORDS:

DELETERIOUS ORAL HABITS, THUMB SUCKING, MOUTH BREATHING, TONGUE THRUSTING, MASOCHISTIC HABITS.

INTRODUCTION

A habit is a repetitive action that tends to occur unconsciously. Most of the repetitive behaviours start and finish spontaneously during infantile period. In both

children and adults, the mouth is considered to be a primary and permanent location for expression of emotions, relief in passion and anxiety, so there is a palliative action by the stimulation of this region with tongue, finger or nail.^{1,2} According to Mathewson (1982),

oral habits are a learned patterns of muscular contractions. Deleterious oral habits patterns may lead to perverted or impeded osseous growth, tooth malposition, disturbed breathing habits, difficulties in speech, imbalance the facial musculature and psychological problems.³ Habits are mostly seen in the early childhood and mixed dentition stages. Oral habits can be divided into 2 main groups: **(1) Acquired oral habits:** learned behaviours that could be stopped easily when the child grows up and start another one. **(2) Compulsive oral habits:** learned behaviours which are fixed in child and they feel safety with this habit when emotional pressures are intolerable and preventing the child from these habits make him or her anxious and worried.^{1,2} The prevalence of oral habits in high school girls and primary school students have been reported to be 87.9 and 30%, respectively.⁴ Quashie-Williams et al. found 34.1% of children with an oral habit in his study.⁵ To produce detrimental and lasting effects for any habit, there are trident of factors responsible like duration of the habit per day, the degree and intensity of habit. The intent of this article is to review different oral habits commonly seen in children and their prevalence, clinical effects, diagnosis and treatment modalities, which serve as a guide to create awareness among paediatricians, pediatric dentists, general dentists as well as parents to render comprehensive care to our child patients.

1. THUMB/ DIGIT SUCKING - It is one of the most common habit seen in children. Defined as the placement of thumb or one or more fingers in varying depth into the mouth. Starts in I.U life and continues up to 1-2 yrs; disappears with maturation. It should be viewed by the clinician as a behavioural pattern of multivariate nature. It may begin for one reason and be sustained by other factors at different ages.⁶

CLASSIFICATION: Based on clinical observation - 1) **Normal thumb sucking** - Up to 1.5 years of age 2) **Abnormal thumb sucking** - Beyond pre-school age a)

Psychological - involved with deep rooted emotional factor b) **Habitual** - no psychological bearing c) **Nutritive sucking** - breast-feeding, bottle feeding d) **Non nutritive sucking** - thumb or finger sucking, pacifier sucking.⁷

INCIDENCE: Popovich and Thompson (1973), Kelley et al (1973):11.7% girls and 8.3% boys. Subtenly (1973): equal distribution, Race: low incidence in Negroid races.⁶

ETIOLOGY: Most common cause of this habit is due to Insecurity or attention from the family members due to working parents, Hereditary, Social adjustment and stress, Retained infantile swallow, Post-natal sucking reflex.⁶

In neonate: Insecurities are related to primitive demands as hunger

During the first weeks of life: Related to feeding problems

During the eruption of the primary teeth: It may be used to relieve teething.⁷

TRIDENT FACTORS AFFECTING THUMB SUCKING: Graber and Swain (1985) **Intensity, frequency & duration** are the 3 main factors that affect severity of displacement of teeth and supporting tissues.

Intensity of force - amount of force exerted on teeth while practicing the habit

Frequency of indulgence - number of times the habit is practiced during a day

Duration - amount of time/ number of years spent on habit.⁸

PEDIATRICIAN VIEW - The following are the diagnostic point that paediatrician can diagnose the habit:-

History - a) Determine the psychological component involved and check about emotional status, b) Questions regarding frequency, intensity & duration of the habit, c) Enquire the feeding pattern, parental care.⁷

Extra-Oral Examination - a) Digits - reddened exceptionally clear, chapped and with short fingernail, i.e. a clean dishpan thumb (Figure 1) b) Lips: A short, hypotonic upper lip, Lower lip hyperactive c) Profile: Usually convex profile (Figure 2) d) Associated with other habits like tongue thrusting, f) Enlarged tonsils h) Speech defects (lisp) (Figure 3)⁷



FIGURE 1 - LESION ON THUMB



FIGURE 2 - CONVEX PROFILE



FIGURE 3 - DIFFICULTY IN LISPING

Intra-oral Examination - Maxillary anterior proclination & mandibular retroclination (Figure 4), Anterior open bite (Figure 5), Constriction of maxillary arch, high palatal arch (Figure 6), posterior crossbite (Figure 7), increased overjet, decreased overbite.⁷



FIGURE 4 - PROCLINATION OF INCISORS



FIGURE 5 - ANTERIOR OPEN BITE



FIGURE 6 - HIGH PALATAL ARCH



FIGURE 7 - POSTERIOR CROSS BITE

PREVENTION: 1) Motive based approach should be explained to parents for their involvement in prevention of the habit like child's engagement in various activities, duration of breast feeding, Mother's presence and

attention during bottle feeding, Well-timed weaning and beginning of solid foods, Use of a dummy or pacifier (Figure 8)⁷



FIGURE 8 - CHILD WITH A DUMMY/ PACIFIER TO PREVENT THUMB SUCKING HABIT

TREATMENT: Paediatrician themselves can explain the following treatment plan: 1) **Psychological therapy** - Nagging, scolding or frightening the child should be avoided but tend to make them resort to the habit. 2) **Parent counselling** should be done 3) **Dunlop's hypothesis** - The child should be asked to sit in front of the mirror and asked to observe himself as he indulges in the habit. Forced purposeful repetition of habit eventually associates with unpleasant reactions and the habit is

abandoned. (Figure 9) 4) **Reward system** - Praise child or provide a small reward for not sucking their thumb i.e. Stickers on a chart (Figure 10) 5) **Ace bandage approach** - elastic bandage wrapped across the elbow. Pressure exerted by the bandage removes the digit from the mouth as the child tires and falls asleep. (Figure 11) 6) **Use of long-sleeve nightgown** (Figure 12) **My special shirt** (Figure 13) 7) **Thumb - home concept** - small bag is given to the child to tie around his wrist during sleep and it is explained to the child that just as the child sleeps in his

home, the thumb will also sleep in its house and so the child is restrained from thumb sucking during night. (Figure 14) 8) **Hand puppets** - Currently the use of hand puppets is gaining popularity to stop the habit (Figure 15) 9) **Thumb sucking book** - Parents should motivate the child in a story form (Figure 16) 10) **Elbow guard and three alarm system** - First, The child wearing the elbow guard. Second, The music/vibration/siren/recorded voice

played when tried to bend the elbow. Third, The elbow guard restricting thumb/finger reaching the mouth (Figure 17) 11) **Chemical treatment** - Bitter and sour chemicals have been used over the thumb to terminate the practice e.g. quinine, asafetida, pepper, castor oil, etc. also anti-thumb sucking solutions are available (Figure 18) 12) **Thumb guard** - most effective extra oral appliance for control of the habit (Figure 19).⁷



FIGURE 9 – FORCEFUL REPETITION OF HABIT IN FRONT OF MIRROR



FIGURE 10 – REWARD SYSTEM

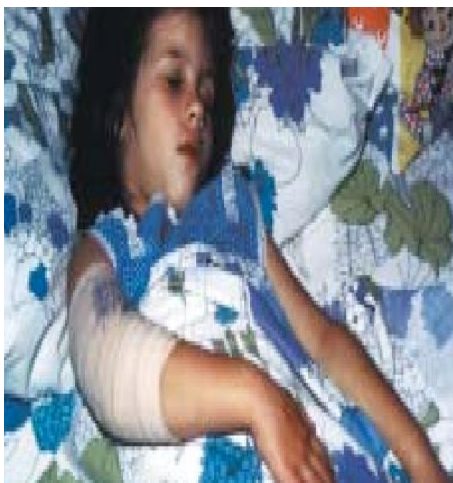


FIGURE 11 - ACE BANDAGE APPROACH



FIGURE 12 – USE OF LONG SLEEVE NIGHT GOWN



FIGURE 13 – SPECIAL SHIRT



FIGURE 14 – THUMB HOME CONCEPT



FIGURE 15 - HAND PUPPET

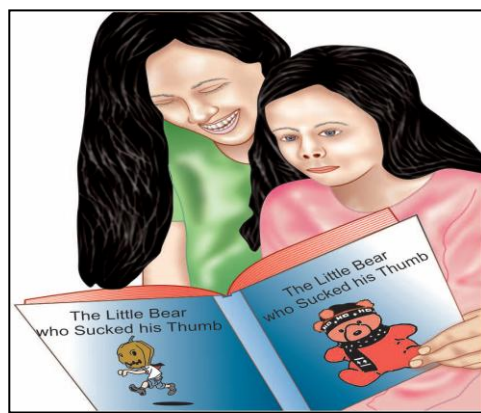


FIGURE 16 - THUMB SUCKING BOOK



FIGURE 17 - ELBOW GUARD AND THREE ALARM SYSTEM



FIGURE 18 - ANTI-THUMB SUCKING SOLUTION



FIGURE 19 - THUMB GUARD



FIGURE 20 - MODIFIED BLUE GRASS APPLIANCE

Intraoral appliances: Blue grass appliance, modified blue grass appliance (Figure 20), Quad helix, Palatal crib. Refer to pediatric dentist for the further treatment.⁷

2. TONGUE THRUSTING – It is the most controversial of all oral habits. Profitt (1972): Defined as the placement of the tongue tip forward between incisors during swallowing.⁶

CLASSIFICATION: Moyers (1955) a) **Simple** : Normal

tooth contact during the swallowing act. b) **Complex** : Teeth apart during swallow, contraction of the circum-oral muscles during swallowing and poor occlusion of teeth.⁷

INCIDENCE: Milton (1978): 97% newborns 80% 5-6yrs 3% 12 yrs.⁶

ETIOLOGY: Most common cause of this habit is due to upper respiratory tract infections, because of their effects on tonsils and adenoids, neurological disturbances, feeding

practices, and due to gap filling tendency i.e. Any space around the dental arches not occupied by teeth will tend to be filled by the tongue partly and may functionally adapt to transient change in anatomy, induced due to other oral habits mostly with thumb sucking habit, tongue size i.e. Macroglossia and microglossia: In these situations tongue is inadequate to fill the oral space resulting in a forward thrusting, soft diet causes underdevelopment of orofacial muscles, due to oral trauma changes in deglutition pattern, change in sleeping habits and also there are chances of tongue thrusting habit.⁷

PEDIATRICIAN VIEW – The following are the diagnostic point that paediatrician can diagnose the habit:-

History – a) check for hereditary etiological factor, b) Information regarding upper respiratory infection – refer to ENT specialist c) Sucking habits and neuromuscular problems.

Extra-Oral Examination - Check for size, shape and movements of tongue.

Functional examination – a) Observe the tongue position while the mandible is in rest position, b) Observe the tongue during various swallows - Conscious swallow, Command swallow of saliva, Command swallow of water, Conscious swallow during mastication.

Palpatory examination – a) Place water beneath the patients tongue tip and ask him to swallow – Normal: Mandible rises and teeth are brought together but no contraction of lips or facial muscles, Tongue thrusting: Marked contraction of lips and facial muscles b) Place hand over temporalis muscle and ask to swallow – Normal: Temporalis contracts and mandible is elevated, Tongue thrusting: No temporalis contraction c) Hold the lower lip and ask the patient to swallow – Normal: The swallow can be completed, Tongue thrusting: Patient cannot complete swallow, d) speech disorders such as lisping, problems in articulation of s, n, t, d, l, z, and v sounds.⁷

Intra-Oral Examination - Proclination of maxillary anteriors (Figure 21), anterior or posterior open bite (Figure 22), posterior teeth crossbite (Figure 23) increase overjet, maxillary constriction.⁶



FIGURE 21 - PROCLINATION OF MAXILLARY ANTERIORS



FIGURE 22 - ANTERIOR OPEN BITE



FIGURE 23 - POSTERIOR CROSS-BITE



FIGURE 24 - LIP EXERCISES, TUG OF WAR & BUTTON PULL EXERCISE

TREATMENT: Self correcting by 8-9 years: by the time permanent teeth erupt. If associated with other habits, associated habit should be treated first. 1) **Myofunctional therapy** – child can be guided regarding the correct posture of the tongue during swallowing by various exercises like asking the child to place the tip of the tongue in the rugae area for 5 minutes and then asking him to swallow 2) **Lemon candy exercise** - lemon candy is put on the tongue tip. Child is asked to hold the candy against the palate by the tongue tip and then asking the child to swallow 3) **4s exercise** – spot, squeezing, salivating, swallowing. Using the tongue the spot is identified, the tongue tip is pressed against this spot and the child is asked to swallow keeping the tongue at the same spot 4) **Using Orthodontic elastics** - tongue tip is held against the palate using elastics of 5/16" and sugarless fruit drop 5) **Other exercises:** Whistling, reciting count from 60-69, gargling, yawning, peanuts exercise, water holding exercise (in front of mirror) repeat 20 times / day to tone

the respective muscles 6) **lip exercises, tug of war and button pull exercise** - A string is tied to two buttons, one of the button is placed between the lips of the patient while the other is held by the patient outside. The outer button is pulled outwards and at the same time the inside button is resisting the forces thereby strengthening the lips on both aspects (Figure 24) 7) **Sub conscious therapy** - Once the voluntary swallowing pattern is acquired the child proceeds to subconscious therapy, viz. subliminal therapy in which the patient is asked to place a reminder sign or auto suggestion which requires the patient to give self-instructions like repeat 6 times "I will swallow correctly all night long" for 10 nights.⁷

Intraoral appliances: Both Removable or fixed appliances can be used. Pre-orthodontic trainer for myofunctional training, Hawley's appliance, Hawley's appliance modifications, Oral screen, Tongue crib (Figure 25). Refer to pediatric dentist for the further treatment.⁷



FIGURE 25 - TONGUE CRIB



FIGURE 26 - LIP POSTURE: MOUTH BREATHERS-LIPS WILL BE APART

3. MOUTH BREATHING - Usually seen in people with nasal obstruction. Chopra (1951) & Sassouni (1971): Defined as a habitual respiration through the mouth instead of the nose.⁶

CLASSIFICATION: Finn (1987): 3 categories 1) **Obstructive** - Increased resistance to or complete obstruction of normal airflow through nasal passage. 2) **Habitual** - persistence of the habit even after elimination of the obstructive cause. 3) **Anatomical** - Short upper lip leads to incompetence of lips and hence mouth breathing.⁷

ETIOLOGY: Developmental and morphologic anomalies like abnormal development of nasal cavity, nasal turbinates, and short upper lip. Partial obstruction due to deviated nasal septum, localized benign tumors. Infection and inflammation of nasal mucosa, chronic allergic stomatitis, chronic atrophic rhinitis, enlarged adenoids and tonsils, nasal polyps. Traumatic injuries to the nasal cavity. Genetic pattern—ectomorphic children having a genetic type of tapering face and naso-pharynx are prone to nasal obstruction.⁶

PEDIATRICIAN VIEW –

History – a) ask parents about whether the child adopts frequent lip apart posture, b) ask for history of Tonsillitis, allergic rhinitis and otitis media.

Extra-oral Examination - a) Observe the patient for Lip posture – Mouth breathers: Lips will be apart, Nasal breather: Lips will be touching (Figure 26) b) Ask the patient to take a deep breath through nose – Mouth breathers: No change in shape or size of external Nares – Nasal breathers: Demonstrates good control of alar muscles c) Consult for E.N.T examination

Clinical tests • Mirror test: It is also called as Fog test. Two-surfaced mirror is placed on the patient's upper lip. If air condenses on upper side of mirror the patient is nasal breather and if it does so on the opposite side then he is a mouth breather. (Figure 27)

• **Massler's water holding test:** Patient is asked to hold the mouth full of water. Mouth breathers cannot retain the water for a long time. (Figure 28)

• **Jwemen's butterfly test:** Take a few fibers of cotton and place it just below the nasal opening. On exhalation if the fibers of the cotton flutter downwards patient is nasal breather and if fibers flutter upward he is a mouth

breather. (Figure 29)⁷



FIGURE 27 - MIRROR TEST



FIGURE 28 - JWEMEN'S BUTTERFLY TEST



FIGURE 29 - MASSLER'S WATER HOLDING TEST



FIGURE 30 - ADENOID FACIES, LARGE FACE HEIGHT

Extra-oral features - Pigeon chest appearance, speech defects - nasal tone in voice, sleep apnea syndrome, narrowing of maxillary sinus and nasal cavity, adenoid facies, Large face height (Figure 30), gummy smile, Short

thick incompetent upper lip (Figure 31) and a voluminous curled over lower lip. Blood gas constituents: 20% more Co2 and less O2.⁶



FIGURE 31 - GUMMY SMILE, SHORT THICK INCOMPETENT UPPER LIP



FIGURE 32 - CONSTRICTED MAXILLARY ARCH

Intra-oral examination - Inflamed & irritated gingival tissue in the anterior maxillary arch, Constricted maxillary arch (Figure 32), Flaring of incisors (Figure 33), Tendency

towards an open bite (Figure 34), Posterior cross bite, Low tongue position (Figure 35).⁶



FIGURE 33 - FLARING OF INCISORS



FIGURE 34 - OPEN BITE



FIGURE 35 - LOW TONGUE POSITION



FIGURE 36 - ORAL SCREEN

TREATMENT: The main aspect of management of a mouth-breathing patient is to treat and eliminate the underlying cause or pathology that has created the habit with the help of ENT Surgeon. This should be followed by symptomatic treatment like Deep breathing exercises, Lip exercises 15 to 30 min/day for 4 to 5 months. Intraoral appliances i.e. Oral screen with hole or without hole can be made (Figure 36). Depending on child's age, severity of problem pediatrician can refer the patient to pediatric dentist for more comprehensive care.⁷

4. BRUXISM - It is the grinding or gnashing of teeth, usually occurring at night. Rjamford et al (1966): Defined Bruxism as the clenching or grinding of the teeth when the individual is not chewing or swallowing.⁷

CLASSIFICATION: Olkimora (1972) divided bruxers into 2 categories: 1) associated with stressful events. 2) associated with non-stressful events, more of hereditary influence present.

According to time of occurrence: 1) **Diurnal bruxism** 2) **Nocturnal bruxism**⁷

ETIOLOGY: It may be caused due to Psychological factors that has been associated with feeling of anger and aggression or be a manifestation of the inability to express emotions such as anxiety and hate. Faulty restorations, Trauma from occlusion, Faulty eruption of deciduous or permanent teeth, Nutritional deficiencies, Pubertal growth spurt peak in boys and start of spurt in girls.⁷

PEDIATRICIAN VIEW -

History - Ask about frequency and intensity of the habit.

Extra-oral examination - Check for Tenderness of the jaw muscles on palpation, ask for muscular fatigue on waking up in the morning, Check Temporomandibular Joint: Pain, crepitation, clicking in joint, restriction of mandibular movements.

Intra-oral examination - Occlusal trauma, tooth ache, mobility mainly in morning, Extreme sensitivity due to loss of enamel, atypical wear facets, pulp may be exposed.(Figure 37)⁶



FIGURE 37 - SEVERE ABRASION OF TEETH

TREATMENT: Occlusal adjustments of any premature contacts, Occlusal splints/night guards (Figure 38), Restorative treatment, Relaxation training, Physiotherapy,

muscle relaxants, Biofeedback, Acupuncture, Orthodontic correction.⁷



FIGURE 38 - OCCLUSAL SPLINTS



FIGURE 39 - LIP REDDENED AND CHAPPED AREA BELOW THE VERMILION BORDER

5. LIP BITING - It may involve either of the lips, higher predominance towards the lower lip. Defined as habits that involve manipulation of the lips and perioral structures.⁷

CLASSIFICATION: 1) Lip licking/Wetting of lips by the tongue 2) Lip sucking habit

ETIOLOGY: Malocclusion, In conjunction with other habits, Emotional stress.

PEDIATRICIAN VIEW -

History - Ask about frequency and intensity of the habit

Extra-oral examination - a) Observe for lip trap, reddened and chapped area below the vermilion border (Figure 39) b) Check for muscular imbalance

Intra-oral examination - Protrusion of upper incisors, Retrusion of lower incisors, Lower incisor collapse with lingual crowding (Figure 40), redness or ulceration on lip (Figure 41)

TREATMENT: It becomes more deleterious with age because of the muscular force interacting child's growth. Treatment should be directed initially towards the etiology followed by appliance therapy like lip protector (Figure 42), oral screen and lip bumper (Figure 43).⁷



FIGURE 40 - CROWDING OF TEETH



FIGURE 42 - LIP PROTECTOR

FIGURE 41 - REDNESS ON LIP



FIGURE 43 - LIP BUMPER

6. NAIL BITING – It is one of the most common habits in children and adults. It is the sign of internal tension.

INCIDENCE: Wechsler (1931) 43% in adolescents 25% in college students.

AGE OF OCCURRENCE - below 3 years – absent, 4 to 6 years – incidence rises sharply, 7 to 10 years – remains constant and reaches its peak at adolescence

ETIOLOGY: Insecurity, Psychosomatic successor of thumb sucking, Nervous tension. After the age of 15 the nail biting habit is replaced by pencil biting, hair twirling or gum chewing.

PEDIATRICIAN VIEW –

History – Ask about frequency and intensity of the habit

Extra-oral examination – a) Observe for Inflammation of the nail and nail bed (Figure 44)

Intra-oral examination - Crowding, rotation and alteration of incisal edges of incisors. (Figure 45)

TREATMENT: In mild case, no treatment is indicated. Scolding, nagging and threats should not be used. Treat the basic emotional factors causing the act. Encouraging outdoor activities may help in easing tension. Application of nail polish, light cotton mittens as reminder.⁷



FIGURE 44 - INFLAMMATION OF THE NAIL AND NAIL BED



FIGURE 45 - ALTERATION OF INCISAL EDGES OF INCISORS

7. SELF-INJURIOUS HABITS - (Masochistic habits, sado-masochistic habits, self-mutilating habits) Repetitive acts that result in physical damage to the individual.

INCIDENCE: 10 to 20% in mentally retarded children and in children with psychological abnormalities.

ETIOLOGY: 1) Organic: Associated with Lesch-Nyhan disease and De Lange's syndrome. 2) Functional a) Type A: Injuries superimposed on a pre-existing lesion, b) Type B: Injuries secondary to another established habit, c) Type C:

Injuries of the unknown or complex etiology.

PEDIATRICIAN VIEW –

Check for a) Biting of fingers, cheek (Figure 46) b) Frenum thrusting, c) Picking of gingiva (Figure 47), d) Insertion of sharp objects into the oral cavity like pen, pencil.

TREATMENT: It generally requires a multidisciplinary approval. Care should be taken in dealing with this form of behavior of underlying emotional component. Psychotherapy, Palliative therapy followed by

mechanotherapy using protective padding and mouth

guards are used.⁷



FIGURE 46 - CHEEK BITING

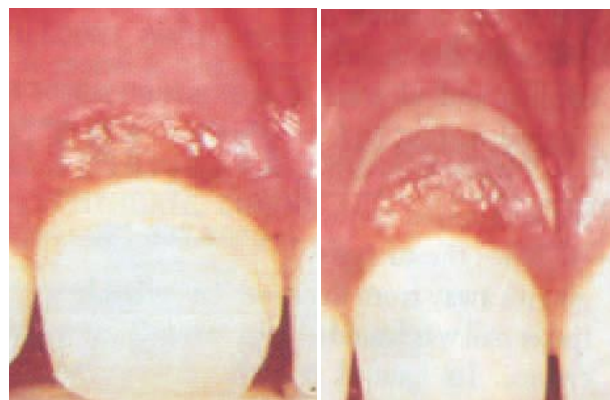


FIGURE 47 - PICKING OF GINGIVAL



FIGURE 48 - MOUTH GUARDS

CONCLUSION - Oral habit can be a form of distressing and are hard to break and new habits are hard to form, but it is possible to form new habits through repetition. Prevention and interception of these deleterious oral habits at an early stage is very important for the good oral health of the children. Mainly due to anterior open bite, the child tends to lose self-confidence and become a great source of embarrassment for kid. Along with pediatric dentists, paediatrician also plays the role of friend, philosopher and guide to both parents and child indulging in damaging oral habits.

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