

Review

Challenges of childhood thumbsucking habit and treatment measures

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Accepted 15 January, 2015

Suckling is a physiological act that provides nourishment and comfort. A baby's sucking can be either nutritive or nonnutritive. Nonnutritive sucking can turn into a continuous behavior practiced unconsciously, leading to a deleterious oral habit (eg, thumb sucking). The extent of damage caused by this habit is dependent on the duration, frequency and intensity. Till the age 3, this habit is termed to be normal but later certain intervention has to be taken. This habit can have a negative impact on speech, psychology and dental development (maxillary prognathism, increased overjet, mandibular retrognathism, posterior crossbite, midline diastema and open bite) of the child. A combined multidisciplinary team comprising of the Family physician, Speech therapist, psychologist, Pediatric dentist, Orthodontist, pediatrician and Orofacial mycologist is needed for the management and treatment planning of this delirious habit. Thumb sucking is a non meaningful habit commonly found in children. This habit can have a negative impact on speech, psychology and dental development (maxillary prognathism, increased overjet, mandibular retrognathism, posterior crossbite, midline diastema and open bite) of the child. This paper stresses upon the need of combined effort by the multidisciplinary team for the effective treatment planning.

Keywords: Thumbsucking, proclination, overjet, dental development, children.

INTRODUCTION

Sucking is a physiologic act that is instinctively performed by a fetus while fed through the placenta. It becomes a fully developed reflex at birth. Sucking allows a baby to obtain nourishment and provides comfort. Therefore, a baby's sucking can be either nutritive or nonnutritive. Nonnutritive sucking can turn into a continuous behavior practiced unconsciously, leading to a deleterious oral habit (eg, thumb or pacifier sucking). The development of a normal occlusion depends on an adequate balance between external (lips and cheeks) and internal (tongue) muscle forces.

Oral habits result in a muscular imbalance that adversely interferes with orofacial growth. The nutritive form which provides essential nutrients, while non-nutritive sucking insures a feeling of warmth and a sense of security. Thumb-sucking can become a habit in babies and young children who use it to comfort themselves

when they feel hungry, afraid, restless, quiet, sleepy, or bored. (Yemitan et al., 2010; Farsi and Salama, 1997; Warren and Bishara, 2002).

Prevalence of Thumb sucking

Farsi et al reported that the prevalence of sucking habits was 48.36% with the dummy-sucking as the dominant type. Most dummy-suckers had broken their habits in the first few years of life while more digit-suckers were still active at age 5 years. (Figure 1)

- Schooling level showed a greater association with thumb sucking in children whose fathers had a low level of schooling
- The youngest child in the family had a greater prevalence of thumb sucking.
- Working mothers: since women are increasingly entering the market, the children must compete with other siblings for the mother's limited time. (Farsi and Salama, 1997; Warren and Bishara, 2002; O'Brien et al., 1996; Adair, 2003)



Figure 1. Thumbsucking Habit

Effect of Intensity and Duration of the habit

Ravn et al suggested that Children who rest their thumbs passively in their mouths are less likely to experience difficulty than those who vigorously suck their thumbs. When an active thumb sucker removes his or her thumb from the mouth, a popping sound often is heard.

The increased duration of the habit leads to greater occlusal abnormalities and compared with those who ceased their habit by 12 months of age (O'Brien et al., 1996; Adair, 2003; Ravn, 1976; Helle and Haavikko, 1974)

Etiology

Various theories have been suggested that prolonged Thumb sucking may develop from

- Insufficient satisfaction of the sucking need in infancy
- Emotional disturbances(Nanda et al)
- Pleasure derived from sucking.(Helle et al)

The psychoanalytical theory suggests that to the extent that the child matures, it tends to abandon the auto-erotic habits that were previously associated the pleasure zones, for example, the mouth in the verbal phase. (Helle and Haavikko, 1974; Nanda, 1972 Larsson, 1975)

At what point does thumb-sucking become a problem?

The American Dental Association and the American Academy of Pediatrics agree and believe that until the age 6, thumb sucking usually does little or no damage to the dentition or the orofacial structure. Warren et al concluded that after age 6, however, chronic thumb/finger sucking may begin to do damage and should be addressed.

Prolonged digit-sucking habits can have a negative impact on

1) Speech, A child may also develop speech problems, including mispronouncing Ts and Ds, lisping, and thrusting out the tongue when talking. When the thumb anchors the tongue down and forward and serves to reinforce an incorrect rest posture of the tongue, an inaccurate and inappropriate spring-off point for speech sound production occurs. Some sounds may be produced incorrectly. When the tongue is resting low and forward, the production of a frontal /t/d/n/l/, or interdental /s/ lisp may occur.(Larsson et al)

2) Psychological effect: When this chronic behavior occurs in the school environment, children who suck tend to tune out what is happening around them and lose some ability to concentrate on school work. Sometimes reduction of

peer acceptance and/or bullying may occur.(Popovich et al)

3) Effect on occlusion

- reduced maxillary arch widths
- increased maxillary arch depths
- reduced mandibular canine arch depth .
- reduction in intercanine widths and mandibular molar arch depth yemitan
- Posterior cross bite(warren 2001)
- Open bite
- Retrusive mandible
- Midline diastema (Helle and Haavikko, 1974; Nanda, 1972 Larsson, 1975; Larsson, 1978; Larsson, 1987; Tewari, 1970; Popovich and Thompson, 1970; Melson, 1979; Lindner and Modeer, 1989; Bowden, 1966)

Pacifiers VS Thumbsucking Habit

Pacifiers can affect the teeth in essentially the same way as does sucking on fingers and thumbs. However,

pacifier use often is an easier habit to break. If you offer an infant a pacifier, use a clean one. Never dip a pacifier in sugar, honey or other sweeteners before giving it to an infant. Children who do not have access to unrestricted breastfeeding or bottle-fed children may satisfy their instinctive sucking urge with a pacifier. Warren et al suggested that prolonged pacifier habits resulted in changes to the dental arches and the occlusal parameters that were different from the effects of digit sucking. In addition, some changes in the dental arch parameters and occlusal characteristics (eg, prevalence of posterior crossbite and increased amount of overjet) persisted well beyond the cessation of the pacifier or digit habit (Warren and Bishara, 2002; Farsi and Salama, 1997; Ravn, 1976)

Multidisciplinary Approach for the management of the habit

Family physician

The first signs of the damage are usually noticed by the Family physician. They will refer the patient to a Pediatrician and Pedodontists for the further and future intervention.

Speech Therapist

The harm caused by this habit on the speech and pronunciation will be taken care of the speech therapist

Psychologist

Children often suck their fingers when feeling insecure. Focus can be kept on correcting the cause of the and comfort the child. The psychologist can go ahead with the counseling of the child and the parents to reach the root cause of any emotional disturbances.

Pediatrician

Pediatricians are usually the first people to encounter such cases. They can suggest the reward and reminder therapy for the breaking of the habit. They will suggest the parent to

- Put gloves on your child's hands or wrap the thumb with an adhesive bandage or a cloth. Explain that the glove, bandage, or cloth is not a punishment but is only there to remind him or her not to thumb-suck.

- Develop a reward system, such as putting stickers on a calendar or otherwise recording each day that your child does not suck his or her thumb. After an agreed-

upon number of days, have a celebration for your child. (Van Norman et al).

- Use a special nontoxic, bitter-tasting nail coating, such as Thum. Apply it like fingernail polish to the thumbnail each morning, before bed, and whenever you see your child sucking his or her thumb. This treatment is most successful when it is combined with a reward system.

Pedodontist

If the Reminder and the Reward therapy fails in that case appliance therapy can be used

Various appliances can be given depending on the intensity, duration and frequency of the habit. (Profitt et al)

- Removable cribs appliance
- Fixed cribs appliance
- Palatal rakes
- Blue grass appliance
- Thumbguard

Orthodontist

Active sucking and pacifier habits in children frequently result in changes to the orofacial structures and occlusion. Some of these changes include: (1) anterior open bite; (2) anterior displacement of the maxilla; (3) proclination of the upper incisors; (4) unilateral or bilateral posterior crossbite; and (5) tongue thrusting during swallowing. The prolonged habit often leads to malocclusions. The crossbite has to be corrected by giving Quadhelix appliance and in cases with severe open bite and Over jet, The fixed orthodontic therapy may be required.

Orofacial mycologists

An orofacial myologist is a trained professional who diagnoses and provides treatment for orofacial myofunctional disorders (OMDs) such as abnormal tongue patterns, openmouth rest posture of the lips, low forward rest posture of the tongue, and sucking habits. The therapy is referred to as orofacial rest posture therapy. Before an orofacial myologist

can begin treating any of these other OMDs, the thumb/finger sucking pattern has to first be eliminated or other therapy protocols will not be successful. (Tewari, 1970; Popovich and Thompson, 1970; Melson, 1979; Lindner and Modeer, 1989; Bowden, 1966; Proffit WR. Contemporary Orthodontics Fourth Edition. Elsevier, Health Sciences Education, Marketing; Fisher, 206; Norman, 1999; National Center for Health Statistics, U.S. Public Health Service, The incidence of Dental Malocclusion in Children Ages 6-11 in the United, 1965).

CONCLUSION

As it has been suggested by various researchers and clinicians that the clinical management of the various oral habits is dependent on the combined and cohesive team work of doctors, we should be able to benefit the patients and the society by following the multidisciplinary approach for this habit correction also. The early intervention can prevent a lot of damage in the speech psychology and occlusion of the child.

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