

NOVEL APPROACHES IN BREAKING ORAL HABITS IN CHILDREN

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Abstract

Aim: Oral habits are harmful to one's health due to their propensity to alter the dentoskeletal as well as musculoskeletal development of jaws. The purpose of this study was to systematically review the newer treatment modalities being used by the clinicians to interrupt the habit and their detrimental consequences on the child's oral well-being.

Materials and Methods: A total of 46 articles were screened, with 40 articles being excluded, 5 full-text articles being evaluated for eligibility to be reviewed for the present paper.

Conclusion: Newer approaches for cessation of oral habits show better compliance and are more cost effective than the conventional one.

Keywords: 'oral habits', 'oral habit management', 'interruption of oral habit', 'early intervention'

Introduction

A habit is defined as a complex process that becomes automatic action by repetitive muscle contraction.¹ It is an acquired recurrent behavior pattern, which manifests itself in regular frequency or increased performance facility. Oral habits are a common issue that harms one's quality of life. In both children and adults, the mouth is the primary and permanent locus for expressing emotions, and it can even provide relief from rage and anxiety manifesting into oral habits. The pleasure or relief from the stimulation of the oral region/ musculature acts as a reward for the continuation of the habit which becomes regular by a routine.

Oral habits are harmful to one's health due to their propensity to alter the dentoskeletal as well as musculoskeletal development of jaws. The changes are influenced by the intensity, frequency and duration of inappropriate pressure enforced by these habits. The activity of orofacial musculature is a paramount factor for guiding the occlusal development and the growth of the jaws. Abnormal forces from the oral habit in a growing child can lead to the development of malocclusion. It is found in many studies that the presence of malocclusion adversely influences the aesthetics, function and psychology of a child. The correction of the resultant condition at a later stage of deleterious oral habit needs a complex and time-consuming treatment modality, if not identified in the early stages. The intervention of oral habits is recommended at the age of 4 years.² Hence it is pivotal to scrutinize and manage the presence of oral habits in a child to prevent sequelae.

Traditionally there are a number of approaches for managing such behaviors. With many risks associated with oral habits, most of the parents show a high degree of apprehension about the continued oral habits and how

and when these habits should stop.³ Methods such as threats, nagging, and punishments by most of the parents worsen the situation rather than improve it.⁴

Recently, some innovative and non-invasive techniques for hampering oral habits have emerged resulting in higher patient compliance and superior outcomes.

The purpose of this study was to systematically review the newer treatment modalities being used by the clinicians to interrupt the habit and their detrimental consequences on the child's oral well-being.

Materials and Methods

Search strategy: The review was performed using Google Scholar and Pubmed, the online databases. Specialized websites such as Researchgate and Science Direct were used, also analysis of the literature given in the various textbooks. The search for the articles was limited from January 2013 to May 2021. Keywords such as 'oral habits', 'oral habit management', 'interruption of oral habit', 'early intervention' were applied in the search database. The title and abstract of each article that was found using keywords were evaluated, and articles that met the criteria were accessed. The screening procedure also included any other relevant articles discovered during the research. The reference lists of all potentially eligible papers were manually screened.

Data extraction: The primary selection started from the abstracts and titles of the obtained studies. Screening and identification of studies against the selection criteria was done. Whenever the abstract was not clearly fulfilling the criteria, the verification was done based on full text of the study. All papers that passed the abstract screening were obtained in their full length, and data extraction was carried out. Using the mentioned keywords, a total of 52 articles were found and only 46 articles remained after removing the duplicates. A total of 46 articles were screened, with 40 articles being excluded, 6 full-text

	Authors	Title	Approach used by authors
1	Di Vecchio S, Manzini P, Candida E, Gargari M. 2019	Froggy mouth: a new myofunctional approach to atypical swallowing.	<ul style="list-style-type: none"> Removable appliance made of a flexible thermoplastic elastomer. It should be placed between the lips and teeth, approximately 2 mm from the labial commissure on both sides. It should be kept in the mouth at least for 15 minutes every day.
2	Kar S, Pal A. 2019	Sudipta Kar's cribbed thumb guard: An innovative inexpensive way to treat thumb sucking.	<ul style="list-style-type: none"> Unique yet convenient thumb guard for child patient. Presence of a metal crib improves the appliance's effectiveness. Prevents the thumb from entering the mouth at various levels. Incorporates three cribs horizontally discouraging habitual thumb placement into the mouth. Easy to fabricate and cost-effective
3	Sahu A, Shyagali TR 2017	A new innovative light-emitting diode habit-breaking appliance.	<ul style="list-style-type: none"> The appliance was a standard Hawley's retainer with the palatal acrylic portion thinned to the greatest extent possible. An electric circuit was created within the retainer using a button-sized battery, a very small coloured LED bulb, and a plastic-coated copper wire. The light from the appliance starts emitting as the patient places the thumb into the oral cavity.
4	Anand S, Hegde DY, Yeluri R, Masih U. 2017	Modified RURS' elbow guard: An extraoral appliance for the digit sucking habit.	<ul style="list-style-type: none"> For this appliance an extended elbow guard was fabricated from self cure acrylic by taking an impression and pouring cast of elbow kept at 45-60° angulation. On the elbow guard, a velvet material with four velcro straps was affixed for improved rigidity, strength, and to further constrains the movements. Easy fabrication and quick acceptance.

5	Krishnappa S, Rani MS, Aariz S. 2016	New electronic habit reminder for the management of thumb-sucking habit.	<ul style="list-style-type: none"> It was a basic appliance that produced alarming sounds when the patient puts his or her finger into the oral cavity. The appliance must be worn on the finger that is intended for sucking. To make the device appealing to the child patient, the alarm portion was encased in an enticing wristwatch. It is made up of four contact heads that are attached to an acrylic ring with the alarm device and battery located in the reminder section.
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articles being evaluated for eligibility to be reviewed for the present paper.

Results

Following table contains information about the 5 full-text articles that were analyzed and included in this review.

Discussion

Childhood is the mirror which reflects the propensities of adulthood. A habit tends to occur unconsciously because it becomes a routine of behaviour that is repeated regularly. Persisting habits of finger-sucking, abnormal tongue position, non-nutritive sucking and tongue thrust swallow are the most usual elements influencing facial growth and potentially dental development in childhood.

Presence of habits in preschoolers is 87.4% as found by Motta LJ et al.⁵ Oral habits in school going children was found at lower prevalence of 34.1% stated by Quashie-Williams⁶. A prevalence of 29.7% in south Indian children & 25.5% in north Indian children was observed by Shetty et al, (1998)⁷ and Kharbanda et al (2003)⁸. In a study of the relationship between socioeconomic factors and oral habits, it was found that there are more oral habits in the children of the parents having low socioeconomic conditions. This is due to the high likelihood that parents with low socioeconomic conditions may not have adequate information about oral health and problems that may arise in the presence of oral habits.⁹

Children who are exposed to stressful life situations have higher probability to perform oral parafunctional activities was found in a study done by Emodi-Perlman et al (2012) found.¹⁰ Adverse dento-facial development and oral habits are lesser a cause-and-effect relationship but more an association.¹¹ Skeletal or dentoalveolar deformations like decreased overbite, increased overjet, posterior crossbite, or raised face height with sufficient intensity, duration, and frequency may be attributed to habit formation. The duration of the force of a habit is of greater concern than the magnitude of force. The pressure applied by the cheek, lips, and tongue at resting position has a huge impact on the position of the tooth and they are maintained most of the time.¹²

Early detection of oral habits in children could be a crucial step in preventing occlusal complications. Child behavior modification strategies, myofunctional therapy, patient/parent counseling, appliance therapy, or referral to other professionals such as orthodontists, psychologists, or otolaryngologists, followed by recall visits and reinforcement are included in the therapeutic approaches for habit cessation. A reminder appliance would help and should be used to manage the oral habits only when a child resolves to drop the hold of habit.¹³ Patients, as well as their parents or caregivers, must be made aware of the repercussions of an oral habit.

The Froggy Mouth appliance was created by Patric Fellus, which inhibits the bilabial contact, eliminating the negative pressure inside the oral cavity by triggering the involuntary pathway. This allows the tongue to protrude and retract by the contraction of styloglossus muscle, resulting in proper deglutition. It is an appliance which can be used for the management of atypical swallowing, tongue interposition between dental arches, anterior and posterior open bite and their sequelae. In addition, when compared to traditional approaches, the device requires less patient compliance (only 15 minutes per day). It comes in three sizes and three different colour boxes S. (Blue), M (orange) and L (Violet). It stimulates the neural circuits that generate the trigeminal nerve's automatic movements.¹⁴

Sudipta Kar's cribbed thumb guard is a custom designed appliance for the patient in which conventional approaches fail to stop the habit. The effectiveness of the appliance is improved by incorporation of three cribs made up of SS wire. These cribs prevent the habitual insertion of the thumb at different levels of the thumb joint. Elastic is also included in the appliance through holes to get a hold of the appliance on the thumb. The habit was greatly managed by this appliance with improved dentofacial conditions.¹⁵

Light-emitting diode habit-breaking appliances can be used to manage the habit of thumb or digit sucking and tongue thrusting. It is a "gentle" and "light" reminder causing the problem to be subconsciously de-rooted. It is a simple Hawley's retainer with a short labial bow and Adam's clasp having an electric circuit within the palatal acrylic part of the retainer, with a very small colored light-emitting diode (LED) bulb and an on-off switch or feather touch switch. The light from the LED can be seen once the switch within the appliance gets pressed by the placement of the thumb or by tongue thrust. The light emitting from the appliance serves as a reminder to drop the habit. It also makes the patient conscious as the emitting light from the mouth exposes the patient to friends and family or the general public putting the patient into embarrassing circumstances.¹⁶

Modified RURS' elbow guard can be used in the cases where conventional RURS' elbow guard fails to manage the habit of sucking the thumb. The modified appliance was delivered with an extension of 2.5 inches on the both sides of the conventional elbow guard. Easily available modelling wax was used in the impression making of the elbow for the fabrication of the appliance. For this, the Velcro straps have been doubled to improve the hold of the device over the elbow with even more restriction of the elbow's movement. It was advised to be only worn at bedtime, so the compliance of the patient was better. An added psychological benefit of the appliance is that it can be worn under full sleeves at daytime without revealing it to the peers which can prevent the embarrassing situation for the child patient. This appliance is proven to manage the habit and its sequelae like open bite and tongue thrust.¹⁷

Electronic habit reminder for management of sucking habit is an extraoral appliance with four contact heads attached to an acrylic ring. The acrylic ring was to be worn on the thumb or finger involved. It also consists of an alarm with a battery connected to wires to complete the circuit. The alarm system was enveloped inside a wrist watch. The wrist watch was made attractive to the child patient by adding a picture of favorite cartoon to it. As the patient inserts the thumb/ finger into the oral cavity, the alarm starts ringing and reminds the patient about the habit. The alarm goes off when the patient withdraws the thumb/ finger from the oral cavity. It is cost effective and the results can be seen within 5 months of wearing the appliance.¹⁸

Conclusion

Management of persistent oral habits are very important in a growing child. Newer approaches for cessation of

oral habits show better compliance and are more cost effective than the conventional one. With these appliances the reduction of the adverse effects of oral habits can be seen. These appliances are proven to show the correction of habits within a few months of starting the treatment.

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