LETTER TO THE EDITOR

Bad oral habits: a review of the literature

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To the Editor,

Bone and dental growth are closely related to oral functions. Bad oral habits extended over a long period could cause damage to the dento-skeletal development. The most common are sucking the thumb (or another finger), lips or objects, as well as atypical swallowing and oral breathing.

Sucking habits cause a combination of the direct pressure on teeth by the thumb or objects, with an alteration of the pressure of the resting cheeks and lips. Usually the thumb or another finger, is put between the teeth at an angle which pushes the mandibular incisor lingually and the upper incisor buccally. The displacement degree of the teeth is related to the time of sucking during the day more than the pressure that it creates. For children, whose suction is strenuous but not constant, a significant incisor dislocation may not occur, but then a continuous non-nutritive sucking habit causes an anterior open bite. By the geometry of the jaws, 1 mm of posterior teeth eruption creates a 2 mm open bite anteriorly. The pressure of the cheeks is bigger at the corners of the mouth, explaining, probably, why the upper jaw tends to assume a V shape with a constriction at the level of the canines (1).

Tongue thrust is another bad oral habit where the interposition of the tongue between the dental arches can be observed. At the same time, a low activity of the elevator muscles of the mandible in contrast to a high activity of the perioral muscles, in particular of the mental muscle, can be observed.

The diagnosis should be made as soon as possible as, if not treated early, severe malocclusions can result.

The aim of this study is to analyze the literature in order to identify the effects of bad oral habit on the development of malocclusions.

MATERIALS AND METHODS

The aim of this manuscript consists in analyzing the Literature, to evaluate the effects caused by bad oral habits on the development of malocclusions. The research was made using the database of the US National Library of Medicine through PubMed, (http://www.ncbi.nlm.nih.gov/si- tes/entrez/query.fcgi), then manually extended by the evaluation of bibliographic sources (Fig. 1). The key words used were “oral habits and malocclusion”. The research was limited to the years of publication between 1990 and 2021. One hundred and thirty-eight articles were found. Titles and abstracts of each article were read and evaluated by two independent operators. The articles in which the purpose and results were not pertinent and articles without an abstract were omitted. By this screening only 13 articles were related to the research and the full text was considered.

Key words: bad oral habits; atypical swallowing; growth development; onychophagy; crossbite

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DISCLOSURE: ALL AUTHORS REPORT NO CONFLICTS OF INTEREST RELEVANT TO THIS ARTICLE.

RESULTS

The most recurring bad oral habits are sucking the thumb or another finger and the use of a pacifier. Just one article was found regarding onychophagy, which appeared later in age than the other two bad habits. Mistry and Moles in their study in 2010 compared two groups of children between 7 and 13 years of age, divided by the presence or not of sucking (2, 3). For each patient, the impressions were taken, and the plaster models were used to measure the occlusal differences between the two groups. The results demonstrate that there is a significant difference in the values of open bite and overjet in the two groups studied (4-6). In fact, the authors stated that sucking could lead to a significant increase of the risk of open bite. Other authors studied the influence of sucking in children with posterior crossbite. The results showed that children with crossbite had less occlusal strength and were positive with sucking in the medical history. The authors concluded that non-nutritive sucking plays a key role in the etiology of posterior crossbite.

Researchers obtained, for each model, the measures of length, width, arch depth, overjet, overbite and posterior crossbite. The values were compared by dividing the subjects by the duration of the bad habit. The results indicated that if the habits continued over 4 years, the negative effects on the occlusion were major compared to the ones who ended the habit earlier. The prevalence of anterior open bite, posterior crossbite and increased overjet are directly proportional to the length of time of the habits (7-10). The authors also investigated the effects of the habits on the occlusion in mixed dentition subjects. For this study, 630 children were selected. By the analysis of the plaster models, it resulted that the presence of anterior open bite and posterior crossbite could be prevented by interrupting the bad habits (11). The results demonstrated that the use of a pacifier increases the risk of posterior cross bite, and that the longer this habit lasts, the major is the risk of malocclusion. Bishara highlights the importance of early treatment. He claims that the pre-contact of the deciduous canine can be an important diagnostic index of the degree of the development of the crossbite in children with this habit (12).

Onychophagy is as common in adults as in children, and is generally linked to a psycho-emotional state of anxiety. Children biting their

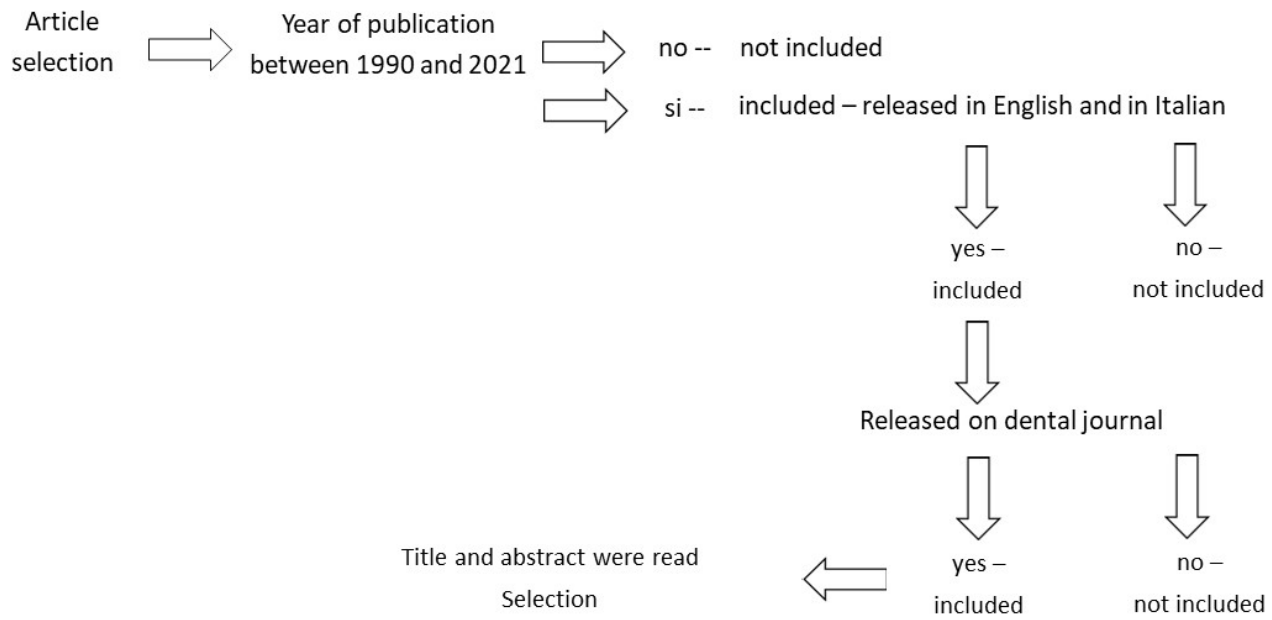

Fig. 1. *Literature review of bad oral habits.*

nails show an evolutional disturbance connected to the oral phase of psychological development. The incidence occurs in children from 4 to 6 years of age, settles around the age of 7-10, increases in teenagers and reduces around 16 years of age. The cause is hard to determine, however, it is generally related to a state of anxiety and usually disappears when there is no anxiety. If linked to other disturbances, it can become a complex problem to rectify.

Children with this habit have a bigger risk of developing problems at the level of the incisors, including the radicular resorption and dental malposition. The apical radicular resorption is one of the most common and undesirable effects of orthodontic treatment, in particular of the upper incisors. Unphysiological strengths imprinting their action on teeth, such as onychophagy, can accelerate this resorption or even cause it. Clinical exams demonstrated that in these patients it is easy to observe dental crowding, teeth rotations, abrasions on the incisal surface of the mandibular incisors and protrusion of the maxillary incisors. Despite all of that, onychophagy is not associated to any type of specific malocclusion since the information is vague and there is no relevant statistical evidence.

DISCUSSION

Bad oral habits can be associated to the development of malocclusions. The two principal habits involved in their development are thumb sucking and the use of a pacifier. The most frequent repercussions of the dental-skeletal development are anterior open bite and posterior crossbite (8, 9).

Sucking can lead to a dislocation of the upper incisor sectors, retroinclination of the lower incisors and an increased overjet.

Two studies particularly investigated the role of pressure on the development of the malocclusion. There is a directly proportional correlation between the pressure values developing in the oral cavity during sucking, and the severity of the malocclusion (6, 7). Also the duration of the sucking is extremely important in terms of hours a day and years before the interruption of the bad oral habit. More specifically, if the sucking lasts beyond 3 years of age, there is an increased risk of developing malocclusions. This is why the timing of action on children prone to this bad oral habit is essential.

Bad oral habits are highly correlated to the development of malocclusions, such as anterior open bite and posterior crossbite, highlighting the importance of an early treatment, even considering that these are parts of a physiological evolution in the first years of life (13).

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