ISSN: 2230-9926

Available online at http://www.journalijdr.com

IJDR

International Journal of Development Research
Vol. 5, Issue, 10, pp. 5784-5788, October, 2015

International Journal of
DEVELOPMENT RESEARCH

Full Length Research Article

PREVENTIVE AND INTERCEPTIVE ORTHODONTICS: REVIEW OF ITS IMPORTANCE

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ARTICLE INFO

Article History:
Received 12th July, 2015
Received in revised form
31st August, 2015
Accepted 29th September, 2015
Published online 31st October, 2015

Key Words:
Orthodontics,
Advantages and Disadvantages of orthodontics, malocclusions.

ABSTRACT

Background: After a century of development and evolution of orthodontics as a science, through global dissemination of Facial Orthopedics procedures we come on the eve of the 3rd Millennium without a unanimous consensus on this issue. Using simple preventive and interceptive orthodontic procedures such as those aimed at maintaining space or its recovery, control of oral habits, and treatment of cross bite and open bite, can prevent or lessen the severity malocclusion. Thus, the early diagnosis of conditions affecting the normal development of dental occlusion can contribute to significantly reduce the incidence of malocclusions.
Objective: This study aimed to make a literature review on preventive and interceptive orthodontics, showing the advantages of this specialty as well as presenting the gaps in information that motivate the improvement and advancement of this prophylaxis.
Methodology: We performed a detailed search of scientific articles with themes common across a database, including the Medline, Pubmed, scielo and bireme with publication of criteria in 1999 will 2015.
Conclusion: It was concluded through the literature findings that preventive and interceptative orthodontic services facilitates the population's access to treatment, allowing the elimination of some etiologic factors and preventing the progression of dental, skeletal and functional inharmonies, mitigating or even eliminating the need for more complex treatments thereafter.

INTRODUCTION

After a century of development and evolution of orthodontics as a science, through global dissemination of Facial Orthopedics procedures we come on the eve of the 3rd Millennium without a unanimous consensus on this issue (Abanto *et al.,* 2015; Corrêa-Faria *et al*., 2014). Subject matter in contemporary literature, research, opinions and clinical experience related to early treatment of malocclusions have disclosed the advantages and disadvantages of preventive and interceptor approach, aiming to reach an answer to the above question (Sousa *et al.,* 2014).Early treatment of the claims seem clear, including the elimination of etiological factors of malocclusion, and the prevention of progression of inharmonies skeletal, dental and functional.

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Obtaining a more favorable dentofacial environment leading tooth eruption for normal positions in arches, and reducing skeletal discrepancies by redirecting facial growth, can minimize or even eliminate the need for complex treatment during the permanent dentition (Kramer *et al.,* 2013). Thus, the early diagnosis of conditions affecting the normal development of dental occlusion can contribute to significantly reduce the incidence of malocclusions.Using simple preventive and interceptive orthodontic procedures such as those aimed at maintaining space or its recovery, control of oral habits, and treatment of cross bite and open bite, can prevent or lessen the severity malocclusion (Loroy *et al*., 2013; Machry *et al*., 2013; Scarpelli *et al*., 2013; Scarpelli *et al.,* 2013).

From a clinical point of view, it is necessary to diagnose and intervene early and properly for the benefit of the normal evolution of the dentition and craniofacial growth, when installed malocclusion not suffer self-correction with the

maturation of occlusion. In view of the possible loss of the malocclusion, it is worrying lack of access to treatment to the majority of the population (Javed *et al*., 2013; Carvalho *et al.,* 2013; Martins *et al.,* 2012; Góis *et al*., 2012).In addition, the treatment of cross-bite, the control of harmful habits and small tooth movements in mixed dentition, in Basic Health Units, practically nonexistent. In this way, the landscape of attention to malocclusion in Brazil is characterized by high prevalence and inadequate coverage capacity (Costa *et al.,* 2012; Aldrigui *et al.,* 2011; Baldani *et al.,* 2011). So, the benefits of early treatment simplifies or eliminates the need for corrective treatment in the permanent dentition, the use of the growth of young patients to favor the correction of dental-skeletal deformities (Carvalho *et al.,* 2011).

Early orthopedic approach mitigates the complexity of orthodontic correction of malocclusion, as in the permanent dentition, the good relationship between apical bases, maxilla and mandible, favor the correct tooth position and the resulting facial aesthetics. Also, if the second stage of orthodontic treatment is required, consume a shorter period of time due to the limited amount of tooth movement required (Wernecke*t al.,* 2011).Furthermore, there is a reduction in the number of cases of permanent teeth extraction. In the permanent dentition, the compensatory treatment of sagittal discrepancies between the apical bases, such as Class II and III skeletal often requires the extraction of premolars and lower (Victora *et al.,* 2010; Piovesan*et al.,* 2011; Finkler *et al.,* 2011).

Thus, early orthopedic intervention, correcting the source of the problem, ie the anteroposterior relationship changed between maxilla and mandible, restrict the need for dental extractions. There are also reducing the need for orthognathic surgery and increased stability of morphological correction (Cardoso *et al.,* 2011; Brasil, 2010; Brasil, 2010).There also reduce biological cost: the development of root resorption and periodontal problems. There is also decrease the vulnerability of the upper incisors to fractures and trauma (Chen*et al.,* 2010). The protrusion of the upper incisors, in malocclusions Class II, Division 1, maintained throughout childhood, increases the chances of experiencing trauma and fractures of these teeth in accidents and falls. There is even greater patient compliance. A decision by the most opportune time for the start of treatment, patient compliance in childhood or adolescence, is a factor of importance.

Many authors state that younger patients are more attentive with co-workers and orthodontic treatment that most adolescents, especially regarding the use of headgear (Feu *et al.,* 2010; Brasil, 2009).And lastly, there is psychological benefits Facial aesthetics has significant implications for the socialization of human beings. The perception of beauty influence the psychological development from infancy to adulthood [2.26]. Research revealed that children at 6 years of age have instilled cultural values of physical attractiveness. To 8 years, its attractiveness criteria are equivalent to the adult. Most beautiful children are more sociable, more accepted by their peers, and even considered more intelligent, which greatly contributes to the development of self-esteem. Based on these principles, sees the value of early treatment contributing to the self-image of the developing child [3.25].This study aimed to make a literature review on preventive and interceptive orthodontics, showing the advantages of this specialty as well as presenting the gaps in information that motivate the improvement and advancement of this prophylaxis.

MATERIALS AND METHODS

We performed a detailed search of scientific articles with themes common across a database, including the Medline, Pubmed, scielo and bireme with publication of criteria in 1999 will 2015 (Figure 1). The inclusion and exclusion criteria were to select 30 articles among all respondents with common themes. Through reading and reflection of the chosen. Discussion and identification was made on the common points and end a conclusion the observation of related studies and objectives presented by them.

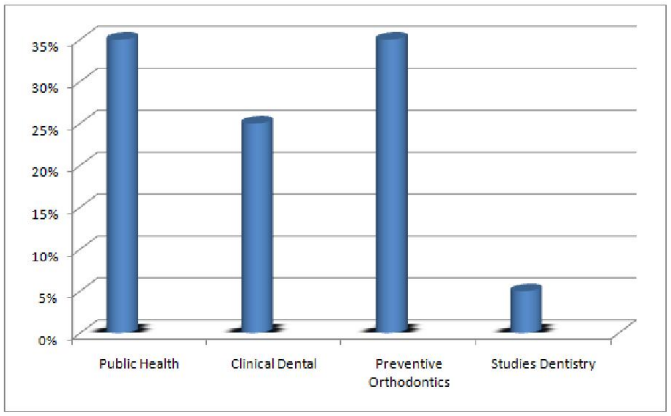

Figure 1. Graph showing the main literature findings on Preventive and Interceptive Orthodontics in the global context, compared to other dental studies

Development

All acquired scientific knowledge must be taken into account in the design of diagnosis prevention, interception or correction. There are no miracle techniques do exist, diagnostics, planning and finishes well or badly made. Revolutionary materials provide no miracles alone. The professional must know and master the technique of good and correct Orthodontics (Abanto *et al.,* 2015; Corrêa-Faria *et al*., 2014). The recognition of a specialty and professional practice depends on an advanced learning in schools, colleges and institutions officially recognized. New techniques and devices are presented on a daily basis, like reinventing the wheel, now square, trademarked, patented, built-in miraculous qualities (Abanto *et al.,* 2015; Sousa *et al.,* 2014).

The teeth respond to pressure of a finger as an orthodontic appliance and moving in response to pressure and the sequence of biochemical and cellular events whose responses are generally the same, indifferent to the teaching of the master, the manufacturer of the argument form, color and marks the bracket, the chemical composition of the wire or the philosophy of the operator (Sousa *et al.,* 2014; Kramer *et al.,* 2013; Loroy*et al.,* 2013). When the device is removed, it becomes impossible to tell what type of device that was used to achieve the goals of orthodontic treatment. The result should speak for itself. If based on objective, aesthetic, health

and stability have been achieved. There are among us orthodontists and clinicians who still seek perfection in the form of a perfect device, perfect technique, but have not yet mastered the principle of tooth movement, or the basic disciplines (Machry *et al.,* 2013; Scarpelli *et al.,* 2013).

In addition, thirty years ago, there used to be gold appliances and took on average 18 to 24 months to treat a specific malocclusion (Scarpelli *et al.,* 2013; Javed *et al.,* 2013). Today, with all imaginable kinds of brackets, high resiliency wires plethora of techniques and with the use of auxiliary trained, it takes, on average, 18 to 24 months to treat a malocclusion medium. From the above, the lesson is that the biology of the stomatognathic system that is the limiting factor and not the device. It should be achieve excellent performance in services and results, aimed at health, function, aesthetics and stability of the results (Carvalho *et al.,* 2013; Martins*et al.*, 2012).

The main cases that should be treated early are early loss of deciduous teeth; the concern with the early loss of deciduous teeth is based on the loss of space that can occur in the dental arch, with the slope of the adjacent teeth into the space originated. With poor installed occlusion, especially in the lower arch, there is no other treatment option but the extraction of premolars associated with orthodontic mechanics (Góis *et al.,* 2012; Costa *et al.,* 2012; Aldrigui *et al.,* 2011). Thus, given the early loss of deciduous teeth, with the intention of avoiding the establishment of malocclusion, you should use the space maintainers, they prevent the migration of adjacent teeth for future space occupied by permanent successor. There are several types of maintainers, removable or fixed, functional and non-functional, selected according to the patient's cooperation, the number of missing teeth, and the region of the dental arch (Baldani *et al.,* 2011; Carvalho *et al.,* 2011; Werneck *et al.,* 2011).

However, after sometime early extraction of deciduous teeth, when it considers the occurrence of wasted space, maintainers lose their function and the devices best suited in these cases become the recuperative space. These devices, which can also be removable or fixed, verticalizam adjacent teeth, returning the space in the dental arch for the permanent tooth before his outburst (Victora *et al.,* 2010; Piovesan*et al.,* 2011; Finkler*et al.,* 2011).So all the bad habits are etiological factors of malocclusion, since they cause an imbalance between muscle forces acting on the dental arches. It is known that not all children with oral habits develop malocclusions, but numerous studies have shown the great bond existing cause and effect between these two factors (Cardoso *et al.,* 2011; Brasil, 2010; Brasil, 2010).

In the presence of habit, the development of morphological changes will depend on their frequency, intensity and duration, as well as individual predisposition related to facial growth pattern of each child (Chen*et al*., 2010; Feu *et al*., 2010; Brasil, 2009). In this way, it highlights the need for early intervention of habit, in a joint action with the dentist ENT specialist, speech therapist and psychologist, for the removal of the etiological factors and correction caused morphological irregularities. Thus, the otolaryngologist treats the obstruction of the upper airways, the orthodontist, the dentist or general practitioner restore the altered dentoesquelética morphology, and later, the speech therapist performs the rehabilitation of muscle function, thus ensuring the stability of early treatment (Abanto *et al.,* 2015; Corrêa-Faria *et al*., 2014; Sousa *et al.,* 2014).In cases of mouth breathing, the diagnosis should be based on clinical and radiographic morphological signs such as long face syndrome, the presence of hypertrophic tonsils and nasopharyngeal obstruction by adenoid, conditions that dictate the need for assessment by an expert, ENT (Sousa *et al.,* 2014; Kramer *et al.,* 2013).

The persistence of oral habits throughout the process of growth and development of children, gradually worsens the structural and functional imbalances of the stomatognathic system, greatly complicating both the treatment of malocclusion as the altered neuromuscular function in older ages (Loroy*et al.,* 2013; Machry *et al.,* 2013). The bad most common occlusions, subsequent to oral habits include the anterior open bite, maxillary atresia with posterior cross bite, the maxillary protrusion and mandibular retraction, the vestibuloversão of the upper incisors with or without diastemas widespread in the anterior region, the linguoversion the lower incisors and excessive overjet (Scarpelli *et al.,* 2013; Scarpelli *et al.,* 2013).

There are also disadvantages of early treatment. The difficulties in predicting the process of growth and craniofacial development requires the orthodontist a forecast of future morphology in the permanent dentition, from the evaluation of deciduous or mixed dentition. This complex task requires knowledge about the growth and development of the face and teeth, as well as the plurality of events, genetic and environmental, that interfere in this process. Thus, the question about the direction of craniofacial development, and with the lack of knowledge, can inhibit the professional to intervene early (Abanto *et al.,* 2015; Corrêa-Faria *et al*., 2014; Sousa *et al.,* 2014; Kramer *et al.,* 2013).Furthermore, the effects of orthopedic apparatus, particularly functional, based mainly on biological response of the patient, which does not show the same mathematical accuracy.

Also extending from the chronological course of treatment (Abanto *et al.,* 2015; Corrêa-Faria *et al*., 2014; Kramer *et al.,* 2013; Machry *et al.,* 2013). The diagnosis of functional and aesthetic drawbacks associated with malocclusion, combined with a future vision of how the irregularity will progress to permanent dentition, leading professionals to opt for early treatment when the advantages outweigh the disadvantages. We equate dentistry to medicine, as they value the medical attitude to treat a disease before it gets worse and compromise, reversible or irreversible health of the patient (Sousa *et al.,* 2014; Kramer *et al.,* 2013).

Conclusion

It was concluded through the literature findings that preventive and interceptative orthodontic services facilitates the population's access to treatment, allowing the elimination of some etiologic factors and preventing the progression of dental, skeletal and functional inharmonies, mitigating or even eliminating the need for more complex treatments thereafter. In addition to adequate training to new employees and

continuing education to those who are entered in the network, a protocol to prevent and intercept the malocclusion for inclusion in oral health programs.

Competing interests

The authors declare que they have no competing interests.

Acknowledgement

We appreciate greatly the UNIPOS graduate for support and also UNORP of Sao Jose do Rio Preto / SP for the support.

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