Original Article

Awareness of Interceptive Orthodontics among the Dentists Serving at Pakistan Institute of Medical Sciences Islamabad

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ABSTRACT

Objective: This research was carried out to determine the awareness among dental surgeons regarding interceptive orthodontic treatment.

Study Design: cross-sectional study

Place and Duration of Study: This study was conducted at the conducted in Dental Department of PIMS Islamabad from February to July 2021.

Materials and Methods: Including all faculty members, residents, and house officers a convenience sampling technique was used. Data were analyzed by using IBM-SPSS 23.0.

Results: The mean age of participants was 25.66 ± 5.66 years of which 41% were male and 59% were female. Total 47% of the participants were familiar with interceptive orthodontics. All the participants reported that oral habits can affect occlusion.

Conclusion: In our study majority of dentists were not aware of interceptive orthodontics and intervention used during the mixed dentition.

Key Words: Esthetic, Malocclusion, Mixed dentition

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INTRODUCTION

The deciduous dentition begins to erupt around the age of six month and is completed around two years of age. Deciduous dentition is gradually replaced by permanent successors from the age of six years.[1,2] Along with dental caries, gingivitis, and dental fluorosis, malocclusion is the second most established dental problem in teenagers of school going age.[3]Interceptive orthodontic techniques are basic methods used for the prevention and removal of possible abnormalities in the development of occlusion and dento-facial complex.[4] These procedures reduce the severity of malocclusion which in turn helps to improve self-esteem and image of patients, tooth eruption patterns, growth patterns and control of oral habits.[5]

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According to the College of Diplomats of American Board of Orthodontists, early intervention during mixed dentition will develop adequate skeletal and dental growth before completion of permanent dentition.[6] Corrective and preventive measures are used in the treatment of malocclusion. Before the first signs of malocclusion develop in the primary or early mixed dentition, preventive measures can be taken. According to orthodontic literature, the benefits of early treatment are limited, with only 15–20 percent of those in need of treatment benefiting.[1, 7]

This plot primarily depicts recommendations for interventions to remove harmful, nonnutritive sucking behavior and remove the negative consequences of early loss of deciduous teeth.[6] The main benefit of interceptive orthodontics is that the malocclusion can be corrected or intercepted, thereby lowering the complexity of any dental intervention in permanent dentition, since this is technically simpler and has reasonably lower cost compared to complete orthodontic treatment.[8] The practicing general dentist has an important role in the identification of orthodontic abnormalities presenting in their daily routine practice.[9] The current literature suggests that the general dentists are under-confident to implement interceptive orthodontic intervention in mixed dentition to reduce severity of malocclusion in the secondary dentition.[10] With the help of interceptive orthodontics, we can

reduce the effect of malocclusion on young adults and the financial burden from the economy along with psycho-social impact from society.[11] Economically under privileged population cannot bear cost of orthodontic treatment. Such population has already limited awareness and access to health care facilities.[12] Simon et al reported that expenses for comprehensive orthodontic treatment vary from 1000 to 5000 US dollars, which is quite comparable to the cost of orthodontic treatment in Pakistan (150- 350 thousands Pak. rupees).[13] In the remote areas of Pakistan either no qualified dental surgeon is available or they are not aware of the advances in various fields of dentistry such as Orthodontics. Whereas it is also a fact that even in big cities, general dental surgeons are not aware of interceptive orthodontics.[1]

Therefore, this research was carried out to determine the awareness among dental surgeons regarding interceptive orthodontic treatment. By this, we may create awareness among the general dental practitioner which ultimately might promote the need for a better treatment outcome in regards to the general population of Pakistan.

MATERIALS AND METHODS

After taking permission from Ethical Review Board of Shaheed Zulfqar Ali Butto Medical University Islamabad vide reference NO: F.1-1/2015/ERB/SZA BMU/731, a Cross Sectional Study was conducted in the Department of Dentistry, Pakistan Institute of Medical Sciences, Islamabad. In this study, faculty members, post graduate residents and house officers were included and faculty of orthodontic department was excluded. A self-designed closed-ended questionnaire used which was discussed with consultant of orthodontist. The questionnaire was assessed for the validity by using reliability test Cronbach Alpha. In this study convenience sampling technique was used. After explaining the purpose of the study to the participants we got response from 76 out of 115 participants. Data were analyzed by using IBM-SPSS 23.0. For categorical variables, frequencies and parentages were recorded. For continuous variables, the mean and standard deviation have been calculated.

RESULTS

A self-design closed ended questionnaire was used in which the validity was asses by using reliability test Cronbach Alpha which was 0.709. The questionnaire was distributed among the 115 participants. Total 76 out of 115 participants responded to our questionnaire in which 59% were female and 41% were males. The mean age was 25.66 ± 5.66 years. In the study 45% participants were house officers and 37% were PGs as shown in Fig: NO. 01. The data showed that only 42% of participants were familiar with interceptive orthodontics as given in Fig: NO.02. Skill and knowledge related questionnaire was elaborated as follow. Table No.01 shows skills related statistics such as 42% suggested that the serial extraction is beneficial in interceptive orthodontics while 58% suggested that it is not helpful. About64% suggested that intervention of interceptive orthodontics during mixed dentition reduces the malocclusion in the permanent dentition. On evaluation of knowledge related questionnaire 69% of participants reported that the intervention of interceptive orthodontics gives better results in the school age. All the participants reported that oral habits can affect occlusion while 42% reported that outcome of interceptive orthodontics treatment depends upon the awareness among the parents as given in Table No.2.

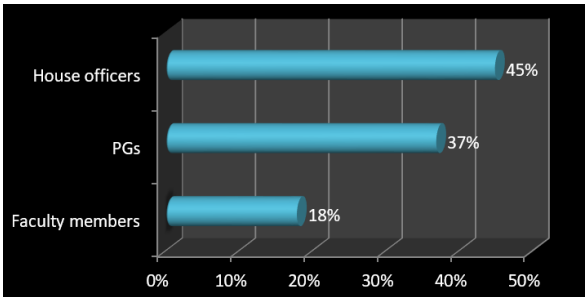

Figure No.1: Distribution of participants

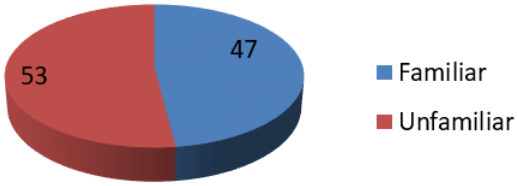

Figure No.2: Awareness of interceptive orthodontics

Table No.1: Descriptive Statistics of Skills Related Questions

Questions	Response	Frequency	age (%)
Maintenance of deciduous teeth can improve facial appearance	YES	20	55.56
	No	16	44.44
Can a Space maintainer device be used to maintain space for deciduous teeth loss	YES	12	33.33
	No	24	66.67
Can Serial extraction be beneficial in Interceptive Orthodontics treatment	YES	15	41.67
	No	21	58.33
Does interceptive orthodontic reduces malocclusion in mixed dentition	YES	23	63.89
	No	13	36.11

Table No. 2: Descriptive Statistics of Knowledge Related Question

Question	Response	Frequency	Age (%)
Thumb sucking, Tongue thrusting and Mouth breathing habits can affect Occlusion	YES	36	100
	No	0	0
Factors affecting the outcome of Interceptive orthodontics treatment	Awareness among the school children	9	25.0
	Awareness among the parents	15	41.67
	Awareness among the primary care personnel	12	33.33
Interceptive orthodontics give better results in	Preschool-age	2	5.56
	School-age	25	69.44
	Adult age	9	25.0
	Old age	0	0
Interceptive orthodontic should be taught at	Under-Graduate level	13	36.11
	Post-Graduate Level	23	63.89

DISCUSSION

Orthodontics focuses on the degree of natural variability in the function and morphology of hard and soft dental tissues, in particular the way occlusal changes are developed. Worldwide there is an increase in the awareness of orthodontics especially interceptive orthodontics but in developing countries like Pakistan the level of dental health is not satisfactory.[14] The level of awareness of interceptive orthodontics is unsatisfactory in our participants which is also reported by Partap et al in his work.[4] This is interlinked with the level of education, income, and facilities provided by the government.. In our study we have noticed that parent's awareness (42%) is leading contributing factor and primary health care personal awareness is the second important factor which was 33% that affect the outcome of interceptive orthodontics. Mandeep KB et al reported that children who frequently visited the dentist and whose mother usually participated were more likely to have better dental health and are referred to orthodontic intervention.[15] Children from rural areas has limited awareness and access to health care facilities for orthodontic care.[9]

In our study 57% of participants suggested that maintenance of deciduous teeth can prevent malocclusion as reported by utomi et-al.[16]The frequency of different malocclusions in each age group is dependent on the age of the patient and the developmental processes, as reported by Myrberg and Thilander. At the end of the primary erupting teeth the proportion of children with occlusal deformities is greatest. It then tends to decrease during the functional stage before peaking at the beginning of the mixed dentition.[17] These conclusions have been reinforced by the comparison with previous longitudinal and cross-sectional work in Rostock by Dahl Hiecke and Heckmann of the comparative malocclusion rates recorded in their research.[18] Although the prevalence of malocclusions varies, the large increase in malocclusions from 42% in the primary dentition to 60% in the early mixed dentition indicates that the number of discrepancies does not decrease in preschool and school kids.[16]

The dental age and development process, which are at their peak during the mixed dentition, impact the prevalence and variations of malocclusion. Up to 60% of these abnormalities do not decline in school-age children.[19] The goal of interception during mixed dentition is to decrease the extent of malocclusion, eliminate treatment difficulties, and minimize the cost and overall treatment duration, which strengthen the self-esteem of children as they grow older.[20]

Oral habits like digit or lip sucking and tongue thrust have the highest role in malocclusion development. Sugar is an intrinsic urge in babies, according to the current trend of 'learned behavior' theory, and peace/digit sucking is a spring for all excess sucking pressure created by today's effective body feeding. The use of pacifiers was linked to early adoption of formula feeding and short breast feeding. Recent ultrasound studies indicate that the orofacial muscle activity in breast-feeding and formula – feeding children is significantly different. Increased posterior cross bite by disrupting the normal palate and alveolar ridge growth has also been suggested due to early weaning of breast feeding.[21] Modeer et al reported 48% as causes of anterior open bite in school-going age groups.[22] In our study we have found that 100% of participants reported the relationship of habits with malocclusion.

Green J. reported that after premature loss of deciduous teeth, space maintainers (fixed or removable) appliances is used to maintain arch length.[23] In our study 67% of participants reported that the use of these appliances has no role in the maintenance of space that shows the lack of awareness in our study participants. The awareness among the parents of children is important to get satisfactory treatment outcome.[24]In previous studies new graduates have been found to be

confident in most clinical areas but have little understanding of interceptive orthodontics hence the clinical orientation of interceptive orthodontics is necessary but our participants suggested that it should be taught at post-graduate level.[25] It is recommended that interceptive orthodontic awareness programs/ seminars should be carried out by health professionals and heads of the institutes in dental colleges to improve the knowledge and awareness for interceptive orthodontics so that the general population may have normal occlusion and a better dento-facial aesthetic.

CONCLUSION

It was concluded that the majority of dentists were not aware of interceptive orthodontics and intervention used during the mixed dentition.

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Author's Contribution:

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Revisiting Critically:	Pirya Chandnani, Syed Nasran Bibi
Final Approval of version:	Pirya Chandnani

Conflict of Interest: The study has no conflict of interest to declare by any author.

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