

Original Research

Knowledge, attitude, and awareness of private practitioners in Pune relating to interceptive orthodontic intervention

¹Renuka Nagrale, ²Neetu Kadu, ³Asif Mulla, ⁴Omkar Prabhu, ⁵Afreen Khan

¹Professor and Head, ²Associate Professor, Department of Public Health Dentistry, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India

^{3,4,5}Undergraduate Student, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India

ABSTRACT:

Introduction: Various physiological events, early extraction or loss of tooth in deciduous dentition may result in malocclusion in permanent dentition. Interceptive orthodontics refers to any procedure that eliminates or reduces the severity and occurrence of malocclusion in developing dentition. The aim of this study was to analyze dental practitioner's knowledge, attitude and awareness towards interceptive orthodontic treatment for children in Pune. **Materials and Methodology:** Questionnaire study was conducted among 134 general dental practitioners in Pune, a cosmopolitan city of Maharashtra, India. A structured questionnaire consisting of 29 questions was put forth to analyze knowledge, attitude and awareness towards interceptive orthodontic intervention among general practitioners. This study was carried on 64 dental practitioners to assess the knowledge, attitude, practice and awareness towards interceptive orthodontic interventions in their general practice. **Results:** Total 134 dental practitioners were included in study out of which 79 were males and 55 were females. About 78 dental practitioners agreed where 34 dental practitioners were neutral regarding use of dental appliances, diagnostic tools, treatment expenditure towards treating of interceptive orthodontic procedures. Around 110 practitioners observed that crowding, oral habits, malocclusion are common issues and causes of treating interceptive orthodontic treatment. **Conclusion:** Knowledge, attitude and practice towards interceptive orthodontics is average in dental practitioners in Pune city and parents should increase their awareness towards interceptive orthodontics.

Keywords: Crossbite, Malocclusion, Oral habits, Orthodontic appliances, Space maintainer.

Received: 20 August, 2023

Accepted: 22 September, 2023

Corresponding author: Asif Mulla, Undergraduate Student, M.A. Rangoonwala College of Dental Sciences and Research Centre, Pune, Maharashtra, India

This article may be cited as: Nagrale R, Kadu N, Mulla A, Prabhu O, Khan A. Knowledge, attitude, and awareness of private practitioners in Pune relating to interceptive orthodontic intervention. J Adv Med Dent Scie Res 2023;11(10):55-60.

INTRODUCTION

Interceptive orthodontics defined as phase of science and art of orthodontics employed to recognize and eliminate the potential irregularities and malposition's in developing dentofacial complex¹.

The deciduous dentition is crucial to a person's growth and development, and malocclusion is primarily brought on by dentofacial abnormalities, which can be either genetically or environmentally induced. Psychosocial issues, functional issues like trouble chewing, temporomandibular joint disorders, poor speech, difficulty swallowing, and a higher susceptibility to other dental diseases like caries and periodontal disease are all repercussions of malocclusion. All these potential issues for the patient

can be resolved with early orthodontic treatment for a developing malocclusion. Determining if interceptive orthodontic treatment is necessary Because the specialists who provide this care may differ from one another, it is important to be aware that their views on identifying, avoiding, and treating malocclusions may differ. This may affect the outcome of interceptive orthodontic therapy directly or indirectly.

This study compares how pediatric dentists, dental surgeons, and orthodontists perceive, know about, and feel about interceptive orthodontics. based on the training and expertise of the practitioner. In India, education programs to train in the diagnosis and treatment of malocclusions span for around three years after receiving a dental undergrad degree. Given

the time limits of undergraduate courses of study, training in diagnosing and/or treating patients with interceptive orthodontics may not be sufficient. Studies have shown that clinical management differences exist among pediatric dentists, dental surgeons, and orthodontists who undertake early diagnosis and interceptive treatment of malocclusion. Depending on the severity of the malocclusion, different treatment options may be used³. For example, paediatric dentists and dental surgeons may use a functional (removable) or removable dentoalveolar appliance in cases of anterior open bite. Orthodontists may use class II or open bite headgear in cases of crowding. Treatment options for crowding may include a functional appliance or serial extraction². General practitioners, orthodontists and pediatric dentists also have differences in their choice of treatment. They usually treat any type of malocclusion, mainly in primary and early mixed dentition, and they have changes in referral rate. Some studies report a significant percentage of general practitioners who decide not to refer patients to a specialist and provide some type of interceptive treatment but approach being more general in nature. Early orthodontic therapies can be initiated in the deciduous, mixed, or permanent dentition if malocclusion is identified. This will encourage positive developmental changes and lessen or completely eliminate aberrant oral cavity conditions. Early interceptive orthodontic therapies have the potential to eliminate or lessen the severity of a growing malocclusion, the problems associated with subsequent fixed orthodontic treatments, and the length of time required for treatment. It is important to recognize that given the potential variances in the practitioners who offer interceptive orthodontic treatment, their expertise, attitudes, and awareness towards treating, diagnosing, and preventing malocclusions may vary. This may unquestionably have an effect on how well interceptive orthodontic treatment works. This study aims to compare the knowledge, attitude and awareness towards interceptive orthodontics among dental practitioners in Pune, a metropolitan city in Maharashtra.

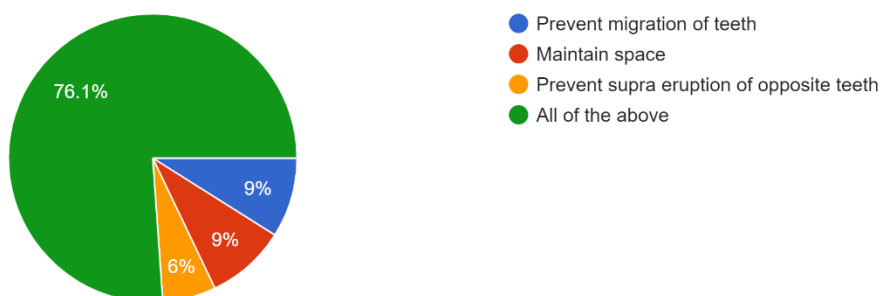
MATERIALS AND METHODS

The questionnaire based cross sectional study was carried out in different dental practitioners in Pune city. The sampling technique used was convines sampling. MCQ based questionnaire was developed and used for assessment of knowledge attitude awareness practice regarding Interceptive Orthodontics among dentists¹⁰. The questionnaire was reviewed by the subject matters experts who judged the questionnaire for its relevance, understanding and clarity for corrections to be made accordingly¹³. Internal consistency was analysed using Cronbach’s alpha. Reliability is calculated by using Cronbach calculator. Thus, the Cronbach α was equal to **0.857**. Sample size is calculated using input parameter pertaining ‘G’ power software version 3.1.9.4. Effective size of the sample was 0.5 (medium). Power of the study was **80%**. The threshold for statistical significance i.e. (α value) was 0.05. Degree of freedom of sample size was 5. Hence calculated sample size is **126**. Considered sample size was **134**. Subjects satisfying the inclusion criteria were asked to fill the questionnaire which was distributed manually and through an online link shared by the corresponding author to the different dental practitioners in Pune. The purpose of the questionnaire was explained to respondents beforehand and filling it out was considered as consent¹². Inclusion criteria included dentists who had graduated in BDS & MDS and were currently doing dental practice. Any dentist who is graduated in dentistry and currently not practicing dentistry were excluded from the study¹¹. The questionnaire comprised of knowledge attitude practice based multiple choice questions with four or five options were formulated by corresponding author. Total 134 responses were collected through the medium of online form (Google form). Data entry was done in Microsoft Excel sheet. For technical aspects, we have utilised IBM SPSS 27-2019, June software to prepare statistical table. 29 questions were considered meticulously for 20 size study population. Results were documented on Excel sheet. Tables were made to holistically determine the value of validity and reliability

RESULTS

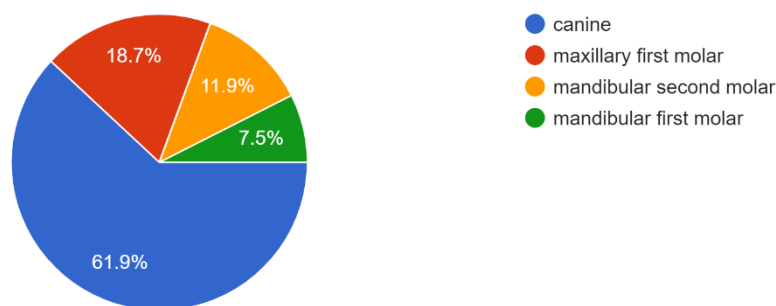
What are functions of space maintainer ?

134 responses



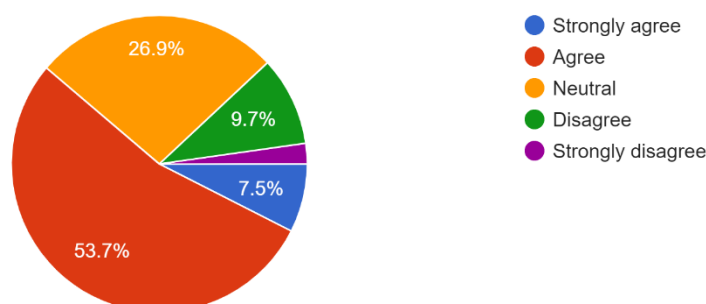
Which of the following permanent teeth is least extracted in serial extraction ?

134 responses



Do you think habit break appliance plays major role in interceptive orthodontics ?

134 responses



DEMOGRAPHIC DATA

Gender	Male=79	Female=55
Education	Bds=98	Mds=36
Dental practitioner	Private=123	Other=11

In this particular study out of 134 participants 79 were male and 55 were female. Among 134 practitioners 98 are BDS and 36 are MDS. 123 dentist doing private practice and 11 dentist practices other type of practice.

KNOWLEDGE BASED SURVEY RESPONSES

QUESTIONS	A Responses	B Responses	C Responses	D Responses	E Responses
What do you understand by term interceptive orthodontics?	9(6.7%)	11(8.2%)	112(83.6%)	2(1.5%)	-
How interceptive orthodontics reduce time treatment among young patient?	82(69.8%)	16(11.9%)	24(17.9%)	12(9%)	-
What are general aims of preventive orthodontics?	9(6.7%)	2(1.5%)	7(5.2%)	116(86.6%)	-
Common issue that are treated with interceptive orthodontics?	10(7.5%)	9(6.7%)	5(3.7%)	110(82.1%)	-
How long interceptive orthodontics takes place?	11(8.2%)	21(15.7%)	62(46.3%)	40(29.9%)	-
Are braces required for interceptive orthodontics?	55(41%)	36(26.9%)	31(23.1%)	12(9.1%)	-
How long does interceptive orthodontics stands?	63(47%)	22(16.4%)	11(8.2%)	30(22.4%)	8(5.9%)
What are functions of space maintainer?	12(9%)	12(9.1%)	8(6%)	102(76.1%)	-
Best form of space maintainer?	19(14.2%)	13(9.7%)	39(29.1%)	63(47%)	-
Which of the following is not include in the procedure of space maintainer?	18(13.4%)	23(17.2%)	20(14.9%)	73(54.5%)	-

Developing crossbite is treated by?	94(70.1%)	16(11.9%)	11(8.2%)	8(6%)	5(3.7%)
Ideally malocclusion should be treated between the age of?	9(6.7%)	12(9.1%)	16(11.9%)	97(72.4%)	-
Which of the following permanent teeth is least extracted in serial extraction?	83(61.9%)	25(18.7%)	16(11.9%)	10(7.5%)	-

The majority of dentists agree that interceptive orthodontics is a corrective and preventive treatment for developing malocclusion. 116 practitioners agree that the main goals of interceptive orthodontics are to minimize crowding, improve oral habits, and address malocclusion. Of the 134 practitioners, 39 believe that a band and loop is the greatest form of space maintainer, while 63 believe that a pulpotomized tooth is the best form. In a serial extraction, 83 practitioners agreed that the permanent canine is the

least extracted, while 25 practitioners agreed that the maxillary permanent first molar is the least extracted. When treating patients with interceptive orthodontics, dental professionals frequently deal with concerns related to crowding, malocclusion, and oral habits. 62 practitioners have noted that the duration of treatment for interceptive orthodontics is 3–4 years. The ideal age for interceptive orthodontics is when malocclusion first appears.

ATTITUDE BASED SURVEY RESPONSES

QUESTIONS	Strongly agree Responses	Agree Responses	Neutral Responses	Disagree Responses	Strongly disagree Responses
Do you think space regainer and space maintainer plays a pivotal role?	16(11.9%)	75(56%)	27(20.1%)	11(8.2%)	5(3.7%)
Do you think that early diagnosis of skeletal maturity ease the interceptive orthodontic treatment plan efficiently?	17(12.7%)	78(58.2%)	28(20.9%)	8(6%)	3(2.2%)
Do you think that interceptive orthodontic intervention helps in reducing malocclusion?	14(10.4%)	80(59.7%)	25(18.7%)	11(8.2%)	4(3%)
Carelessness and lack of awareness among parents for interceptive orthodontic is major drawback?	14(10.4%)	73(54.5%)	36(26.9%)	8(6%)	3(2.2%)
Do you think that interceptive orthodontic will save money of the patient from expensive orthodontic treatment plan?	9(6.7%)	73(54.5%)	39(29.1%)	9(6.7%)	4(3%)
Do you think that habit breaking appliances plays major role in interceptive orthodontics?	10(7.5%)	72(53.7%)	36(26.9%)	13(9.7%)	3(2.2%)
Do you think interceptive orthodontic is magical boom for future dental practice?	6(4.5%)	79(59%)	34(25.4%)	11(8.2%)	4(3%)
Do you think that oral screens, lip bumpers, removable appliances part of easy interceptive orthodontics?	9(6.7%)	78(58.2%)	34(25.4%)	11(8.2%)	2(1.5%)

Out of 134 dental practitioners on an average 12 practitioners (8.85%) are strongly agree, 76 dental practitioners (56.72%) shows agree, 32(24.17%) dental practitioners are neutral were as 10 dental practitioners(7.65%) was disagree and 4 dental

practitioners (2.75%) are strongly disagree and shows their attitude towards utilizing of orthodontic appliances, habit breaking appliances, diagnostic tools, treatment expenditure, attitude of parents, towards interceptive orthodontic interventions.

PRACTICE BASED SURVEY RESPONSES

QUESTIONS	A Responses	B Responses	C Responses	D Responses	E Responses
Do you observe that naso alveolar moulding(NAM) is the starting of interceptive orthodontic?	26(19.4%)	70(52.2%)	24(17.9%)	14(10.4%)	
What are the drawbacks of the interceptive orthodontic negligence in private practice?	30(22.4%)	60(44.8%)	21(15.7%)	17(12.7%)	6(4.5%)

Interceptive orthodontic help in treatment of ectopic and impacted teeth?	55(41%)	35(26.1%)	34(25.4%)	10(7.5%)
Do you prefer differently abled children for interceptive orthodontic rather than long term orthodontic treatment?	62(46.3%)	38(28.4%)	24(17.9%)	10(7.5%)
Do you practice interceptive orthodontic in daily routine?	47(35.1%)	56(41.8%)	20(14.9%)	11(8.2%)
Do practice serial extraction for interceptive orthodontic procedure?	74(55.2%)	22(16.4%)	31(23.1%)	7(5.2%)
Do you observe awareness regarding malaligned tooth by parents regarding their children in your practice?	82(61.2%)	30(22.4%)	17(12.7%)	5(3.7%)
Do you apply radiographic for interceptive orthodontic treatment?	103(76.9%)	11(8.2%)	17(12.7%)	3(2.2%)

Twenty-six practitioners watch Naso alveolar molding (NAM). Of the practitioners, 14 are not aware of it, and 70 do not use. Of the 134 practitioners, 55 exhibit awareness of the treatment of impacted and ectopic dogs. 22 practitioners do not use serial extraction, while 31 practitioners use it based on a case-by-case basis. 47 practitioners prefer orthodontists to treat interceptive orthodontic problems. Twenty practitioners refer to pedodontics, whereas 56 rely on their expertise of BDS. Radiographic interpretation is used by 103 practitioners to treat interceptive orthodontics. Of the practitioners, 82 reported that parents were aware of their child's misaligned teeth, while 30 reported that parents were not aware of the condition. According to 60 practitioners, the disadvantage of interceptive orthodontics is extended therapy, and the cause for disregarding treatment is failed treatment.

DISCUSSION

Interceptive orthodontics defined as phase of science and art of orthodontics employed to recognize and eliminate the potential irregularities and malposition's in developing dentofacial complex¹

The most popular tool used for educational research is the questionnaire. Since our study is well-established, reliable, and valid technique of assessment of knowledge of interceptive orthodontic therapies, multiple choice questions were chosen as the methods to assess the knowledge, attitude, and practice of interceptive orthodontics. Following review, the dentist is questioned extensively, and the validity of the questionnaire was checked before any data were collected, as this allows for the retention of valuable things and the discarding of less valuable ones.

according to uttal dh et al Early loss of deciduous teeth and space discrepancy management are generally taught as part of curriculum in general dental practice, which may explain better performance of respondents in these domains⁴. but prioly Early diagnosis of alleviating occlusal problems during the transition from primary to permanent dentition is crucial in preventing malocclusion. Thus, concluding early detection as timely referral to dentists which is necessary required for preventive and interceptive

orthodontic interventions. Comparing the study conducted by Borrie et al⁵. He assessed that the primary reasons that affects the implementation of interceptive orthodontics is always documented according to the case reports so finally They concluded that the key barriers to providing interceptive care are not just the lack of knowledge but also lack of self-confidence and experience have a significant role.

Petiela contradicting the statements of orthodontics studies said that Improvement in knowledge will definitely help the general dental practitioners to correctly diagnose and timely intercept various developing malocclusion which would improve the patient's oral health related quality of life and also greatly reduce the orthodontic patient load thus Early correction of many occlusal problems may not completely solve malocclusion in the future⁶. But Still, it could positively affect the child's quality of life and could reduce the risk of dental trauma, justifying the articles our study gives the clear statement that early intervention definitely is the key for successful orthodontics treatments in every age group with time period of treatment plan and the possible successful outcomes in various case scenarios .it could positively affect the child's quality of life and could reduce the risk of dental trauma, justifying the articles our study gives the clear statement that early intervention definitely is the key for successful orthodontics treatments in every age group with time period of treatment plan and the possible successful outcomes in various case scenarios .

It is clear that the interceptive measures should be clearly defined before being performed, but interceptive orthodontics is not performed by most General practicing dentist⁷. This decision is shown to be influenced by the confidence of clinicians, further education or training, the perceived importance of Interceptive orthodontics and the possible impact on future orthodontic care⁸. Clarification of the scope of practice for General practicing dentist in providing orthodontics should be considered. Only with the adequate knowledge and multi-disciplinary approach from paediatric and orthodontics and consulting oral

surgeons Clarification may be seen to reduce confusion that may be limiting general dental Interceptive orthodontics treatment⁹. It is recommended that future research be undertaken to examine methods of improving the knowledge awareness among the general dentist about interceptive orthodontic in the city of pune.

RECOMMANDATIONS

1. Initiation of interceptive orthodontic programme among dental practitioners.
2. Spreading awareness in paediatric dentistry among general population.

CONCLUSION

Knowledge, attitude and practice towards interceptive orthodontics is average in dental practitioners in pune and need to increase awareness in parents.

REFERENCES

1. Definition of interceptive orthodontic by American Association of orthodontics 1969
2. Arvystas MG. The rationale for early orthodontic treatment. American journal of orthodontics and dentofacial orthopedics. 1998 Jan 1;113(1):15-8.
3. Zere E, Chaudhari PK, Sharan J, Dhingra K, Tiwari N. Developing Class III malocclusions: challenges and solutions. Clinical, cosmetic and investigational dentistry. 2018 Jun 22:99-116.
4. Uttal DH, Cohen CA. Spatial thinking and STEM education: When, why, and how?. In Psychology of learning and motivation 2012 Jan 1 (Vol. 57, pp. 147-181). Academic Press.
5. Shabbir S, Shaheed M, Ilyas K, Zakria E. Knowledge of fresh graduates in the field of dentistry regarding interceptive orthodontics. Pakistan Orthodontic Journal. 2022 Jul 8;14(1):51-6.
6. Pietilä T. Orthodontic care in Finnish Health Centers, thesis, University of Turku; 1998
7. Borrie FR, Felicity R. Interceptive Orthodontics: The Evidence, Current General Dental Practice, and Way Forwards in the UK.
8. Currell SD, Vaughan M, Dreyer CW. Interceptive orthodontic practices in general dentistry: a cross-sectional study. Australasian Orthodontic Journal. 2019 Nov 1;35(2):152-7.
9. Chaushu S, Chaushu G. Lingual appliances, implants and impacted teeth. In The orthodontic treatment of impacted teeth 2007 (pp. 229-238). Informa UK Ltd, London.
10. Kaneini Shree N, Selvaraj V. Knowledge and Attitude of Basic Orthodontics among General Dentists and Non-Orthodontic Postgraduates in South India—A Cross-Sectional Questionnaire Based Survey.
11. Anabtawi MF, Gilbert GH, Bauer MR, Reams G, Makhija SK, Benjamin PL, Williams OD, National Dental Practice-Based Research Network Collaborative Group. Rubber dam use during root canal treatment: findings from The Dental Practice-Based Research Network. The Journal of the American Dental Association. 2013 Feb 1;144(2):179-86.
12. Lefever S, Dal M, Matthíasdóttir Á. Online data collection in academic research: advantages and limitations. British journal of educational technology. 2007 Jul;38(4):574-82.
13. Curran V, Hollett A, Casimiro LM, Mccarthy P, Banfield V, Hall P, Lackie K, Oandasan I, Simmons B, Wagner S. Development and validation of the interprofessional collaborator assessment rubric ((ICAR)). Journal of interprofessional care. 2011 Sep 1;25(5):339-44.