

Original Article

Evaluation of awareness and knowledge of orthodontic extraction pattern in patients undergoing orthodontic treatment among the patient's guardian, general dentist, and oral surgeons: A survey in Central India

ABSTRACT

Introduction: Extractions in orthodontics remain a relatively controversial concept still today. The present study was conducted to elucidate and evaluate the awareness and knowledge among the patient's guardian, oral surgeons, and general dentists on orthodontic extraction pattern being followed in the central parts of India.

Materials and Methods: A cross-sectional questionnaire-based survey was conducted among the patient's guardian, oral surgeons, and general dentists in central parts of India through an e-survey using Google Forms. The sample size was 500 and e-mails were sent to 850 members through Google Form. Questionnaire was distributed and responses were evaluated. The online recorded information was converted into codes and analyzed. The analysis was done using descriptive statistics and expressed in the form of frequency and percentages.

Results: Most of the responses by patient's guardian, dentist, and oral surgeon are for extracting teeth simultaneously on the same side per jaw and follow it accordingly, and also important finding of responses is for extracting teeth after starting orthodontic treatment.

Conclusion: It was observed that most of the general dentists and oral surgeons agree with the cordial concept of extracting teeth simultaneously on the same side per jaw and follow it accordingly. It was observed to be comfortable for the patients in extracting teeth in two appointments as per the pain bearing capacity and convenience.

Keywords: Dentist, extraction pattern, oral surgeons, orthodontic treatment, patient's guardian, survey

INTRODUCTION

The role of extractions in orthodontic treatment has been a controversial subject for over a century with different opinions among the health-care professionals. Since the early days of orthodontics, the need for tooth extractions in certain orthodontic situations has been discussed.^[1] The main goal of orthodontic treatment is to obtain a normal occlusal relationship of the teeth in relation to facial structures.^[2]

Extractions in orthodontics were reintroduced scientifically in the 1930s and with the advent of Begg's technique reached its

peak in the 1960s. Tweed's philosophy and Begg's technique concluded that extraction-based techniques were the demand

TWINKLE D. BAJAJ, POORWA B. PAKHALE, AMOL A. VERULKAR, RATNADIP A. LOHAKPURE, NIYATI B. POTODE, SHIVANI S. KHANDELWAL

Department of Orthodontics and Dentofacial Orthopaedics, VYWS, Amravati, Maharashtra, India

Address for correspondence: Dr. Poorwa B. Pakhale, Near Camp D-Mart, Suyog Colony, Shirish Apartment, Amravati, Maharashtra, India.

E-mail: poorwa.pakhale@gmail.com

Received: 08-Apr-2020

Revised: 02-Jul-2020

Accepted: 13-Jul-2020

Published: 23-Sep-2020

Access this article online	
Website: www.orthodrehab.org	Quick Response Code 
DOI: 10.4103/ijor.ijor_12_20	

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How to cite this article: Bajaj TD, Pakhale PB, Verulkar AA, Lohakpure RA, Potode NB, Khandelwal SS. Evaluation of awareness and knowledge of orthodontic extraction pattern in patients undergoing orthodontic treatment among the patient's guardian, general dentist, and oral surgeons: A survey in Central India. *Int J Orthod Rehabil* 2020;11:101-5.

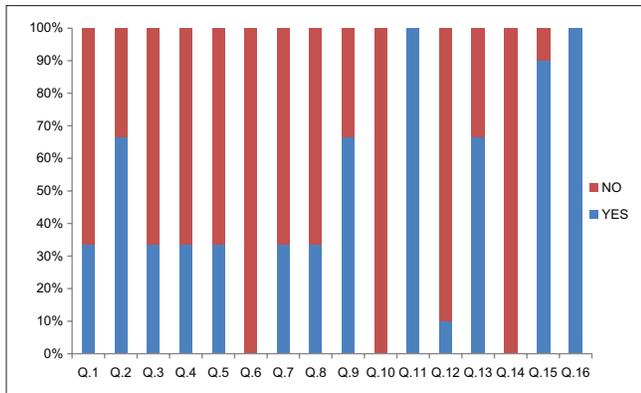


Figure 1: Graphical presentation of parents' response

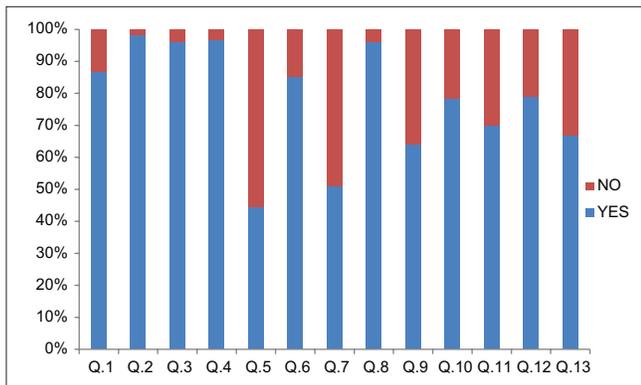


Figure 2: Graphical presentation of dentists' response

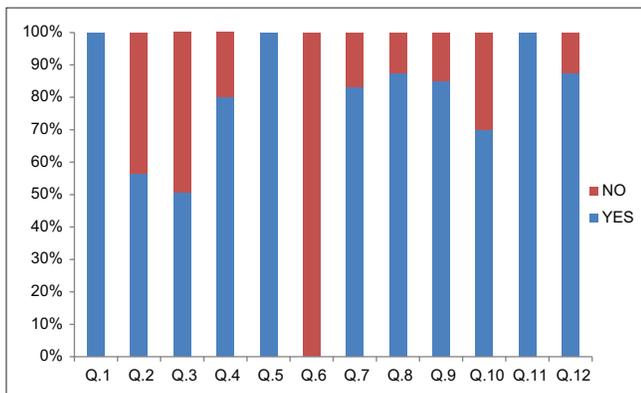


Figure 3: Graphical presentation of oral surgeons' response

of treatment that affected the stability of results obtained.^[3] Since then, it is believed that the extraction of specific teeth might be required in different types of malocclusion according to the treatment plan and mechanics involved.^[3]

Recently, the new extraction debate has reopened regarding the pattern for extraction protocol being followed in day-to-day clinical practice. Different extraction protocols have been followed in patients undergoing orthodontic treatment according to the convenience of patient's guardian, oral surgeons, and the general dentists. Now, the

controversies regarding whether to extract all the teeth in a single appointment or in subsequent visits according to the protocol and convenience were often linked to personal preferences rather than scientific criteria. There are various factors that reinforce different extraction patterns in patients undergoing orthodontic treatment. Considering these factors, the present study was designed to elucidate and evaluate the awareness and knowledge among the patient's guardian, oral surgeons, and general dentists on orthodontic extraction pattern being followed in the central parts of India. However, this survey was done to assess the knowledge regarding the extraction pattern that is followed hitherto.

Objectives

Following were the objectives perceived during this survey:

- To evaluate the patient knowledge regarding the orthodontic extraction pattern as a part of their treatment plan in the central parts of India
- To evaluate the awareness of orthodontic extraction pattern among the oral surgeons who perform extractions in patients undergoing orthodontic treatment
- To evaluate the awareness of orthodontic extraction pattern among the general dentists who perform extractions in patients undergoing orthodontic treatment.

MATERIALS AND METHODS

The study was approved by the institutional review committee.

Study setting

A cross-sectional questionnaire-based study was conducted among the patient's guardian, oral surgeons, and general dentists in central parts of India through an e-survey using Google Forms between January 2019 and September 2019.

Study population and sampling technique

A list of all the oral surgeons and general dentist was obtained and a list of e-mail address was collected through convenience sampling. The sample size was calculated using Epi Info software. The final sample size was 500 and e-mails were sent to 850 members through Google Form.

Study tools and data collection

The 16-item closed questionnaire in structured format was framed for the patient's guardian, 13-item questionnaire for general dentist, and 12-items for oral surgeons. The questionnaire was distributed in the central parts of India. Lawshe's method was used for content validity using judgments from a panel of 10 subject matter experts. The reliability was also established by test-retest among 20

volunteers of similar population. The kappa value was 0.9 which indicated high reliability. This was followed by pilot testing among 10 volunteers who were asked to answer the questionnaire and provide feedback on content, clarity, and brevity of the questionnaire.

Details regarding the electronic mail were collected which was followed by questions on awareness and knowledge. All the participants used a nominal scale (YES/NO scale) for the response. Checkboxes were provided and participants had to click on any one option for each question. Care was taken that one person could answer the questionnaire only once and all the questions were mandatory. Efforts were made to get completed forms by sending three reminders via e-mails. The responses were directly recorded through Google Forms. Since this was an e-survey, the informed consent was included in the Google Form.

Statistical analysis

The online recorded information was converted into codes and analyzed using the Statistical Package for the Social Sciences (SPSS) for Windows, version 26.0 (IBM Corp., Armonk, N. Y., USA). The analysis was done using descriptive statistics and expressed in the form of frequency and percentages.

RESULTS

A total of 500 participants were included in this study which divided into three groups of 150 patient's guardian participants, 175 general dentist participants, and 175 oral surgeon participants. Analysis of the survey details was expressed in tabular form with respect to percentage-wise distribution of attitude and knowledge of the participants involved [Tables 1-3].

The survey pattern for patient's guardian resulted about their knowledge regarding the extraction protocol which is followed. When they were questioned regarding the awareness of malocclusion, 33.4% answered yes and 66.6% answered no. However, although not aware, 66.6% of the patients still had no knowledge about the extraction being followed in patients undergoing orthodontic treatment. All of the participants in this group, i.e., 100% of them, had no idea about the most commonly extracted teeth in orthodontic treatment plan. When asked about the extracting single tooth per side in the upper and lower jaws simultaneously more convenient for their child, 90% answered affirmatively (Yes = 90%; No = 10%). 100% found it convenient for them in terms of appointments and visits to the dentist [Table 1] and [Figure 1].

When asked about pain experienced after during orthodontic treatment, 66% answered yes means less pain experience after starting orthodontic treatment. About 33% answered no, it means no change in pain experience even after extraction carried out after starting orthodontic treatment.

Extraction pattern followed by the general dentist is shown in Table 2. General dentist had 86.9% of the patients undergoing orthodontic treatment in their clinic and 13.1% answered negatively. When asked about the type of malocclusion in their patients, 98.3% answered affirmatively. Almost 96.6% undergo orthodontic extraction in their clinic in routine practice. Orthodontic extraction protocol of extracting teeth per side in both the jaws in a single visit was answered affirmatively by 66.9% (Yes = 66.9%; No = 33.1%) [Table 2]. When asked about the easiness of extraction if it is carried out after starting orthodontic treatment; then 70% answered yes, 30% answered no, it means it is an easier way to carrying out extraction after starting orthodontic treatment [Table 2] and [Figure 2].

When oral surgeons were provided with their questionnaire, everyone respond positively about orthodontic extraction in their clinic. Among them, 80% do the extraction of the first premolar most commonly and 85% agreed the ideal protocol of extracting teeth simultaneously on the same side per jaw. Almost 87.4% found convenience about the extraction pattern being followed and 12.6% did not agree to this protocol [Table 2] and [Figure 3].

DISCUSSION

It is important and essential to educate the individuals about the benefits of the orthodontic treatment. This can be accomplished by a multidisciplinary approach, in which general dental practitioners and other nonorthodontic specialties can play the role of oral orthodontic health educators, but this can possible only if they have good knowledge and attitude toward orthodontic treatment.^[4]

An extraction is just a tool for orthodontic treatment; it is not necessarily good or bad. They improve the stability and quality of the treatment when used in the right way. When they used in wrong, they can create devastating functional and esthetic results.^[5]

Literature has all the data regarding the extraction controversies that had emerged in past. There are several factors which influenced the preference of teeth for extraction to achieve an acceptable, esthetic, and functional occlusion. This study is unique in its attention because of the

Table 1: Parents questionnaire with responses(%)

Question number	Questionnaire	Response (n=150), n (%)	
		Yes	No
1	Do you know about your child's malocclusion?	33.4	66.6
2	Do you think he/she requires treatment for the same?	66.6	33.4
3	Are you aware about the speciality branch in the treatment of such malocclusion?	33.4	66.6
4	Have you ever visited an orthodontist?	33.4	66.6
5	Are you aware about tooth extraction as a part of treatment plan in orthodontics?	33.4	66.6
6	Do you know about the most commonly extracted teeth in orthodontic treatment plan?	0	100
7	Have you started with the orthodontic treatment of your child?	33.4	66.6
8	Did you undergo extraction of teeth of your ward for the correction of irregularly placed teeth?	33.4	66.6
9	Did you notice about the extraction being carried out?	66.6	33.4
10	Were all of your child's teeth extracted in the same visit?	0	100
11	Were you satisfied with the extraction protocol carried out in your child?	100	0
12	Do you feel only single tooth should be extracted in a day?	10	90
13	Is it less painful to extract teeth after starting orthodontic treatment?	66.6	33.4
14	Will it be more convenient for you to visit the dentist every time for a single tooth extraction in a day?	0	100
15	Do you feel extracting single tooth per side in upper and lower jaw simultaneously was more convenient for your child?	90	10
16	Was it more convenient for you in terms of appointments and visits to the dentist?	100	0

Table 2: Dentist questionnaire with responses(%)

Question number	Questionnaire	Response (n=175), n (%)	
		Yes	No
1	Do you have patients undergoing orthodontic treatment in your clinic?	86.9	13.1
2	Are you aware of the type of malocclusion they have?	98.3	01.7
3	Do you know about tooth extraction in treating a certain type of malocclusion?	96.0	04.0
4	Did you undergo the extraction of teeth as a part of the orthodontic treatment plan in your patients?	96.6	03.4
5	Do you call oral surgeons for an orthodontic tooth extraction?	44.6	55.4
6	Do you feel the first premolar is the most commonly extracted tooth in a patient undergoing orthodontic treatment?	85.3	14.7
7	Do you find difficulty in convincing patients for an orthodontic tooth extraction?	50.9	49.1
8	Do you extract all the teeth planned in your treatment plan in a single visit?	96.0	04.0
9	Is it comfortable for you to extract a single tooth in a single visit?	64.0	36.0
10	Is it convenient for you to extract teeth per side simultaneously in both the jaws in the same visit?	78.3	21.7
11	Was it easy to extract teeth after starting orthodontic treatment?	70.0	30.0
12	Do you find it is comfortable for the patients?	78.9	21.1
13	Do you believe in the orthodontic extraction protocol of extracting teeth per side in both the jaws in a single visit?	66.9	33.1

difference in its evaluation criteria related to the orthodontic extraction pattern. We could not identify any other survey regarding knowledge prevalent among practitioners and patients regarding the extraction pattern, especially in patients undergoing orthodontic treatment. Hence, this survey was conducted on a priority basis.

The questionnaire survey was conducted to evaluate the knowledge, attitude, and awareness in patient's guardian, general dental practitioners, and oral surgeons. This survey revealed some interesting findings that reflected the existing scenario of the orthodontic extraction pattern as perceived among the individuals involved in the study. The knowledge and awareness prevalent among the study participants were

moderately satisfactory, but to some extent, the results definitely highlighted the need for more education about this concept among the patients.

The patient's guardian involved in this study speculated a moderate response about the acquaintance of their child's malocclusion and the treatment options required for the same. Most of them were not aware about the extraction of teeth needed in their treatment plan for better and stable results. They also had no mind's eye about the pattern of orthodontic extraction that is usually carried out. However, sublimely they were totally satisfied with the extraction pattern of extracting single tooth per side in the upper and lower jaws simultaneously, being it more comfortable

Table 3: Oral surgeon questionnaire with responses(%)

Question number	Questionnaire	Response (n=175), n (%)	
		Yes	No
1	Do you undergo orthodontic extractions in your clinic?	100	0
2	Do you frequently undergo orthodontic extractions?	56.6	43.4
3	Do you find the positive attitude of patients towards orthodontic extractions?	50.3	49.7
4	Is the first premolar the most commonly teeth to be extracted during an orthodontic treatment plan?	80.0	20.0
5	Do you feel legitimate for the extraction protocol that is followed by orthodontics?	100	0
6	Do you extract all the teeth planned in the treatment plan in a single visit?	0	100
7	Do you extract two teeth on the same side per jaw in a single visit?	83.4	16.6
8	Do you find extracting the teeth according to the pattern you follow is more convenient for you and your patients?	87.4	12.6
9	Does extracting teeth simultaneously on the same side per jaws is the ideal protocol to be followed?	85.0	15.0
10	Was it easy to extract teeth after starting orthodontic treatment?	70.0	30.0
11	Is it convenient for you to simultaneously extract teeth in both jaws on the same side?	100	0
12	Do you feel extracting a single tooth in a single visit more comfortable and appropriate for the patient?	87.4	12.6

and convenient in terms of their visits to the dental clinic. This concluded that patients require more knowledge and education regarding the orthodontic extraction pattern.

General dentists and oral surgeons, both on the other hand, had broad idea about this concept. They on regular basis undergo orthodontic extractions in their clinics as per this survey. They disagreed with the fact of extracting all teeth in a single visit and synchronously found it irrelevant to extract a single tooth in a single visit. This survey proved that most of them agree with the cordial concept of extracting teeth simultaneously on the same side per jaw and follow it accordingly. This gave a foundation to this survey and also made it essential for others to be aware of the orthodontic extraction pattern that needs to be followed as per the convenience of the patients as well as the health-care professionals performing the same.

During this study, we also observed that extraction which is carried out after starting orthodontic treatment leads to less pain experience by patients during extraction procedure.

Therefore, continuing dental education programs are the need of the hour to constantly update about the knowledge not only in practitioners but most importantly, among the patient's and their guardians. It becomes equally responsible for the clinicians, i.e., general dentists and the oral surgeons to instill the knowledge about the orthodontic extraction pattern which is beneficial and equally convenient.

CONCLUSION

It was observed that most of the general dentists and oral surgeons agree with the cordial concept of extracting teeth simultaneously on the same side per jaw and follow it accordingly. It was observed to be comfortable for the patients in extracting teeth in two appointments as per the pain-bearing capacity and convenience; and also the extraction of teeth after bonding procedure leads to less pain experienced by patients. However, it is still necessary to instill the scientific knowledge among the patients and their guardians regarding the same.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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