



Original Research Article

An assessment of knowledge and application of lingual orthodontics among orthodontists in their routine clinical practice

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ABSTRACT

Background: With orthodontic patient demographics expanding to involve more adults, the demand for esthetic appliances is greater and orthodontists are keen on offering their patients more discreet and even invisible options. Lingual orthodontics is a very viable field which offers all this, and it is noteworthy that more and more orthodontists in India are practicing the craft.

Aim: This questionnaire based survey aims to assess the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India.

Methodology: A sample of 157 participants (orthodontists) was taken after assessing the sample size within the age group of 27 - 50 years of age. The participants comprised of orthodontists practicing in various parts of India. A Questionnaire was created on Google forms and circulated to participants using various social media platforms. The data of responses of participants were analyzed and evaluated with the help of pie charts.

Results: This survey analyzed the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India. The results highlighted certain key points ; Majority of the Orthodontists in India did not practice Lingual Orthodontics and if a patient demanded Lingual braces, majority of the Orthodontists convinced them for conventional braces. Majority of the Orthodontists also reported of not being comfortable practicing Lingual Orthodontics and were not even certified as trained Lingual Orthodontists. They reported of facing certain problems like long treatment duration, more frequent patient visits, increased appointment duration, increased breakages and increased patient discomfort. Most of the participants suggested that conventional braces were better than Lingual braces and they also felt that Lingual Orthodontics took up a lot of clinical chair side time. Maximum participants reported of frequently using conventional braces in their routine clinical practice. They also felt that there was a need to conduct increased awareness and training programs in lingual Orthodontics and a whopping majority also believed that Lingual Orthodontics had now become obsolete.

Conclusion: This questionnaire based survey clearly helped in analyzing the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India. Increased awareness and training programs in lingual Orthodontics need to be conducted in India as there were very few Orthodontic clinicians practicing lingual Orthodontics in routine practice.

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1. Introduction

There is clear consensus among orthodontists that there has been an increase in requests by orthodontic patients to correct their malocclusion with a more aesthetic alternative.

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Many adult patients requiring orthodontics for aesthetic and functional reasons are discouraged by visible orthodontic treatment. Although orthodontic treatment has previously been viewed by both the public and clinicians to be a therapy for younger patients, the acceptance by more adults to seek

treatment has increased. While in recent years, aesthetic brackets and clear plastic sequential appliances have gained popularity among many orthodontists and patients, lingual orthodontics remain a unique appliance on its own. Although aesthetic brackets may serve to mask the

visual presence of the orthodontic appliance, it persists as an aesthetic problem for many patients. While clear plastic sequential appliances are effective in treating milder cases, complex mechanics cannot be fully expressed using these systems on their own. Many clinicians believe that lingual orthodontic treatment is substantially more resource-intensive and have maintained pronounced reservations towards this treatment alternative. Since the earliest fixed lingual appliances were introduced in the mid to late 1970s,^{1–4} they have been subject to a varied response.^{5–8} Many negative perspectives continue to be propagated and there remain few dedicated lingual practitioners in India. The aim of this study was to assess the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India

2. Aim

To assess the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India.

3. Objectives

1. To assess the knowledge of Lingual Orthodontics among Orthodontists in India
2. To assess the percentage of Orthodontists practicing Lingual Orthodontics
3. To assess the common concerns while practicing Lingual Orthodontics
4. To assess the need to conduct increasing awareness programs about Lingual Orthodontics in India

4. Materials and Methods

A cross sectional study was conducted over duration of 3 months. A sample of 157 participants (orthodontists) was taken after assessing the sample size within the age group of 27 - 50 years of age. The participants comprised of dentists practicing in various parts of India. A Questionnaire was created on Google forms and circulated to participants using various social media platforms. The data of responses of participants were analyzed and evaluated with the help of pie charts.

5. Selection Criteria

5.1. Inclusion criteria

1. Dentists who have completed MDS in Orthodontics
2. Dentists willing to give informed consent for participation in study
3. Dentists practicing in private clinics
4. Participants in the age group of 27 to 50 years

5.2. Exclusion criteria

1. Non Orthodontist participants
2. Participants unwilling to give informed consent for participation in study
3. Other dentists who do not work in private clinics
4. Participants below 27 years or above 50 years

5.3. Sample Size

157

Sample size calculation

[3]Sample Size for Frequency in a Population	
Population size (for finite population correction factor or fpc) (N):	1000000
Hypothesized % frequency of outcome factor in the population (p):	93% +/- 5
Confidence limits as % of 100 (absolute +/- %)(d):	5%
Design effect (for cluster surveys-DEFF):	1
Sample Size(n) for Various Confidence Levels	
Confidence Level(%)	Sample Size
95%	157
80%	143
90%	91
97%	123
99%	173
99.9%	282
99.99%	375
Equation	
Sample size $n = [DEFF * N * p(1-p)] / [(d^2 / Z^2 * 1 - \alpha/2 * (N-1) + p * (1-p)]$	
Results from OpenEpi, Version 3	

5.4. Method

A Google form of the questionnaire was created to analyze and assess the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India. The questionnaire along with a brief synopsis explaining the aims and objectives of the study was sent to participants. The participants were approached by the principal investigator and co-investigator via personal connections and whatsapp groups. The aims and objectives of the study were explained in a message accompanying the online questionnaire link. Informed consent was taken from all the participants before solving the questionnaire. Timely reminders were sent as well. The participation was completely voluntary and all the participants had an option of opting out of the study by not filling the questionnaire. The questionnaire consisted of a total of 10 questions. They

were aimed to evaluate the Orthodontists choice pertaining to molar bonding/banding in routine clinical practice.

5.5. Questionnaire

The questions were a mix of multiple choice questions. After some questions about the informed consent, gender and age the following questions were asked:

Table 1:

1.	Do you routinely practice Lingual orthodontics?
2.	What do you do when the patient demands lingual braces?
3.	Are you comfortable practicing Lingual Orthodontics?
4.	Have you been trained in Lingual Orthodontics with a separate certification course for the same?
5.	What are your common concerns while practicing Lingual Orthodontics?
6.	Do you feel that treatment results of conventional braces are better than lingual Braces?
7.	Do you feel Lingual Orthodontics takes up a lot of clinical chair side time?
8.	Which appliance do you frequently use in your routine clinical practice?
9.	Do you feel there is a need to conduct increased awareness and training programs in lingual Orthodontics?
10.	Do you feel Lingual Orthodontics has now become Obsolete?

5.6. Statistical Analysis

Descriptive analysis was performed with the help of SPSS software and mean and standard deviation was recorded

6. Results

This survey analyzed the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India. This questionnaire based study highlighted the following results:-

1. Majority of the Orthodontists in India do not practice Lingual Orthodontics
2. If a patient demands Lingual braces, majority of the Orthodontists convinced them for conventional braces
3. Majority of the Orthodontists reported of not being comfortable practicing Lingual Orthodontics
4. Majority of the participants were not even certified as trained Lingual Orthodontists
5. Participants also reported of facing certain problems like long treatment duration, more frequent patient visits, increased appointment duration, increased breakages and increased patient discomfort
6. Most of the participants suggested that conventional braces were better than Lingual braces

7. Participants also felt that Lingual Orthodontics took up a lot of clinical chair side time.
8. Maximum participants reported of frequently using conventional braces in their routine clinical practice
9. Majority of the participants also felt that there is a need to conduct increased awareness and training programs in lingual Orthodontics
10. A whopping majority also believed that Lingual Orthodontics has now become obsolete.

7. Discussion

The aim of this study was to assess the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India. Clinical protocols were not elucidated when lingual orthodontics were first introduced, resulting in many clinicians starting lingual orthodontic cases without being fully prepared. Orthodontists generally felt that the lingual technique required more rigorous attention to detail as well as a fundamentally different approach to treatment planning and biomechanics.⁹ Postural challenges associated with potential back pain and related discomfort may have discouraged many operators, resulting in premature termination of cases to be completed by labial appliances.¹⁰ Previously, many orthodontists viewed lingual orthodontics as substantially more resource-intensive. Despite recent advancement in laboratory techniques,¹¹ computer-aided bracket manufacture and archwire placement,¹² which were attempts to make this whole exercise less back-breaking, many orthodontists reported in this study that lingual orthodontics still does not play an integral role in their daily practice. However, to assess the knowledge and clinical practice of Lingual Orthodontics among Orthodontists, this questionnaire based study was carried out. We needed to assess whether Orthodontists actually practice Lingual Orthodontics in their routine clinical practice, the difficulty they face during treatment and also the common concerns and perceptions about Lingual orthodontics. Firstly, a sample size was estimated based on previous studies done related to the same topic. The sample size was calculated using software for sample size calculation. The sample size was estimated to be 157. A Questionnaire was then fabricated on Google Forms which was then circulated to age groups from 27 to 50 years via various Whatsapp groups. The consent of the participant was recorded on Google forms itself. After 157 participants filled the Google questionnaire form, the data was collectively analyzed. A majority of 83.3% of the participants reported of not routinely practicing lingual orthodontics and only 16.7% of the participants reported of practicing the same [Figure 1]. When patients themselves demanded for Lingual braces, majority of 66.7% of the Orthodontists convinced them for conventional braces, 25% of the participants referred their patients to a trained and certified lingual Orthodontist

and only 8.3% of the participants actually delivered the treatment with lingual braces [Figure 2]. A majority of 76.9% of Orthodontists reported of not being comfortable practicing Lingual Orthodontics [Figure 3] and a majority of 81.8% were not even certified as trained Lingual Orthodontists [Figure 4]. Participants also reported of facing certain problems like long treatment duration, more frequent patient visits, increased appointment duration, increased breakages and increased patient discomfort. Amongst these a majority of 45.5% of the participants believed that long treatment duration was a major constraint in opting for this treatment protocol [Figure 5]. A whopping majority of 81.8% also felt that treatment results of conventional braces were better than lingual braces [Figure 6] and 72.2% of participants also felt that Lingual Orthodontics took up a lot of clinical chair side time [Figure 7]. A majority of 54.5% of the participants reported of frequently using conventional braces in their routine clinical practice, 18.2% of them used clear aligners and self-ligating braces and only 9.1% of the participants reported of using lingual braces in routine clinical practice [Figure 8]. A wide majority of 81.8% of the participants felt that there is a need to conduct increased awareness and training programs in lingual Orthodontics [Figure 9] and a majority of 72.7% of the participants also believed that lingual orthodontics has now become obsolete in India [Figure 10].

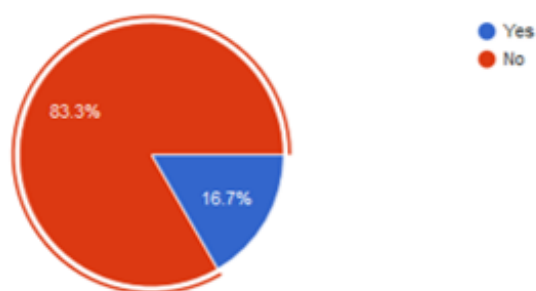


Fig. 1: Do you routinely practice lingual orthodontics?

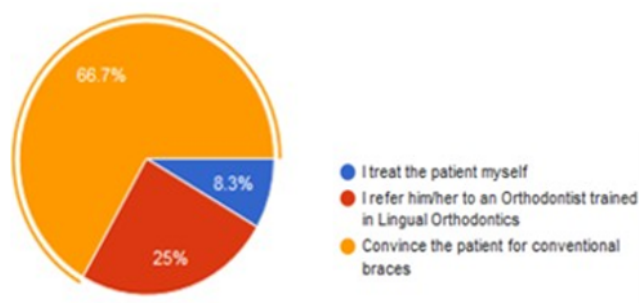


Fig. 2: If a Patient demands lingual braces

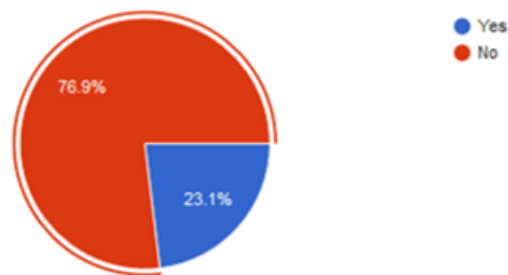


Fig. 3: Are you comfortable practicing lingual orthodontics?

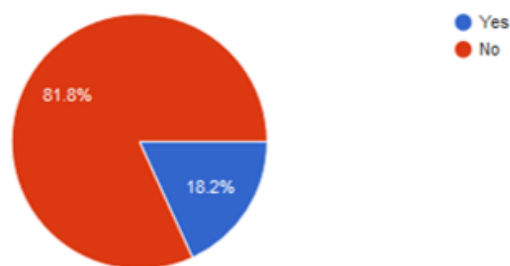


Fig. 4: Have you been trained in lingual orthodontics with a separate certification course for the same?

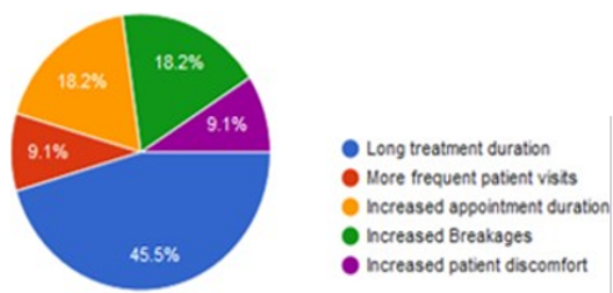


Fig. 5: What are you common concern while practicing lingual orthodontics?

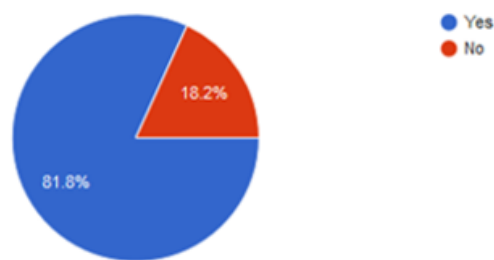


Fig. 6: Do you feel treatment results of conventional braces are than lingual braces?

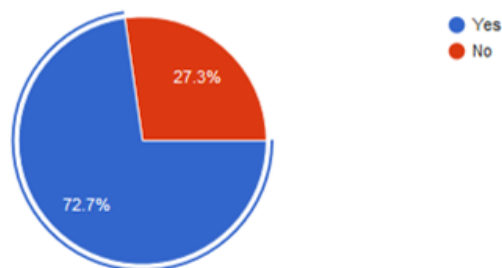


Fig. 7: Do you feel lingual orthodontics take up a lot of clinical chair side time?

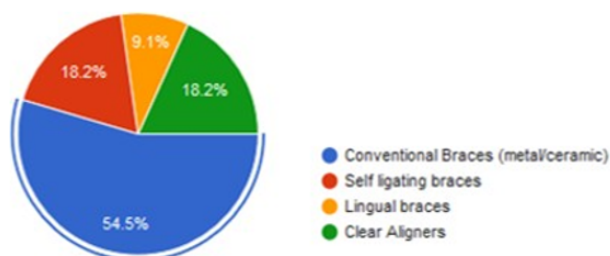


Fig. 8: Which appliance do you frequently use in your routine clinical practice?

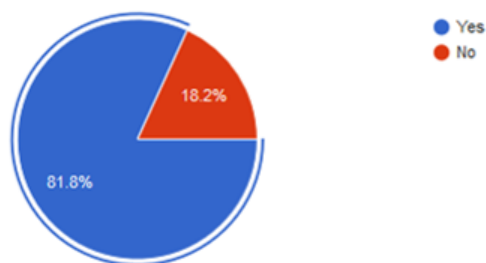


Fig. 9: Do you feel there is need to conduct increased awareness and training programmer in lingual orthodontics?

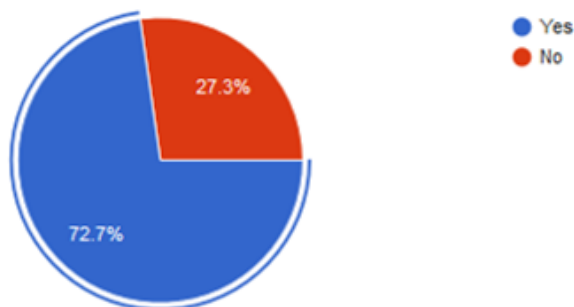


Fig. 10: Do you lingual orthodontics has now become obsolete?

8. Conclusion

This questionnaire based survey clearly helped in analyzing the knowledge and application of Lingual Orthodontics among Orthodontists in their routine clinical practice in India. Increased awareness and training programs in lingual Orthodontics need to be conducted in India as there were very few Orthodontic clinicians practicing lingual Orthodontics in routine practice.

9. Acknowledgement

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10. Source of Funding

None.

11. Conflict of Interest

None.

References

1. Fujita K. New orthodontic treatment with lingual bracket and mushroom archwire appliance. *Am J Orthod.* 1979;76:657–75.
2. Fujita K. Multilingual bracket and mushroom arch wire technique. A clinical report. *Am J Orthod.* 1982;82:120–40.
3. Kurz C, Swartz ML, Andreiko C. Lingual orthodontics: a status report. Part 2: Research and development. *J Clin Orthod.* 1982;16:735–40.
4. Paige SF. A lingual light-wire technique. *J Clin Orthod.* 1982;16:534–44.
5. Creekmore T. Lingual orthodontics—Its renaissance. *Am J Orthodon Dentofac Orthoped.* 1989;96(2):120–37.
6. Gorman JC. Treatment of adults with lingual orthodontic appliances. *Dent Clin North Am.* 1988;32:589–620.
7. Fillion D. The resurgence of lingual orthodontics. *Clin Impressions.* 1998;7:2–9.
8. Poon KC, Taverne AA. Lingual orthodontics: a review of its history. *Aust Orthod J.* 1998;15:101–4.
9. Ling PH. Lingual orthodontics: history, misconceptions and clarification. *J Can Dent Assoc.* 2005;71:99–102.
10. Kurz C, Romano R. Lingual orthodontics: historical perspective. In: R R, editor. *Lingual orthodontics*. Hamilton (ON): BC Decker; 1998. p. 3–20.
11. Wiechmann D. New bracket system for lingual orthodontic treatment. Part 1. Theoretical background and development. *J Orofac Orthop.* 2002;63:234–45.
12. Wiechmann D. Lingual Orthodontics (Part 4): Economic Lingual Treatment (ECO-Lingual Therapy). *J Orofac Orthopedics / Fortschritte der Kieferorthopädie.* 2000;61(5):359–70.

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