

Preference of Retention Protocol among Orthodontists: A Questionnaire Study

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ABSTRACT

Background: This study seeks to examine the prevailing retention methods adopted by orthodontists in India, while also exploring their preferred approaches, the key factors influencing their decisions, and the challenges they encounter in selecting appropriate retention protocols.

Materials and Methods: A descriptive cross-sectional study was carried out involving 100 orthodontists from various regions across India. A validated questionnaire-based survey of 15 multiple-choice and open-ended questions was disseminated online. A structured Google Form with multiple-choice and open-ended questions was developed to evaluate orthodontists' perspectives on retention protocols, focusing on types of retainers used, preferences, influencing factors, duration of use, maintenance instructions, dietary advice, follow-up strategies, patient education, and perceived challenges in post-treatment retention management. The data of responses of participants was analyzed on the Google Form application itself with the help of a spreadsheet and pie charts.

Results: Most orthodontists practiced in the southern region (88%) and were primarily involved in private practice (39%) or postgraduate training (31%). About 45% had delivered retainers in more than 300 cases. A majority (79%) preferred both fixed and removable retainers, with Essix and fixed lingual retainers being most commonly used. A majority of respondents (81%) reported that multiple factors influenced their choice of retainer type. Retention duration varied, with 25% recommending indefinite wear. Only 11% did not follow up with patients post-treatment. Patient compliance, breakage/loss of retainers, and communication challenges were noted as common issues. Importantly, 95% considered long-term retention as "very important."

Conclusions: There is a strong preference among Indian orthodontists for dual retention protocols combining both fixed and removable appliances. Clinical decision-making is primarily influenced by treatment-related factors and patient adherence. Patient education and structured follow-up remain crucial for successful post-treatment outcomes, although challenges remain in compliance and appliance maintenance.

Keywords: Retention, Orthodontic Treatment, Retainer, Orthodontist Survey, India.

INTRODUCTION

The orthodontic treatment aims to improve function, maintain structural balance between dental arches and facial tissues, and create aesthetic harmony. However, the effectiveness of orthodontic treatment

goes beyond the active phase, relying heavily on the retention phase to ensure long-term stability of the results ^{1,2}. During orthodontic treatment, applied forces lead to adaptive changes in both the teeth and

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the periodontal tissues, facilitating controlled tooth movement. Despite achieving desired alignment, teeth tend to shift back to their original positions due to residual growth, occlusal forces, and other biological factors ^{3,4}. To prevent relapse, it is essential that teeth are held in place until they become functionally stable in their new positions ⁵.

Choosing an appropriate retention protocol is considered one of the most crucial and sensitive elements of orthodontic treatment. Teeth have a natural tendency to return to their original malocclusion after treatment, and relapse can be seen at any age. This can lead to both aesthetic and functional concerns, as well as additional costs and treatment time for patients ^{6,7}. Relapse can be particularly problematic for the appearance of anterior teeth, which are most visible in the smile ⁸. Several factors, including growth, occlusion, periodontal health, and soft tissue pressures, impact the retention phase and the probability of relapse ^{9,10}.

Given these challenges, orthodontists must adopt well-informed retention protocols tailored to each patient's individual needs ^{11,12}. While the retention phase plays a vital role in orthodontic treatment, orthodontists continue to differ in their opinions on the most effective retention strategies. This study aims to investigate the retention practices of orthodontists in India, examine the factors that impact their choice of retention styles, and assess the perceived significance of long-term retention in maintaining the success of orthodontic treatments.

MATERIALS AND METHODS

A cross-sectional study employing a structured online questionnaire was conducted to investigate the perspectives and practices of orthodontic practitioners in India regarding post-treatment retention. The 15-item questionnaire, encompassing both closed- and open-ended formats ¹³, was distributed to a sample of 100 orthodontic professionals, including postgraduate students, private practitioners, faculty members, and those working within multispecialty clinics. The survey explored various facets of retention protocols, such as the area and type of practice, the volume of retainer cases, preferred retainer types and the factors influencing their selection, recommended

duration of wear, patient instructions for maintenance and dietary adjustments, follow-up strategies and intervals, the perceived importance of patient education and long-term retention, common challenges encountered, and patient satisfaction. Response data collected via Google Forms was subsequently analyzed using the platform's spreadsheet functionality and integrated pie chart visualizations ^{13,14}.

RESULTS

Practice Demographics (Figures I & II): The geographic distribution of respondents revealed a strong concentration in South India (88%), with smaller representation from North (7%), West (3%), and East India (2%). Regarding the type of practice, private practice was the most prevalent setting (39%), followed by postgraduate student clinics (31%), multispecialty practices (17%), and academic faculty positions (13%).

Area of practice in India?

100 responses

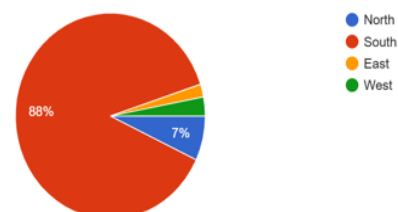


Figure I. Distribution of orthodontic practitioners by geographical area in India. The majority of respondents were from South India (88%), followed by North (7%), West (3%), and East (2%).

Which type of practice do you have?

100 responses

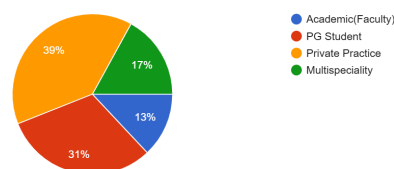


Figure II. Distribution of respondents by type of practice. The majority were involved in private practice (39%), followed by postgraduate students (31%), multispecialty clinics (17%), and academic faculty (13%).

Experience with Retention Cases (Figure III): A significant proportion of the surveyed orthodontists

(45%) reported substantial experience with post-treatment retention, having managed over 300 cases. Other respondents indicated treating 0–50 cases (34%), 50–100 cases (9%), and 100–300 cases (12%).

In how many cases have you given Retainers?

100 responses

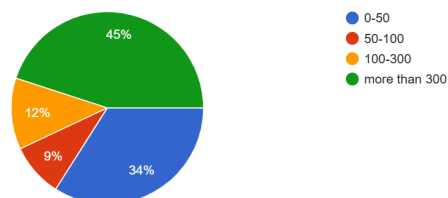


Figure III. Distribution of respondents based on the number of cases in which retainers were provided. The highest proportion of respondents (45%) reported giving retainers in more than 300 cases, followed by 34% in 0–50 cases, 12% in 100–300 cases, and 9% in 50–100 cases.

Preferred Retention Modalities (Figures IV & V): The dominant approach to retention involved a combination of both fixed and removable retainers, favored by 79% of the practitioners. Removable retainers alone were preferred by 13%, while fixed retainers alone were the choice of 8%. Among removable retainer designs, fixed lingual retainers were the most frequently utilized (43%), followed by Essix retainers (36%), Begg's wrap-around retainers (7%), and Hawley's retainers (4%). Notably, 10% of respondents indicated using "All of the above" designs, tailoring their selection to individual case requirements.

What type of retention do you most commonly recommend to your patients after orthodontic treatment?

100 responses

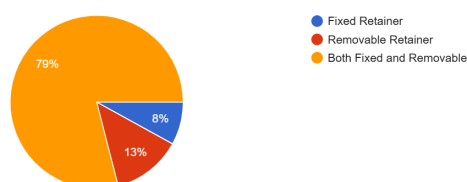


Figure IV: Distribution of respondents based on the type of retention most commonly recommended after orthodontic treatment. The majority of respondents (79%) reported recommending both fixed and removable retainers, followed by 13% who preferred only removable retainers and 8% who preferred only fixed retainers.

What is your preference of Retainer?

100 responses

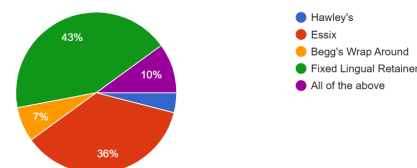


Figure V: Distribution of respondents based on their preferred type of retainer. Fixed lingual retainers were the most preferred (43%), followed by Essix retainers (36%), "all of the above" (10%), Begg's wrap-around retainers (7%), and Hawley's retainers (4%).

Factors Influencing Retainer Selection (Figure VI): When determining the type of retainer, the majority of orthodontists (81%) considered a comprehensive set of factors, including patient age, treatment complexity, patient compliance, treatment duration, aesthetics, and cost. Among individual factors, treatment complexity (11%) and patient compliance (6%) were the most frequently cited as primary considerations.

What factors influence your choice of retention type?

100 responses

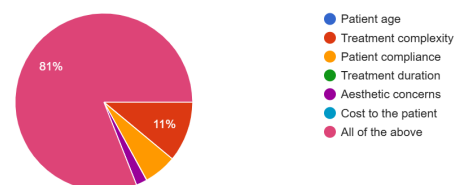


Figure VI: Distribution of respondents based on factors influencing the choice of retention type. The majority of respondents (81%) reported that all listed factors influence their choice, followed by 11% who selected treatment complexity, and smaller proportions citing patient compliance, aesthetic concerns, cost, treatment duration, or patient age individually.

Duration of Retainer Wear (Figure VII): Recommendations for the duration of retainer wear varied among practitioners. While 25% advised indefinite wear, the remaining responses were distributed across specific timeframes: 0–6 months (8%), 6–12 months (20%), 12–18 months (21%), and 18–24 months (26%).

For how much time do you advise your patients to wear the Retainer?

100 responses

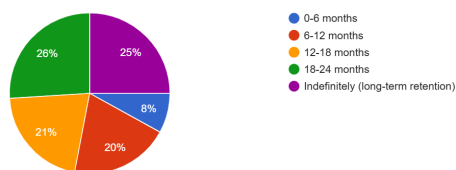


Figure VII: Distribution of respondents based on the duration for which patients are advised to wear retainers. The most common recommendation was 18–24 months (26%), followed closely by indefinite (long-term) retention (25%), 12–18 months (21%), 6–12 months (20%), and 0–6 months (8%).

Patient Instructions for Retainer Care (Figure VIII): Orthodontists commonly emphasized several key aspects of retainer care to their patients. These included consistent daily hygiene practices such as brushing and using water flossers, diligent and consistent wear (with many recommending approximately 23 hours per day), proper storage (e.g., placing removable retainers in water when not in use), and the importance of regular check-ups and prompt reporting of any breakage.

Do you recall patients for follow-up during retention phase?

100 responses

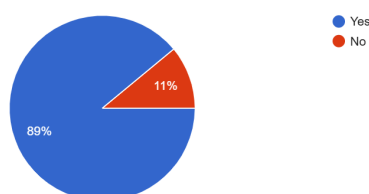


Figure VIII: Distribution of respondents based on whether they recall patients for follow-up during the retention phase. A large majority of respondents (89%) reported recalling patients for follow-up, while 11% did not recall patients during the retention phase.

Dietary Advice during Retention: Dietary recommendations during the retention phase varied. A minority (12.2%) advised a soft diet or avoidance of hard foods, particularly for patients with fixed retainers. Conversely, some practitioners did not recommend specific dietary changes. Common advice included avoiding biting with the anterior teeth and refraining from consuming hot or sticky foods.

Follow-Up and Monitoring Strategies (Figure IX): A large majority of practitioners (89%) reported recalling patients for post-retention follow-up. The frequency of these follow-up intervals varied, with 41% scheduling appointments every 6 months, 27% every 3 months, 11% annually, and 19% only when patients reported issues. A small percentage (2%) did not actively monitor post-treatment retention.

If yes, at what intervals?

100 responses

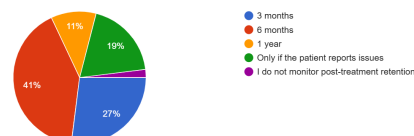


Figure IX: Distribution of respondents based on the interval of follow-up during the retention phase. Most respondents (41%) recalled patients every 6 months, followed by 27% every 3 months, 19% only if the patient reported issues, 11% annually, and 2% who did not monitor post-treatment retention.

Importance of Patient Education (Figure X): There was a near-universal consensus among respondents regarding the significance of patient education on retention, with 99% reporting that they thoroughly educate their patients. Only 1% indicated providing minimal education on this aspect.

Do you educate your patients about the importance of retention?

100 responses

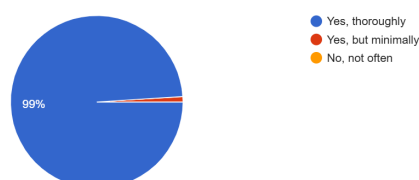


Figure X. Distribution of respondents based on patient education on the importance of retention.

Common Challenges in Retention Management (Figure XI): The most frequently encountered challenges in post-treatment retention were retainer breakage or loss (45%) and issues related to patient compliance (31%). Other reported challenges included difficulties in tracking adherence (6%), problems with retainer fitting (5%), and financial constraints (1%). A notable proportion (12%) reported experiencing multiple challenges.

What are the most common challenges you face in retention management?

100 responses

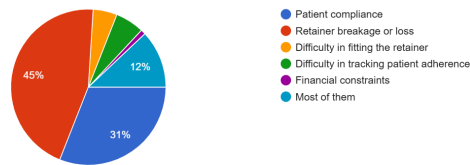


Figure XI: Distribution of respondents based on the challenges faced by orthodontists during retention management.

Patient Satisfaction (Figure XII): Assessing patient satisfaction during the retention phase revealed that 45% of orthodontists perceived their patients as "always" satisfied, while 53% reported satisfaction "sometimes." A small minority (2%) indicated that their patients were "never" satisfied.

Is patient satisfied during the retention phase?

100 responses

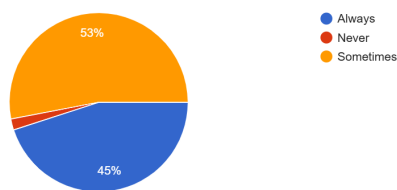


Figure XII. Distribution of respondents based on the patient satisfaction during the retention phase.

Perceived Importance of Long-Term Retention (Figure XIII): The overwhelming majority of orthodontists (95%) considered long-term retention to be "very important" for maintaining treatment outcomes. A small percentage viewed it as "somewhat important" (4%), and only 1% considered it "not very important."

In your opinion, how important is long-term retention in maintaining the results of orthodontic treatment?

100 responses

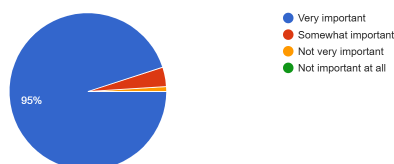


Figure XIII: Distribution of respondents based on the importance of long term retention.

This revised presentation provides a more organized and descriptive summary of the findings, explicitly referencing the figures and using clearer language. It

also maintains the original data while enhancing readability and flow

DISCUSSION

Retention is a crucial phase of orthodontic treatment, aiming to maintain the stability of corrected tooth positions and prevent relapse ^{1,2}. This study surveyed 100 orthodontists across India to understand current trends, preferences, and challenges associated with orthodontic retention protocols.

The demographic distribution of respondents showed a strong predominance from South India (88%), which may reflect regional accessibility or participation bias ¹³. Private practitioners (39%) and postgraduate students (31%) made up the majority, indicating significant contributions from both experienced clinicians and those in training.

Regarding clinical exposure, a considerable proportion (45%) of orthodontists had treated more than 300 patients with retainers ¹⁴. This highlights the practical experience of the respondents and provides credibility to their reported preferences and practices.

A significant majority (79%) opted for a combination of fixed and removable retainers, in line with research suggesting that using both modalities provides superior retention, particularly in cases with high relapse potential ¹⁵. The fixed lingual retainer (43%) and Essix retainer (36%) were the most commonly preferred designs. These preferences suggest a shift toward more aesthetic and patient-friendly appliances ^{16,17} compared to traditional options like Hawley's retainers, which accounted for only 4% of responses.

Multiple factors influence the choice of retention type. While individual factors like treatment complexity (11%) and patient compliance (6%) were acknowledged, an overwhelming 81% of orthodontists reported that all listed factors influenced their decision ¹⁸. This holistic approach suggests a customised retention plan tailored to individual patient needs.

There was a diversity of opinion regarding the ideal duration of retainer wear. A significant proportion of orthodontists (25%) recommended indefinite wear, while others suggested fixed durations ranging from

6 to 24 months. This variation reflects ongoing debates in the literature, where long-term retention¹⁹ is often advocated due to the unpredictable nature of post-treatment tooth movement.

Patient instructions were consistent in emphasizing hygiene, proper storage, and continuous wear. However, dietary advice during the retention phase varied considerably. While some orthodontists recommended soft diets or avoidance of hard and sticky foods, others gave no specific guidance. This inconsistency underscores the need for standardized dietary protocols based on the type of retainer used.

Follow-up practices were generally well established, with 89% of respondents recalling patients after treatment. The majority of the orthodontists schedule the follow-up visits at intervals of 3 to 6 months. However, nearly 20% followed up only when patients reported issues, suggesting room for improvement in proactive retention monitoring.

Almost all respondents (99%) educated their patients about retention, highlighting a strong emphasis on patient awareness. Nevertheless, only 45% felt their patients were “always” satisfied during the retention phase, with 53% stating “sometimes,” and 2% reporting dissatisfaction. This indicates a potential gap between patient expectations and their experience during the retention period¹².

The most frequently reported challenges were retainer breakage or loss (45%) and compliance issues (31%). These practical difficulties can significantly compromise treatment stability. Incorporating strategies such as better appliance design, patient motivation techniques, and adherence monitoring tools (e.g., smart retainers or wear-time indicators)²⁰ may help mitigate these issues.

Finally, the majority of respondents (95%) acknowledged the importance of long-term retention, consistent with the broader orthodontic consensus. This reinforces the view that retention should not be considered a short-term phase but an integral, ongoing aspect of orthodontic care¹⁹.

CONCLUSIONS

This survey-based study highlights current trends and preferences in orthodontic retention protocols

among practitioners in India. A combination of fixed and removable retainers emerged as the most commonly preferred approach, with fixed lingual and Essix retainers being favoured for their effectiveness and patient acceptability. The decision-making process for the retainer type was largely multifactorial, emphasizing individualized care. While most orthodontists recalled patients for follow-up and educated them thoroughly about retention, challenges such as appliance breakage, patient compliance, and variable satisfaction levels remain prevalent.

The findings underscore the need for standardized guidelines on retainer wear duration, dietary instructions, and follow-up protocols to improve long-term outcomes. Greater focus on patient education, monitoring tools, and appliance design improvements may help address current challenges and enhance overall satisfaction during the retention phase. Long-term retention was recognized as critically important by nearly all respondents, reaffirming its role as a fundamental component of successful orthodontic treatment.

Clinical Implications

1. Individualized Retention Protocols: Since most orthodontists consider multiple factors such as age, compliance, treatment complexity, and aesthetics when choosing retainers, it is essential to tailor retention strategies to each patient rather than using a one-size-fits-all approach.
2. Combination Retainers Preferred: The high preference for combined fixed and removable retainers suggests better stability and patient adaptability. Clinicians should consider dual retention, especially in high-risk relapse cases.
3. Patient Education Is Key: Nearly all practitioners stressed the importance of thorough patient education. Continuous reinforcement about the purpose, care, and duration of retainer use can improve compliance and outcomes.
4. Follow-Up and Monitoring: Regular follow-up intervals (mostly every 3–6 months) during the retention phase are crucial for identifying and addressing retention issues early, thus minimizing relapse risk.

5. Addressing Common Challenges: Retainer breakage and poor compliance were the most cited issues. Clinicians should explore more durable materials, provide contingency plans, and implement tracking methods to ensure adherence.

6. Emphasis on Long-Term Retention: As long-term retention was regarded as very important by the majority, clinicians must incorporate long-term or indefinite retention plans in suitable cases and clearly communicate this to patients.

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