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Original Research Article

Understanding Orthodontist's Preferences for Aligners and Fixed Appliances: A Perspective-Based Approach

*Dr. Adheena Nambiar[1], Dr. D. Hemamalini[2], Dr. K.M. Shahul Hameed Faizee[3], Dr. L. Xavier Dhayananth[4]

[1] Postgraduate Resident, Sathyabama Dental College & General hospital, Chennai
[2] Assistant Professor, Sathyabama Dental College & General hospital, Chennai
[3] Professor & Head of the dept., Sathyabama Dental College & General hospital, Chennai
[4] Associate Professor, Sathyabama Dental College & General hospital, Chennai

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Corresponding author: Dr. Adheena Nambiar
Postgraduate Resident, Sathyabama Dental College & General hospital, Chennai

Abstract

Objective: *This study aimed to evaluate orthodontists' preferences for clear aligners and fixed appliances based on their perceptions and clinical experience.*

Methods: *A nationwide cross-sectional survey was conducted among practicing orthodontists in India using a self-designed and validated questionnaire. A total of 378 responses were collected and analysed using descriptive statistics and the chi-square test.*

Results: *Among the 378 orthodontists who participated, 92.9% reported using clear aligners in their practice. Clear aligners were preferred by 84.1% of respondents for treating mild to moderate cases. Fixed appliances, however, were favoured for complex malocclusions, including crowding, open bite, extractions, Class III cases, and orthognathic surgery. A hybrid approach combining both modalities was preferred by 52.4% for complex cases. Clear aligners were associated with better patient compliance (73%), improved periodontal health (82.5%), and a reduced incidence of white spot lesions (77%). In contrast, fixed appliances were deemed superior for torque control, anchorage, and finishing precision.*

Conclusion: *Orthodontists preferred clear aligners for mild to moderate cases due to aesthetic, comfort, and periodontal benefits, while fixed appliances were favoured for complex treatments for their biomechanical control. The growing use of hybrid approaches highlights a case-specific treatment strategy.*

Keywords: *Orthodontic treatment, clear aligners, fixed appliances, orthodontists' preferences, treatment outcomes, patient compliance.*

INTRODUCTION

Malocclusion represents a prevalent dental condition that can impair orofacial function and exert long-term impacts on an individual's psychological and social well-being. Orthodontic intervention aims to correct malocclusions and craniofacial skeletal discrepancies, thereby enhancing masticatory efficiency and overall facial aesthetics.[1] Fixed appliances have long been the primary treatment for malocclusion in orthodontics, playing a crucial role in achieving treatment outcomes.[2]

However, in recent years, clear aligners have gained popularity in orthodontics as a removable and aesthetically appealing alternative to traditional fixed-appliance treatment. Clear aligners have been utilized in orthodontics since 1946 when Dr. Harold Kesling first introduced a series of thermoplastic tooth positioners to achieve tooth alignment.[3]

Aesthetic considerations are often a top priority for patients undergoing clear aligner therapy (CAT). The ability to remove the aligners, along with their discreet appearance, offers enhanced comfort and reduced discomfort when compared to traditional fixed appliances. Additionally, CAT has shown advantages for adult patients susceptible to

periodontitis, with studies indicating better periodontal outcomes over a 12-month period relative to fixed orthodontic braces.[4] However, the effectiveness of CAT in managing more complex orthodontic cases remains less well established.

Hence, this study aims to investigate orthodontists' preferences regarding clear aligner therapy versus fixed appliances by evaluating their insights, clinical experiences, and decision-making patterns in treatment selection.

METHODOLOGY

A nationwide cross-sectional survey was conducted among practicing orthodontists in India using a self-designed and validated questionnaire. A total of 378 orthodontists participated in the survey, selected through simple random sampling to maintain unbiased representation.

Sample size estimation was performed based on a previous study by Arqub et al[5]

n= 4pq/ d^2 = 400 where prevalence (p)=46, q=1-p, d (allowable error) = 5

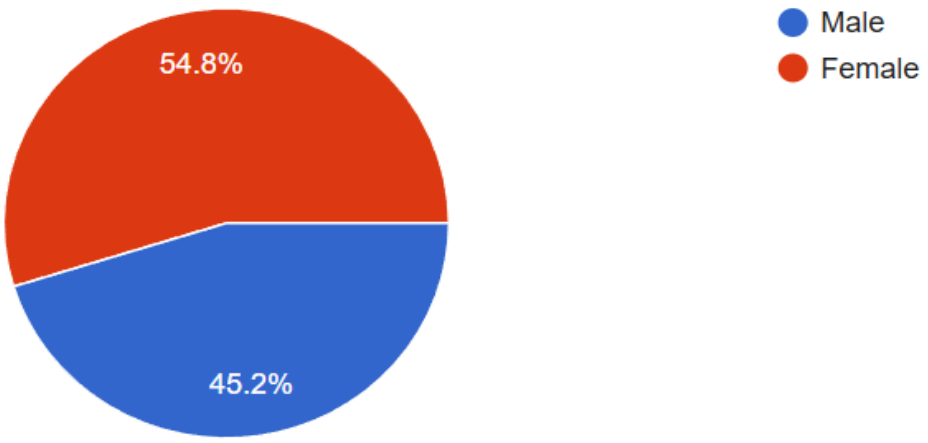
n= 200

Based on earlier research studies, the questionnaire was created and validated for content by an expert panel. A Google Form link was generated and circulated to collect responses. The data were imported into Microsoft Excel (version 2024) and analyzed using SPSS (version 25.0). Descriptive statistics were applied, with categorical variables presented as frequencies and percentages. Inferential analysis was conducted using the Chi-square test.

RESULTS

A total of 378 orthodontists participated in the survey. The gender distribution comprised 45.2% males (n = 171) and 54.8% females (n = 207), with no statistically significant difference observed ($\chi^2 = 3.429$, $p = 0.064$). (Figure 1)

Figure 1



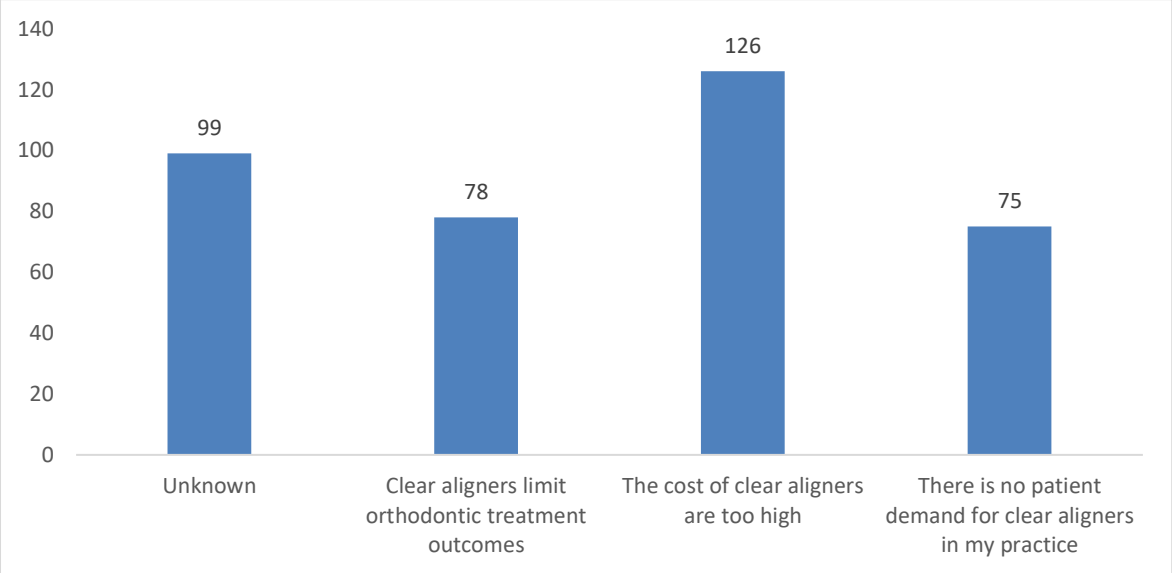
Regarding practice type, 30.2% were involved in private practice, 51.6% in both institutional and private practice, and 18.3% solely in institutional practice. The difference in distribution was statistically significant ($\chi^2 = 64.714$, $p < 0.001$). Most respondents had between 1–5 years of professional experience (37.3%), followed by 16–20 years (23.8%), indicating a significant variation across experience levels ($\chi^2 = 103.905$, $p < 0.001$).

Most participants (92.9%) reported currently using clear aligners in their practice ($\chi^2 = 277.714$, $p < 0.001$), with 49.2% having used them for 1–5 years. (Table 4, Fig 4) When asked about the number of cases initiated in the past year, 57.1% reported beginning 1–10 cases, while 19.8% reported initiating 11–20 cases.

Knowledge acquisition about clear aligners was most reported through a combination of conferences/CDE programs, workshops, and journals (19%), followed closely by those who included books in their learning pathway (16.7%).

When asked about the proportion of practice dedicated to clear aligners, 55.6% stated 1–25%, and only 3.2% reported more than 75%. Notably, 7.1% indicated no use of aligners in their practice. For those not using aligners, cost (33.3%) and concerns about treatment limitations (20.6%) were the most cited barriers (Fig 2).

Figure 2



Treatment Preferences and Clinical Considerations:

- For mild to moderate cases, 84.1% preferred clear aligners (χ^2 = 176.095, $p < 0.001$), whereas for complex cases, 52.4% favoured a hybrid approach combining clear aligners and fixed appliances (Table 1).
- Fixed appliances were predominantly preferred for managing crowding (60.3%), open bite (64.3%), extraction cases (70.6%), orthognathic surgeries (72.2%) and Class III malocclusion (70.6%) ($p < 0.001$ for all) (Table 1).
- However, for deep bite management, responses were nearly evenly split (clear aligners 48.4%, fixed appliances 51.6%), showing no significant difference ($p = 0.537$) (Table 2)
- A majority (67.5%) did not use clear aligners for functional cases (Table 2).

Table 1

Which option do you prefer for mild to moderate cases?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	318	84.1	176.095	0
Fixed Appliance	60	15.9		
Total	**378**	**100.0**		
Which option do you prefer for complex cases?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	51	13.5	85.857	0
Fixed Appliance	129	34.1		
Hybrid	198	52.4		
Total	**378**	**100.0**		
In your opinion, which treatment modality is most effective for managing crowding cases?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	150	39.7	16.095	0
Fixed Appliance	228	60.3		
Total	**378**	**100.0**		
According to you, which treatment modality is most effective for managing open bite cases?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	135	35.7	30.857	0
Fixed Appliance	243	64.3		
Total	**378**	**100.0**		

Which approach, in your opinion, works best for treating extraction cases?	Frequency (n)	Percentage (%)	Chi Square	P value
Clear Aligners	111	29.4	64.381	0
Fixed Appliance	267	70.6		
Total	**378**	**100.0**		
In case of orthognathic surgery, which method of treatment would you choose?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	105	27.8	74.667	0
Fixed Appliance	273	72.2		
Total	**378**	**100.0**		
Which approach do you prefer for managing Class III malocclusion?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	111	29.4	64.381	0
Fixed Appliance	267	70.6		
Total	**378**	**100.0**		

Table 2

In your opinion, which treatment modality is most effective for managing crowding cases?	Frequency (n)	Percentage (%)	Chi Square	P value
Clear Aligners	183	48.4	0.381	0.537
Fixed Appliance	195	51.6		
Total	**378**	**100.0**		
Do you use clear aligners for treating functional cases?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Yes	123	32.5	46.095	0
No	255	67.5		
Total	**378**	**100.0**		

Biomechanical and Clinical Outcomes:

- Fixed appliances were considered superior for torque control (66.7%) and anchorage control (61.9%) (Table 3).
- A better finish was attributed to fixed appliances by 62.7% of participants (Table 3).
- Nevertheless, 73% believed that patient compliance was more optimal with clear aligners ($p < 0.001$) (Table 4).

Table 3

Which approach has better torque control in your opinion?	Frequency (n)	Percentage (%)	Chi Square	P value
Clear Aligners	126	33.3	42	0
Fixed Appliance	252	66.7		
Total	**378**	**100.0**		
Which approach has better anchorage	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**

control in your opinion?				
Clear Aligners	144	38.1	21.429	0
Fixed Appliance	234	61.9		
Total	**378**	**100.0**		
According to you, which offers you a better finish?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	141	37.3	24.381	0
Fixed Appliance	237	62.7		
Total	**378**	**100.0**		

- While 38.9% perceived a higher relapse risk with aligners, the majority did not agree ($p < 0.001$) (Table 4).
- Most respondents (77%) believed that clear aligners lead to fewer white spot lesions and 82.5% indicated that they offer better periodontal health ($p < 0.001$ for both) (Table 4).

Table 4

According to you, for which treatment modality is patient compliance most optimal?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Clear Aligners	276	73.0	80.095	0
Fixed Appliance	102	27.0		
Total	378	100.0		
Do you believe that the risk of relapse is higher with clear aligner therapy than with fixed appliance therapy?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Yes	147	38.9	18.667	0
No	231	61.1		
Total	**378**	**100.0**		
Do you think incidence of white spot lesion lesions are much less in clear aligners compared to fixed appliances?	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**
Yes	291	77.0	110.095	0
No	87	23.0		
Total	**378**	**100.0**		
Which of the following do you	**Frequency (n)**	**Percentage (%)**	**Chi Square**	**P value**

think will result in better periodontal health?				
Clear Aligners	312	82.5	160.095	0
Fixed Appliance	66	17.5		
Total	**378**	**100.0**		

DISCUSSION

This study aimed to assess the preferences, clinical practices, and perceptions of orthodontists regarding clear aligners and fixed appliances. The results provide a detailed understanding of how aligner therapy is assimilated into practice and the reasoning behind treatment protocols along with the perceived effectiveness of both methods clinically across several case types.

One striking result was that 92.9% of respondents claimed to use clear aligners as part of their practice, which shows that this option is being embraced widely. Most of these orthodontists (49.2%) had 1–5 years of experience with aligners, which implies that a few of them are still relatively new to aligner therapy but are using it more frequently in their practice.

The majority (57.1%) admitted to starting 1-10 cases of using aligners in the last year while 19.8% started 11-20 cases. This suggests a moderate level of adoption, especially for cases that are less severe to moderately severe, which is where 84.1% of respondents preferred aligners over fixed appliances.

The reasons supporting this preference are many. Aligners are considered to ensure a higher level of patient compliance: 73% of respondents indicated that the patient's oral hygiene and periodontal health would be better with the use of aligners (82.5%) suggesting aligned with research that indicates the use of removable appliances enhances oral hygiene measures and diminishes the likelihood of white spot lesions—this was the opinion of 77% of respondents. The aesthetic appeal of aligners and their comfort also contribute to increased patient acceptance, which may influence clinicians' willingness to offer them more frequently. These observations are consistent with findings from recent studies.

Konda et al[6] highlighted the advantages of aligners, including aesthetics, comfort, and fewer emergency visits, particularly in mild to moderate malocclusions. Similarly, Pereira et al.'s[7] systematic review and meta-analysis confirmed that patients using clear aligners experienced significantly less pain and required fewer analgesics during the initial treatment phase compared to those with fixed appliances.

Despite the growing popularity of aligners, fixed appliances remain the treatment of choice in complex cases. A hybrid approach—combining aligners and fixed appliances—was preferred by 52.4% of orthodontists for complex cases. This approach reflects a pragmatic treatment philosophy that seeks to balance the mechanical control of braces with the aesthetic and hygienic benefits of aligners.

These findings are supported by recent clinical innovations, such as the hybrid method described by Aldohan et al. (2023)[8], which utilizes custom tunnel attachments to enhance aligner efficacy during complex tooth movements.

For specific malocclusions, fixed appliances were clearly favoured. For example, in cases of crowding (60.3%), open bite (64.3%), deep bite (51.6%), extraction cases (70.6%), and Class III malocclusion (70.6%), fixed appliances were considered more effective.

These findings are in accordance with previous studies, such as those by Lanteri et al. (2018)[9] and Gu et al. (2017)[10], which reported that fixed appliances demonstrated greater efficacy than clear aligners in managing complex malocclusions—particularly in achieving better outcomes as measured by the Peer Assessment Rating (PAR) index.

Another article by Zheng et al. (2017) [11] is in accordance with our results, highlighting that clear aligners offer advantages primarily in terms of reduced chair time and shorter treatment duration, particularly in mild-to-moderate cases.

Additionally, fixed appliances were preferred for orthognathic surgery cases by 72.2% of respondents. These findings underscore the perception that traditional braces offer superior control in three-dimensional tooth movements, torque expression, anchorage management, and overall finishing quality—confirmed by 66.7%, 61.9%, and 62.7% of respondents, respectively.

These findings are consistent with the study by Ke et al. (2019)[12], which reported that clear aligners are less effective than conventional fixed appliances in achieving adequate occlusal contacts, controlling tooth torque, and ensuring long-term retention.

Interestingly, in deep bite cases, preferences were nearly equal between aligners and braces, with no statistically significant difference. This suggests evolving confidence in the capabilities of aligners in managing vertical discrepancies, although the biomechanics involved may still warrant caution in complex deep bite scenarios. However, as highlighted by Kang et al. (2024)[13], while initial overbite correction may be achieved, refinements show limited additional effectiveness—underscoring the need for cautious application of aligners in more complex deep bite cases.

Regarding knowledge acquisition, most orthodontists cited continuing dental education (CDE), workshops, and journals as primary sources of aligner-related knowledge. This emphasizes the role of professional development in adapting to newer technologies and integrating evidence-based approaches into practice. It also reflects the need for standardized and accessible training in aligner systems, especially given the rapid evolution of digital orthodontics.

Although aligners were appreciated for several clinical advantages, limitations were noted. About 33.3% of respondents cited high cost as the primary reason for not using clear aligners, followed by concerns regarding limited treatment outcomes (20.6%) and lack of patient demand (19.8%). These barriers suggest that economic and demographic factors continue to influence clinical decision-making, especially in regions or populations where aesthetic-driven demand may be lower.

These findings align with Kassam and Stoops (2020)[14] who found that aligners are more prone to relapse due to tipping movements, unlike the bodily movement achieved with fixed appliances. Although treatment duration may be shorter, final occlusal outcomes—particularly in the anterior-posterior dimension—may be less favourable, with a higher risk of post-treatment instability.

Another concern addressed was the risk of post-treatment relapse. A total of 38.9% of participants believed the risk of relapse was higher with aligners, while 61.1% disagreed. This indicates a degree of uncertainty regarding long-term stability with aligner therapy and points to the need for further longitudinal studies comparing retention protocols and relapse rates between the two systems. A study by Kuncio et al. (2007) [15] similarly supports our findings, demonstrating that patients treated with Invisalign experienced greater post retention relapse compared to those treated with conventional fixed appliances

Taken together, the results reflect an increasing acceptance of clear aligners, especially for less complex cases, due to advantages in patient experience and soft tissue health. However, fixed appliances continue to be perceived as biomechanically superior in handling complex malocclusions. The hybrid approach reported by many respondents may signify an optimal treatment strategy in contemporary orthodontics—combining innovation with foundational principles of tooth movement.

This study is limited by its reliance on self-reported data, which may be subject to bias. The findings, however, are strengthened by the large and diverse sample size (n=378), and the use of validated survey tools and statistical analysis.

CONCLUSION

The findings of this survey highlight a clear and growing preference among orthodontists for clear aligners in managing mild to moderate malocclusions, primarily due to advantages in aesthetics, patient compliance, oral hygiene, and periodontal health. However, fixed appliances remain the modality of choice for complex cases, such as extractions, skeletal discrepancies, and Class III malocclusions, where greater biomechanical control is essential.

The widespread adoption of a hybrid treatment approach further emphasizes the importance of clinical versatility and individualized patient care. These results underscore the evolving landscape of orthodontic practice, where treatment decisions are increasingly influenced by both clinical efficacy and patient-centered factors.

Continued education and clinical experience with aligners are essential to optimize their use, especially in complex scenarios. Further research is warranted to evaluate long-term outcomes and the effectiveness of hybrid treatment protocols.

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