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Original Research Article

A survey on the knowledge and perception of orthodontic clear aligner systems among general dentists

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ABSTRACT

Background and objective of the study: To date, there is no information available on the general dentist's experience with Clear Aligner case selection, type of clinical practice etc. Therefore, the purpose of this survey was to evaluate the knowledge of general dentists in their experience and types of dental malocclusion treated with CA, the patients demand and perception of CA treatment.

Materials and Methods: A structured questionnaire was created to evaluate the knowledge and perception of clear aligner therapy among the general dentists. The study sample comprised of 196 licensed general dental practitioners who had more than 2 years of clinical experience post graduation.

The structured questionnaire included 17 closed ended questions which sought to assess the knowledge and perception of Clear Aligner Therapy among the general dentists.

Results: There is a need for increased education and awareness among general dentists to enhance their knowledge and expertise in providing clear aligner treatment.

Conclusion: Overall, clear aligners have revolutionized orthodontic treatment by offering improved aesthetics, patient acceptance, and quality of life.

1. Introduction

Orthodontics has evolved over the past decades in order to improve the comfort of the patient and the practitioner. Such a development was also accompanied by a significant increase in the aesthetic demands of patients.[1] Technological advances have enabled the evolution of orthodontic appliances with reduced visibility and increased acceptability. Plastic and ceramic brackets, lingual brackets, white-coated wires, and transparent tray aligners were introduced to the market to overcome the esthetic disadvantages of metal brackets.[2]

Clear aligners (CA) have been used in orthodontics since 1946 when Dr. Harold Kesling introduced the use of a series of thermoplastic tooth positioners to obtain tooth alignment. CA treatment has evolved mainly over the last 15 years through new technologies and materials to widen the range of tooth movements. The main advantages of CA treatment are better esthetics with higher patient acceptance and a general better quality of life.[3]

With the recent increase in adults seeking orthodontic treatment, there has been a corresponding increase in demand for appliances that are both more aesthetic and more comfortable than conventional fixed appliances.[4]

CA treatment cause less pain compared to conventional fixed orthodontic treatment and also provides an

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improvement of the gingival and periodontal health.[3] However, there are some significant limitations in treating complex malocclusions, i.e., the limited control of root movement, the intermaxillary discrepancy correction, anterior extrusion, and rotation movement. CA can be provided by both orthodontists and general dentists; however, some significant differences were evinced between the two groups in the use of a CA treatment in their clinical practice.[3]

To date, there is no information available on the general dentist's experience practicing with Clear Aligner case selection, type of clinical practice etc. Therefore, the purpose of this survey was to evaluate the knowledge of general dentists in their experience and types of dental malocclusion treated with CA, the patients demand and perception of CA treatment.

2. Aims

To determine the knowledge and perception of clear aligner orthodontic therapy among the general dentists.

3. Materials and Methods

A structured questionnaire was created to evaluate the knowledge and perception of clear aligner therapy among the general dentists. The study sample comprised of 196 licensed general dental practitioners who had more than 2 years of clinical experience post graduation.

The structured questionnaire, included 17 closed ended questions, was assembled using a Google form, which sought to assess the knowledge and perception of Clear Aligner Therapy among the general dentists.

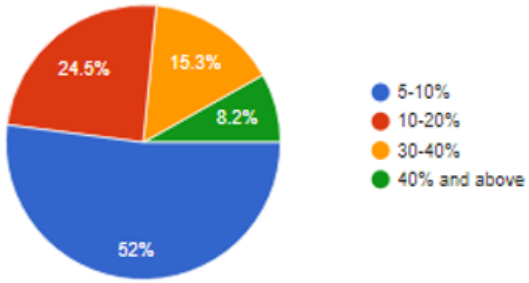
3.1. Data collection

For data collection, the structured questionnaire was distributed to the general practitioners included in the study via WhatsApp and the responses were subsequently recorded.

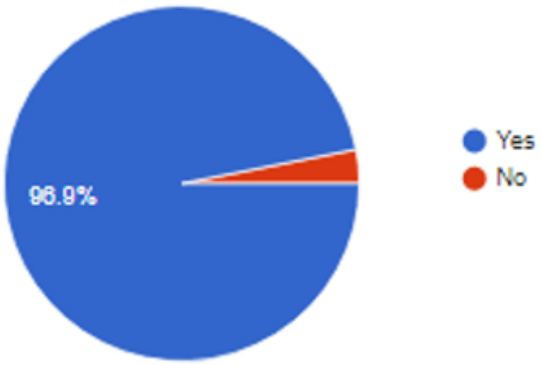
4. Results

According to the data depicted in Graph 1, it can be observed that among the 196 general dentists who participated, 102 of them reported that 5-10% of the patients in their practice enquired about clear aligner orthodontic therapy. Additionally, 48 dentists stated that 10-20% of patients in their practice were interested in clear aligner therapy, while 30 dentists mentioned that 30% of patients in their practice showed interest. Only 16 dentists claimed that 30-40% of patients in their practice enquired about clear aligner therapy in their practice.

As illustrated in Graph 2, majority (96.9%) of general dentists would prefer an orthodontists opinion before starting with an aligner treatment.



Graph 1: In your general practice what is the percentage of patients that enquire about clear aligner therapy ?

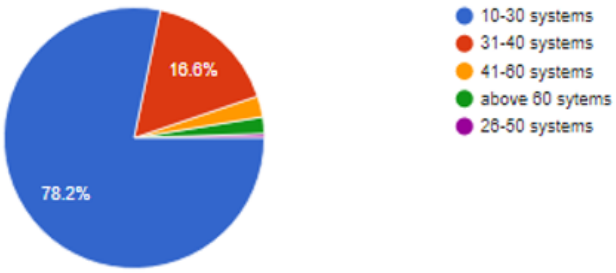


Graph 2: Would you prefer an orthodontist,s opinion, starting with an aligner treatment ?

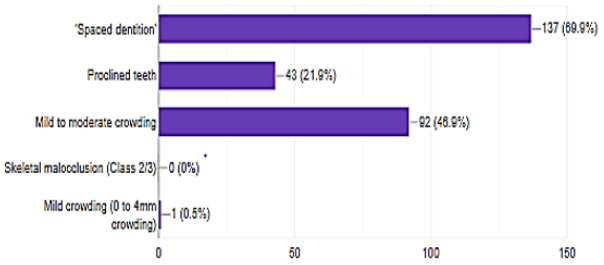
According to the data presented in Graph 3, when it comes to the availability of aligner systems in the Indian market, a majority of general dentists (78.2%) perceive that there are 10-30 aligner systems accessible. However, only a few dentists are aware of the existence of over 60 aligner systems in the market.

As illustrated in Graph 4, majority of the respondents (69.9%) believe that Spaced dentition would be the easiest malocclusion that can be treated with aligners, followed by mild to moderate crowding (46.9%) and then proclined teeth (21.9%). None of the dentists believed that skeletal malocclusion could be treated with aligners.

As depicted in Graph 5, a significant proportion of dentists (54.1%) opted to dispose the aligner trays treating them like medical waste. Meanwhile, 27.3% of dentists preferred to return them to the aligner company, while 9.3% considered keeping them for future use. The remaining 9.3% of respondents indicated a desire to treat the trays as

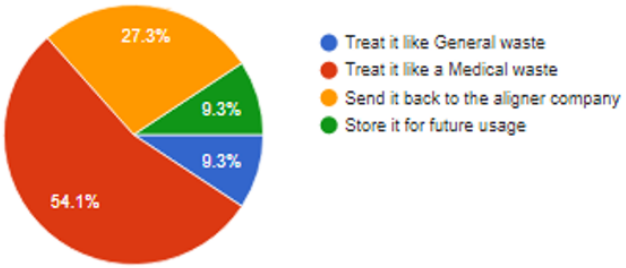


Graph 3: According to you, how many aligner systems are available in the indian market ?



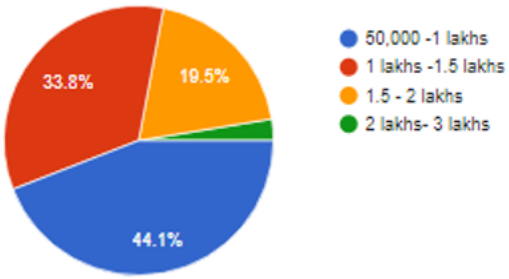
Graph 4: According to you, which malocclusion do you think would be easier to treat with aligners ?

general waste.



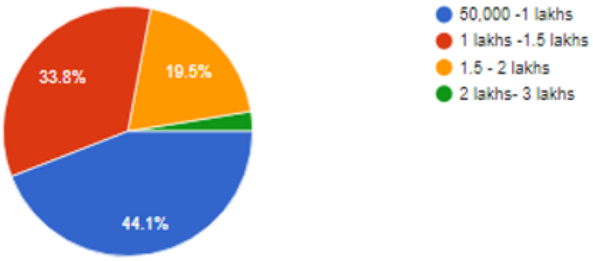
Graph 5: How would you want to dispose your aligner trays ?

As illustrated in Graph 6, regarding the cost of aligner treatment in case of mild to moderate malocclusion, 44.1% of the respondents were of the notion that treatment cost to range between 50,000 - 1 lakh, about 33.8% of the dentists feel the cost to range between 1 - 1.5 lakhs, 19.5% of the dentists percieved the cost to be about 1.5 - 2 lakhs and the rest 2.6% of the dentists thought it would fall between between 1.5 - 2 lakhs.



Graph 6: What, according to you, would be the approximate cost for Aligner treatment in a mild to moderate malocclusion ?

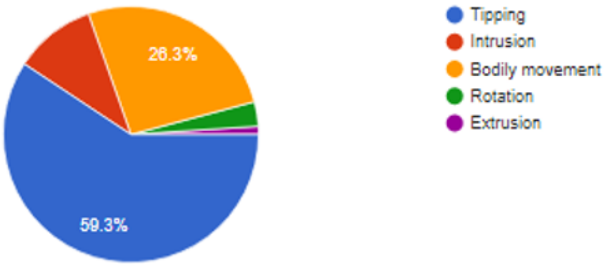
As illustrated in Graph 7, When asked about the appliance that could be less injurious to the periodontium, 78.5% of the General dentists believed Clear aligner therapy to be less injurious to the peridontium and the rest 21.5% felt fixed orthodontic appliance to be less injurious.



Graph 7: What, according to you, would be the approximate cost for Aligner treatment in a mild to moderate malocclusion ?

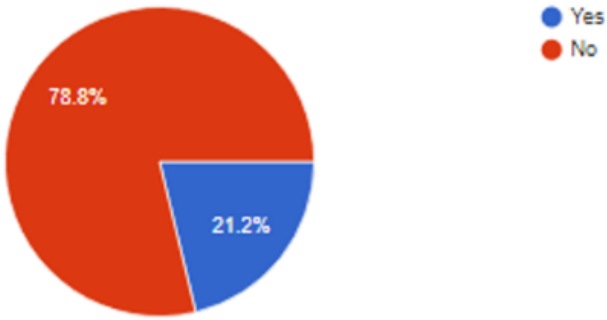
As outlined in Graph 8 with respect to the type of tooth movement that were thought to be less demanding with clear aligners. 59.3% of the general dentists felt tipping to be most straightforward sort of tooth movement that's achievable with aligners, 20.3% of the general practitioners remarked bodily tooth movement being the easiest type of tooth movement that can be accomplished with aligners. 10.3% of the general practitioners remarked intrusion to be the easiest form of tooth movement that can be achieved with aligners. 3.1% of the general practitioners felt intrusion to be the easiest form of tooth movement that could be achieved with aligners. Only 1% of the general practitioners perceived rotation to be the easiest.

As illustrated in Graph 9, majority (78.8%) of the respondents didn't have any knowledge on aligner systems



Graph 8: Which type of tooth movements do you believe is easier to achieve with clear aligner thearapy ?

that has expanders incorporated in its design. 21.2% of the dentists were aware about the aforementioned fact.

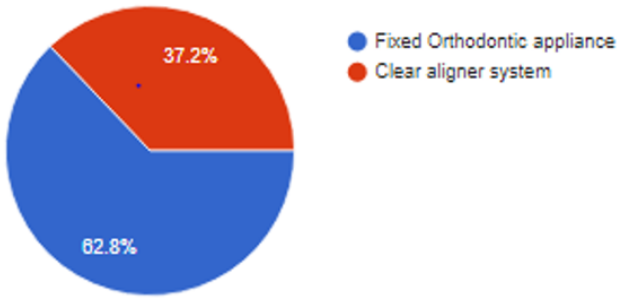


Graph 9: Have you come across any aligner therapy that has expanders incorporated in its design ?

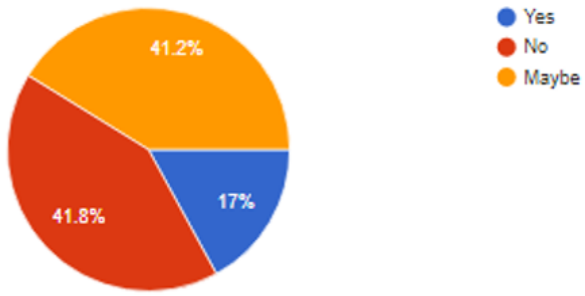
According to the data, 62.8% of the dentists felt that fixed orthodontic treatment is more technique sensitive, while 37.2% of the dentists viewed clear aligner treatment to be the more technique sensitive option. This indicates that a majority of the dentists believed fixed orthodontic treatment to require more technical skill and precision compared to clear aligner treatment.

According to the data presented in Graph 11, it can be seen that 17% of dentists are of the opinion that Fixed orthodontic appliance will no longer be relevant in the coming years. On the other hand, 41.8% of dentists hold the belief that it will not become obsolete. The remaining 41.2% of dentists have not reached a conclusive decision on the matter.

As illustrated in Graph 12, When asked about their preference, out of the total respondents, 86.6% of the dentists opted for aligners that are delivered by an Orthodontist, 11.6% opted for aligners that are delivered by a General dentist.

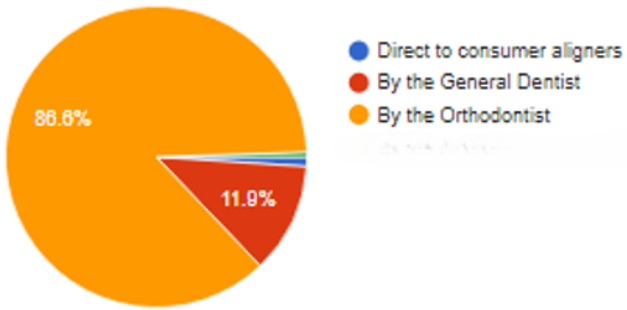


Graph 10: Which out of the given appliance systems, do you think is more technique sensitive ?



Graph 11: Do you believe fixed orthodontic appliance will become obsolete in the upcoming years, with the advent of clear aligner therapy ?

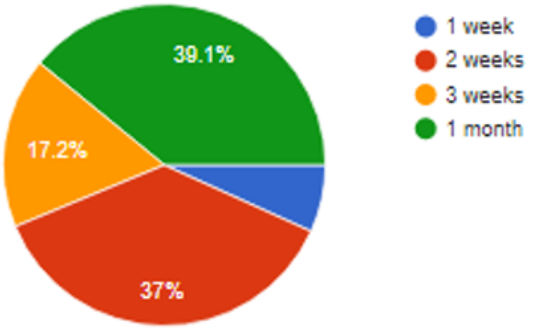
1% of general dentists opted for Direct to consumer aligners and 0.5% opted for in-office aligners.



Graph 12: What would you prefer?

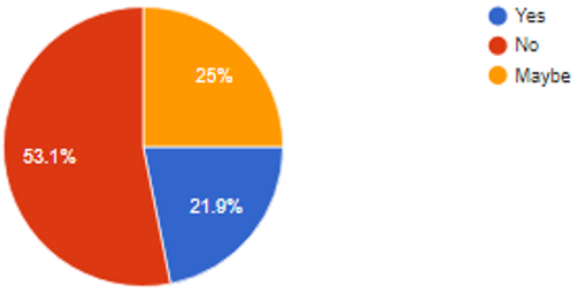
As outlined in Chart 13, 39.1% of the General dentist's assumed that the length of wear for each aligner tray was 1 month, around 37% feel the term of wear to be 2 weeks, 17.2% of the total respondents remarked it to be 3 weeks

and the rest 6.8% thought it to be 1 week.



Graph 13: How long you think the patient has to wear each Aligner tray?

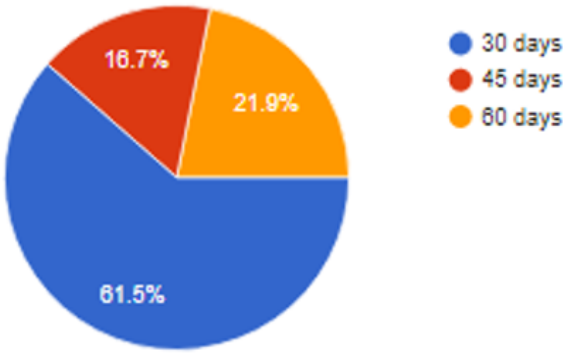
According to the data presented in Graph 14, when considering the impact of clear aligner therapy on a patient's quality of life, 53.1% of general dentists believed that it would not interfere. Conversely, 21.9% of dentists think that it does indeed affect the patient's quality of life. The remaining 25% of dentists have not reached a conclusive decision on this matter.



Graph 14: Will clear Aligner therapy interferes with the quality of a patient ?

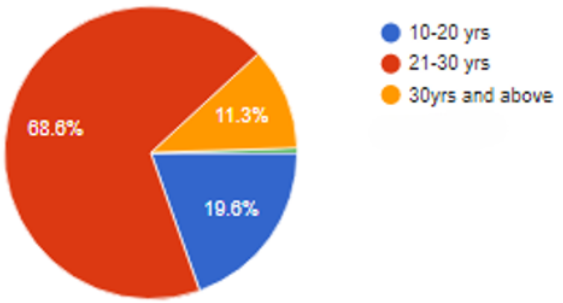
As illustrated in Graph 15, majority (61.5%) of general dentists opted for 30 days to be the follow up protocol for clear aligners. 16.7% of the dentists chose 45 days as the follow up protocol and the rest 21.9% settled for 60 days as the follow up protocol.

As shown in Graph 16, when general practitioners were asked about the age range of patients who inquire about clear aligner therapy, it was found that 68.6% of dentists reported a higher frequency of patients aged 21-30 years showing interest in clear aligner therapy. For 19.6% of dentists, the majority of patients who usually inquire about clear aligner therapy fall within the age group of 10-20 years. The remaining 11.3% of dentists claimed that they have a higher frequency of patients aged 30 years and above



Graph 15: What should be the follow up protocol for clear Aligner therapy

inquiring about clear aligner therapy in their practice.



Graph 16: What age group patients enquire about clear aligner therapy ?

5. Discussion

Over the past decades, orthodontics has undergone significant development aimed at enhancing the comfort of both patients and practitioners. The utilization of clear aligners (CA) in orthodontic treatment dates back to 1946 when Dr. Harold Kesling introduced a series of thermoplastic tooth positioners to achieve tooth alignment.The primary benefits of CA treatment include improved aesthetics, greater patient acceptance, and an overall enhancement in quality of life.[3]

Both orthodontists and general dentists are capable of offering CA treatment; nevertheless, notable distinctions were observed between these two groups regarding the utilization of CA treatment in their clinical practice.[3]

The purpose of this survey was to evaluate the knowledge of general dentists in their experience and types of dental malocclusion treated with CA, the patients demand and perception of CA treatment.

In our study, as depicted in Graph 1, we observed that among the 196 general dentists who participated, 102 general practitioners had approximately 5-10% of their patients inquiring about clear aligner treatment. In contrast, only a small number of dentists (16) claimed that more than 40% of their patients expressed interest in clear aligner treatment. This indicates that a limited proportion of patients approach general practitioners for clear aligner treatment. One possible explanation for this phenomenon could be the patients' accessibility to various social media platforms, which provide awareness about clear aligner therapy and the specialists (Orthodontists) who specialize in this field. As a result, patients are more inclined to seek the services of an orthodontist rather than a general dentist.

CAT was initially introduced to treat minor irregularities of tooth position only. Some aligner systems remain deliberately and explicitly limited to the correction of minor positional irregularities whilst others also claim to target complex malocclusions.[4]

In our study, as illustrated in Graph 1, the majority (96.9%) of the repondents would want to have an Orthodontists opinion before starting with an aligner treatment. The reason could be less confidence in trying a new technique. Also, for the general dentists information about clear aligners is mainly gained through private courses and less from academic seminars, congress lectures, and book chapters or papers in comparison to the orthodontists, who are conversely more related to the academic environment after their postgraduate, as seen from a study by Fabrizia d'Apuzzo et al.[3]

The increase in public awareness of dental aesthetics has led to an increase in the demand for more aesthetic orthodontic treatment methods. This directly corresponds to the observed increase in the number of dental practitioners providing CAT.[5]

Variously marketed, numerous CA orthodontic products now exist worldwide.

In our study we observed that, only a handful of general dentists (2.1%) were aware of the availability of 60 or more aligner systems in the market. This outcome might be very suprising in this day and age. But the reasoning behind it could be very obvious, which is, the fact that rather than the general dentists, Orthodontists are mostly approached by the clear aligner companies for marketing purposes. Hence, the less awareness among the general dentist on different aligner companies.

Initially, CAT (Clear Aligner Technology) was employed primarily for treating simpler malocclusions. However, over successive generations, there has been significant progress in Clear aligner technology. Consequently, aligner systems have evolved to be more specialized and meticulously crafted, focusing on rectifying complex malocclusions. Through this study, we are able to discerne that the majority (69.9%) of the General dentists perceived that spaced dentition would be the easiest malocclusion that can be treated with aligners, followed by mild to moderate crowding and thereafter correction of proclined teeth. However, out of the total respondents, none of the general dentists remarked that Skeletal malocclusion can be treated with aligners. These findings are in accordance with studies done by Jose vincens et al.[6] and Fabrizia d'Apuzzo et al.[3]

A general dentist would perceive, clear aligners not being efficient enough in treating skeletal malocclusions because of the lack of adequate knowledge about the system and also due to the limited use of the appliance in their practice. On the contrary, there are multiple case reports which can substantiate that newer generation Clear aligners are quite efficient in resolving mild to moderate malocclusions.

Due to its aesthetic properties, global markets have seen a surge in aligner demand. The clear aligners market size was estimated at USD 4.7 billion in 2021, globally and from 2022 to 2030 is assumed to grow at a compound annual growth rate (CAGR) of 29.5%. With such an exponential increase in the use of aligners, one also needs to consider the biomedical waste generated by aligners, which would also increase substantially.[7]

In our study, as illustrated in Graph 5, majority of the General dentists (54.1%) wanted to treat the aligners like medical waste. 27.3% of the dentists wanted to send it back to the aligner company. 9.3% of the dentists wanted to store it for future use and finally the rest 9.3% of the general dentists went for treating it like general waste. Aligners are made up of non-biodegradable thermoplastic material especially, Polyethylene Terephthalate which is highly resistant to decomposition. In addition, toxic gases released during combustion like Polychlorinated biphenyls, dioxins, etc. pose a threat to all living organisms when released into the atmosphere. However there are very limited studies regarding aligner waste management in clinical practice. Hence there is a need to create awareness no only among practitioners but also the general population.

Speaking on the expense that usually accompany clear aligner therapy, through this study we were able to gauge what does a general dentist would assume the cost factor to be for Clear aligner therapy. 44.1% of general dentists, as in the majority, believed that the cost of aligner therapy for treatment of mild to moderate malocclusion ranges from Rs 50,000 -1 lakh. Invisalign is the most common clear aligner option that is outsourced. The cost for Invisalign treatment is about Rs 47,000 for five aligners, Rs 98,000 for 14 aligners cases, and Rs 1,45,000 for full cases. For ClearCorrect, the price for five aligners is Rs 32,300, Rs 76,430 for 14 aligners cases, and Rs 1,23,000 for unlimited cases. So majority of the general dentists were nearly correct in assuming or deducing the expense associated with clear aligner therapy.[8]

Since their introduction in 1999, clear aligners have witnessed a growing surge in popularity. Researchers have found that clear aligners not only facilitate proper

oral hygiene but also lower the risk of encountering adverse periodontal complications when compared to fixed appliances.[9] In our study, 78.5% of the general practitioners believed that Clear aligner therapy is less injurious to the periodontium compared to a fixed orthodontic appliance as illustrated in Graph 7. This is in agreement with a study conducted by Karkhanechia et al. who ran a one-year study, comparing the periodontal status between patients treated with fixed appliances and those treated with CAT. They found that patients treated with CAT had increased periodontal status and decreased periodontopathic bacteria as compared to patients treated with fixed appliances.[10]

The results of our study are also in agreement with a study by Rossini et al. who conducted a systematic review to assess periodontal health during CAT. Five articles matched their criteria, and they concluded that, during CAT, there is a significant improvement in periodontal indices, especially as compared to treatment with fixed appliances.[11] On the contrary, The studies by Low et al. and Levrini et al. regarding the quality and morphology of the oral biofilm of patients treated with CAT or fixed appliances stated, respectively, that biofilm starts forming on the raised edges or textural surfaces of the aligners, which can negatively impact the periodontal health of the individual.[12,13]

Clear aligner therapy (CAT) is an accepted mainstay of orthodontic mechanotherapy. In 2009, Kravitz et al. evaluated the accuracy of anterior tooth movement using Invisalign by comparing the predicted and achieved tooth movement and reported a mean overall accuracy of 41%.[14] A recent follow-up to this study by Haouili et al. suggested that the mean accuracy improved to 50% in 2020.[15]

Out of the total general dentists that responded to our survey, 59.3% of the general practitioners had noticed, tipping, to be the easiest kind of tooth movement that can be achieved with aligners and only 1% of the general dentists felt 'extrusion' to be the easiest type of tooth movement achieved with aligners. This is in accordance with a study by Kravitz et al. who had concluded that mesio-distal tipping is the most predictable movement, whereas extrusion and teeth rotations are the hardest movements to achieve.[14]

This indicates that majority of the general practitioners are in a sense familiar with the kind of tooth movements that can be achieved with Clear aligners.

When discussing different additions that can enhance the effectiveness of clear aligners, it is worth mentioning that certain more recent aligner systems include expanders within their design. This inclusion aims to facilitate genuine skeletal transverse modification of the dental arch. But majority of the general dentists (78.8%) were ignorant about aligner systems that had expanders incorporated in its design. The reason for this could be that the amount of patients that are being treated with clear aligners in their general practice are very few indicating the demand might be less and secondly, aligner company representatives do not usually proceed towards General practitioners for marketing their system. Hence there is major gap in the awareness of the aforementioned fact.

Moving on to the appliance that is considered to be technique sensitive. Through our study (Graph 10) we were able to assess that, majority (62.8%) of the general dentists believe that Fixed orthodontic appliance were more technique sensitive compared to clear aligner treatment. The reasoning behind it remains ambiguous as there are limited studies comparing the technique sensitivity between the two systems and also that the parameter of technique sensitivity remains subjective. Also, fixed orthodontic appliance requires bonding of brackets to the teeth along with banding of the molars, which is considered to be a cumbersome process. On the contrary, clear aligners require bonding of few composite attachments on specific tooth making the process more convenient.

Orthodontics, a dynamic and progressive field within dentistry, witnesses continuous advancements. As new techniques and technologies emerge, some older approaches may become outdated while others endure over time.

In 1723, Pierre Fauchard introduced the expansion arch, followed by the development of the Crozat appliance. Charles Tweed introduced the edgewise appliance in 1941, and in 1956, Begg introduced the concept of Differential force. Peter Kesling modified the edgewise bracket to create the Tip-Edge bracket. Dr. Lawrence F. Andrews revolutionized the field with the introduction of the Straight Wire Appliance (SWA), marking the beginning of the preadjusted era. The second generation of preadjusted brackets, known as the Roth prescription, included minimum extraction series brackets suitable for both non-extraction and extraction cases. Bennett, McLaughlin, and Trevisi further modified the standard SWA bracket system to develop the MBT bracket system.

Subsequently, self-ligating brackets were introduced as an alternative to conventional ligation. In recent years, Align Technology pioneered the Invisalign appliance, a digitally-driven orthodontic treatment method based on three-dimensional (3D) technology, introduced in the USA in 1998.

While 17% of dentists (as indicated in Graph 11) predicted the obsolescence of fixed orthodontic appliances in the future, it is important to note that fixed appliances have continuously evolved over time and have proven their durability. The fundamental principles of tooth movement biomechanics remain unchanged, suggesting that outright declaring an appliance as completely obsolete in the coming years may not hold true. Additionally, It is important to note that orthodontic treatment is highly individualized, and the decision between fixed appliances and clear aligners should be made based on the specific needs and goals of each patient. The field of orthodontics is continuously evolving, and both fixed appliances and clear aligners will likely

continue to play significant roles in orthodontic treatment in the foreseeable future.

Patients have traditionally sought treatment from highly qualified orthodontic specialists. However, an increase in nonspecialists providing orthodontic care and the emergence of DTC aligners offers potential patients more provider choices.[16] Through our study (Graph 12) we were able to assess what does a general dentist prefer, when it comes to clear aligner providers. Majority (86.6%) of the general dentists preferred an Orthodontist in this case. Again the rationale behind this remains apparent, since an Orthodontist are the specialists that frequently deal with patients, who want to improve their smile, by bringing about some form of tooth movement and clear aligner therapy is a means of achieving the same.

In the literature, the recommended wearing duration for an aligner tray should be 7 days.[17] Sarah Alansari et al. found that vibrational stimulation for 5 minutes per day can reduce the interval between aligner changes without affecting treatment effectiveness.[18] Through our study (Graph 13) we observed that the majority(39%) of the general dentists opted for 1month to be the duration of wear for each aligner tray. This goes to show that General dentists are not very much cognizant about the duration of wear of the aligner trays, since the acquaintance with the appliance is quite limited, when compared with an Orthodontist.

A study by Sanaa Alami et al,. on the inconveniences caused with the use of aligners by patients. They concluded that patients had pronunciation and speech problems and few patients had difficulty chewing. Few of their patients reported of mucosal injuries. In contrast, On the other hand, some patients their study (13.2%) felt bothered by food accumulation.[19]

Nedwed et al. also reported that 44% of the patients had difficulty chewing, mainly because the teeth were sensitive to pressure or had food particles caught between them due to temporary gaps.[20] So this studies reveal that, clear aligner therapy does in fact interfere with the quality of life of a patient to some degree, however, its not extremely limiting for a patient. In our study (Graph 14), 53.1% of the total respondents concurred that clear aligner therapy wouldn't severely affect the quality of life of a patient.

Orthodontics comprise of tooth movement in the jaw from one position to another to attain esthetics. Burstone in 1962 suggested three phases of tooth movement. They are: Initial phase, Lag phase, Post lag phase. Initial phase occurs immediately after the application of force to tooth. The movement is rapid due to the displacement of tooth in periodontal space. After the initial phase, there is a lag phase in which the movement is minimal or sometimes no movement at all. The reason for this phase is the hyalinization of compressed periodontal ligament. In the lag phase the tooth movement stops for twenty to thirty days and during this time frame all the necrotic tissue is removed along with the resorption of adjacent bone marrow. The third phase is the post lag phase in which the movement of tooth gradually or suddenly increases and is usually seen after forty days after the initial force application. Hence upon initiating orthodontic treatment, almost for all patients the follow up protocol stays 4-6 weeks. In our study (Graph 15), 61.5% of the general dentists believed the follow up protocol to be 30 days for clear aligner treatment which is ideal, the rationale being the 3 phases that accompany orthodontic tooth movement as explained earlier.

In our study (Graph 16), the majority (68.6%) of the General dentists opted for the option of 21-30 yrs age group patients that mostly enquired about clear aligner treatment. This finding is in accordance with the study by Martin Baxmann et al, who concluded that patients seeking clear aligner therapy are usually younger than 35yrs. Usually it is seen that, patients in this age group (21-30yrs) are either self-employed, or employees. In other words, they are independent and are able bear the cost of aligners by themselves.

6. Conclusion

1. General dentists have limited patient demand for clear aligner treatment compared to orthodontists, possibly due to patient awareness and preference for specialist care.
2. General dentists have limited knowledge about the availability of different aligner systems in the market, which can be attributed to less marketing by aligner companies to general practitioners.
3. Clear aligner therapy is effective in treating mild to moderate malocclusions but is perceived as less efficient for treating skeletal malocclusions by general dentists due to limited knowledge and experience.
4. Clear aligners are considered less injurious to the periodontium compared to fixed appliances, and there is a perceived improvement in periodontal health during clear aligner treatment. General dentists are in agreement with this.
5. General dentists have an understanding of the tooth movements that can be achieved with clear aligners but lack awareness of aligner systems with expanders incorporated in their design.
6. Fixed orthodontic appliances are considered more technique sensitive than clear aligner treatment by general dentists, although the comparison is subjective and limited studies exist.
7. Both fixed appliances and clear aligners have their advantages and will likely continue to play significant roles in orthodontic treatment in the future.
8. Patients prefer orthodontists as providers for clear aligner treatment, reflecting the expertise and specialization associated with orthodontic care.

9. General dentists have limited knowledge about the recommended wearing duration for aligner trays, indicating a need for further education on aligner treatment protocols.
10. Clear aligner therapy may cause some inconveniences for patients, such as speech problems, difficulty chewing, and mucosal injuries, but it is not severely limiting to the patient's quality of life.
11. Further research and awareness are needed regarding aligner waste management in clinical practice to address the environmental impact of aligners.

Overall, clear aligners have revolutionized orthodontic treatment by offering improved aesthetics, patient acceptance, and quality of life. However, there is a need for increased education and awareness among general dentists to enhance their knowledge and expertise in providing clear aligner treatment.

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8. Conflict of Interest

None.

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