



**Assessment of Awareness and Perceptions of Healthcare Professionals in Kerala Regarding The Use of Clear Aligners in Orthodontic Treatment**

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**Abstract**

**Introduction:** Clear aligners have been one of the most recent advancements in the field of orthodontics. Increasing demand for aesthetics in orthodontics limitless the use of clear aligners, but knowledge is still lacking among the population including medical professionals. This study aims to evaluate the awareness of health professionals regarding the use of clear aligners in orthodontic treatment.

**Materials and Methods:** A structured questionnaire was created to evaluate the knowledge and perception of clear aligner therapy among the health care professionals. The study sample comprised of 55 medical doctors, 65 dentists (undergraduate doctors), 40 ayurveda doctors, 40 nurses, 11 physiotherapists from Kerala. The structured questionnaire, included 8 closed ended questions, was assembled using a Google form, which sought to assess the knowledge and perception of Clear Aligner Therapy among the health care professionals.

**Results:** A total of 211 professionals responded to the questionnaire, of which 26% were from medical faculty, 31% from dental, 20% from ayurveda, and 20% from nursing, 5% from physiotherapy. On average, the awareness and perception of health professionals regarding the use of clear aligners in orthodontics was average to low. Among all the health professions, the graduates from the dental faculty showed maximum knowledge regarding clear aligners, whereas the awareness amongst the nurses was the least.

**Conclusion:** On assessing the knowledge of health professionals from different faculties in Kerala regarding clear aligners, statistically different results were found for responses from all faculties. Since it is one of the most recent advancements in the field of orthodontics, there is a need to bridge this knowledge gap among health professionals, which would help them guide their patients to seek the best treatment modality at the appropriate age.

**Keywords:** Orthodontics, Awareness, Health Professionals, Clear Aligners.

## Introduction

Clear aligners are a form of removable orthodontic appliance that helps in correcting different forms of malocclusion.<sup>[1]</sup> There are different treatment options to correct malocclusions which include removable orthodontic appliances, fixed orthodontic appliances, myo-functional appliances, orthopaedic appliances and surgical orthodontics.<sup>[2,3]</sup> But the disadvantages of this treatment procedures includes patient discomfort, pain, and masticatory and aesthetic problems.<sup>[4,5]</sup> To overcome these disadvantages, a newer treatment modality named clear aligners was introduced in the field of orthodontics. With the increasing demand for aesthetics, patients desire an aesthetically pleasing alternative to the traditional braces.<sup>[6,7]</sup>

The concept of clear aligners was first introduced in dentistry by Kesling in the year 1945. Kesling proposed the use of clear aligners as positioners to refine the final orthodontic treatment.<sup>[8]</sup> In 1998, Align Technology (Santa Clara, USA) introduced a system called Invisalign.<sup>[9]</sup> This is considered to be an aesthetic alternative to conventional orthodontic treatment which can be used for correction of mild to moderate cases. Later, auxiliary tools integrated with clear aligner treatment were introduced which improved its clinical efficiency, stability and treatment outcome. With the evolution of graphic designing, it was integrated with digital diagnostic tools, programmed virtual treatment plans, and biomechanical designing. A three-dimensional visual interface that allows dentists to customize the treatment plan and monitor the progress to incorporate the modifications as per requirement.<sup>[10,11,12]</sup> The material used in the preparation of clear aligners is polyurethane plastics. The material is transparent hence

it provides excellent aesthetics and, as the aligners are removable, they provide adequate oral health maintenance. Although clear aligners were introduced years back, but they did not gain much popularity in those decades because of a lack of awareness and promotion. With the advances in technology and promotion techniques like social media and digital marketing, the use of clear aligners in orthodontics has gained immense popularity in the last decade.<sup>[13,14]</sup> With advancements in the field of biomechanics, the use of clear aligners has evolved drastically and can be used for various malocclusions.<sup>[15]</sup> However, even though these clear aligners provide several advantages to patients, their efficacy is still debated in the literature. There is a need to increase awareness regarding the use of clear aligners which would enhance its popularity among people who want to seek orthodontic treatment. Spreading awareness improves the state of mind and consciousness of the people, which in turn will help in enhancing oral health.<sup>[16]</sup> In 2022, a study was performed in Saudi Arabia assessing the knowledge of dentists regarding clear aligners which showed moderate awareness and in 2022 similar study was performed in Gujarat, India to assess knowledge among dentists which showed a high level of awareness among them.<sup>[17]</sup> As assessed by a study in Saudi Arabia in 2022, the awareness amongst the general public was also very low.<sup>[18]</sup>

Many studies have been undertaken to assess the awareness of clear aligners amongst different populations including dentists, patients undergoing orthodontic treatment, and the general population, the perception among health professionals is unexplored.

**Aim and Objective:** To determine the knowledge and perception of clear aligner orthodontic therapy among the health care professionals.

**Materials and methods**

A cross-sectional questionnaire-based study was performed. Healthcare professionals from different faculties from Kerala like medical (n=55), dental (n=65), nursing (n=40), ayurveda (n=40) and physiotherapy (n=11) that were invited to participate in the study. The total number of graduates from all the healthcare field was around 211.

Sample size estimation was done with the non-probabilistic sampling method using the formula,

$$n = Z^2_{1-\alpha/2} \times p(1-p) / d^2$$

$$\text{Alpha } (\alpha) = 0.05$$

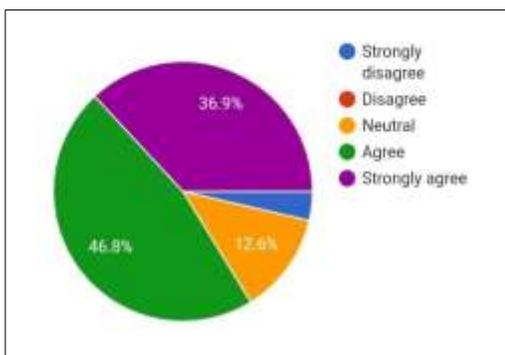
$$\text{Estimated proportion (p)} = 0.50$$

$$\text{Estimated error (d)} = 0.05$$

The minimum sample size needed came to n=211. Accordingly, the sample distribution was medical (n=55), Ayurveda (n=40), dental (n=65), physiotherapy (n=11), and nursing (n=40). The draft questionnaire was formulated consisting of 8 questions. A Google form was created and the link was circulated to all the participants via whatsapp and other social media platform. The responses were marked on the basis of a 5-point Likert Scale where 1=Strongly agree, 2=Agree, 3=Neutral, 4=Disagree, and 5=Strongly disagree.

**Results**

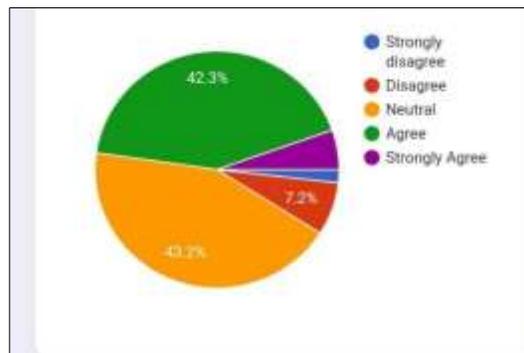
Q1- Can we use clear aligner for orthodontic teeth alignment



83.7 % of the sample population were aware about the option clear aligner for the treatment of malaligned teeth.

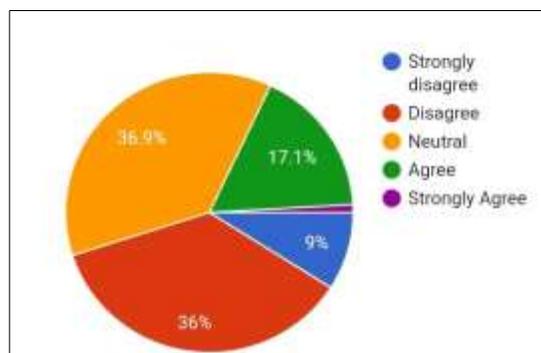
16.3% of sample were not aware of the clear aligner treatment.

Q2- Is clear aligners are better than wires and braces



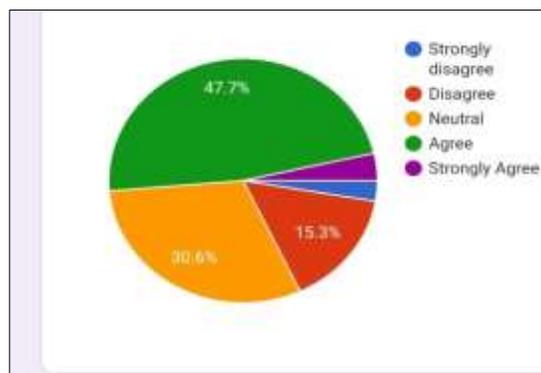
42.3% of sample considered clear aligner as a better option than normal braces.

Q3- Can clear Aligners treats all types of Orthodontic Problems



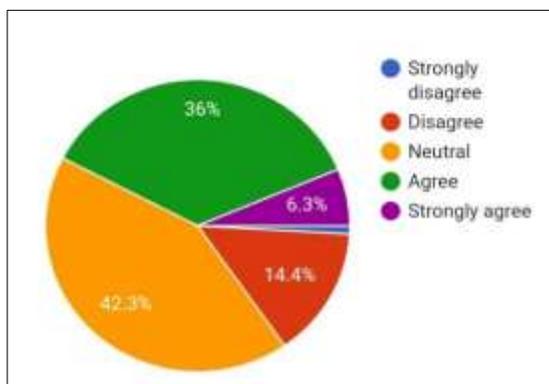
Only 17.1% Of Sample Population Opted Clear Aligner As A Treatment Options for all types of Orthodontic Problems.

Q4- Is there any need to change clear aligners every 2-3 weeks.



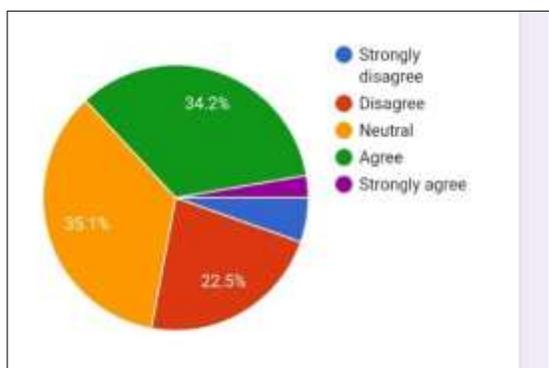
47.7% Commended that Clear Aligner needs to be changed every 2-3 Weeks Interval.

Q5- Are clear aligners completely invisible



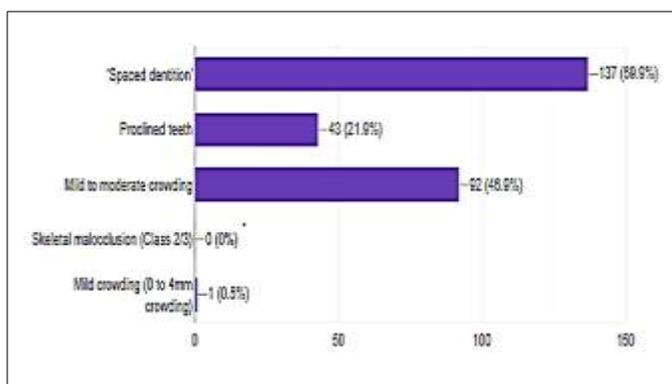
42.2% commended clear aligners are completely invisible, 20.7 disagreed to that statement.

Q6- Can clear Aligners limit the type of food you eat.



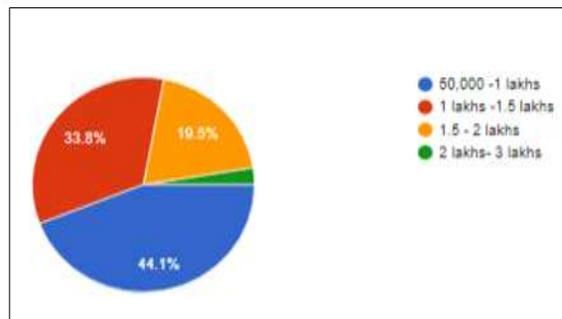
34.2% Commented that clear aligner could bring dietary restrictions during the treatment period.

Q7- According to you, which malocclusion do you think would be easier to treat with aligners ?



Majority (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%).

Q8- What, according to you, would be the approximate cost for Aligner treatment in a mild to moderate malocclusion ?



Regarding the cost of aligner treatment in case of mild to moderate malocclusion, 44.1% of the respondents were of the opinion that treatment cost to range between 50,000 - 1 lakh.

### Discussion

Orthodontic aligner therapy has gained increased recognition within the dental community in the past decade. In the present study, there was a relatively low level of awareness about clear aligners among medical and paramedical professionals. In contrast, dentists (undergraduate dentists) exhibited a significantly higher level of awareness regarding the same.

These findings are consistent with the study conducted by Shivilani et al<sup>[19]</sup> which reported low awareness about clear aligners among graduates in fields such as Ayurveda, physiotherapy, and nursing. However, our findings are in contrast to those of Pawar et al<sup>[20]</sup>, where the majority of participants demonstrated prior knowledge about clear aligners. This discrepancy may be attributed to differences in the demographics of the study populations.

There is a need for more uniform and comprehensive educational strategies to ensure that all healthcare professionals, regardless of their specialty, are well-informed about the latest advancements in orthodontic treatments such as clear aligners.

## Conclusion

On assessing the knowledge of health professionals from different faculties in Kerala regarding clear aligners, statistically different results were found for responses from all faculties. Since it is one of the most recent advancements in the field of orthodontics, there is a need to bridge this knowledge gap among health professionals, which would help them guide their patients to seek the best treatment modality at the appropriate age.

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