



Original Article

Public Awareness and Perceptions of Orthodontic Treatment with Invisalign in Qassim, Saudi Arabia

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ABSTRACT

The Invisalign system offers enhanced hygiene compared to traditional braces. Since the device is removable, it allows patients to maintain their usual oral hygiene routines, thereby reducing the likelihood of problems such as discoloration and decay that are usually associated with fixed braces. The present study aimed to investigate the level of awareness of the general population in the Qassim region about orthodontic treatment using Invisalign. A survey-based study was conducted among the general population of the Qassim region using a convenient sampling method. 200 people were asked to complete a questionnaire. The findings showed that 47% of respondents had undergone orthodontic treatment, with 42% having fixed orthodontic appliances. In addition, 52.5% believed that orthodontic treatment is more appropriate for children aged 7 and 17 years. Among the participants, 96% had visited a dentist, 63% were familiar with Invisalign, and 74.5% perceived its effectiveness to be high. However, most participants had no personal experience with Invisalign treatment, and their overall knowledge about the system was moderate.

Keywords: Perception, Orthodontic, Invisalign, Awareness

Introduction

Dentists have been using clear aligners since the mid-1990s. These aligners are crafted from a transparent, thin plastic material that covers the surfaces of the teeth. Typically, they are worn for a minimum of 20 hours each day and are replaced with a new set every two weeks in a planned sequence [1, 2].

Advancements in orthodontics, particularly over the past decade, have significantly increased the demand for esthetic treatment options. Patients often express a strong desire to collaborate with orthodontists in setting treatment goals, largely influenced by the impact of orthodontic devices on their appearance. Traditional orthodontic methods are commonly associated with aesthetic compromises, leading to apprehension among individuals seeking treatment. To address these concerns, innovative tools and techniques designed to prioritize aesthetics have been integrated into clinical orthodontic practice [3, 4].

The Invisalign system, in particular, offers notable advantages over conventional braces in terms of hygiene. Being a removable appliance, it allows users to maintain their oral hygiene routines without interference, thereby reducing the risks of discoloration and tooth decay commonly observed with fixed braces. Additionally, Invisalign users face fewer dietary restrictions. For instance, they can indulge in sticky sweets or other challenging foods after temporarily removing their aligners, enhancing convenience and overall satisfaction [5, 6].

Numerous studies have examined patients' experiences with Invisalign orthodontic treatment. Research conducted in Germany highlighted a high level of acceptance among patients using aligners. Most individuals required only about a week to adapt, with some experiencing mild discomfort lasting two to three days. Oral mucosal inflammation was generally uncommon. Additionally, speech difficulties were less significant compared to

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traditional linguistic methods. As a result, Invisalign is considered highly suitable for individuals whose professions involve extensive speaking or public representation [7, 8].

Another research focused on periodontal health in Invisalign users, revealing better oral health outcomes compared to individuals with fixed orthodontic braces. Patients with traditional braces demonstrated poorer oral health, although no significant differences were noted between the two groups at the start or during treatment in other aspects [9, 10].

A study from the United States emphasized that Invisalign requires a high level of compliance for effective results, making it primarily recommended for adults. Teenagers with fully erupted permanent teeth (excluding third molars) might also be suitable candidates, provided their compliance has been assessed. However, one major limitation of the Invisalign system is that some patients may not wear the aligners consistently, leading to less effective treatment outcomes [11, 12].

Justification/rationale of the study

Orthodontic treatment serves as a preventive approach in dentistry, aiming to reduce the risk of oral health issues such as gingivitis, dental caries, and periodontitis. Many patients hesitate to pursue orthodontic care due to concerns about aesthetics. However, Invisalign offers a solution to this challenge. Consequently, this study highlights the significance of providing esthetic orthodontic treatment options for patients facing these concerns.

Aim of the study

To assess the level of awareness of the general population in the Qassim region about orthodontic treatment using Invisalign.

Objectives of the study

- To identify the proportion of the general public familiar with Invisalign compared to those who are unaware.
- To evaluate the number of participants currently undergoing Invisalign treatment.
- To outline the factors influencing their choice to pursue or avoid Invisalign as an orthodontic treatment option.

Hypothesis

The general public exhibits limited knowledge and awareness about the use of Invisalign for orthodontic treatment.

Materials and Methods

Study design

A research study conducted among the public in the Qassim region utilized a survey-based approach.

Sample

A convenience sampling method was employed, and 200 individuals were asked to complete the questionnaire.

Inclusion criteria

The study included Saudi individuals living permanently in the Qassim region, aged 15 years and above, from both genders.

Exclusion criteria

This study excluded non-Saudis, temporary residents, and individuals under the age of 15 years.

Study instrument

A questionnaire was created, containing demographic information along with inquiries regarding knowledge about Invisalign, public preferences, and their reasons for choosing or not choosing it.

Statistical analysis

The data were analyzed both descriptively and inferentially using SPSS version 22.

Results and Discussion

A total of 200 individuals participated in the survey, with 86% being Saudis, 88% residents of Qassim, 57% male, and 55% single. In terms of education, 36% had completed high school, and 63% held a bachelor's degree. Employment status revealed that 48.5% were working, 2.5% were retired, 15% were doctors, and 36.5% worked in other professions (**Table 1**).

Table 2 presents the survey responses, showing that 96% of participants had visited a dentist. Of them, 47% had undergone orthodontic treatment, and 42% had received fixed braces. 52.5% believed that orthodontic treatment must occur between the ages of 7 and 17. Additionally, 63% reported familiarity with Invisalign, and 74.5% considered its effectiveness to be high.

Table 1. Demographics of the study participants

Demographics	Frequencies (%)
Nationality	Saudis (86%) Non-Saudis (14%)
Qassim resident	Yes: 88% No: 12%
Gender	Males: 57% Females: 43%
Age (years)	≤ 18: 8.5% 18-24: 36% 25-34: 34% 35-44: 11% ≥ 45: 7.5%
Marital status	Single: 55% Married: 45%
Educational level	Below high school: 5% High school: 36% Diploma: 8% Bachelors: 63% Masters: 4.5% PhD: 0.5%
Job-status	Student: 28.5% Employee: 48.5% Unemployed: 18.5% Retired: 2.5% Others: 0.5%
Job position	Doctor: 15% Other medical: 4.5% Other field: 36.5% Not applicable: 40.5%
Income per month	≤ 1000: 19.5% 1000-3000: 20% 3000-8000: 15.5% 8000-16000: 12.5% ≥ 16000: 9%

Table 2. Survey questions with their responses

Survey questions	Responses (%)
Have you ever had a dental visit?	Yes: 96% No: 4%
Have you undergone orthodontic treatment?	Yes: 47% No: 53%
If yes, what kind of treatment did you undergo?	Fixed: 42% Invisalign: 0.5% Both: 1% None: 25.5%

According to you, what is the ideal age to begin orthodontic treatment?	Below 7 years: 1.5% 7 to 17 years: 52.5% 18 or more: 37.5% Don't know: 8%
Are you familiar with fixed metal orthodontic treatments?	Yes: 65.5% No: 34.5%
If yes, how did you learn about it?	Family: 22% Friend: 12.5% Social media: 8.5% Dentist: 45% Advertisements: 1.5% Others: 8.5%
Are you familiar with translucent trays (Invisalign)?	Yes: 76.5% No: 23.5%
If yes, how did you learn about it?	Family: 7% Friend: 7.5% Social media: 28.5% Dentist: 23% Advertisements: 11.5% Others: 6.5%
How effective do you believe Invisalign treatment is?	High: 74.5% Moderate: 6% Not effective: 0.5% Don't know: 17%
How much do you think Invisalign treatment costs?	High: 60.5% Moderate: 13.5% Same as fixed: 4.5% Don't know: 19%
What is the typical duration for Invisalign treatment?	Long: 15% Longer than fixed: 26% Same as fixed: 23% Don't know: 30%
Is Invisalign appropriate for every type of orthodontic case?	Yes: 5% No: 27.5% Maybe: 38.5% Don't know: 23%
Are you familiar with Invisalign?	Yes: 63% No: 9.5% Maybe: 12% Don't know: 9.5%
Is Invisalign more effective than traditional braces?	Yes: 33.5% No: 8% Maybe: 35% Don't know: 21.5%
Is it possible to transition from traditional braces to Invisalign?	Yes: 23.5% No: 9% Maybe: 35.5% Don't know: 30.5%
Is Invisalign suitable for everyone?	Yes: 11% No: 24% Maybe: 35% Don't know: 27.5%
Does Invisalign cause less discomfort compared to traditional braces?	More painful: 20% Less painful: 13.5% Equal: 8% Maybe: 14% Don't know: 48%
What is the proper way to clean Invisalign?	With water: 19.5%

Toothpaste: 23%
Cup of water: 17%
Don't know: 38.5%

This research aimed to evaluate the understanding and perceptions of individuals living in Al-Qassim regarding the use of Invisalign as a treatment method. A study by Almasoud [13] indicated that patients treated with Invisalign aligners experienced significantly less pain compared to those with traditional metal braces. The discomfort was at its peak within the first 24 hours and gradually decreased by day 7. Additionally, the use of pain relief medications was higher at 24 hours, although fewer patients using Invisalign aligners resorted to painkillers. In contrast, our study found that 20% of participants stated that Invisalign was more uncomfortable than conventional braces.

A study by Pacheco-Pereira *et al.* [14] revealed that patients were overall satisfied with their Invisalign treatment. The most notable improvements were observed in daily activities, with patients providing positive responses to over half of the questions. Negative experiences were not significant enough to outweigh the generally favorable feedback from patients.

In our study, only 33% of participants stated that Invisalign was a superior treatment option compared to traditional braces. Research by Miller *et al.* [15] highlighted significant differences between the two treatments in terms of their impact on patients in the initial stages. Patients using Invisalign reported a higher quality of life compared to those with fixed braces. Several factors play a role in choosing the appropriate orthodontic device. The findings of this study offer valuable information that can assist both orthodontists and patients in making informed decisions about which appliance to select.

It is crucial to recognize the limitations associated with cross-sectional study designs. A primary limitation of this approach is that both the exposure and outcome are assessed simultaneously, making it difficult to establish a time-based relationship between them. Without longitudinal data, it becomes challenging to draw a definitive cause-and-effect connection [16].

Conclusion

In general, most participants had not undergone Invisalign treatment, and their level of knowledge about it was found to be moderate.

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