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## Assessment of Awareness, Knowledge and Perception on Orthodontic Retainers among Patients Undergoing Orthodontic Treatment in a Tertiary Care Dental Hospital – A Cross-Sectional Survey

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### KEYWORDS

Retainer, Awareness, Knowledge, Perception, Relapse

### ABSTRACT:

#### Background:

Retention is a crucial phase in orthodontic treatment to maintain results and prevent relapse. Patient compliance plays a key role in the success of retention, but awareness and perceptions about retainers vary among patients.

#### Objectives:

This study aims to evaluate the level of awareness, knowledge, and perceptions regarding orthodontic retainers among patients undergoing treatment, to help improve patient education and compliance.

#### Material and Methods:

A cross-sectional survey was conducted at tertiary care dental hospital with 213 patients aged 16–35 years. A structured questionnaire was used to assess awareness, knowledge, and perceptions about retainers. The data were analysed using descriptive statistics.

#### Results:

Most patients (88.3%) reported that their orthodontist explained the need for retainers. However, knowledge gaps were evident, with only 58.9% aware of relapse risks and 55.1% understanding the effects of growth and aging. Patients generally had positive perceptions, with high acceptance of wired retainers (90.2%) and support for digital reminders (81.3%). Concerns about discomfort, food restrictions, and speech difficulties were common. Preferences leaned toward removable, non-wire retainers, and many believed that both the patient and orthodontist share responsibility for orthodontic treatment stability and prevention of relapse.

#### Conclusion:

Although patients generally have a positive attitude toward retainers, gaps in knowledge and misconceptions remain. Improving patient education through clear, repeated communication and supportive tools can enhance compliance and help ensure long-term treatment stability.

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## Introduction:

Retention phase represents the one of the most crucial stages of orthodontic treatment, as it plays a decisive role in ensuring that the corrected positions of teeth are maintained for a sufficient duration to allow periodontal and surrounding supporting tissues to reorganize and adapt.<sup>[1,2]</sup> Relapse is multi factorial in nature and is commonly influenced by residual craniofacial growth, periodontal and gingival remodeling, occlusal changes, and continuous soft tissue pressures.<sup>[3,4]</sup> Despite the precision and effort involved in active treatment, orthodontic relapse remains a major clinical challenge that can compromise the long-term stability of results.<sup>[5]</sup> To address these risks, the need for prolonged retention has been strongly emphasized in orthodontic literature and clinical practice.<sup>[6]</sup>

Among the various factors that influence the effectiveness of the retention phase, patient compliance is consistently regarded as the most decisive determinant of long term success.<sup>[7,8]</sup> The effectiveness of retainers depends almost entirely on the extent to which patients adhere to the prescribed usage. However, patient compliance frequently declines over time, particularly after the active phase of orthodontic treatment has been completed.<sup>[5]</sup> This reduction in adherence is often linked to limited patient awareness, inadequate understanding of the biological and clinical significance of retention, and a lack of sustained motivation to follow long-term instructions.<sup>[7]</sup>

These challenges highlight the need for continuous patient education, reinforcement of the importance of retention, and the implementation of strategies that encourage long-term cooperation. For this reason, orthodontists must emphasize the significance of retention as early as the treatment planning stage and include detailed discussion of its necessity in the informed consent process.<sup>[9]</sup> Effective communication at the onset can help patients develop realistic expectations and reinforce the idea that retention is not a temporary phase but rather an essential, ongoing component of orthodontic care.

Research consistently demonstrates that patients who are well educated and adequately counseled regarding the purpose and importance of retainers show significantly higher levels of adherence, thereby achieving better long-term treatment

stability.<sup>[10,11]</sup> Conversely, insufficient awareness and poor attitudes toward retention increase the likelihood of irregular retainer use, ultimately leading to relapse and dissatisfaction with treatment outcomes. Therefore, evaluating patients' base line knowledge, awareness, and perceptions about orthodontic retention is of great importance. Such an evaluation not only highlights potential gaps in understanding but also provides orthodontists with valuable insight to design targeted educational programs and motivational strategies. Strengthening patient education can significantly improve compliance, minimize the risk of relapses, and contribute to the long-term success of orthodontic treatment.

Therefore, the present study aims to assess the level of awareness, knowledge, and perception among patients regarding orthodontic retainers, which would further guide orthodontists in providing effective patient education and motivation for improving compliance with post-orthodontic retention.

## Material and methods:

### Study Design

This research was designed as a cross-sectional survey to assess the level of awareness, knowledge, and perception regarding orthodontic retainers among patients undergoing orthodontic treatment.

### Study Setting

The study was conducted at a tertiary care dental hospital that caters to a large and diverse patient population.

### Sample Size and Duration

The required sample size was calculated using statistical methods and determined to be 214 participants, based on a study power of 80% and 95% confidence interval. The study was conducted over a period of three months.

### Inclusion and Exclusion Criteria

- Inclusion criteria: Patients aged 16–35 years who were undergoing orthodontic treatment and were willing to provide informed consent.
- Exclusion criteria: Patients with psychological disorders



or intellectual disabilities, to ensure reliable responses and minimize bias.

Study Tool

A structured questionnaire was specifically developed for this study. It was rigorously tested for reliability and validity prior to administration. The questionnaire consisted of 23 close-ended questions designed to comprehensively assess awareness, knowledge, and perception regarding orthodontic retainers.

Ethical Considerations

Ethical clearance for the study was obtained. Before administration of the questionnaire, participants were informed about the objectives of the study, and written informed consent was obtained. Participation was entirely voluntary, confidentiality of responses was

Results

assured, and participants were informed of their right to withdraw at any stage without prejudice.

Data Collection

The questionnaire was administered electronically using Google Forms, which ensure efficient data collection, minimized manual entry errors, and allowed direct electronic storage of responses for accuracy and uniformity.

Statistical Analysis

The collected data was compiled and analyzed using IBM SPSS Statistics, Version 21.0. Descriptive statistics, including frequencies and percentages, were used to summarize the responses. The results were presented in both tabular and graphical formats to provide a clear and comprehensive representation of the findings.

Table 1: Questions on knowledge and awareness regarding retainers among patients

Questions	Yes	No	No Idea
	N (%)		
Does your Orthodontist explain to you about the need to wear retainer appliance after Orthodontic Treatment? (Q1)	189(88.3%)	25(11.7%)	-
Do you know about the additional gum procedures carried out to enhance the maintenance of corrected tooth position after treatment? (Q19)	76(35.5%)	138(64.5%)	-
Do you think teeth can move back to their original position after orthodontic treatment?(Q3)	126(58.9%)	35(16.4%)	53(24.8%)
Do you think that the grow than daging can alter the corrected tooth position (Q4)	118(55.1%)	27(12.6%)	69(32.2%)
Are you aware that you will require retainers in both upper and lower teeth after treatment?(Q5)	125(58.4%)	36(16.8%)	53(24.8%)
Do you think all orthodontic patients need to wear retainers?(Q6)	98(45.8%)	24(11.2%)	92(43%)
Do you know about different types of orthodontic retainers?(Q8)	87(40.7%)	93(43.5%)	34(15.9%)
Do you think it's possible to choose your own retainer(Q12)	71(33.2%)	36(16.8%)	107(50%)



88.3% reported that their orthodontist explained the need for retainers, hence showing good professional communication. (Q1) Only 35.5% were aware of gum procedures to maintain correction – indicating a gap in awareness. (Q19) 58.9% were aware that teeth can move post-treatment (Q3); about 25% had no idea, showing partial understanding. 55.1% recognized growth/ageing can change tooth position with moderate

awareness. (Q4) 58.4% knew retainers are needed for both jaws. (Q5) Only 45.8% believed all patients needed them, while 43% had no idea highlighting a knowledge gap. (Q6) Nearly 40.7% of participants were aware of different retainers while majority of them were unaware. (Q8) 50% felt they cannot choose retainers themselves, showing reliance on orthodontists. (Q12)

**Table 2A:**

**Questions on perception regarding retainers among patients**

Questions	Yes	No	No Idea
	N (%)		
Acceptance of wired retainers(Q11)	193(90.2%)	21(9.8%)	-
Annoyance of appliance after treatment(Q18)	140(65.4%)	74(34.6%)	-
Acceptance of minor gum procedure after treatment (Q20)	159(74.3%)	55(25.7%)	-
Mobile app to remind on retainers (Q22)	174(81.3%)	40(18.7%)	-
Retainer would be painful(Q15)	126(58.9%)	54(25.2%)	34(15.9%)
Food restriction(Q16)	145(67.8%)	39(18.2%)	30(14%)
Hindrance of speech(Q17)	123(57.5%)	58(27.1%)	33(15.4%)

90.2% showed high acceptance over wired retainers. (Q11) 65.4% found appliances were annoying after treatment. (Q18) 74.3% would accept a minor gum procedure after treatment indicating positive perception. (Q20) 81.3% welcomed a mobile application as a reminder to wear retainers. (Q22) 58.9% expected retainers to be painful, indicating fear/misconception.

(Q15) 67.8% anticipated food restrictions as a common concern after wearing retainers. (Q16) 57.5% expected difficulties in speech (Q17) While patients are willing to accept retainers, they anticipate discomfort, restrictions, and annoyance. They are receptive to supportive tools like mobile applications.

**Table 2B:**

**Questions on perception regarding retainers among patients**

Questions	Options	Percentage
	Not important	8(3.7%)



Importance on long lasting result from orthodontic treatment (Q2)	Less important	25(9.8%)
	Extremely important	185(86.5%)
Different types of retainers (Q7)	Essix Retainer	99(46.3%)
	Essix Retainer; Hawley Retainer	21(9.8%)
	Essix Retainer; Hawley Retainer; Bonded Retainer	31(14.5%)
	Essix Retainer; Bonded Retainer	10(4.7%)
	Hawley Retainer	31(14.5%)
	Hawley Retainer; Bonded Retainer	5(2.3%)
	Bonded Retainer	17(7.9%)
Preference on retainers (Q9)	Removable	141(65.9%)
	Fixed	73(34.1%)
Preference on retainer appliance (Q10)	Retainer with Wire component	60(28%)
	Retainer without Wire component	154(72%)
Responsibility for retention (Q21)	Orthodontist	24(11.2%)
	Patient	33(15.4%)
	Both	157(73.4%)
Mobile app-interval store mind on wearing retainers (Q23)	Daily	141(65.9%)
	Weekly	39(18.2%)
	Monthly	34(15.9%)

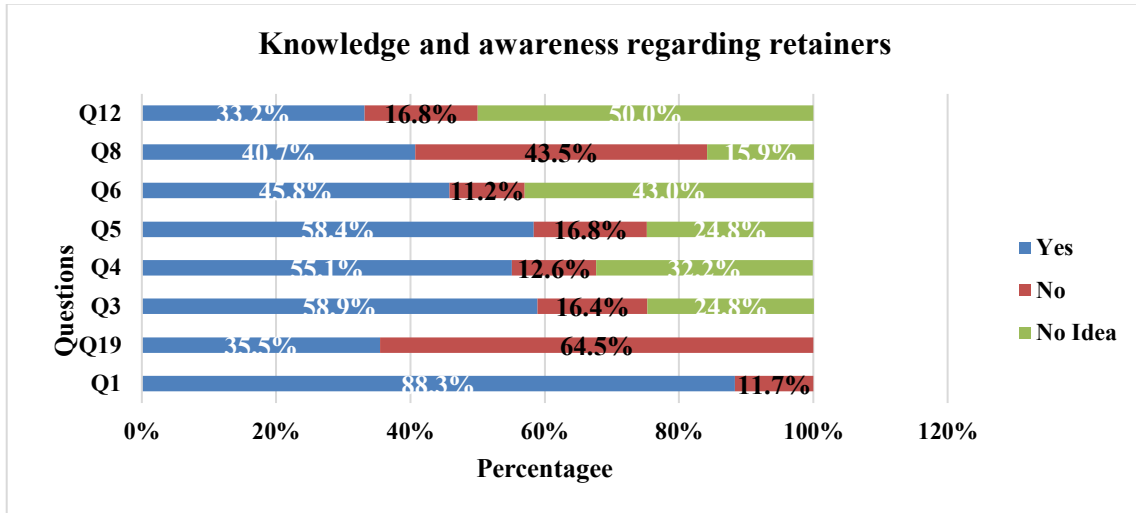
86.5% considered retainers extremely important for long-lasting results. (Q2) Most favored Essix retainers (46.3%); fewer preferred Hawley or bonded retainers. (Q7) 65.9% preferred removable over fixed. (Q9) 72% preferred retainers without wire, which could be an aesthetic concern. (Q10) Majority (73.4%) felt both patient and orthodontist share responsibility in

maintaining retention of tooth movement. (Q21) 65.9% preferred daily reminders through mobile application for continual usage of retainers. (Q23) Patients prioritize aesthetics, convenience, and shared responsibility. They strongly prefer removable, non-wire retainer spandex pact orthodontists to guide them while also taking personal responsibility.



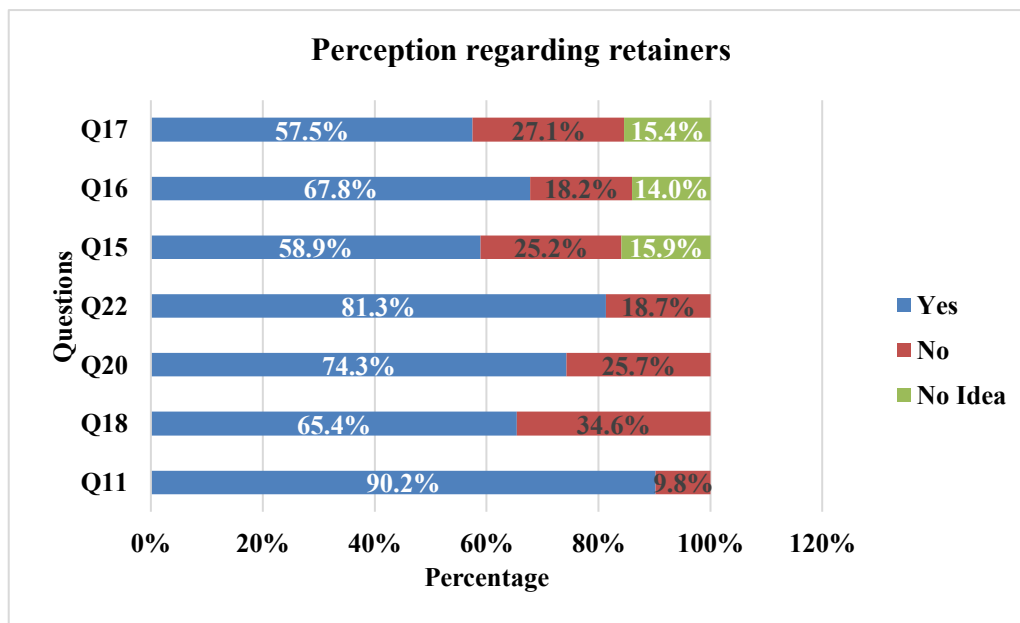
Graph 1:

Questions on knowledge and awareness regarding retainers among patients



Graph 2A:

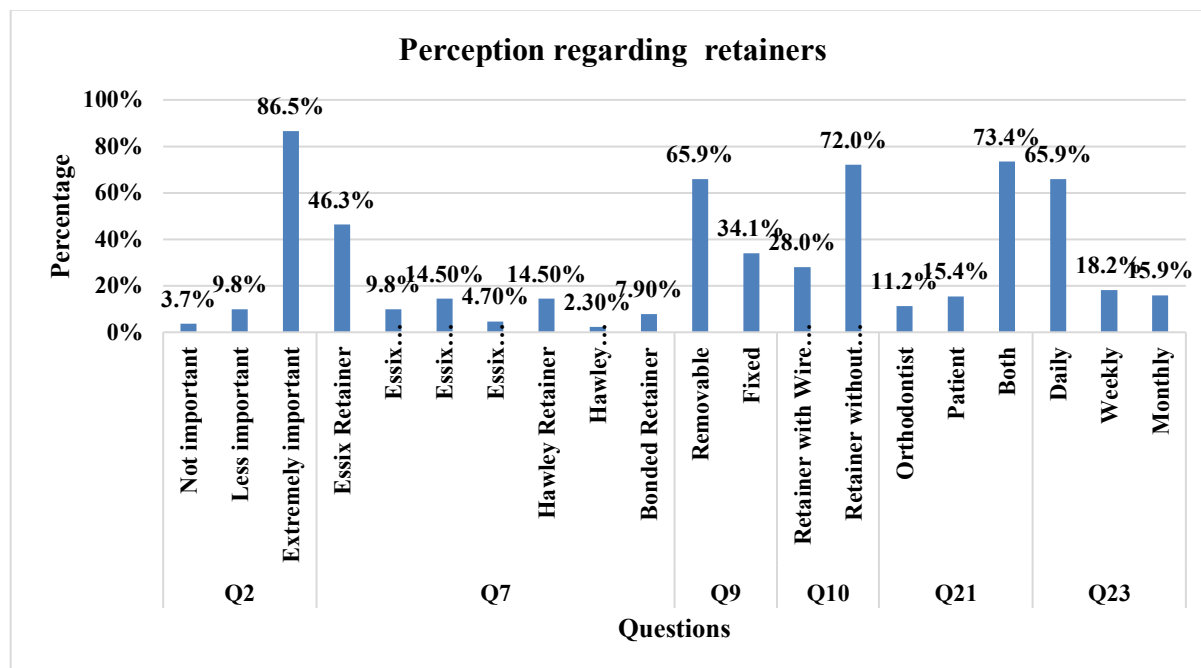
Questions on perception regarding retainer among patients





Graph2B:

## Questions on perception regarding retainers among patients



## DISCUSSION:

The present study was undertaken to evaluate the level of awareness, knowledge, and perception regarding orthodontic retainers among patients undergoing orthodontic treatment at a tertiary care dental hospital. Retention has long been established as a crucial phase of orthodontic treatment, as it prevents relapses and ensures the long-term stability of corrected tooth positions.<sup>[1,2]</sup> Among the various factors influencing retention, patient compliance has consistently been identified as the most decisive determinant of success.<sup>[3,4]</sup> The findings of this study provide valuable insights into the current level of patient understanding while highlighting the notable gaps that, if unaddressed, may compromise retention outcomes.

A key finding was that most patients (88.3%) reported receiving an explanation regarding the importance of retainers from their orthodontist, reflecting satisfactory communication practices in the clinical setting. Nevertheless, a considerable proportion of patients retained only partial or inaccurate knowledge. For example, only 58.9% of respondents were aware of the risk of relapse post-treatment, and just 55.1%

understood the influence of aging and growth on tooth stability.

Similar trends have been observed in previous studies, where patients demonstrated incomplete comprehension of long-term retention protocols despite professional counselling.<sup>[5,3,6]</sup> These findings emphasize the necessity of reinforcing retention-related education at multiple stages of orthodontic treatment rather than limiting discussions to its conclusion. Knowledge gaps were also evident regarding the types of retainers and the universal requirement for retention. Only 40.7% of participants were aware of the different retainer options, and 43% were uncertain whether all orthodontic patients require retention.<sup>[7-9]</sup> Since poor awareness can directly undermine compliance, structured and simplified educational strategies, possibly involving visual aids or written material, may be more effective in conveying this information. Patient perceptions revealed generally favorable attitudes toward retention, with 90.2% willing to wear wired retainers and 74.3% accepting minor gum procedures to enhance stability.

However, concerns related to discomfort, food restrictions, speech difficulties, and pain were



frequently reported, which could negatively impact adherence.<sup>[8,10,11]</sup> 81.3% of participants supported the use of mobile applications as reminders for retainer wear, aligning with emerging literature on the effectiveness of digital health tools in improving orthodontic compliance.

Aesthetic considerations also played a substantial role, with 72% preferring retainers without visible wires and 65.9% favoring removable over fixed retainers.<sup>[14,15]</sup> While removable retainers are generally more esthetic and convenient, they rely heavily on patient cooperation, whereas fixed retainers provide more reliable outcomes regardless of compliance.<sup>[16,17]</sup> This underscores the importance of balancing patient preferences with clinical judgment to ensure both adherence and stability of treatment. Interestingly, 73.4% of patients believed that the responsibility of maintaining retention should be shared between the orthodontist and the patient, reflecting a collaborative attitude while highlighting the necessity for sustained professional follow-up and reinforcement strategies.<sup>[1,18]</sup>

Overall, the findings reinforce the critical importance of patient education, motivation and the integration of supportive tools such as digital reminders to improve compliance. While patients generally express positive perceptions toward retainers, the identified gaps in knowledge and misconceptions highlight the need for orthodontists to adopt comprehensive, patient-centered communication approaches that are simple, repetitive, and reinforced at different stages of treatment.

#### Limitations:

The present study was cross-sectional in design and relied on self-reported responses, which may be influenced by recall or social desirability bias.

#### Future Directions:

Future research should prioritize the integration of mobile applications as supportive tools in the retention phase. Such platforms can provide structured reminders, patient education, and adherence monitoring, thereby enhance compliance and contribute to improved long-term treatment stability.

#### Conclusion:

While patients acknowledge the importance of retainers, notable misconceptions remain, particularly concerning food restrictions, speech difficulties, and

discomfort. Misunderstandings, often influenced by social media or peer experiences rather than professional guidance, may reduce compliance despite overall acceptance. This highlights the need for orthodontists to provide structured, consistent, and patient-centered education to dispel myths and strengthen informed decision-making.

The strong acceptance of mobile application-based reminders highlights a promising strategy to enhance compliance. By providing timely reminders, accessible education, and corrective information, mobile apps can effectively address misconceptions, improve adherence, and support long-term treatment stability. Integrating such digital tools into routine orthodontic practice offers a practical and impactful approach to optimizing post-treatment outcomes.

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