

## Evaluation Of Patient Satisfaction On Different Removable Retainers: A Questionnaire Survey

Ms. Alfena Fathima M, Dr. Santhosh Kumar, Dr. M. S. Rami Reddy

(Department Of Orthodontics, Adhiparasakthi Dental College And Hospital)

(Department Of Orthodontics, Adhiparasakthi Dental College And Hospital)

(Department Of Orthodontics, Adhiparasakthi Dental College And Hospital)

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### Abstract

**Background:** Patient satisfaction plays a crucial role in the success of orthodontic retention. Removable retainers such as Hawley's and Essix retainers are commonly prescribed, yet patient-reported outcomes regarding comfort, speech, aesthetics, and durability remain variable.

**Aim:** To comparatively evaluate patient satisfaction with Hawley's and Essix removable retainers using a questionnaire-based survey.

**Materials and Methods:** A questionnaire-based comparative study was conducted among 50 patients undergoing orthodontic retention therapy. Participants were divided into two groups based on the type of retainer used: Hawley's retainer (n = 25) and Essix retainer (n = 25). The questionnaire assessed speech comfort, swallowing, aesthetics, fit, oral hygiene maintenance, overall satisfaction, and retainer breakage. Descriptive statistics were used, and association between retainer type and breakage was analyzed using the Chi-square test.

**Results:** Most participants belonged to the 15–25-year age group. Females constituted the majority in both groups. Essix retainer users reported better speech comfort and ease of swallowing compared to Hawley's users. Satisfaction with fit was higher among Essix users (84.6%) than Hawley's users (69.2%). Oral hygiene maintenance was challenging in both groups. Overall satisfaction was high for both retainers. Retainer breakage was significantly higher in the Hawley's group (69.2%) compared to the Essix group (38.5%), with a statistically significant association ( $p = 0.026$ ).

**Conclusion:** Both retainers demonstrated high overall patient satisfaction; however, Essix retainers showed superior comfort in speech, swallowing, fit, and durability. Hawley's retainers exhibited higher breakage rates, suggesting the need for careful case selection and patient instruction.

**Keywords:** Orthodontic retention, Essix retainer, Hawley retainer, patient satisfaction, questionnaire survey

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### I. Introduction

Orthodontic treatment aims to achieve optimal dental alignment, functional occlusion, and improved facial aesthetics. While advances in orthodontic techniques have significantly improved treatment outcomes, maintaining these results remains a major clinical challenge. Following active orthodontic treatment, teeth exhibit a natural tendency to relapse toward their pre-treatment positions due to periodontal ligament elasticity, soft tissue pressures, occlusal forces, and continued growth-related changes<sup>1-3</sup>. Consequently, the retention phase is universally recognized as a critical component of comprehensive orthodontic care.

Retention appliances are designed to stabilize corrected tooth positions while allowing sufficient time for reorganization of periodontal and gingival tissues<sup>4</sup>. Among the various retention modalities available, removable retainers continue to be widely prescribed because they are cost-effective, easy to fabricate, adjustable, and allow better access for oral hygiene compared with fixed retainers<sup>5</sup>. However, the success of removable retainers is highly dependent on patient compliance, which in turn is strongly influenced by patient satisfaction<sup>6</sup>.

The Hawley retainer has historically been regarded as the gold standard removable retainer. Its acrylic baseplate and labial wire design permit occlusal settling and minor post-treatment adjustments, offering flexibility in clinical management<sup>7</sup>. Despite these advantages, Hawley retainers have been associated with several patient-related concerns, including speech difficulty, discomfort during swallowing, and compromised aesthetics due to the visibility of wire components<sup>8,9</sup>.

In recent decades, vacuum-formed retainers (VFRs), commonly referred to as Essix retainers, have gained increasing popularity. Fabricated from thin thermoplastic materials, Essix retainers closely adapt to the dentition, providing superior aesthetics and reduced bulk<sup>10</sup>. These characteristics have been shown to enhance patient acceptance and compliance, particularly among adolescents and young adults who place high value on appearance<sup>11</sup>.

Nevertheless, Essix retainers are not without limitations. Studies have reported issues related to durability, wear, deformation, and potential challenges in maintaining oral hygiene due to complete tooth coverage<sup>12,13</sup>. As both Hawley and Essix retainers possess distinct advantages and disadvantages, evaluating patient satisfaction with these appliances is essential for evidence-based retainer selection.

Patient satisfaction is a multidimensional concept encompassing functional comfort, aesthetic perception, fit, ease of maintenance, durability, and overall experience<sup>14</sup>. Questionnaire-based surveys provide valuable insight into these subjective parameters, complementing clinical evaluations and aiding clinicians in understanding patient preferences and expectations<sup>15</sup>.

Therefore, the present study was conducted to comparatively evaluate patient satisfaction with Hawley's and Essix removable retainers using a questionnaire survey, focusing on speech comfort, swallowing comfort, aesthetics, fit, oral hygiene maintenance, overall satisfaction, and retainer breakage.



**Fig 1 Hawley's Retainer Maxilla And Mandible**

**Fig 2 Essix Retainer Maxilla And Mandible**

## **II. Materials And Methods**

**Study design and ethical approval:** This questionnaire-based comparative cross-sectional study was conducted among orthodontic patients who had completed active treatment and were in the retention phase of more than 3 months in the "Department of Orthodontics and Dentofacial Orthopedics of Adhiparasakthi Dental college and Hospital, Melmaruvathur". Ethical approval was obtained prior to the initiation of the study, and informed consent was obtained from all participants.

**Study population:** A total of 50 patients were included and divided equally into two groups based on the type of removable retainer used:

Group I: Hawley's retainer users (n = 25)

Group II: Essix retainer users (n = 25)

### **Inclusion criteria**

Patients who had completed fixed orthodontic treatment  
Patients currently wearing removable retainers  
Patients under retainers for more than 3 months  
Patients willing to participate and complete the questionnaire

### **Exclusion criteria**

Patients using fixed or bonded retainers  
Patients with speech, swallowing, or neuromuscular disorders  
Patient who didn't undergo any orthognathic surgeries  
Patients unwilling to participate

### **Questionnaire design:**

A structured questionnaire was designed to assess patient satisfaction across seven domains commonly reported in orthodontic retention literature<sup>16-18</sup>:

- Comfort during speech
- Ease of swallowing fluids
- Satisfaction with retainer appearance
- Satisfaction with retainer fit
- Ability to maintain oral hygiene
- Overall satisfaction with the retainer
- History of retainer breakage

Responses were recorded using predefined categorical options to allow descriptive and comparative analysis using “google forms” and circulated among the participants.

**Demographic data:** Demographic variables including age and sex were recorded. Age was categorized into three groups: below 15 years, 15–25 years, and above 25 years.

**Statistical analysis:** Data were tabulated and analyzed using descriptive statistics. Frequencies and percentages were calculated for all variables. The association between retainer type and retainer breakage was assessed using the Chi-square test, with statistical significance set at  $p < 0.05$

### III. Result

#### Demographic analysis:

##### Age distribution:

**Table 1**

Age group	Hawley’s Retainer	Essix Retainer
Below 15 years	2 (7.7)	4 (15.4)
15–25 years	20 (76.9)	14 (53.8)
Above 25 years	4 (15.4)	8 (30.8)

Most participants in both groups were aged 15–25 years, with a higher proportion in the Hawley’s group (76.9%) compared to the Essix group (53.8%). Participants above 25 years were more common among Essix retainer users (30.8%) than Hawley’s users (15.4%). The youngest age group (<15 years) constituted a small proportion in both groups. Overall, the age distribution showed variability between the two retainer types.

The majority of participants in both groups belonged to the 15–25 years age group, indicating that young adults constituted the predominant study population. Females formed a higher proportion of participants in both groups, consistent with previous reports of higher orthodontic treatment uptake among female patients<sup>19</sup>.

##### Sex distribution:

**Table 2**

Sex	Hawley’s Retainer	Essix Retainer
Female	16 (61.5)	14 (53.8)
Male	10 (38.5)	12 (46.2)

Females constituted the majority of participants in both retainer groups. The proportion of females was slightly higher among Hawley’s retainer users (61.5%) compared to Essix retainer users (53.8%). Male participants accounted for 38.5% and 46.2% of Hawley’s and Essix retainer users, respectively. The sex distribution was relatively comparable between the two groups.

#### Analysis of Questionnaire results

##### 1. Speech Comfort While Wearing the Retainer:

**Table 3**

Level of comfort	Hawley’s Retainer	Essix Retainer
Comfortable	8 (30.8)	10 (38.5)
Uncomfortable	14 (53.8)	3 (11.5)
Very uncomfortable / Very comfortable	4 (15.4)	13 (50.0)

More than half of the Hawley’s retainer users reported difficulty with speech, with 53.8% reporting discomfort. In contrast, **a higher proportion of Essix retainer users reported better speech comfort**, with 50.0% reporting being very comfortable. The proportion reporting discomfort was considerably lower in the Essix group (11.5%). These findings indicate differences in speech comfort between the two retainer types. The reduced bulk and absence of wire components in Essix retainers may explain this finding.

##### 2. Ease of swallowing fluid:

**Table 4**

Level of comfort	Hawley’s Retainer	Essix Retainer
Comfortable	8 (30.8)	10 (38.5)
Uncomfortable	14 (53.8)	3 (11.5)
Very uncomfortable / Very comfortable	4 (15.4)	13 (50.0)

Among Hawley’s retainer users, more than half (53.8%) reported discomfort while swallowing fluids. In contrast, half of the Essix retainer users (50.0%) reported being very comfortable during swallowing. Only

11.5% of Essix retainer users reported discomfort. Overall, **ease of swallowing appeared to be better among Essix retainer users**. Difficulty in swallowing fluids was more commonly reported among Hawley retainer users. Essix retainer users experienced fewer swallowing-related complaints, suggesting **improved functional adaptation**.

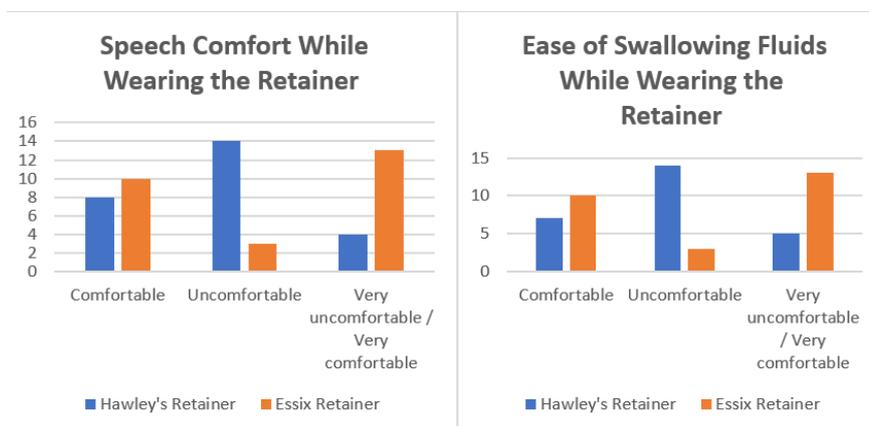


Fig 2 Speech Comfort And Ease Of Swallowing Bar Chart Representation

3. Satisfaction with Appearance of the Retainer:

Table 5

Level of satisfaction	Hawley's Retainer	Essix Retainer
Comfortable	15 (57.7)	17 (65.4)
Uncomfortable	6 (23.1)	8 (30.8)
Very comfortable	5 (19.2)	1 (3.8)

More than half of participants using Hawley's retainers were comfortable with the appearance (57.7%). A slightly higher proportion of Essix retainer users reported comfort with appearance (65.4%). However, dissatisfaction was reported by 23.1% of Hawley's users and 30.8% of Essix users. **Very high satisfaction was more frequently reported among Hawley's users.**

4. Satisfaction with fit:

Table 6

Level of satisfaction	Hawley's Retainer	Essix Retainer
Comfortable	18 (69.2)	22 (84.6)
Uncomfortable	7 (26.9)	3 (11.5)
Very comfortable	1 (3.8)	1 (3.8)

Most participants in both groups were satisfied with the fit of their retainers. Comfort with fit was higher among Essix retainer users (84.6%) compared to Hawley's users (69.2%). Only a small proportion in both groups reported being very comfortable with the fit. Overall, **Essix retainers showed better fit satisfaction**. Satisfaction with retainer fit was higher among Essix retainer users. The close adaptation of thermoplastic material to the dentition may enhance comfort and perceived stability<sup>20</sup>.



Fig 3 Satisfaction With Appearance And Fit Of The Retainer Bar Chart Representation

5. Ability to Maintain Oral Hygiene with the Retainer:

Table 7

Level of comfort	Hawley's Retainer	Essix Retainer
Comfortable	9 (34.6)	8 (30.8)
Uncomfortable	14 (53.8)	13 (50.0)
Very uncomfortable / Very comfortable	3 (11.5)	5 (19.2)

More than half of participants in both groups reported difficulty in maintaining oral hygiene. Discomfort was reported by 53.8% of Hawley's users and 50.0% of Essix users. Comfort levels were similar between the two groups. These findings suggest **comparable challenges in oral hygiene maintenance with both retainers**. This highlights a common challenge associated with removable retainers, regardless of design<sup>21</sup>

6. Overall satisfaction:

Table 8

Level of satisfaction	Hawley's Retainer	Essix Retainer n (%)
Comfortable	22 (84.6)	19 (73.1)
Uncomfortable	1 (3.8)	3 (11.5)
Very comfortable	3 (11.5)	4 (15.4)

The majority of participants in both groups reported being comfortable overall. Overall comfort was higher among Hawley's retainer users (84.6%) compared to Essix retainer users (73.1%). Very high satisfaction was reported slightly more often in the Essix group. **Overall satisfaction levels were high for both retainer types.**

7. Retainer breakage:

Table 9

Breakage	Hawley's Retainer	Essix Retainer n (%)
Yes	18 (69.2)	10 (38.5)
No	8 (30.8)	16 (61.5)

Retainer breakage was reported more frequently among Hawley's retainer users. The association between retainer type and breakage was found to be statistically significant ( $p = 0.026$ ), indicating a **higher susceptibility to fracture or deformation in Hawley retainers**.

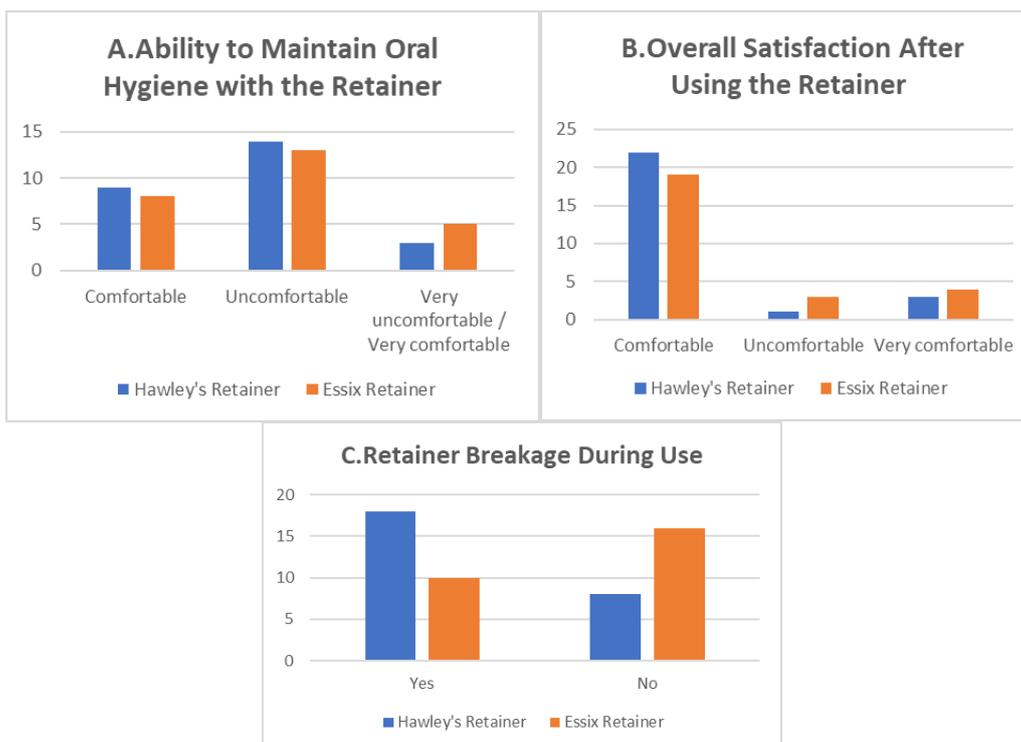


Fig 4 Bar Chart Representation  
 A. Maintaining Oral Hygiene B. Overall Satisfaction  
 C. Retainer Brekage

#### IV. Discussion

Retention is a critical determinant of long-term orthodontic success, and patient satisfaction plays a pivotal role in ensuring compliance<sup>22</sup>. The present study provides a comprehensive comparison of patient satisfaction between Hawley's and Essix removable retainers, incorporating functional, aesthetic, and durability-related factors. The superior speech comfort observed with Essix retainers aligns with previous studies reporting reduced interference with tongue movement due to minimal appliance bulk<sup>10, 11</sup>. Speech difficulty associated with Hawley retainers has been attributed to acrylic coverage of the palate and the presence of labial wires. Ease of swallowing was also greater among Essix retainer users. Functional comfort during swallowing is essential for daily retainer wear, particularly in patients advised to wear retainers for extended durations<sup>23</sup>. Aesthetic satisfaction was high in both groups, though Essix retainers demonstrated a slight advantage. Aesthetics have been shown to significantly influence patient compliance, especially among younger individuals and adults in professional settings<sup>20, 24</sup>. Satisfaction with retainer fit was higher among Essix users, which may contribute to improved comfort and reduced appliance movement. However, challenges related to oral hygiene maintenance were evident in both groups, emphasizing the need for patient education regarding retainer cleaning protocols<sup>21</sup>. The significantly higher breakage rate observed with Hawley's retainers is consistent with previous reports highlighting acrylic fracture and wire distortion as common causes of appliance failure<sup>25</sup>. While Essix retainers may undergo wear over time, their lower reported breakage rates may enhance patient confidence and compliance.

Overall, both retainer types demonstrated acceptable levels of patient satisfaction. However, Essix retainers showed advantages in functional comfort, aesthetics, fit, and durability, suggesting that they may be better suited for patients prioritizing comfort and appearance.

#### V. Conclusion

Both Hawley's and Essix removable retainer's demonstrated high patient satisfaction during the retention phase of orthodontic treatment. Essix retainers exhibited superior performance in terms of speech comfort, ease of swallowing, fit, and reduced breakage rates. However, oral hygiene challenges were common to both retainer types. Individualized retainer selection based on patient preferences, lifestyle, and clinical considerations is recommended to optimize compliance and long-term treatment stability.

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