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Original Research Article

Invisible Orthodontics: Ceramic appliance vs Lingual appliance -A patient perception survey

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ABSTRACT

Aim: The aim of the study was to analyse variations in patients' perception on oral health, aesthetic acceptance, pain perceptions and comfort levels in patients who has undergone/undergoing orthodontic treatment by means of two types of invisible orthodontic appliances: fixed lingual metal brackets and fixed buccal aesthetic/ceramic brackets.

Materials and Methods: A comparative survey to assess the patient perception after their initial levelling alignment phase was created via Google form and sent to 25 ceramic labially treated and 25 lingually treated patient.

Results: Comfort level, pain perception, speech impediment ,quality of life in patients was significantly better in Ceramic brackets as compared to lingual (p=0.001),Aesthetic perception was significantly higher impact on ceramic (p=0.001) as 72% reported no impact on aesthetics with lingual brackets as compared to 4% in the ceramic brackets. Oral hygiene maintenance: The difference on impact of Oral hygiene maintenance was statistically non- significant between ceramic brackets and lingual brackets (p=0.238).Difficulty while having food was statistically non- significantly between ceramic brackets and lingual brackets.(p=0.448).

Conclusion: Patients prefer lingual treatment cause of their esthetic nature and their expectations are higher with lingual treatment which itself is not favorable from a clinicians perspective and it is worth noting that speech disturbances may lead to greater social embarrassment than more or less invisible ceramic brackets.

1. Introduction

Orthodontic treatment has evolved significantly in recent years with the introduction of invisible orthodontic appliances, which aim to provide effective teeth alignment while minimizing the impact on patients' daily lives. Two popular options are fixed lingual metal brackets and fixed buccal aesthetic/ceramic brackets.[1–3] This study aimed to analyse variations in patients' perceptions of oral health, aesthetic acceptance, pain perception, and comfort levels after undergoing orthodontic treatment with these two types of invisible orthodontic appliances.

2. Materials and Methods

A comparative survey was conducted to assess patient perceptions after the initial levelling and alignment phase of their orthodontic treatment. The survey was created using Google Forms and was distributed to 25 patients who received ceramic (labially treated) brackets and 25 patients who received lingual (lingually treated) brackets. The survey included questions related to comfort level, pain perception, speech impediments, quality of life, aesthetic perception, oral hygiene maintenance, and difficulties with food consumption. Descriptive statistics was obtained from google form. The chi square test was used to investigate significant difference between groups. The whole set of

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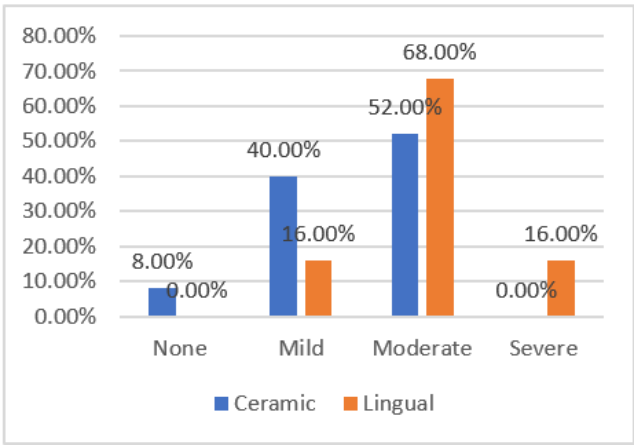
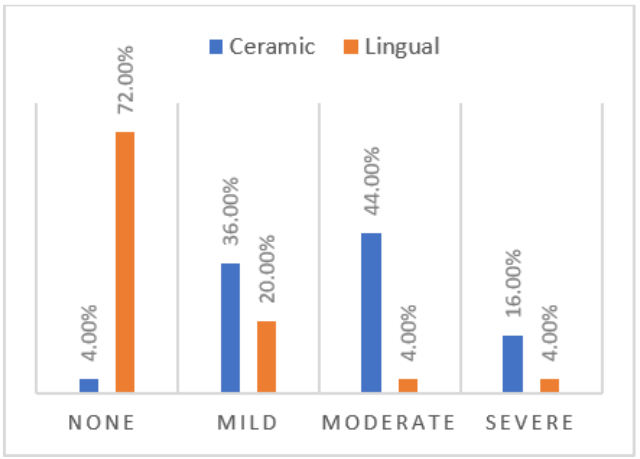
data was entered into MS Excel prior to statistical analysis (P-value 0.05 was regarded as statistically significant). To better understand the statistically significant difference, all findings are presented in tabular and graphical formats.

3. Results

3.1. Statistical analysis

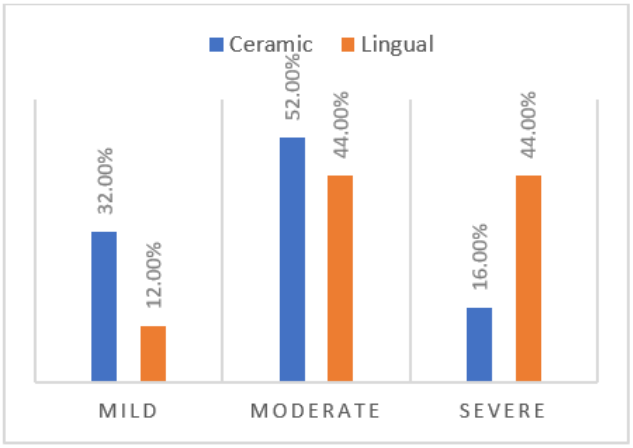


Graph 1: Impact of treatment modality on problem with comfort level

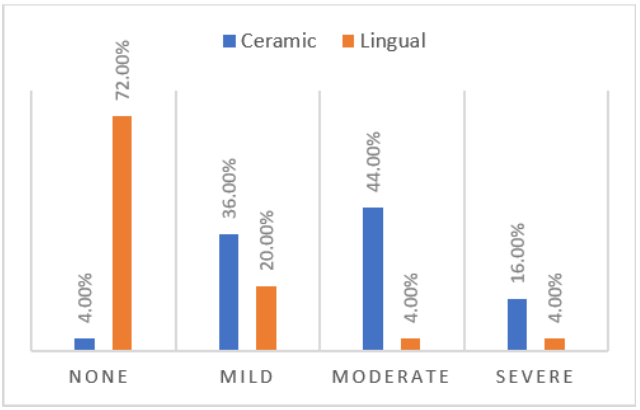


Graph 2: Impact of treatment modality on pain perception

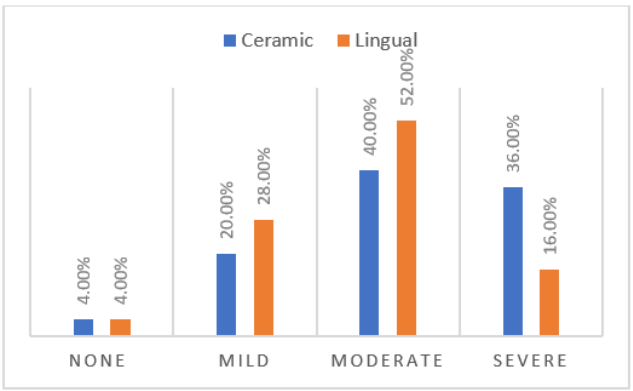
The provided table and graphs presents statistical data on various measured parameters in two groups: the Ceramic Group and the Lingual Group, with percentages across different levels of severity (None, Mild, Moderate, High).



Graph 3: Impact of treatment modality on difficulty in speech



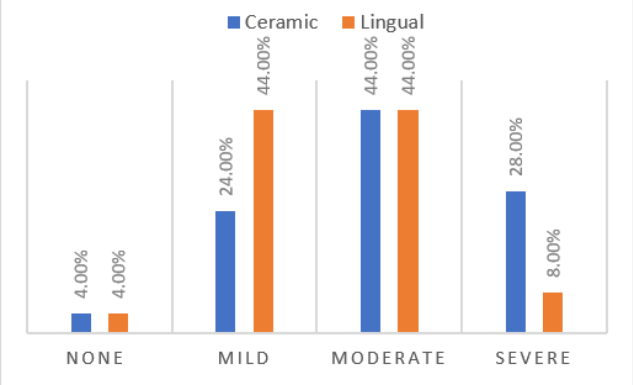
Graph 4: Impact of treatment modality on aesthetic



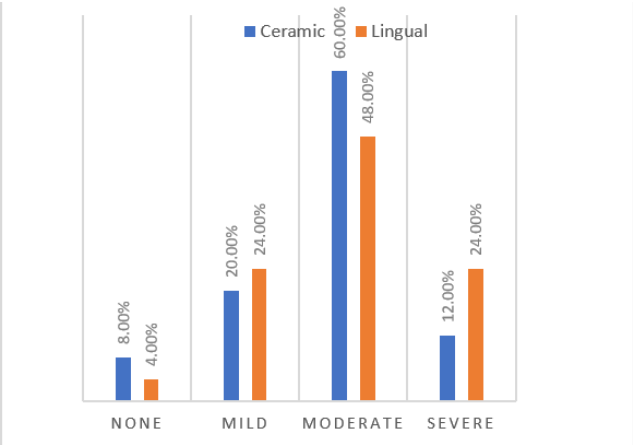
Graph 5: Impact of treatment modality on difficulty in having food

Table 1: Statistical data on all the measured parameters in survey (In Percentage)

Parameters	Ceramic Group				Lingual Group			
	None	Mild	Moderate	High	None	Mild	Moderate	High
Comfort level	8	40	52	16	0	16	68	16
Pain	4	36	44	14	72	20	4	4
Difficulty in speech	o	32	52	16	0	12	44	44
Aesthetics	4	36	44	16	72	20	4	4
Food	4	20	40	36	4	28	52	16
Oral hygiene maintenance	4	24	44	44	4	44	44	8
Quality of life	8	20	60	12	4	24	48	24



Graph 6: Impact of treatment modality on oral hygiene maintainance



Graph 7: Impact of treatment modality on quality of life

4. Key Observations

The Lingual Group generally experiences higher levels of pain and difficulty in speech compared to the Ceramic Group.

The Ceramic Group tends to have higher percentages in comfort level, aesthetics, and quality of life.

Both groups have similar patterns in food preferences, oral hygiene maintenance, and aesthetics.

These results suggest that there are notable differences between the two groups in terms of comfort, pain, speech difficulties, aesthetics, food preferences, oral hygiene maintenance, and overall quality of life. The choice between ceramic and lingual options may depend on individual priorities and preferences related to these parameters.

5. Discussion

In a comprehensive study comparing the experiences of patients treated with ceramic brackets versus lingual brackets in orthodontic therapy, several key findings emerged[7]. Notably, patients undergoing treatment with ceramic brackets reported significantly higher levels of comfort and considerably decreased pain perception compared to their counterparts with lingual brackets, as indicated by a p-value of 0.001. This suggests that ceramic brackets may offer a more comfortable and less painful orthodontic experience for patients.

Furthermore, the study revealed that patients with ceramic brackets experienced much less speech impairment and reported a higher quality of life throughout their orthodontic therapy journey. These outcomes underscore the potential advantages of ceramic brackets in terms of speech and overall well-being during treatment.

Aesthetic considerations also played a significant role in the study's findings. Patients with ceramic brackets were found to have considerably higher aesthetic ratings (p=0.001) compared to those with lingual brackets. Notably, a striking 72% of patients with lingual brackets reported no impact on aesthetics, while only 4% of ceramic bracket patients made the same observation. This suggests that ceramic brackets may be a preferred choice for individuals who prioritize the aesthetic aspects of their orthodontic treatment.[4–7]

However, when it came to oral hygiene maintenance, there was no statistically significant difference between

ceramic and lingual brackets (p=0.238), indicating that both types of brackets can be equally manageable in terms of maintaining oral hygiene.[8]

Lastly, in terms of difficulties with food consumption, the study found no significant disparity between patients with ceramic and lingual brackets (p=0.448). This suggests that neither type of bracket significantly impedes a patient's ability to consume food comfortably.[9–13]

6. Conclusion

In summary, this study highlights the advantages of ceramic brackets over lingual brackets in terms of comfort, pain perception, speech impediment, quality of life, and aesthetic perception. However, both types of brackets appear to be equally effective in terms of oral hygiene maintenance and food consumption. These findings provide valuable insights for both orthodontic practitioners and patients when considering the choice of bracket type for orthodontic treatment.[14–17]

7. Source of Funding

None.

8. Conflict of Interest

None.

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