



Original Research Article

A survey to assess the knowledge and attitude of adults from the age group of 18 to 35 Years towards comprehensive orthodontic treatment - A questionnaire based study on adult orthodontics

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ABSTRACT

Introduction: Facial appearance has proved to play a key role in social and psychosocial settings. With the advances in Orthodontics, patients have become more aware about the possibility of correcting malocclusions via Braces. Adults however, face some roadblocks before making a confident decision. Understanding these concerns would help provide optimum treatment to such patients.

Aim: To assess the knowledge and attitude of Adult patients towards Orthodontic treatment

Materials and Methods : A sample of 205 participants was taken (155 Female and 50 Male) after assessing the sample size within the age group of 18 - 35 year of age. A Questionnaire was created on Google forms and circulated to participants using various social media platforms. The data of responses of participants was analyzed on Google forms application itself with the help of pie charts and graphs.

Results : Majority of the participants, both with or without braces asserted that age was not a barrier in getting orthodontic treatment done. They also suggested that it was never too late to undergo Orthodontic treatment and that it could be carried out at any age. Majority of the participants, both treated and non-treated cases also believed that Orthodontic treatment improved function and enhanced the Facial appearance. Participants also believed that Orthodontic treatment would boost their confidence and in no way, would wearing braces affect them socially.

Conclusion : This survey based questionnaire helped in assessing the attitude of the general adult population towards adult Orthodontic treatment as a whole. It concluded that age is not a barrier in today's times for getting orthodontic treatment done. Moreover, Adult Orthodontics not only improved the function, but also the Aesthetics and Self Esteem of the Adult patient undergoing treatment thus eliminating the earlier notion that Braces can be worn only up till a particular age. Prolonged treatment time was one of the causes of reluctance in many participants; however, the other benefits outweighed the time related inconvenience caused by orthodontic treatment.

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1. Introduction

Orthodontics is a widely sought out treatment branch today. Good facial aesthetics boosts self -esteem and confidence when interacting with peers. Misaligned teeth have the potential of seriously affecting facial aesthetics. The benefits

of orthodontic treatment outweigh the inconvenience caused by the procedure by such a large margin that adults have been readily seeking the treatment. Malocclusion in adults can be a result of deteriorating periodontal health as well. Periodontitis can lead to mobility of teeth and consequent drifting. While periodontal procedures can successfully treat the gingiva, orthodontics is needed to align the teeth in the most favorable positions. Hence, interdisciplinary treatment

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yields better results.

With increasing need of Orthodontic treatment in adults and increased awareness, several roadblocks have been observed. These roadblocks pertain to the patient's financial conditions, length of the treatment time, fear or failure of treatment etc. Evaluation of such parameters is required to better understand such patients and devise treatment plans, keeping these concerns in mind. Knowing patients expectations regarding treatment in order to adapt them to the real therapeutic possibilities, considerably increases the chances of satisfaction with the final results.¹

There are some distinct differences between orthodontics for the adult and for the child. There are psychosocial aspects that must be considered as well as the physiological parameters while treating adults. The psychosocial aspects include the reaction of others to the patient and the patient's reaction to himself, namely self-image. Facial esthetics is an important determinant of self and social perceptions.² Information about the limitations and possibilities of orthodontic treatment, which may differ from those of younger patients, should be provided to these patients.³ This, in turn, requires accurate estimation of the patients' perceptions toward treatment.³ Therefore, it is necessary to investigate the motivation of patients for seeking orthodontic treatment and to analyze the barriers preventing them from starting orthodontic treatment according to different age groups. According to Mahajan M et al, on assessing different factors which motivated adults to seek orthodontic treatment, most of the patients realized the need for the orthodontic treatment in adult age only followed by the fact that adult patients were mostly unhappy about their dental appearance in perception of their smile before treatment which motivated them to seek treatment at this age.² Kim Y et al found that the middle-aged had a relatively high percentage of interest (above 45%) in orthodontic treatment. However, demographic characteristics were not significantly associated with the positive interest. These results highlighted the need for educating the middle-aged about the limitations and possibilities of orthodontic treatment to increase its acceptance.³ Tayer et al concluded that the negative concerns and fears the patients had about their course of treatment were soon dissipated. Perseverance toward the treatment goal was an overriding characteristic of every patient, and satisfaction with the end result was uniformly favorable. These patients would encourage all others to undergo treatment if it was required.⁴

This questionnaire based survey has been designed to evaluate the attitude of adults towards orthodontic treatment and assess the level of motivation amongst various patients towards Adult Orthodontics.

2. Aim

To assess the knowledge and attitude of Adult patients towards Orthodontic treatment.

3. Objectives

1. To assess the different motivational factors which lead to adults seeking orthodontic treatment.
2. To assess if increased age is a barrier in seeking orthodontic treatment.
3. To assess the positive or negative attitude of patients towards adult orthodontics.
4. To assess the difference in attitudes between patients who have and who have not undergone orthodontic treatment.

4. Materials and Methods

A cross sectional study was conducted over duration of 3 months. An online questionnaire was prepared using Google forms. Appropriate permission was taken from the Scientific Advisory committee and Institutional ethics committee.

4.1. Inclusion criteria

1. Adults in the age group of 18 to 35 years
2. Adults with any kind of malocclusion
3. Patients with varying degrees of overjet or overbite

4.2. Exclusion criteria

1. Patients with age group below 18 or above 35
2. Patients with cleft lip and palate
3. Patients with other Craniofacial anomalies
4. Patients with medical disorders

4.3. Estimated Sample size

138

4.4. Actual Sample Size

205

Sample size calculation:

Recommended sample size is: 138

The sample size (n) is calculated according to the formula: $n = [z^2 * p * (1 - p) / e^2] / [1 + (z^2 * p * (1 - p) / (e^2 * N))]$

Where: z = 1.96 for a confidence level (α) of 95%, p = proportion (expressed as a decimal), N = population size, e = margin of error.

$z = 1.96, p = 0.5, N = 51, e = 0.05$

$n = [1.962 * 0.5 * (1 - 0.5) / 0.052] / [1 + (1.962 * 0.5 * (1 - 0.5) / (0.052 * 51))]$

$n = 384.16 / 2.8325 = 137.523$

$n \approx 138$

The sample size (with finite population correction) is equal to 138

Results from OpenEpi, Version 3, open source calculator–SSPropor

4.5. Input data

Confidence Interval (2-sided) 95%

Power 80%

Ratio of sample size (Group 2/Group 1)

	Group 1	Group 2	Difference*
Mean	36	25.33	10.67
Standard deviation	25.29	18.88	
Variance	639.584	356.454	

Sample size of Group 1 - 69

Sample size of Group 2 - 69

Total estimated sample size - 138

4.6. Method

A Google form of the questionnaire was created to assess the attitude of adults towards orthodontic treatment. The questionnaire along with a brief synopsis explaining the aims and objectives of the study was sent to the relevant ethical clearance committees.

After receiving clearance from the Scientific Advisory Committee and the Institutional Ethics Committee, the questionnaire was circulated amongst the participants.

The participants were approached by the principal investigator and co-investigators via personal connections and Whatsapp groups. The aims and objectives of the study were explained in a message accompanying the online questionnaire link. Informed consent was taken from all the participants before solving the questionnaire. Timely reminders were sent as well. The participation was completely voluntary and all the participants had an option of opting out of the study whenever desired.

The questionnaire was divided into two groups, those who had undergone orthodontic treatment in the past and those who had not. Each group was exposed to a different set of questions. This division was made to understand the difference in perception between those who had undergone orthodontic treatment in the past and those who had not. The people who have had treatment in the past were asked about their initial motivation for the treatment and its effect on their self-esteem. The other group was asked whether they feel that they should have undergone orthodontic treatment at a younger age. At the end of their questions, both the groups were asked if they would be willing to undergo orthodontic treatment at their current age. Their answers were analyzed based on their past treatment experience.

4.7. Questionnaire

After some questions about the informed consent, gender and age the following questions were asked:

Table 1:

Are you undergoing or have you undergone treatment in the past?*

Participants with History of Braces

At what age did you get your orthodontic treatment done?

What motivated you to get your treatment done?

Do you feel that orthodontic treatment has improved your self-esteem and quality of life?

Do you feel age is a barrier in getting orthodontic treatment done?

Would you recommend orthodontic treatment to other people of your age?

If you hadn't undergone treatment in the past, would you be willing to get treatment now at your current age?*

Participants with No History of braces

Do you think you should have undergone treatment when you were younger?

Do you feel it is too late to undergo orthodontic treatment?

Would you be willing to get braces?*

Participants Willing to get braces

What would be your reason for getting braces?

Do you feel increased age is a barrier in undergoing orthodontic treatment?

Are you worried that the appearance of the braces would affect you socially?

Do you feel that braces treatment will boost your confidence?

Participants Not willing to get braces

Do you feel increased age is a barrier in undergoing orthodontic treatment?

What would be your reason for not getting braces?

The questions were a mix of multiple choice, short answer and checkbox type questions. The participants were directed to different sections of the questionnaire depending on their answer to the questions marked with a '*'. This helped in ensuring that the participants were not unnecessarily exposed to questions that did not apply to them.

4.8. Statistical analysis

Descriptive analysis was performed with the help of SPSS software and mean and standard deviation was recorded

5. Results

Majority of the participants, both with or without braces asserted that age was not a barrier in getting orthodontic treatment done. They also suggested that it was never too late to undergo Orthodontic treatment and that it could be carried out at any age. Majority of the participants, both treated and non-treated cases also believed that Orthodontic treatment improved function and enhanced Facial appearance. Participants also believed that

Orthodontic treatment would boost their confidence and in no way, wearing braces would affect them socially.

The results of this questionnaire based survey highlighted certain key features:

1. Participants believed that there is no age boundary for undergoing Orthodontic treatment. Braces can be worn at any age to either correct function or improve aesthetics
2. Majority of the ones who are undergoing or have undergone treatment were self-motivated to undergo treatment
3. Majority of the participants felt that Orthodontic treatment improved self-esteem and quality of life
4. They also suggested that they would recommend Orthodontic treatment to people of any age who need it.
5. Majority of the treated participants also polled that hadn't they undergone treatment in the past, they would still be willing to take the braces treatment at their current age
6. Participants with no History of braces also did not suggest that they should have undergone treatment in the past. They did not take the treatment solely because they did not need the treatment and not because of age. This implied that even the non-treated participants believed that age was not a barrier in undergoing Orthodontic treatment.
7. Participants believed that Braces in Adults not only improved the function, but also enhanced one's facial appearance.
8. They also did not believe that the appearance of braces in an Adult patient would affect them socially in any way.
9. Majority of the participants believed that wearing braces would boost their confidence.
10. A major finding in the participants not willing to undergo Orthodontic treatment was the prolonged treatment time. There were other reasons like fear of sudden change in facial appearance, some preferred aligners over braces; however the major reason for declining braces treatment in majority of the participants was the long treatment time.

6. Discussion

There is a tremendous rise in demand for orthodontic braces treatment in adults. It was an earlier belief that Orthodontic treatment could be carried out only in the younger age group. Adult orthodontics was not a routine unlike today. However, to assess the knowledge and attitude of the general population towards Adult Orthodontic treatment, this questionnaire based study was carried out. We needed to assess various parameters in context with their knowledge and attitude towards Adult orthodontics. Firstly, a sample

size was estimated based on previous studies done related to the same topic. The sample size was calculated using software for sample size calculation. The sample size was estimated to be 138. A Questionnaire was then fabricated on Google Forms which was then circulated to age groups from 18 to 35 years via various Whatsapp groups. Ethical clearance for the study was obtained from the Institutional Ethical committee of Sinhgad Dental College and Hospital, Pune. The sample size recommended for the study was 138, however we received responses from 205 participants who filled the questionnaire and were willing to participate in the study after giving their consent. This was the actual sample size of the study. The consent of the participant was recorded on Google forms itself. After 205 participants filled the google questionnaire form, the data was collectively analyzed. The questionnaire structure was segregated into various sections. 1st, the informed consent followed by general information of the patient. 2nd, a few questions pertaining to history of braces treatment in the past followed by questions to participants with no history of braces, and finally a few questions to participants willing to undergo braces treatment who haven't undergone it yet and another set of questions to participants not willing to undergo braces treatment and the reasons for the same. On analyzing the data, we had received informed consent from all 205 participants. The participants involved in the study belonged to various age groups ranging from 18 to 35 yrs [Figure 1]. Of the total participants, 75.6% were females and 24.4% were males [Figure 2]. When the occupation of the participants was assessed, it was found that the majority of them were professionals, either doctors, engineers or students pursuing a professional career. 100% of the sample participants were literate with 12th pass being their minimum qualification. Hence the study analyzed the attitude and knowledge of literate and well educated participants towards the concept of Adult Orthodontics. 29.3% of participants had undergone or were undergoing orthodontic treatment and 70.7% of the participants were the ones who had never undergone treatment [Figure 3]. Furthermore, the study questionnaire was segregated into patients with and without the history of braces. The adult participants with history of braces in the past, reported having undergone Orthodontic treatment at 16 to 21 years of age [Figure 4]. This was the age when they started their orthodontic treatment. 23.3% of the ones who had a history of braces, underwent treatment on recommendation by their dentist, 30% underwent treatment on suggestion by either friends or family, however, 46.7% i.e. majority of the participants were Self Motivated to undergo treatment [Figure 5]. A drastic improvement in Self Esteem and quality of life was recorded by the patients. 90% of the participants polled that Orthodontics did improve their Self Esteem and Quality of life with 10% of them who polled for the contrary [Figure 6]. 67.8% of them suggested that age

was not at all a barrier in procuring Orthodontic treatment while 30.5% suggested that age was a barrier in undergoing orthodontic treatment [Figure 7]. These set of participants were of the Old School view that Orthodontics can only be carried out in the younger population. Also, 93.3% of the population suggested that they would recommend [Figure 8] orthodontic treatment to other people of their age with around 5% of the participants who suggested the contrary. 88.3% participants also polled that if they hadn't undergone Orthodontic treatment in the past, they would be willing to get treatment now at their current age [Figure 9]. Next, in the questionnaire were a set of questions for participants who had no history of braces. 65.5% of the participants felt that they should have undergone treatment when they were younger and 33.8% of them felt that there was no need for treatment [Figure 10]. A major deviation and finding in this study was when 82.1% of the participants with no history of braces polled that they felt it was not too late to undergo Orthodontic treatment [Figure 11]. This was indicative that the awareness about Adult Orthodontics was good and sufficient in literate and well educated population and further education and awareness among general population about Orthodontic treatment in adults was needed in 14.5% of the participants who felt that it was too late to undergo Orthodontic treatment [Figure 11]. This group of participants needs to be educated that braces treatment can be carried out even in the adult population and there is no age barrier to undergo Orthodontic treatment in today's times. 35.9% of the participants with no history of braces were willing to get braces treatment if need be whereas 64.1% of them did not find the need to undergo treatment [Figure 12]. Further, a few questions were asked to the participants who were willing to get braces treatment. 33.3% of the 105 responses that we received polled that they would be willing to get braces as they felt it would improve their facial appearance and 58.1% of the participants believed that braces would improve both their appearance as well as function [Figure 13]. Also amongst these 105 participants, 58.1% believed that age was not a barrier in undergoing orthodontic treatment while 38.1% felt the contrary [Figure 14]. 65.7% of the participants felt that the appearance of braces wouldn't affect them socially in any way, while 33.3% of them believed that wearing braces would affect them socially and were a little reluctant about the same [Figure 15]. Among all, 87.6% of the subjects were optimistic about braces boosting their self Confidence, whereas a minimal of 6.7% of the population stated that braces did not in any way boost their self-confidence [Figure 16]. The last set of questions in this elaborate questionnaire was directed towards the participants who were not willing to get braces treatment. Firstly, they were asked if they felt that increased age was a barrier in any way whilst undergoing orthodontic treatment. 43% participants agreed, while 53% of them disagreed to

this question [Figure 17]. Then, the last question asked to this group of participants was the reason why they were not willing to undergo Orthodontic treatment. Their response was varied. 8% of the participants were not willing to undergo braces treatment as they believed it would decrease their self-esteem, 22% of them feared that braces would change their facial esthetic appearance and the majority of them i.e 34% declined Orthodontic treatment due to long completion time that incurs along with the treatment [Figure 18]. A small percentage of participants refused treatment due to various reasons - they didn't feel the need to undergo braces treatment, some stated that their teeth were already well aligned and hence did not require treatment while some said that they would prefer aligners over braces.

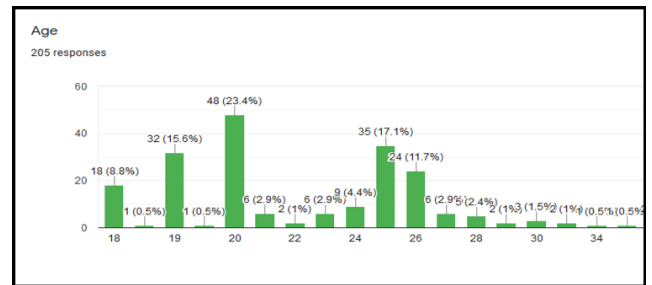


Fig. 1: Age

The age group of patients with maximum responses was 20yrs and 25yrs

Sex
205 responses

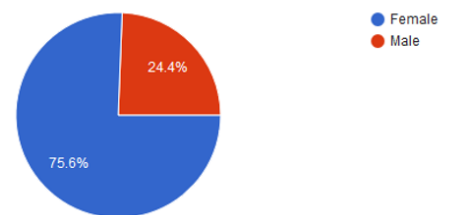


Fig. 2: Sex

Female responses were more than males and this could be correlated either to the increased awareness of orthodontic treatment in females or increased demands of facial esthetics by females more than males. Women are more concerned with beauty and have a better perception of treatment need as well as esthetic results.⁵⁻¹¹ This fact explains why, even in random samples such as in our study, there is a prevalence of females.^{7,8,10-15}

Majority of the Patients had not undergone orthodontic treatment in the past so the risk of bias of patient response about their view towards adult orthodontics was greatly reduced. There was more likelihood of procuring a fair

205 responses

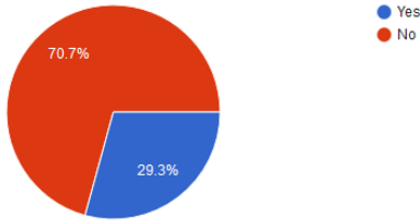


Fig. 3: Are you undergoing or have you undergone braces treatment in the past?

response as many of the patients were not sensitized towards orthodontic treatment.

6.1. Patients with history of braces

60 responses

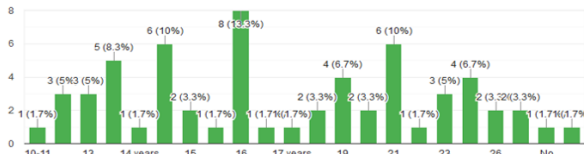


Fig. 4: What age did you get your orthodontic treatment done?

Majority of patients who underwent orthodontic treatment started the treatment at approximately the age of 16 years, however in this study all the participants were above the age of 18 years. This can be correlated to the age during which complete permanent dentition teeth eruption has taken place. This can also be correlated to the age wherein teenagers are at the peak of puberty and just entering the adulthood phase during which esthetics becomes of prime concern. The mature patient is very worried about how he or she looks and would be very cooperative towards any measures taken to improve the way they look as they believe this might change their quality of life.

60 responses

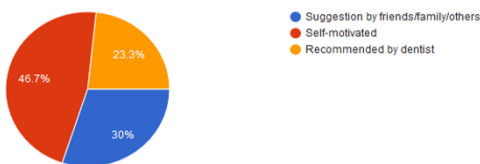


Fig. 5: What motivated you to get your treatment done?

Hence according to statistics, these age groups of patients were self-motivated to undergo Orthodontic treatment and hence very cooperative towards the entire phase of

treatment. The psychological benefits for adult patients in need of oral rehabilitation may occur because of the motivation obtained by the improved occlusion and smile esthetics that they see and observe among their peers and people they are socially around with, who are undergoing or have undergone treatment in the past.

60 responses

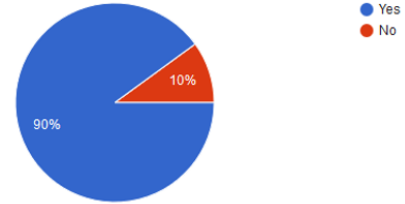


Fig. 6: Do you feel that orthodontic treatment has improved your self esteem and quality of life?

The patients did believe that braces treatment did improve their quality of life and Self Esteem. Esthetic reasons alone justify treatment, not only because it almost always results in a better patient self-image,¹⁶ but also because patients value esthetic and psychological benefits more than functional and dental health improvements.^{17,18} The perception of esthetics differs between person to person.¹⁶ Some people with severe malocclusion do not report a negative impact, while others with mild irregularities cited major impacts on their QoL

59 responses

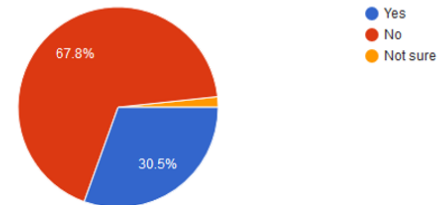


Fig. 7: Do you feel age is a barrier in getting orthodontic treatment done?

Majority of participants believed that age was not a barrier to undergo Orthodontic treatment

Majority of the patients suggested that they would recommend orthodontic treatment to their peers and people of their age group which implied an optimistic view of patients towards orthodontic treatment as a whole

Participants were willing to undergo orthodontic treatment at their current age had they not have undergone it in the past, which again was suggestive of their positive attitude towards adult orthodontics. This also suggested that they believed that orthodontics could be carried out at any time in life and age was not a barrier.

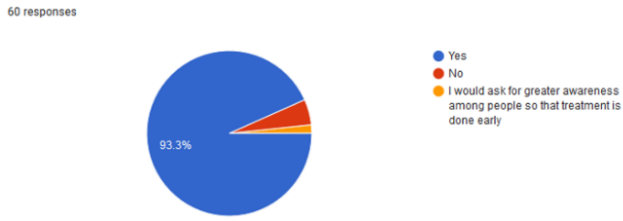


Fig. 8: Would you recommend orthodontic treatment to other people of your age?

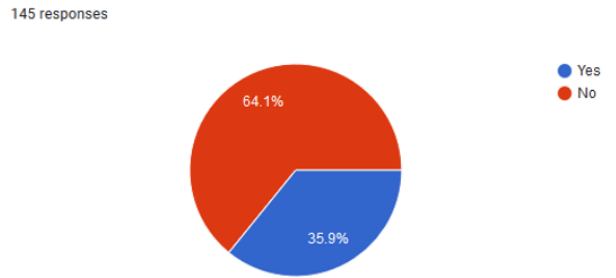


Fig. 12: Would you willing to get braced?

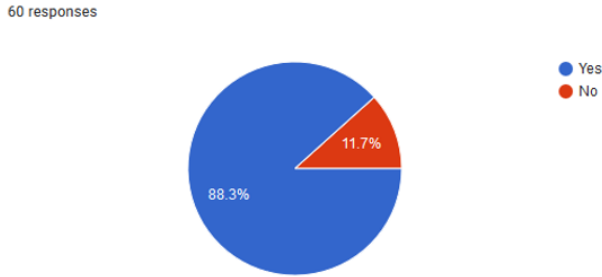


Fig. 9: If you hadn't undergone treatment in the past, would you be willing to get treatment now at your current age?

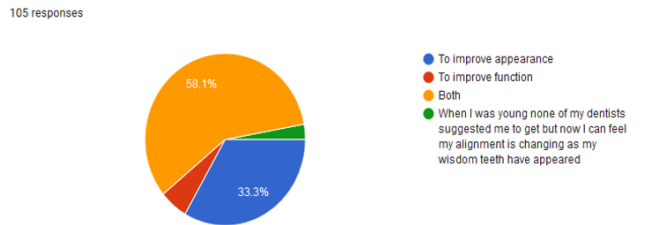


Fig. 13: What would be your reason for getting braces?

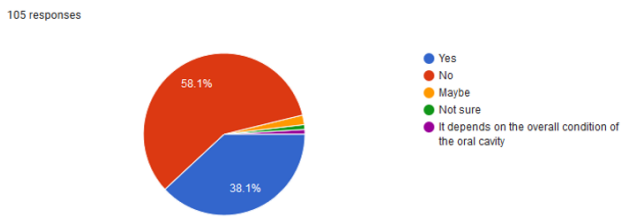


Fig. 14: Do you increased age is a barrier in undergoing orthodontic treatment?

Patients with history of braces

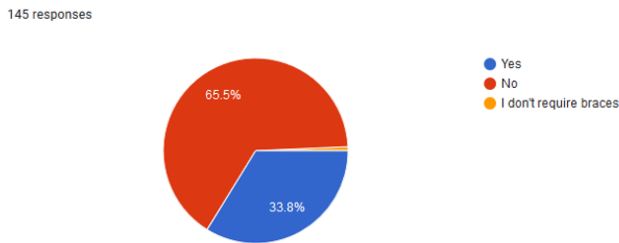


Fig. 10: Do you think you should have undergone treatment when you were younger?

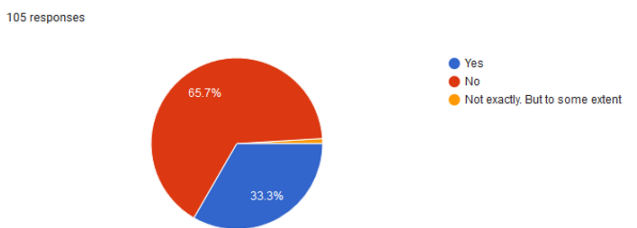


Fig. 15: Are you worried that the appearance of the braces would affect you socially?

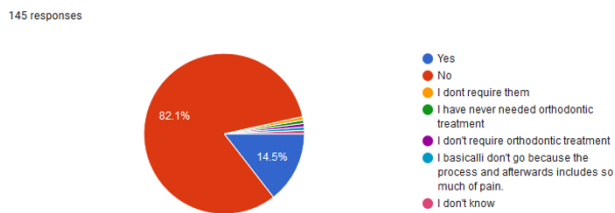


Fig. 11: Do you feel it is too late to undergo orthodontic treatment

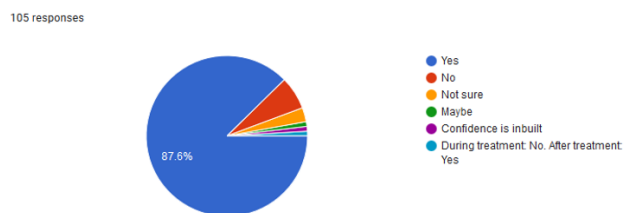


Fig. 16: Do you feel that braces treatment will boost your confidence?

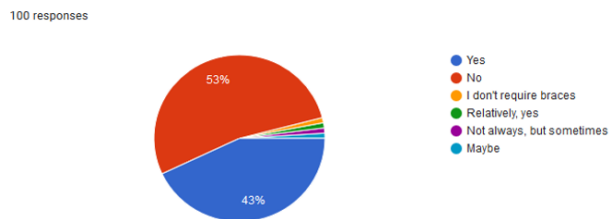


Fig. 17: Do you feel increased age is a barrier in undergoing orthodontic treatment?

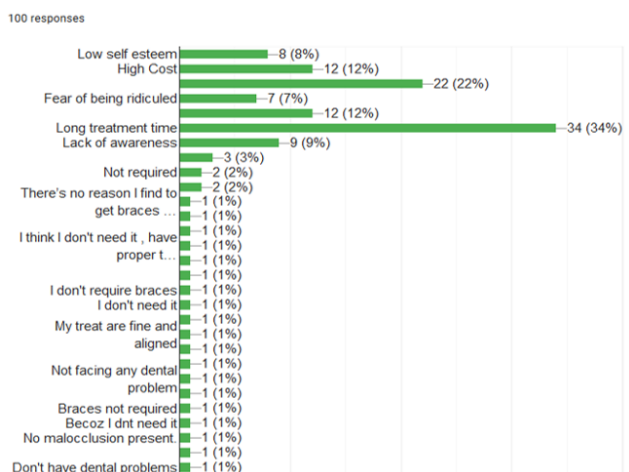


Fig. 18: What would be your reason for not getting braces? (select all that apply)

6.2. Patients willing to get braces treatment done

6.3. Patients not willing to get braces treatment done

7. Conclusion

This survey based questionnaire helped in assessing the attitude of the general Adult population towards Comprehensive Adult Orthodontic treatment on a whole. It concluded that age is not a barrier in today's times for getting orthodontic treatment done. Moreover, Adult Orthodontics not only improved the function, but also the Aesthetics of the Adult patients undergoing treatment. Treatment improved the Quality of life and Self Esteem of the patient. This survey eliminated the earlier notion that Braces could be worn only up till a particular age. Prolonged treatment time was one of the causes of reluctance in many participants; however, the other benefits outweighed the time related inconvenience caused by orthodontic treatment.

8. Source of Funding

No financial support was received for the work within this manuscript.

9. Conflict of Interest

The authors declare they have no conflict of interest.

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