

Knowledge and Attitude of General Population towards Orthodontic Treatment in Aseer Region, Kingdom of Saudi Arabia

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ABSTRACT

Aim: The aim of this study was to assess the attitude and knowledge of general population towards orthodontic treatment in Kingdom of Saudi Arabia.

Materials and methods: A cross-sectional questionnaire-based study was conducted among the general population of Aseer, Kingdom of Saudi Arabia. A validated, self-administered 10-item questionnaire was formulated and sent to the study participants through social media. The responses were entered into Microsoft Excel sheet and statistically analyzed using Statistical Package for the Social Sciences (SPSS), version 17.

Results: Majority (45.3%) of the respondents disagreed that people wearing orthodontic appliances do not look good, while 36.2% were neutral in answering the same. A bulk of respondents (81.2%) agreed that the orthodontic treatment is expensive, while only 7.4% of the respondents disagreed for the same. Majority (96%) of the respondents agreed that special oral hygiene aids, such as orthodontic brush, interdental brush, and mouthwash are required to be used during orthodontic treatment. Around 73% of the respondents agreed that orthodontic treatment takes a long time, while 20.6% were neutral in responding to the same.

Conclusion: It was concluded that although most of the respondents were aware about the features of orthodontic treatment and also had a positive attitude about it, still not all had the same attitude. It is recommended that the orthodontists, general dentists, and public health dentists need to make collaborative efforts to overcome the barriers for uptake of orthodontic treatment by the people.

Keywords: Attitude, Esthetics, Malocclusion, Orthodontic treatment.

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INTRODUCTION

Malocclusion is now just next to the other oral health problems, such as dental caries and periodontal diseases.¹ It has been established to be the third most common oral health problem, which is caused due to various environmental and genetic factors. Lifestyle of a person is adversely impacted by malocclusion due to its psychological as well as other disturbances in eating, talking, and esthetics.²

As reported in an earlier study, in Aseer region, Kingdom of Saudi Arabia, the prevalence of Angle's Class 1 to 3 malocclusions was 62.3, 28.4, and 9.3% respectively, among 15- to 17-year-old adolescents. It affects not only the appearance of a person but also impacts their emotional, physical, psychological, and social life aspects.³ Hence, the need of orthodontic treatment is but imperative for overcoming such problems to live a normal healthy life, not flawed with any sense of deprivation. Uptake of the treatment depends mainly on the attitude of the person towards orthodontic treatment. Esthetical awareness has increased, courtesy the interactions among people through social media, notwithstanding the fact that a shred of misperception about orthodontic treatment still persists in the populations, though in varying degrees. The patient compliance and the treatment outcome, in turn, depend majorly on the patient's attitude towards orthodontics. Thus, the orthodontists need to know, first of all, the patients' attitude as well as their knowledge about their dental problems and the solutions, thereby both the treatment planning and the treatment shall be definitely better managed, without any setbacks.

It is nowadays aboveboard in a totally demystified form that the expectations and wishes of patients can be satiated more efficiently only when the doctor is aware about the same and more so when he/she is open enough to discuss without any reservation and shyness both the

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possible and the impossible aspects related to the desires of the patients.⁴

There are quite a good number of factors which have a collateral bearing on encouragement as well as discouragement plus disenchantment of people regarding uptake of orthodontic treatment. In a number of studies previously conducted, such reasons have been established, and it has been found that the treatment charges are the main bottleneck for utilization of the same. Other reasons underlying the negative attitude of patients towards orthodontic treatment have been spelt out as apprehension of pain, time-consuming process, and lack of interest and awareness about the special aspects of oral hygiene maintenance during orthodontic treatment.⁵

Various studies have been conducted worldwide to assess the attitude of patients towards malocclusion and need of orthodontic treatment. Abdellatif and Al-Emran⁶ in their study conducted in the Kingdom of Saudi Arabia among 1,459 youth aged 9 to 17 years found that majority of them (92%) felt that correct occlusion is quite important against the rest who did not agree over the same. Esthetics, self-confidence, and proper tooth function in eating were considered as the main motivating factors for uptake of orthodontic treatment. In another study conducted in Kingdom of Saudi Arabia, it was found that 88% of populace were aware of their malocclusion and they thought of seeking orthodontic treatment to improve their looks.⁷ It is inarguably ascertained that degree of knowledge, gender, and age-related attitude and behavior of people serve as guidelines and thus facilitate the orthodontist in educating potential patients in providing advice.⁸ In yet another study, it has been observed that people went to the orthodontic department for undergoing treatment of malocclusions with the only aim of achieving improvement in their esthetics.⁹ Various studies have been carried out previously by many researchers on the patients' views, compliance, knowledge, attitude, and practice towards orthodontic treatment, but the studies involving general population are scarce. Hence, a study was conducted among general population of Aseer, Kingdom of Saudi Arabia, to assess their knowledge and attitude towards orthodontic treatment.

MATERIALS AND METHODS

A cross-sectional study was carried out among the general population of Aseer, Kingdom of Saudi Arabia. Before conducting the study, the ethical approval was obtained from Scientific Research Committee, King Khalid University College of Dentistry. A sample of 680 was calculated keeping the margin of error as 5% and confidence level 99%. All those subjects who were above 15 years of age were included in the study. A close-ended

questionnaire (Appendix 1) was formulated which comprised of two parts: First portion included the questions related to the demographic information of participants, such as age, gender, and educational qualification. The other part of the questionnaire comprised 10 questions wherein some were related to the attitude, while others were related to knowledge of people towards orthodontic treatment. A 3-point Likert scale was used to assess the attitude of the respondents which included three responses (agree, disagree, and neutral). Respondents were asked to indicate their level of agreement to a given statement by choosing one of the three response categories. The length of the questionnaire was restricted to 10 items only so that it is convenient for the respondents to answer the questions in less time without losing interest. A statement that mentioned about the confidentiality of the responses as well as of the identity of respondents was included on the top of the questionnaire. Those who responded to the questionnaire were considered to be willing for participation in the study.

The reliability of the questionnaire was checked by conducting a pilot study on 20 persons who were not a part of the final study sample. The questions were checked for ease in understanding and clarity by repeating the study on the same respondents. To measure the internal consistency of the questionnaire, Cronbach's alpha was used. Cronbach's alpha coefficient of 0.8 was found, indicating the acceptable internal reliability. The questionnaire was translated into both English and Arabic (local language) and then sent to the general population through social media, such as WhatsApp, Twitter, and Facebook. The data hence received were entered into a Microsoft Excel sheet and put to statistical analysis using SPSS.

RESULTS

In the present study, 76.9% were males, while 23.1% were females. About 9% comprised 15 to 19 years; 54% belonged to 20 to 29 years age group; 29.4% belonged to 30 to 40 years of age, while only 7.6% belonged to >40 years of age. Majority (79.6%) possessed university level education; 18.1% were qualified till high school, while very less percentage (2.4%) possessed less than high school qualification (Table 1). When the mean scores of knowledge and attitude were compared based on the qualification of respondents, a significant difference was found with $p = 0.053$ and $p = 0.006$ respectively. When mean scores of the attitude of respondents were compared based on gender, a nonsignificant difference was found. When the mean scores of knowledge and attitude were compared based on the age of the respondents, a significant difference was found.

Appendix 1: Questionnaire

Age	Q5. Orthodontic treatment is of long duration
(a) 15–19 years	(a) Agree
(b) 20–29 years	(b) Disagree
(c) 30–40 years	(c) Neutral
(d) more than 40 years	
Gender	Q6. Orthodontic treatment causes tooth/teeth movement
(a) Male	(a) Agree
(b) Female	(b) Disagree
	(c) Neutral
Educational level	Q7. Orthodontic treatment outcomes affect the patient's social and personal life
(a) Less than high school	(a) Agree
(b) High school	(b) Disagree
(c) University level	(c) Neutral
Q1. People who wear braces do not look good	Q8. Brackets/wires may break due to the carelessness of patients
(a) Agree	(a) Agree
(b) Disagree	(b) Disagree
(c) Neutral	(c) Neutral
Q2. Orthodontic treatment is expensive	Q9. If a patient discontinues the orthodontic treatment midway, his/her problem will worsen
(a) Agree	(a) Agree
(b) Disagree	(b) Disagree
(c) Neutral	(c) Neutral
Q3. Patients undergoing orthodontic treatment use special cleaning aids, such as orthodontic brushes, interdental brushes, and mouthwashes	Q10. After accomplishment of the orthodontic treatment, the patient needs to wear a retainer
(a) Agree	(a) Agree
(b) Disagree	(b) Disagree
(c) Neutral	(c) Neutral
Q4. Teeth and jaw irregularities are corrected by braces	
(a) Agree	
(b) Disagree	
(c) Neutral	

Table 1: Demographic data of the respondents (n = 680)

	Frequency (%)
Gender	
Female	157 (23.1)
Male	523 (76.9)
Qualification	
Less than high school	16 (2.4)
High school	123 (18.1)
University education	541 (79.6)
Age (years)	
15–19	61 (9.0)
20–29	367 (54.0)
30–40	200 (29.4)
>40	52 (7.6)

Frequency distribution of subjects according to their responses to questions for attitude and knowledge, based on age, gender, and qualification, is given in Tables 2 and 3

respectively. Frequency distribution of respondents based on responses to questions from Q1 to Q5 and Q6 to Q10 is given in Graphs 1 and 2 respectively.

DISCUSSION

Malocclusion is prevalent in the populace as a common oral health problem. The seriousness with which the problem is taken varies with perception of people about it: a segment of populace does not take it with due seriousness, and thus, they do not prefer to go for its correction through orthodontic treatment,^{10,11} whereas in other sections, malocclusion is not considered to be a normal phenomenon, and hence, they go for orthodontic correction.^{12,13} The critical self-perception of people about their facial and dental appearance prompts them to opt for orthodontic treatment; hence, esthetics is the prime motivating factor for them to consult an orthodontist. Other

Table 2: Frequency distribution of subjects according to their responses to questions of attitude based on age, gender, and qualification

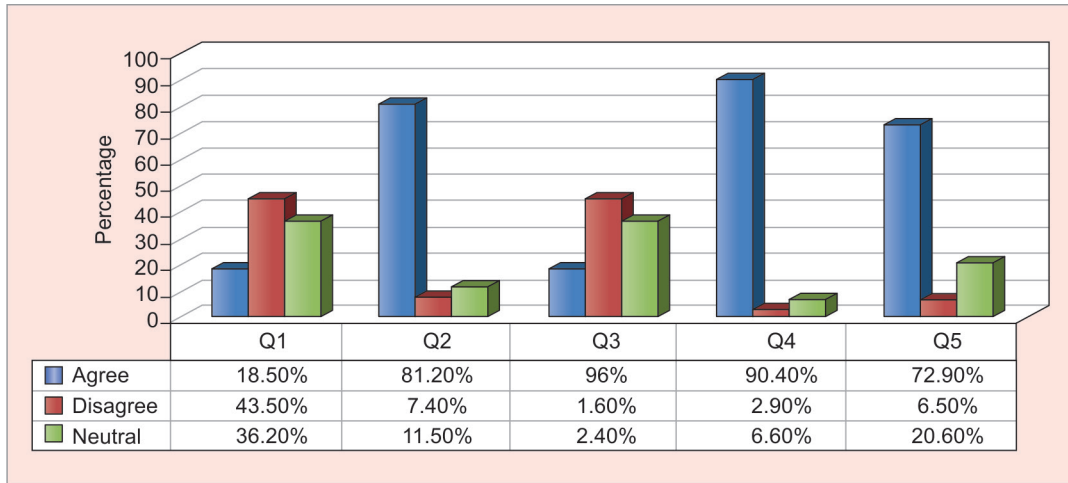
Parameter	Q1 (%)			Chi-square (d.f.)	p-value	Q2 (%)			Chi-square (d.f.)	p-value
	Agree	Disagree	Neutral			Agree	Disagree	Neutral		
<i>Age (years)</i>										
15–19	8.2	50.8	41.0	26.096 (6)	0 [#]	57.4	18.0	24.6	26.550 (6)	0 [#]
20–29	14.2	48.5	37.3			83.1	6.0	10.9		
30–40	25.0	40.0	35.0			83.0	7.0	10.0		
>40	36.5	36.5	26.9			88.5	5.8	5.8		
<i>Gender</i>										
Female	28.0	38.9	33.1	12.330 (2)	0.002**	75.8	12.1	12.1	7.060 (2)	0.029**
Male	15.7	47.2	37.1			82.8	5.9	11.3		
<i>Qualification</i>										
Less than high school	25.0	50.0	25.0	4.012 (4)	0.404*	75.0	18.8	6.2	16.363 (4)	0.003**
High school	13.8	51.2	35.0			69.9	12.2	17.9		
University education	19.4	43.8	36.8			83.9	5.9	10.2		
<i>Q5 (%) (years)</i>										
15–19	45.9	13.1	41.0	40.622 (6)	0	Q7 (%)			21.977 (6)	0.001 [#]
20–29	14.2	48.5	37.3			73.8	9.8	16.4		
30–40	80.5	7.0	12.5			91.6	2.7	5.7		
>40	90.4	1.9	7.7			90.0	4.5	5.5		
<i>Gender</i>										
Female	77.7	8.3	14.0	5.956 (2)	0.051*	80.3	8.9	10.8	21.214 (2)	0 [#]
Male	71.5	5.9	22.6			92.0	2.1	5.9		
<i>Qualification</i>										
Less than high school	68.8	12.5	18.8	10.261 (4)	0.036**	87.5	0	12.5	4.505 (4)	0.342*
High school	62.6	10.6	26.8			87.0	6.5	6.5		
University education	75.4	5.4	19.2			89.8	3.1	7.0		

*Not significant, p>0.05; **Significant, p<0.05; [#]Highly significant, p<0.001

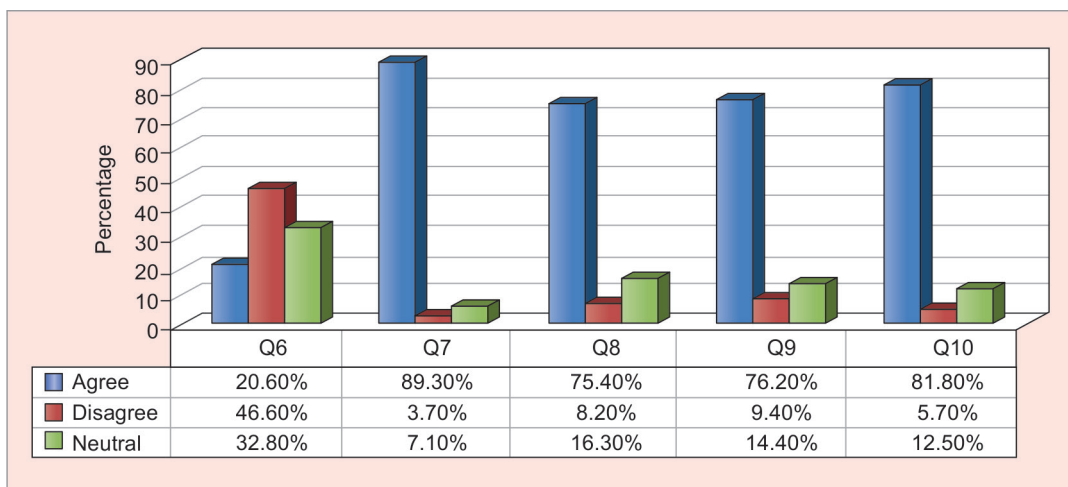
Table 3: Frequency distribution of subjects according to their responses to questions of knowledge based on age, gender, and qualification

Parameter	Q3 (%)			Chi-square (d.f.)	p-value	Q6 (%)			Chi-square (d.f.)	p-value
	Agree	Disagree	Neutral			Agree	Disagree	Neutral		
<i>Age (years)</i>										
15–19	85.2	9.8	4.9	33.931 (6)	0 [#]	19.7	49.2	31.1	7.362 (6)	0.289*
20–29	98.1	0.5	1.4			18.5	46.3	35.1		
30–40	95.5	1.5	3.0			25.5	47.5	27.0		
>40	96.2	0	3.8			17.3	42.3	40.4		
<i>Gender</i>										
Female	91.1	4.5	4.5	14.551 (2)	0.001 [#]	24.2	42.0	33.8	2.272 (2)	0.321**
Male	97.5	0.8	1.7			19.5	48.0	32.5		
<i>Qualification</i>										
Less than high school	93.8	6.2	0	9.602 (4)	0.048**	18.8	56.2	25.0	2.825 (4)	0.588*
High school	91.9	3.3	4.9			16.3	51.2	32.5		
University education	97.0	1.1	1.8			21.6	45.3	33.1		
<i>Q4 (years)</i>										
15–19	83.6	6.6	9.8	17.962 (6)	0.006**	Q8 (%)			4.148 (6)	0.657*
20–29	94.6	1.1	4.4			73.8	11.5	14.8		
30–40	85.5	5.0	9.5			77.7	7.4	15.0		
>40	88.5	3.8	7.7			74.0	8.5	17.5		
<i>Gender</i>										
Female	81.5	8.3	10.2	21.285 (2)	0 [#]	73.9	8.9	17.2	0.276 (2)	0.871*
Male	93.1	1.3	5.5			75.9	8.0	16.1		
<i>Qualification</i>										
<High school	87.5	6.2	6.2	7.650 (4)	0.105*	87.5	6.2	6.2	2.128 (4)	0.712*
High school	87.0	6.5	6.5			72.4	9.8	17.9		
University education	91.3	2.0	6.7			75.8	7.9	16.3		

*Not significant, p>0.05; **Significant, p<0.05; [#]Highly significant, p<0.001



Graph 1: Frequency distribution of respondents based on responses to questions Q1 to Q5



Graph 2: Frequency distribution of respondents based on responses to questions Q6 to Q10

major appealing factors that drive patients for uptake of orthodontic treatment are their knowledge, attitude, and awareness about the same.¹⁴ In a study conducted in the Netherlands, positive or negative attitude of patients has been found to be responsible for their opting to go for or not to go for respectively, orthodontic treatment of their teeth.¹⁵ Therefore, for an orthodontist, to understand well and beforehand, the patients' attitude and knowledge are a very essential prerequisite for achieving the best treatment outcome. Moreover, it is why the present study was conducted in Kingdom of Saudi Arabia to evaluate the knowledge and attitude of the general population towards orthodontic treatment.

In the present study, the majority (45.3%) of the respondents disagreed that people wearing orthodontic appliances do not look good, while 36.2% were neutral in answering the same. These findings were in accordance to the previous studies wherein they found that patients were familiar with orthodontic appliances due to the previous orthodontic experiences of their relatives and friends, and hence, they did not consider wearing

of orthodontic appliances as having any negative effect on esthetics. They simulated it to the wearing of optical glasses for eyesight problems.¹⁶ In yet another study conducted in Kingdom of Saudi Arabia, it was found that patients were more apprehensive for pain and discomfort in wearing the braces than its effect on esthetics. They were more concerned about the discomfort they might face during the archwire activation.¹⁷

In the present study, a bulk of respondents (81.2%) agreed that the orthodontic treatment is expensive, while only 7.4% of the respondents disagreed for the same. These results were similar to the earlier studies wherein the financial restriction was found to be one of the barriers for the patients to undergo orthodontic treatment. They found that majority of those who opted for orthodontic treatment belonged to high socioeconomic status, while very few patients who belonged to low socioeconomic status would prefer to undergo orthodontic treatment. Socioeconomic factor has been seen as having an impact on the uptake on orthodontic treatment.¹⁸ In another study conducted by Whitesides

et al,¹⁹ they found that those female patients who had higher salaries showed higher odds ratio as far as their dental visits for orthodontic treatment was concerned.

In the present study, the majority (96%) of the respondents agreed that special oral hygiene aids, such as orthodontic brush, interdental brush, and mouthwash are required to be used during orthodontic treatment. This finding was similar to the previous study wherein they found that majority of the orthodontic patients were aware of the significance of special oral hygiene measures.²⁰

Moreover, it is mentioned in the previous studies that extensive mechanical as well as chemical oral hygiene measures are used during orthodontic treatment to remove and control plaque from tooth surfaces; mechanical plaque removal includes the use of toothbrushes, interdental brushes, and dental floss, while chemical plaque control includes mouth rinses and dentifrices.²¹ It has been documented that there is a predominant change in oral bacterial flora during fixed orthodontic treatment which is due to fixed appliances, brackets/wires acting as plaque retentive means which may lead to gingivitis.^{22,23}

Around 73% of the respondents agreed that orthodontic treatment takes a long time, while 20.6% were neutral in responding to the same. This observation was in accordance to the previous study wherein majority of Malaysian patients thought that the orthodontic treatment takes long time, while only 4% of the patients thought the other way.⁵ It is suggestive of the fact that respondents were aware about the time-consuming nature of orthodontic treatment which might be due to the information from friends, relatives, Internet, and other social media networks. Although nowadays various efforts are being made to minimize the duration of treatment and the number of visits by using heat-treated nickel–titanium wires, self-ligating brackets, and frictionless mechanics, the problem of long duration of treatment exists.²⁴

About 89.3% of the respondents believed that the outcome of the orthodontic treatment affects the social and personal lives of patients. According to previous study, the main motivation factor of the patients for uptake of orthodontic treatment has been found to be an improvement in their social, personal, psychological well-being, as well as gaining of their self-confidence. In a study carried out by Abdullah et al,¹⁶ it was found that there was a positive response by the subjects for post-orthodontic treatment change in their social life and self-confidence rather than changes in their career options.

In the present study, when the mean scores of knowledge and attitude were compared based on the qualification of respondents, a significant difference was found. These findings corroborate with those of the previous study wherein it is mentioned that the education level and

income of a person have an impact on his/her awareness of oral health problems and the measures to be taken for treatment of the same.²⁵ Moreover, in another study conducted earlier, there was found a significant association between mother's education and dental esthetic sense.²⁶

In the present study, when the mean scores of knowledge and attitude were compared based on the age of the respondents, a significant difference was found. This result was similar to the previous study conducted by Friedman et al.²⁷

LIMITATIONS

- The presence or absence of malocclusion of the respondents was not assessed.
- The past experience of orthodontic treatment was not explored from the respondents which could influence their responses.
- Socioeconomic status of the respondents was not asked in the questionnaire.

CONCLUSION

Within the limitations of the study, it was concluded that although most of the respondents were aware about the importance of orthodontic treatment, yet not all of them had a positive attitude about various orthodontic treatment-related aspects. The knowledge of general population about orthodontic treatment was quite good with only less percentage of them lacking the same.

CLINICAL SIGNIFICANCE

The assessment of the knowledge and attitude of people towards orthodontic treatment would be beneficial to evaluate the need to carry out orthodontic treatment awareness among masses during various oral health education programs, as well as the orthodontists would acquaint themselves with the ways to handle the patients with a negative attitude towards orthodontic treatment.

RECOMMENDATIONS

- There is a need for collaborative efforts of the general dentists, orthodontists, public health dentists, and other specialist dentists to raise awareness about the ill-effects of malocclusion and the measures to prevent and treat the same at its primary level so as to overcome the cost of the orthodontic treatment at secondary and tertiary levels.
- Parents, teachers, children, and all the members of the community should be reached through school/community health education programs so that they avail the orthodontic treatment facilities without having any doubts about it.

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