Patient Satisfaction with Orthodontic Treatment Received in Public and Private Hospitals in Dammam, Saudi Arabia

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Abstract

BACKGROUND: The demand for orthodontic treatment is on the rise, and there are high patient expectations for improved dentofacial appearance. Patient satisfaction with orthodontic treatment is associated with improving treatment outcomes.

OBJECTIVE: To evaluate patient satisfaction with orthodontic treatment received in public and private hospitals.

MATERIAL AND METHODS: This cross-sectional study was conducted on a calculated sample of patients who received orthodontic treatment in public and private hospitals in Dammam, Saudi Arabia. A validated questionnaire (five-point Likert scale) was used to assess patient satisfaction with orthodontic treatment.

RESULTS: A total of 229 out of 243 patients completed the survey (response rate = 94.2%). The mean age of the participants was 22.69 ± 6.34 years. More females (65.5%) than males (34.5%) participated in the study. The participants gave the highest satisfaction score to the doctor-patient relationship (mean score 4.33). This was followed by dentofacial improvement (mean score 4.23), dental functions (mean score 4.20), and psychosocial improvement (mean score 3.94). The patients treated in private hospitals were more satisfied with dental functions domain than those who received treatment in public hospitals (P = 0.032). The patients treated by private orthodontists were more satisfied with provider, and residual category (situational aspect and residual category) than by the private orthodontists.

CONCLUSION: The doctor-patient relationship was the most important factor in satisfaction with orthodontic treatment. Overall, patients treated in public hospitals were more satisfied with orthodontic treatment than those in private hospitals.

Introduction

Malocclusion is the third most common oral condition, and it negatively impacts individuals' social interaction and their emotional status in addition to affecting dental functions and facial appearance [1] [2] [3]. Research shows high orthodontic treatment needs among adolescents [4]. The evidence is mounting about the impact of orthodontic treatment on the quality of life of individuals, and improvement in appearance, speech, self-esteem, socialising and interpersonal relationships are seen in orthodontically treated patients [5] [6] [7]. High income and education, and awareness about oral health including improved facial esthetics have resulted in an increased demand for orthodontic treatment [8]. A vast majority (69.6%) of teenagers wants orthodontic treatment, and their desire is associated with the severity and different types of malocclusion [9]. Female tend to perceive a greater need for orthodontic treatment than male adolescents [10] [11]. Each year, about 5.75 million Americans and Canadians seek orthodontic treatment, and there was 43.75% increase during the last decade [12].

Many factors such as interpersonal relations between provider and patients, accessibility and convenience of care, quality of services, the competence of provider, and the cost of treatment...
Satisfaction of patients with orthodontic treatment is associated with gender, age, duration of orthodontic treatment, and an improvement in dentofacial appearance. Also, patient satisfaction is considered crucial for adherence to orthodontic treatment and is related to the stability of orthodontic treatment [18] [19]. The quality of health services provided to patients also affects their satisfaction [20]. On the contrary, Al-Omri and Abu Alhaiaj reported no relationship between patient satisfaction and age and gender [14]. A previous study in Saudi Arabia reported that 87.1% of patients were satisfied with orthodontic treatment [21].

Presently, there is an increased demand for orthodontic treatment in addition to high expectations for improved dentofacial appearance. Providing high standards of orthodontic treatment and achieving the highest satisfaction level should be a top priority of practising dentists as these elements are critical to retaining the patients. Most studies reported in the literature involved orthodontic patients visiting teaching dental hospitals/centres in universities. The level of patient satisfaction with orthodontic treatment could be different if treated in private dental practices or government hospitals/dental centres.

Therefore, this study was conducted to compare the level of patient satisfaction with orthodontic treatment received in private and public hospitals in the Eastern Province of Saudi Arabia. The study was expected to provide valuable information that could be used to achieve the highest level of patient satisfaction with orthodontic treatment and consequently improved treatment outcomes in both the public and private sectors in the country.

Methods

This cross-sectional study was conducted from January 16, 2017, to April 25, 2017, at public and private orthodontic speciality centres or hospitals in Dammam, Dhahran, AlKhobar the Eastern Province of Saudi Arabia. The ethical approval was obtained from the Scientific Research Unit of the College of Dentistry Imam Abdulrahman Bin Faisal University, Dammam (ethical approval #2017008). The researchers contacted the administrators of the speciality centres and hospitals to get their permission to conduct a survey. An estimated sample of 243 patients was calculated based on a 5% margin of error, 95% confidence interval, 80% of response distribution and population size (20,000) [22]. The patients who received orthodontic treatment over one year were eligible to participate in this study. The participants were briefed about the purpose and details of the study. They provide their consent by filling out the questionnaire. The questionnaire was delivered to every patient up to the first 243 patients. The study was conducted in line with the principles of the Helsinki Declaration.

The patients with cleft lip and cleft palate were excluded from the study. A validated questionnaire (five-point Likert scale) was used to assess patient’s satisfaction with orthodontic care [15]. However, content and face validation of the questionnaire was conducted by the expert faculty members ensuring readability, comprehensiveness, and clarity of the items in the final questionnaire. This is pivotal because when adapting a questionnaire to a new setting, some of the items may not be conceptually relevant to Saudi culture and ways of life. Moreover, some of the items may not be relevant to certain age groups in the current study. Therefore, some of the items in the original questionnaire were removed. The questionnaire was translated into Arabic and reviewed by a faculty member who was an expert in both English and Arabic languages before it was administered to patients. The questionnaire items are distributed in seven sections which include personal data, the doctor-patient relationship, situational aspects, dento-facial improvement, psychosocial improvement, dental function, and residual category.

The collected data were entered and analysed using SPSS program version 22 (IBM Corp. Armonk, NY, USA). Means and standard deviations were calculated for quantitative variables and frequency distribution for categorical variables. Mean scores of each subscale of the questionnaire were calculated. Mann Whitney U test was used to evaluate the differences in satisfaction levels between the patients treated in private and public hospitals. A p-value ≤ 0.05 was considered significant.

Results

A total of 229 out of 243 patients completed the survey with a response rate of 94.2%. The mean age of the participants was 22.69 ± 6.34 years. Approximately 67.7% (n = 150) of the patients were treated at governmental hospitals and 32.3% (n = 79) at private hospitals. More females (65.5%) than males (34.5%) participated in the study. About 39.3% had insurance coverage, and almost half the sample had a monthly family income of more than 10,000 SAR (1$ U.S. = 3.75 SAR). Minimum duration of orthodontic treatment was one year, and the mean duration was 2.21 years (Table 1).
Table 1: Demographic information of study participants

| Characteristics                        | N   | %    |
|----------------------------------------|-----|------|
| Gender                                 |     |      |
| Male                                   | 79  | 34.5 |
| Female                                 | 150 | 65.5 |
| Nationality                           |     |      |
| Saudi                                  | 195 | 85.2 |
| Non-Saudi                              | 34  | 14.8 |
| Education                              |     |      |
| No formal education                    | 4   | 1.7  |
| Primary education                      | 15  | 6.6  |
| Secondary education                    | 109 | 47.6 |
| Bachelor's degree                      | 94  | 41.0 |
| Master's degree and above              | 7   | 3.1  |
| Monthly household income               |     |      |
| Less than SAR 10,000 per month        | 63  | 27.5 |
| Between SAR 10,000 to 20,000 per month| 69  | 30.1 |
| More than SAR 20,000 per month        | 28  | 12.2 |
| Do not know/not sure                   | 69  | 30.1 |
| Dental insurance                       |     |      |
| Yes                                    | 90  | 39.3 |
| No                                     | 139 | 60.7 |
| Age of participants (Mean ± SD)        | 22.69 ± 6.34 years |      |
| Duration of treatment (Mean ± SD)      | 2.21 ± 1.21 years |      |

The comparison of patients’ responses to satisfaction regarding orthodontic treatment received in public and private hospitals was carried out. There are six domains in the questionnaire which are displayed in the tables. In the doctor-patient relationship domain, patients gave the highest mean scores to respectfully receiving treatment (mean score 4.63) and liking the orthodontist (mean score 4.62).

Table 2: Patient satisfaction with orthodontic treatment related to the doctor-patient relationship in public and private hospitals

| Doctor-patient relationship | Mean score ± SD Public hospital | Mean score ± SD Private hospital | p-value |
|-----------------------------|---------------------------------|---------------------------------|---------|
| I personally liked the orthodontist(s) who treated me | 4.62 ± 0.60 | 4.68 ± 0.555 | 4.50 ± 0.687 | 0.045 |
| Greater efforts should have been made to reduce the pain from braces | 3.51 ± 1.31 | 3.63 ± 1.269 | 3.24 ± 1.353 | 0.038 |
| The orthodontist(s) always checked their work carefully | 4.51 ± 0.75 | 4.54 ± 0.714 | 4.46 ± 0.831 | 0.667 |
| The orthodontic care I received could have been better | 3.56 ± 1.35 | 3.60 ± 1.340 | 3.35 ± 1.359 | 0.093 |
| The orthodontist(s) was gentle when treating me | 4.52 ± 0.72 | 4.63 ± 0.583 | 4.30 ± 0.918 | 0.008 |
| Better treatment began, my orthodontist(s) carefully explained what treatment would be like | 4.41 ± 0.82 | 4.55 ± 0.616 | 4.12 ± 1.097 | 0.007 |
| Questions I had about my treatment were answered promptly | 4.52 ± 0.68 | 4.60 ± 0.609 | 4.34 ± 0.799 | 0.013 |
| The assistants were gentle when treating me | 4.56 ± 0.62 | 4.61 ± 0.574 | 4.46 ± 0.70 | 0.120 |
| The orthodontic staff (assistants and office personnel) treated me with respect | 4.53 ± 0.64 | 4.59 ± 0.556 | 4.42 ± 0.776 | 0.190 |
| The orthodontist(s) treated me with respect | 4.63 ± 0.58 | 4.66 ± 0.562 | 4.55 ± 0.622 | 0.183 |
| Overall mean score | 4.33 ± 0.13 | Mean Ranks | 124.59 | Mean Ranks | 145 | 0.014 |

The study participants expressed their satisfaction with different items of dentofacial improvement. But no statistically significant differences were reported by patients treated in public and private hospitals (Table 4).

Table 3: Patient satisfaction with orthodontic treatment related to situational aspects in public and private hospitals

| Situational aspects | Mean score ± SD Public hospital | Mean score ± SD Private hospital | p-value |
|---------------------|---------------------------------|---------------------------------|---------|
| My treatment took as long as I expected it would | 3.83 ± 1.001 | 3.92 ± 0.897 | 3.65 ± 1.175 | 0.160 |
| Even though some appointments were short, each was necessary for my treatment to be successful | 4.31 ± 0.768 | 4.29 ± 0.747 | 4.38 ± 0.816 | 0.457 |
| Problems that arose during treatment were quickly taken care of | 4.24 ± 0.853 | 4.22 ± 0.832 | 4.28 ± 0.899 | 0.346 |
| The treatment area was modern and up to date | 4.30 ± 0.777 | 4.34 ± 0.716 | 4.20 ± 0.891 | 0.429 |
| The orthodontist's office was conveniently located | 4.25 ± 0.793 | 4.28 ± 0.761 | 4.20 ± 0.860 | 0.645 |
| I was satisfied with the selection of days and times when I could be seen for orthodontic appointments | 4.33 ± 0.751 | 4.39 ± 0.649 | 4.20 ± 0.921 | 0.326 |
| The waiting area was comfortable | 4.24 ± 0.820 | 4.30 ± 0.751 | 4.09 ± 0.939 | 0.152 |
| The treatment area was clean and sanitary | 4.47 ± 0.716 | 4.44 ± 0.739 | 4.53 ± 0.667 | 0.426 |
| I had to travel far to reach the orthodontic clinic | 2.89 ± 1.478 | 3.01 ± 1.481 | 2.64 ± 1.448 | 0.076 |
| The treatment took much too long | 3.45 ± 1.247 | 3.37 ± 1.274 | 3.61 ± 1.180 | 0.194 |
| Overall mean score | 3.86 ± 0.129 | Mean Ranks | 121.78 | Mean Ranks | 100.80 | 0.025 |

Patients treated in public hospitals liked orthodontist more than in private hospitals, and the difference was statistically significant (P = 0.045). Similarly, public orthodontists more carefully explained the treatment (P = 0.007) and promptly answered patients’ questions (P-value = 0.013) and gently provided treatment (P = 0.008) than private orthodontists. Overall, there was the more positive perspective of the patients about the doctor-patient relationship in public than private hospitals (P = 0.014) (Table 2).
The study evaluated patient satisfaction with orthodontic treatment and revealed that patients were more satisfied with the treatment received in public than in private hospitals. Overall, a high level of patient satisfaction observed in the present study showed that orthodontic treatment was widely accepted as part of good health care services in the province. In addition to the prevalence and severity of malocclusion, the gender is an important variable that determines the utilisation of orthodontic services. More female patients were represented in the sample in our study. This is in agreement with the results of a previous study that showed 54% of female compared to 37% of male patients pursued orthodontic treatment [23]. The high rate of orthodontic treatment among female patients was because females give more importance to physical attractiveness than males and they also consider teeth more important for facial appearance than male patients [23]. It was also found that the need for orthodontic treatment was perceived more significantly in female than male subjects [10]. Nevertheless, a previous study observed no association between gender and patient satisfaction with orthodontic treatment [14].

In the present study, the highest mean score (4.33) was given to doctor-patient relationship, and more patient satisfaction was recorded for public than private orthodontists. In the doctor-patient relationship domain, the patients gave the highest mean score to respectfully receiving treatment (4.63) and liking the orthodontist (4.62). The patients treated in public hospitals liked orthodontist more than in private hospitals (P=0.045). Likewise, most of the patients who participated in this study were satisfied with the explanation regarding treatment procedures and prompt answering of their queries in public than private hospitals (P<0.05). Similarly, a previous study by Shahran et al. found the majority of patients (87.1%) satisfied with the orthodontic treatment and the dentist-patient relationship was an important factor that affected patient satisfaction [21]. Another study by Keles and Bos also demonstrated similar results and showed that the patients gave the highest satisfaction (mean score 4.24) to doctor-patient relationship domain [19]. The reason of high satisfaction with doctor-patient relationship might be explained by the fact that the treatment will be more effective and patient will be more satisfied when the patient-doctor relationship is good. It has been shown that successful orthodontic treatment is significantly related to the positive doctor-patient relationship [24].

The higher satisfaction observed among patients treated by the public than private orthodontists could be because treatment provided in public settings maintained high ethical and quality standards with evidence-based practice [21]. It is also possible that high patient satisfaction in the public

Table 5: Patient satisfaction with orthodontic treatment related to psychosocial improvement in public and private hospitals

| Psychosocial improvement | Public hospital | Private hospital | p-value |
|--------------------------|----------------|-----------------|---------|
| I feel better about myself because of orthodontic treatment | 4.42±0.994 | 4.39±0.696 | 4.49±0.687 | 0.323 |
| I feel more outgoing because of orthodontic treatment | 3.83±1.109 | 3.85±1.052 | 3.80±1.227 | 0.939 |
| I feel more confident because of orthodontic treatment | 4.04±0.970 | 4.06±0.884 | 4.00±1.135 | 0.758 |
| I feel more popular because of orthodontic treatment | 3.76±1.093 | 3.72±1.042 | 3.82±1.198 | 0.398 |
| When I meet people for the first time, they react much more positively to me since I have been treated | 3.87±1.060 | 3.85±0.986 | 3.92±1.202 | 0.254 |
| Overall mean score | 3.94±0.076 | | | |

Table 6: Patient satisfaction with orthodontic treatment related to dental function and residual category in public and private hospitals

| Dental function | Public hospital | Private hospital | p-value |
|-----------------|----------------|-----------------|---------|
| Eating is easier since I have been treated | 4.21±0.898 | 4.13±0.881 | 4.38±0.917 | 0.013 |
| Chewing is easier since I have been treated | 4.17±0.904 | 4.09±0.863 | 4.34±0.969 | 0.008 |
| I can bite food more easily since I have been treated | 4.18±0.879 | 4.13±0.843 | 4.30±0.947 | 0.050 |
| I would recommend orthodontic treatment to everyone who has difficulties chewing food | 4.25±0.850 | 4.17±0.831 | 4.41±0.875 | 0.014 |
| Overall mean score | 4.20±0.018 | | | |

Table 7: Patient satisfaction with orthodontic treatment related to psychosocial improvement in public and private hospitals

| Psychosocial improvement | Public hospital | Private hospital | p-value |
|--------------------------|----------------|-----------------|---------|
| I feel better about myself because of orthodontic treatment | 4.42±0.994 | 4.39±0.696 | 4.49±0.687 | 0.323 |
| I feel more outgoing because of orthodontic treatment | 3.83±1.109 | 3.85±1.052 | 3.80±1.227 | 0.939 |
| I feel more confident because of orthodontic treatment | 4.04±0.970 | 4.06±0.884 | 4.00±1.135 | 0.758 |
| I feel more popular because of orthodontic treatment | 3.76±1.093 | 3.72±1.042 | 3.82±1.198 | 0.398 |
| When I meet people for the first time, they react much more positively to me since I have been treated | 3.87±1.060 | 3.85±0.986 | 3.92±1.202 | 0.254 |
| Overall mean score | 3.94±0.076 | | | |

Discussion
In conclusion, it was found that patients treated in public hospitals were more satisfied with orthodontic treatment than those in private clinics. There were significant differences in patients’ responses about the doctor-patient relationship and dental function domains. The doctor-patient relationship was the most crucial factor in the satisfaction of patients with orthodontic treatment. The orthodontists working in the private sector should improve orthodontic services to ensure the highest patient satisfaction. The Ministry of Health should better monitor the quality of orthodontic services and take appropriate measures so that patients receive the highest standards of orthodontic care in both the private and public sectors. The orthodontists should consider establishing a professional relationship with the patients to achieve the highest level of patient satisfaction and improved orthodontic treatment outcomes.

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