Evaluating the changes in quality of life is a vital part of measuring the effect of treatment in many clinical settings. Considerable evidence exists which shows that oral disorders including malocclusions may have a significant impact on physical, social and psychological well-being (Shaw et al, 1980; Dolan and Gooch, 1997; Hetherington et al, 1999; Oliveira and Sheiham, 2004; Fernandes et al, 2006; Heravi et al, 2011); therefore, improving the quality of life of patients has become one of the goals of orthodontic treatment. Since there is no evidence-based data available to support the relationship between malocclusions and increasing incidence of caries (Helm and Petersen, 1989; Heesterman, 1993), periodontal diseases (Addy et al, 1988; Polson et al, 1988), TMJ disorders (Luther, 1998) and traumatic dental injuries (Koroluk et al, 2003), improving patients’ quality of life has become the major goal of orthodontic treatments. In the last decade, researchers have been more interested in assessing the effects of malocclusion on oral-health related quality of life (OHRQoL) (Foster-Page et al, 2005; Johal et al, 2007; Locker et al, 2007; de Oliveira et al, 2008; Heravi et al, 2011). Moreover, some researchers have investigated the impact of orthodontic treatments on the quality of life (Zhang et al, 2008; Chen et al, 2010; Liu et al, 2011). Zhang et al (2008) proved that patients’ OHRQoL was worse during the initial 6-month phase of orthodontic treatment, but it was better in the emotional well-being domain when compared to the pre-treatment phase. Liu et al (2011) reported the impact of the initial 18-month phase of fixed orthodontic treatment.
on adulthood OHRQoL. They found that the greatest deterioration in OHRQoL occurred in the early phase of treatment, but with ongoing treatment, the detrimental effects to OHRQoL decreased. Chen et al (2010) evaluated the impact of fixed orthodontic appliance therapy on OHRQoL and reported that these treatments could improve Chinese patients’ OHRQoL. Since there is only limited data on an Iranian population on the effects of treatment with fixed orthodontic appliances on OHRQoL (Heravi et al, 2011) and because of the discrepancies between these results and those of the studies mentioned above, the present study was performed to assess the effect of a 6-month time period after starting orthodontic treatment on the oral-health related quality of life.

MATERIALS AND METHODS

In this longitudinal prospective study, 148 adolescents (97 females and 51 males) seeking treatment at the Orthodontic Clinic of the Mashhad University of Medical Sciences, Iran, participated in our study. They were between 14 and 17 years old and they presented with no previous orthodontic treatment or history of any systemic diseases. They had finished other dental treatment before starting orthodontic therapy.

OHRQoL was assessed by a self-administered questionnaire given at three different times: baseline, one week before orthodontic treatment (T0); 2 months (T1) and 6 months (T2) after starting orthodontic treatment. After screening, 218 patients were recruited to fill out the questionnaire. At T1, 180 patients were followed-up to answer the questionnaire, but at T2, only 148 patients participated in this phase (non-response due to missed appointments). The study was approved by the Research Ethics Committee of the Mashhad University of Medical Sciences.

A questionnaire was developed by adopting items from OHRQoL questionnaires such as the CPQ 11-14, OHIP and OIDP. The validity and reliability of this questionnaire was approved in an earlier study (Fernandes et al, 2006). The questionnaire used here consisted of 43 questions categorised into four domains: oral symptoms, functional limitations, emotional and social well-being. A maximum time of 20 min was allowed for each participant to answer the questions.

Responses to each item were scored on a 5-point Likert scale: 0 = never; 1 = hardly ever; 2 = occasionally; 3 = fairly often; and 4 = very often or every day. The sum total of these scores yields the level of the patient’s OHRQoL. Higher scores indicate a lower level of OHRQoL and vice versa.

After data collection, the scores of each domain were summed up. The Kolmogorov-Smirnov test was used to validate the normal distribution of data. Normally distributed data were analysed by the repeated measure test and the Bonferroni correction of pairwise comparisons. Statistical significance was set at p < 0.05.
RESULTS

One hundred forty-eight of 218 patients completed the OHRQoL questionnaire at all 3 times during the study. Ninety-seven participants were female (67%) and their mean age was 15.8 years. The mean age of male patients was 16.1 years. There was no significant difference in the OHRQoL or its domain scores between the two sexes at any time. Table 1 illustrates means and standard deviations of OHRQoL and its domains.

After using the repeated measure analysis, it became clear that changes in OHRQoL and its domains were significant during this period. Table 2 shows the results of the Bonferroni test. The overall OHRQoL score and the scores of oral-symptom and functional-limitation domains significantly increased from T₀ to T₁. The score of the emotional well-being domain decreased during this period, but not significantly. The changes of the social well-being domain were not statistically significant (Table 2 and Fig 1).
Comparing the T2 phase with T1, a significant decrease was found in the OHRQoL scores and its domains. Moreover, at T2, the scores of the domains were lower than their equivalents at T0, and in the oral-symptoms, social and emotional well-being domains, these differences were significant (Table 2).

DISCUSSION

Many orthodontists believe that by initiating orthodontic treatment, their patients become happier. On the other hand, difficulties faced by patients may become apparent after the placement of orthodontic appliances. In this study, our aim was to assess different aspects of the orthodontic patients’ QoL during the first 6 months after initiating orthodontic treatment in 147 patients. For this purpose, we used a modified questionnaire that was proven to be reliable and valid in a previous study on 14- to 17-year-old adolescents in an Iranian population (Heravi et al, 2011). We found no significant difference between male and female participants. This finding was consistent with the results of previous studies (Chen et al, 2010; Liu et al, 2011). Therefore, the results of both sexes were pooled.

Significant changes in OHRQoL were observed in this study during the initial 6-month phase of orthodontic treatment, which supports the findings of other studies that found treatment with fixed orthodontic appliances to have a negative impact on OHRQoL (Bernabe et al, 2008; Zhang et al, 2008; Liu et al, 2011; Chen et al, 2010).

The overall OHRQoL scores at T0 (before treatment) were lower than T1 (at 2 months). This implies that during the initial phase of orthodontic treatment, the level of OHRQoL decreased, concurring with findings by Zhang et al (Zhang et al, 2008). However, the results of Chen et al (2010) showed that OHRQoL scores at 1 month after starting orthodontic treatment were similar to pre-treatment scores. At the T2 phase (6 months after orthodontic therapy began), the level of OHRQoL increased even beyond that at T0. This result is in contrast to Liu (Liu et al, 2011), who concluded that the level of QoL 18 months after orthodontic treatment began was comparable with pre-treatment, but at 6 and 12 months, the level of QoL was lower than at T0. These differences are in part due to different questionnaires that were used in these studies. In addition, a cultural difference may be assumed to be the cause of this disagreement.

Evaluating the domains of OHRQoL showed that the scores of oral symptoms after a two-month period increased, but decreased after 6 months to a level lower than at T0. This finding is in agreement with Zhang et al (2008) and McGrath et al (2004). This was also the same for functional limitations. These findings make sense, since after bracket placement, patients may experience a period of oral pain, especially during mastication, which can be the cause of an increase in the scores in these domains. Values at T2 showed a significant decrease in scores. It could be that patients have become accustomed to the situation and feel more comfortable with their oral functions – even much more than in the T0 phase.

The emotional and social well-being criteria did not change significantly during the first two months after bracket placement. However, during this period, in contrast to the scores of other domains, the scores of emotional well-being decreased. This fact implies that in a patient with malocclusion, even bracket placement could improve their emotional well-being. This finding is in exact agreement with the results of Zhang et al (2008). The questionnaire (CPQ) used in that study is very similar to the questionnaire used in the present study. Comparing the results of our study with the results of Zhang et al (2008), it was of interest that the mean scores of OHRQoL and its domains in our study were lower than those in the Zhang et al study. Moreover, the score of the emotional well-being domain was about a fifth of that in Zhang et al’s study. These differences can be interpreted by the differences in overall QoL level between the two populations and differences in their cultures. In the T2 phase, scores of these two domains decreased remarkably. This phenomenon can be due to the patient’s wish to improve their appearance.

This information can be useful to inform patients of the likely effect of orthodontic treatment on their lives and thus can give them realistic expectations of treatment.

CONCLUSION

Although the quality of life of patients diminished after placement of orthodontic appliances, six months later, all aspects of quality of life underwent a significant improvement, so that, aside from functional limitations, the final QoL level measured was even better than before treatment began.
REFERENCES


