Assessment of Orthodontic patients' expectations before orthodontic treatment referred to Shahid Beheshti othodontic department and private office, 2006: Part II

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Abstract

Aim Understanding or self- image about beauty of teeth has been considered as the most common reasons for referrals to orthodontic treatment. The aim of this study was to evaluate the expectations and self – concepts of patients referred for orthodontic treatment in a private office and Shahid Beheshti, Dental School.

Materials & Methods To evaluate patient's expectations and self-concept, a questionnaire consisting of 13 close and 2 open questions was prepared. To determine whether the problems of patients are realistic, an orthodontist visited all patients and recorded the findings on a structured questionnaire. In addition some variables that might influence the score that patients recorded to evaluate their own dental beauties were analyzed. To analyze the data, Chi-square, t test, ANOVA, Kappa statistic and multi-variable linear regression model were used.

Results Totally 252 individuals (92 males and 160 females) were evaluated. The girls thought treatment times was longer and the cost was very higher. One- third thought they need other dental treatment. The patients were often sent by doctors or dentist than their friends or family.

24.4% of patients who had TMD problems, mentioned them as the cause of their orthodontic treatment. The patients' grades to selected Cl I pictures, had significant differences with each other ($P<0.001$).

Conclusion The Individuals' image of his teeth was influenced by external, functional and social factors.

Keywords: Therapeutic expectations, Occlusion, Self – concept, Therapeutic incentives

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Based on patient's and his parents understanding, professional and public judgements, social attitudes, esthetic aspect of malocclusion creates very important social aspects in individual's life. [1,2]

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Attractiveness in child's face influences teacher's expectations, evaluations and judgements, and this matter has been observed in many people.[3,4]

Alike adults, the appearance of teeth in children is important, regarding people's social feeling.[5] One study, showed a certain relation between mental and visual need of orthodontic treatment and the individuals were able to differentiate the pictures according to normal occlusion importance.[6] Espeland and Stenvik(1991) concluded that; despite relationship between satisfaction and occlusion personal differences are also effective in this matter.[7] Tang and Kiyak (1998) found out that having high self-

confidence and appropriate imagination from their body, children expect, that orthodontic treatment will improve their life.[8] However; functional aspects should not be ignored.
According to Kiyak et al (1984, 1991), esthetics and oral function were the main reasons, for patients who referred for orthodontics and surgery.9,10 Kiyak et al (1988) showed patients who had intensive problems, reported more side effects after orthognathic surgery.[11] Most of treatment failures in prosthodontics and orthodontics are not due to technical problems, infact there is a difference between patient's expectations and dentist's aims. [12] In order to understand the relationship between patient's expectations and understanding dentist's purposes and findings, studies mainly have difficult designing, because measuring "expectation", "understanding" self- concept and body image,… is very difficult as they are abstract. Actually, working on one aspect of this concept means ignoring the other aspects. This study is intended to determine individual's self-concept and body-image according to objective criteria. In addition to these criteria, subjective criteria and functional problems are also considered to find out which attitude is conforming and which one is contrasting. It means determining patient's view- points in referring to orthodontic treatment of their teeth and their expectation from orthodontic treatment.

Materials and methods

This study was done, in a cross- sectional descriptive way, on patients referring to a private office and orthodontic department of Shahid Beheshti Dental School in 2007. Sampling was done unrandomly in a determined period of time, and 252 patients were evaluated.
Criteria to enter the study:
Not needing surgical treatment (orthognathic or ortho-surgery)
Desire and ability of the patients to fill in the first questionnaire
Physical, etiologic and malocclusion classification limitation was not considered.
Age limitation: Minimum 14 years for girls and 17 for boys and maximum 30 for both groups was considered.
Filling the first and second questionnaire, questioning patients and orthodontic examining.
First questionnaire related to patients was provided by an orthodontist, a senior dentistry student, edited and corrected by a medical research expert and included the following questions:
The patients' suggestion about treatment time, treatment cost and necessity of more treatments was asked in 3 questions.
TMJ (Temporomandibular Joint) problems were asked by one question and based on effect of these problems(if available) on patient's request for orthodontic treatment, was followed by another question.
In order to determine the patient's ability in differentiating regular and irregular teeth, dental and skeletal disorders, 5 selected photos were offered to patients to grade them from 0 to 10 (Figure 1).

Figure 1- Five intra-oral photos which the individuals gave them the VAS scores (0-10)

The way of patient's referring and admission was evaluated by two questions.

Second questionnaire was completed by an academic orthodontist and included 15 closed questions related to dento-skeletal conditions.

The validity of questionnaires: The opinions of 3 persons with 3 different view points (senior dental student for the view point of general dental practitioner, orthodontist for dental specialty view point and medical researches expert for research view point) were used.

Reliability of questionnaire: the first questionnaire was randomly evaluated on 15 patients for two times, and regarding the questions kappa statistics, relative agreement, Pearson correlation coefficient were used, which showed proper reliability of the questions ($K \geq 0.6$; relative agreement ≥ 0.8, Pearson correlation coefficient $r > 0.5$ with $p < 0.05$). The second questionnaire was completed by an academic orthodontist.

There was no time limitation for completing the questionnaire. Fatients breifing was done in a way that no bias in answering was produced.

SPSS 10 software was used to analyze the data. According to variable scale in each case, frequency and percentage of frequency (nominal and rank qualitative variables) and mean, standard deviation, and range of changes (quantitative variables) were used. Statistical analysis was done as following:

1) Reliability of questionnaire: In both times of the repetition of the questionnaires on 15 patients, Kappa statistics was used to binominal variables. Ordinal variables were preferably changed in to binominal variables. In rank, variables which were not changed, Wilcoxon's signed rank test was applied.

Quantitative variables were evaluated using Pearson correlation coefficient and t-paired test. Multi nominal variables were measured by relative agreement percentage.

2) Comparison and gender: Chi- square tests were used for nominal variables, Mann-Whitney for rank variables and t-student test for quantitative variables.

3)The relation between the grade of esthetics of teeth by the person to himself and other factors of first questionnaire: two linear multi-variable regression plans(one as "enter" to determine the related factors and the other as "stepwise" to determine the effective factors after eliminating intermediate effects) were used.

4) The relationship between patient's resvense and the dentist's findings, regarding the case, was measured by kappa test or relative

agreement percentage (if kappa test was not possible).
5) Other comparisons: Regarding the case, they were done by chi-square test, Mann-Whitney, ANOVA, analysis of repetitive quantity variable by Bon-feroni and Pearson correlation coefficient. In all case $\alpha = 0.05$ and $P<0.05$ was considered significant.

Results

Demographic specifications:
Totally 252 individuals including 92 males (%36.5) and 160 females (63.5%) with average age of 19±5 were evaluated.
Patient's view points:
B.1) Time and cost of treatment and necessity of other treatments: The girls thought treatment time was very longer (girls 133.4, boys 114.6, P=%32, Z=2.132). They also thought the cost was very higher (girls 133.1, boys 115, P=%40, Z=2.52).
84 persons (%33.3) believed, beside orthodontic treatment they needed other dental treatments. These needs were not mentioned by 6 persons(%2.4).The other persons had pointed to the following matters: jaw surgery (32 cases, 12.7%), Operative dentistry (23 persons, %11.9) periodontal surgery (21 persons, 8.3%) prosthetic treatment(9 persons, 3.6%)
B.2) Jaw click was seen in 59 persons (23.4%), pain in 30 persons and limitation in mouth opening in 24 persons (11.9 and 9.5% respectively). 143 persons (56.7%) did not suffer from this problem. From 109 persons who had at least one of these 3 problems, 32 (29.4%) mentioned these problems as the cause of their orthodontic treatment.
B-3) Referrals:
As Table 1 shows, patients were often sent by doctors or dentists to do orthodontic treatment and they had often accepted this treatment by full consent.
B-4) Patients' opinions about selected pictures beside occlusal specification are presented in Table 2.Statistically these grades had significant difference with each other (repetitive quantity test; ANOVA; P<0.001; F=107.490)
Paired comparison showed there is a significant difference between the grades (Bon feroni test, P<0.001) except for pictures 4 and 1 (P=0.299) and pictures 5 and 3 (P≈1.000). So picture 2 had the highest and pictures 4 and 1 had the lowest grades. The girl's and boy's view points were only different about first picture. Meanwhile these grades never had proper correlation (r<-0.5 or r>0.5) with the marks graded by the person himself. This correlation about pictures 3 and 5 was statistically significant but regarding correlation coefficient; (Colton scale, 1976) was weak.

B-5) TMJ (Temporo-mandibular joint) problems.
Among 109 persons who thought to have such problems, only 21 persons (%19.3) really had these problems. In contrast, among 143 persons who did not suppose to have these problems, 3 persons (%2.1) suffered from TMJ problems (P<0.001; SE= 0.044; Kappa=0.189).
TMJ problems were seen in 24 persons(%9.5) including 7 boys (%7.6) and 17 girls (%10.6) (Chi-square test; P=0.432; X2=0.617). Problems observed in patients' TMJ were as following: clicking (15 cases; %6.0) , jaw deviation (5cases; %2.0), limitation in jaw opening (3cases; %102), clenching, crepitus and pain (2 cases each; 0.08%).

Table 1– Orthodontic treatment referrals and patients' desire for treatment

Referrals	
Patient himself	97(38/5)
Family or friends	52(20/6)
Physician or dentist	115(45/6)
Patient desire	
I'm willing	171(67/9)
I'm not willing but accept treatment	66(26/2)
I do not want	15(6/0)

Table 2- The scores of the selected photos based on patients' point of view

Number of Photos'	description	Total score	Males' score	Females' score	Gender comparison *	Correlation of individual's score with himself **
1	Class I	2/6 ±5/4	2/2±6/1	2/7 ± 5/1	3/080 = t 0/002 = p	0/027 = -r 0/672= p
2	Class I Normal overbite	1/9 ±8/4	1/7 ± 8/5	1/9 ± 8/3	1/073 =t 0/284 = p	0/098 = r 0/124 = p
3	Class I (edge to edge)	2/1 ±6/7	2/3 ± 7/0	1/9 ± 6/5	1/655= t 0/099 = p	0/171 = r 0/007 = p
4	Class I	2/4 ±5/1	2/4 ±5/4	2/3 ±4/9	1/486 = t 0/139 = p	0/029 = -r 0/646 = p
5	Class I	2/3 ±6/7	2/7± 6/8	2/1 ± 6/6	0/526 = t 0/600 = p	0/178 = r 0/005 = p

*t-student test
** Pearson correlation

Discussion

Appearance of teeth is very important in people's judgment about attractiveness of face. In some countries like America, people believe dental esthetics is very important in esthetic of face. 13-15

Today, it is shown that even children, are good choices for treatment. They know their problems and enjoy enough self confidence. 6,8 Understanding or self-image about beauty of teeth has been considered as the most common reason for referrals to orthodontic treatment.8 In our study, average score graded by patients to the esthetic of their teeth was about 6.4 (mode=7) which showed an average in believing esthetics (0 to10). So in current study neither high self- confidence and self-esteem and nor low self-esteem was observed. Self-confidence is influenced by malocclusion (O'Regan et al 1991) 16 and the belief of the regular incisor teeth on person's attractiveness and consequently his/her function in the society [1,2,17], regarding the person's grade to himself, there was no difference between boys and girls in the current study.[18]

This problem was fairly removed by two ways. First person's score was considered as criterion for himself/herself which balanced the result. Secondly in the 5 pictures, only mouth and teeth was shown to patient to avoid being influenced by picture-owner's gender.

There was no considerable correlation between these grades and persons' grades for themselves. It showed the patients had tried to mark a real score to pictures and themselves. Another evidence for this matter was the high grades for the pictures which had normal occlusion and bite and were classified as skeletal class I (Figure1). In average this grade was 1.7 higher than the second beautiful picture (picture5). Achieved variables were very small both in person's score for himself and score of 5 chosen pictures [19] (Maximum 2.7) and shows relative homogeneity in patients' attitudes about pictures. Also, in current study, persons understanding from

his/her beauty had no relationship with age which indicates, like children and youngsters, adults can also seek treatment.

Phillips et al showed elderly people and youngsters value their individual and social appearance of the same level, but elderly people mostly consider functional and hygienic matters in future 20, and regarding person's evolution, this matter is predictable. Ostler and Kiyak have also approved this result.[10] In contrast, Kiyak et al believed elderly people, having problem in chewing, were less satisfied after orthognathic operation.21 Considering the selection of patients for surgery (comparing to common orthodontic treatment), this finding can limitedly be generalized. Studies done by Cunnigham et al and Shaw et al showed as age goes up, desirability of person's facial body image decreases [1,22] however, it contrasts the findings of current study which may be due to the persons' way of evaluation from themselves and the differences between societies being studies(European and Americans respectively) and the society under-study.

Kiyak et al believed, after a 9 month period following orthognathic surgery, most patients would be satisfied with the result of treatment.[23] On the other hand, approving these findings, Ostler and Kiyak found out the more motivated the person, the more satisfying the result of treatment would be.[10]

According to other studies from Kiyak et al the more the problems imagined by person the more the problems experienced after the operation.[11,21] Bos et al showed that patients who are more satisfied with their face, have more expectations from treatment.[19] Speland and Stenvik demonstrated, the more the patient is aware of his problem, the more dissatisfied he/she would be.[7] Unfortunately, while the orthodontic braces are still in patients' mouth, they have less self-confidence. [23] Positive effect of orthodontic treatment and surgery on person's facial body image is very important for many patients, but these expectations are not necessarily met after treatment.[23] Improvement in dental esthetics is not necessarily followed with increase in self-confidence, and psychological influence of treatment on the person cannot be anticipated.[16] Since the highest reasons for referring to orthodontic treatment are better conformity of upper and lower teeth (%73) and general appearance of teeth 20, paying attention to these matters seems to be critical. It must be kept in mind that, the reason for most of failures in treatment is not technical deficiency, but the difference between patient's need for treatment and dentist's objectives for treatment.[24] In other words, patients usually experience defects which are not approved by others (parents or doctor). People's attitude toward beauty may differ from society to society [6], for instance, spacing specially diastema is disfavored among white races while it is considered a sign of beauty among Africans.[25, 26] Considering all aspects of beauty, it is not always true, for example, in different studies on various societies, pictures having crowding are regarded less attractive [2, 6, 26, 27] which is approved in the present study. So that, among 5 pictures with malocclusion classified as skeletal class I, the most harmonious pictures had the highest scores and the most disharmonious pictures had the least scores. Another point is that the patients' own request for treatment (opposite to family's insistence, friends' suggestion, doctors' or dentists' request) was an effective factor (β=-0.114) in person's low score for himself/herself. As mentioned before, in present study, the first 3 factors have been effective on person's understanding from himself, so they can be among patients' expectations from treatment. The fourth factor (prevention) is not surveyed in our study, but one – third of patients believed, besides orthodontic treatment, they need other treatments like jaw surgery, gum surgery, operative treatment and prosthetics. This matter must be studied in other surveys to find out which one of these treatments are needed (conformity of demand with need) and which one is patients' own image.

In current study psychological and social problems had no difference between boys and girls, just girls felt more ashamed than boys while smiling, in addition girls thought treatment would last longer and cost would be higher. Specialized examining showed existence of missing teeth in two jaws and maxillary crowding were equally prevalent between boys and girls. In contrast mandibular crowding was

more common among girls and spacing in one jaw among boys. In fact, it can be concluded that occurrence of all above mentioned problems are the same in two genders. Other studies have showed girls refer for orthodontic treatment more often, but boys need more treatment; lack of conformity between demand and need in two genders.

This findings are shown in studies by Soh and Lew, Wheeler et al and Helm [27, 28, 24] and they are in agreement with findings about most diseases (dental or non-dental). [29]

There are many individual differences about patients' expectations of treatment and their understanding about their beauty. Evaluation of aspects relating to persons' personality and its effects on request for treatment are suggested to be done in further studies.

Conclusion

Totally it can be concluded:

Age has no effect on persons self-image(esthetics of teeth). Effects of gender are shown just after considering many other factors.

Person's understanding from his/her teeth is influenced by external (occlusion) functional and social factors.

There is a considerable difference between what the patient thinks he needs (demand) and what the dentist finds in his examinations.

References

1-Shaw WC. The influence of children's dentofacial appearance on their social attractiveness as judged by peers and lay adults. Am J Orthod. 1981; 79: 399-415.

2-Shaw WC, Dawe GRM, Charles CR. The influence of dentofacial appearance on the social attractiveness of young adults. Am J Orthod. 1985; 87: 21-6.

3-Kiyak HA, Bell R. Psychosocial considerations in surgery and orthodontics. In: Proffitt WR, White R: Surgical – orthodontic treatment. St. Louis CV: Mosby 1990;Chap3: 71-91.

4-Dare GJ. The effect of pupil appearance on teacher expectations. Early Child Dev Care. 1992; 80: 97-101.

5-Cavior N, Lombardi DA. Developmental aspects of judgment of physical attractiveness in children. Dev Psychol. 1973;8: 67-71.

6-Mugonzibwa EA, Kuijpers-Jagtman AM, Van't Hof MA, Kikwilu EN. Perceptions of dental attractiveness and orthodontic treatment need among Tanzanian children. Am J Orthod Dentofacial Orthop 2004;125: 426-34.

7-Espeland LV, Stenvik A. Perception of personal dental appearance in young adults: relationship between occlusion, awareness, and satisfaction. Am J Orthod Dentofacial Orthop 1991; 100: 234-41.

8-Tung AW, Kiyak HA. Psychological influence on the timing of orthodontic treatment. Am J Orthod Dentofacial Orthop 1998;113: 29-39.

9-Kiyak HA, Beach LR. Intrinsic motives in the decision to seek orthognathic surgery. J Dent Res 1984; 63:212.

10-Ostlers, Kiyak HA. Treatment expectations versus outcomes among orthognatic surgery patients. Int J Adult Orthod Orthognath Surg 1991; 6:247-55.

11-Kiyak HA, Vitaliano PP, Crinean J. Patients' expectations as predictors of orthognathic surgery outcomes. Health Psychol 1988;7: 251-68.

12-Albino JE, Tedesco LA, Conny DJ. Patient perceptions of dental – facial esthetics: shared concerns in orthodontics and prosthodontics. J Prosth Dent 1984;52: 9-13.

13-Cross JF, Cross J. Age, sex, race and the appearance of facial beauty. Dev Psycho 1971;5: 433-9.

14-Linn EL: Social meanings of dental appearance. J Health Hum Behave 1966;7: 289-95.

15-Berscheid E, Walster E, Bohrnstedt G. Body image. Psycho Today 1973;7: 119-31.

16-O'Regan JK, Dewey ME, Slade PD, Lovius BBJ. Self-esteem and aesthetics. Br Soc Ortho 1991;18: 110-18.

17-Sergl HG, Stodt W. Experimental investigation of the aesthetic effect of various tooth positions after loss of an incisor tooth. Trans Eur Orthod Soc 1970; 497-507.

18-Kiyak HA, Hohl T, Sherrick P. Sex difference in motives for and outcomes of orthodontic surgery. J Oral Surg 1981; 39:757-64.

19-Bos A, Hoogstraten J, Praht–Andersen B. Expectations of treatment and satisfaction with dentofacial appearance in orthodontic patients. Am J Orthod Dentofacial Orthop 2003;123: 127-32.
20-Phillips C, Broder HL, Bennett ME. Dentofacial disharmony: motivations for seeking treatment. Int J Orthod Orthognath Surg 1997;12: 7-15.
21-Kiyak HA, NcNeill RW, West RA. Personality characteristics as predictors and sequelae of surgical and conventional orthodontics. Am J Orthod 1986;89: 383-92.
22-Cunningham SJ, Gilthorpe MS, Hunt NP. Are orthognatic patients different? Eur J Orthod 2000;22: 195-202.
23-Kiyak HA, West RA, Hohl TH, McNeill WM. The psychological impact of orthogonathic surgery: A 9- month follow-up. Am J Orthod 1982;81: 404-12.
24-Wheeler TT, Mc Gorray SP, Yurkiewicz L, Keeling SD, King GJ. Orthodontic treatment demand and need in third - and fourth – grade school children. Am J Orthod Dentofacial Orthop 1994;106: 22–3.
25-Helm S, Petersen PE, Kreiborg S, Solow B. Effect of separate malocclusion traits on concern for dental appearance. Community Dent Oral Epidemiology 1986;14: 217-20.
26-Kerosuo H, Hausen H, Lainet T, Shaw WC. The influence of incisal malocclusion on social attractiveness of young adults in Finland. Eur J Orthod 1995;17: 505-12.
27-Soh G, Lew K. Assessment of orthodontic treatment needs by teenagers in Asian community in Singapore. Community Dental Health 1992;9: 57-62.
28-Helm S, Kreiborg S, Solow B. Psychosocial implications of malocclusion: a 15 year follow-up study on 30 year-old Danes. Am J Orthod 1985;87: 110-18.
29-Sadock BJ, Sadock VA. In: Kaplan & Sadock's Synopsis of Psychiatry: Behavioral Sciences/ Clinical Psychiatry. 9th ed. Philadelphia, Lippincott Williams & Wilkins 2003;Chap17:643-60.
30-Dongieux J, Sassouni V. The contribution of mandibular positioned variation to facial esthetics. Angle Orthod 1980;50: 334-9.
31-Wilmont JJ, Barber HD, Chou DG, Vig KW. Association between severity of dentofacial deformity and motivation for orthodontic – Orthognathic Surgery treatment. Angle Orthod 1993;63: 283-8.