

Relationship of Malocclusion with Self-Esteem & Quality of Life of Adult Saudi Female Orthodontic Patients

Kavitha Odathurai Marusamy¹, Ahmed Marghalani², Lujain Khaled Aljuhani³,
Shahd Nabil Alhelali⁴, Saravanan Ramasamy⁵, Ullal Anand Nayak⁶

^{1, 2, 3, 4, 6} Department of Preventive Dental Sciences, Ibn Sina National College for Medical Sciences, Al Mahjar, Jeddah, Kingdom of Saudi Arabia, ⁵ Department of Oral & Maxillofacial Rehabilitation, Ibn Sina National College for Medical Sciences, Al Mahjar, Jeddah, Kingdom of Saudi Arabia.

ABSTRACT

BACKGROUND

Self-satisfaction can be influenced by malocclusion resulting in impairment of psychology, associated with low self-esteem (SE) and quality of life issues (QOL). Certain malocclusions and orthodontic treatment needs are related to QOL and they can affect the psychological development and social skills of adolescents and young adults, who are the most common orthodontic patients. This study was done to assess the self-esteem and Orthognathic Quality of Life (OQL) among female participants with different types of malocclusion in private orthodontic clinics in Jeddah.

METHODS

This questionnaire-based study evaluated the effect of orthodontic malocclusion on SE and QOL in female orthodontic patients with Class I, Class II, Class III malocclusion, crowded anterior teeth, proclined anterior teeth, open bite, and deep bite patients. Patients were evaluated before starting orthodontic treatment with Rosenberg's Self-Esteem Scale and the Orthognathic Quality of Life Questionnaire (OQLQ) to find any correlation with malocclusion severity.

RESULTS

The results indicated that females who had Class II proclination and Class II deep bite type of malocclusion had significantly higher negative SE compared to other types. In the oral function component of the OQLQ, Class II malocclusion had statistically significant higher OQLQ scores than Class I Open bite (mean difference = 6.11, P = 0.004) and Class II Deep bite (mean difference = 4.88, P = 0.015).

CONCLUSIONS

The results suggest that female orthodontic patients with severe Class II and / or severely protrusive lip profile, deep bite may have lower SE and QOL than those with crowding, open bite, and Class III malocclusion.

KEY WORDS

Self-esteem, Orthodontic Malocclusion, Female Adult Orthodontic Patients, Quality of Life

Corresponding Author:

Dr. Kavitha Odathurai Marusamy,
Assistant Professor, Orthodontics Division,
Department of Preventive Dental Sciences,
Ibnsina National College for Medical
Sciences, Al Mahjar, Jeddah,
Kingdom of Saudi Arabia 21418.
E-mail: dr.omkavitha@gmail.com

DOI: 10.14260/jemds/2021/465

How to Cite This Article:

Marusamy KO, Marghalani A, Aljuhani LK,
et al. Relationship of malocclusion with self-
esteem & quality of life of adult Saudi
female orthodontic patients. J Evolution
Med Dent Sci 2021;10(30):2276-2280, DOI:
10.14260/jemds/2021/465

Submission 20-02-2021,
Peer Review 18-05-2021,
Acceptance 25-05-2021,
Published 26-07-2021.

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BACKGROUND

Self-esteem is a person's overall sense of personal worth or value; he / she is self-judging. Self-esteem interferes with every aspect of a person's physical & emotional health, and how they interact with society.¹

High self-esteem causes self-respect, this individual will make a concentrated effort in the face of difficulties; their perseverance increases the probability of obtaining more success than failure.² In contrast, low self-esteem causes the individual to fall behind the difficulties of life or to try, but without giving the best of himself. Negative self-esteem is related to negative affections such as pain, anguish, doubt, sadness, emptiness, guilt, and shame.

Adults now make up a good proportion of patients seeking orthodontic treatment, apart from multidisciplinary treatment, aesthetics are becoming important in adult patient's lives. For the majority of people, facial attractiveness immensely correlated with self-esteem linked with their social and professional relationships.³

Aesthetic appearance influences the improvement of self-concept and self-esteem. Self-esteem could also be affected by the rejection of the body image perceived by itself. Smiling is fundamental for the expression of aesthetics in the face, and therefore the teeth contribute to this expression. Dental appearance can influence the psychosocial state of the individual and also the kindness, social class, and acceptance perceived by the rest. Nevertheless, people trust a person who smiles more than a person who does not.^{2,4}

Dental aesthetics has a greater contribution to psychosocial well-being.^{5,6} Further patients with severe malocclusion involving the anterior teeth experience both emotional and psychosocial negative effects on their lives. It is often stressed that the patient's perception of the malocclusion is often different from that of the orthodontist.

Studies have found that females with severe malocclusion have negative effects on oral health-related quality of life (OHRQOL), predominantly psychosocial wellbeing.^{7,8,9} Patients' OHRQOL has improved after they completed orthodontic treatment than it was before or during treatment.¹⁰ In one particular study, orthodontic treatment completed students had higher self-esteem than untreated ones. Also, students who demonstrated greater negativity about their dental aesthetics had a greater self-perceived need for treatment.¹¹

Low self-esteem adolescents had dissatisfaction with dental appearance, avoided smiling, and believed that having straight teeth necessitates success in life, in contrast, adolescents having a high level of positive feeling towards the orofacial region are more strongly related to self-perceivedness.^{12,13} The prime motivating factor for the decision to seek treatment in adult patients is to improve in dental aesthetics.¹⁴ These studies indicate that dental aesthetics in comparison to oral, physical, and functional statuses of the OHRQOL, has a greater impact on the psychological status of adult patients.

Thus, this study intended to assess the relationships between variables of malocclusion severity and psychosocial well-being in adult Saudi female patients using a self-esteem questionnaire before the start of orthodontic treatment.

METHODS

This descriptive, analytical cross-sectional study evaluates whether there is any difference in self-esteem (SE) and quality of life (QOL) using Rosenberg's self-esteem scale (RSES) (RSE)¹⁵ and the Orthognathic quality of life questionnaire (OQLQ)¹⁶ in different types of malocclusion which includes class I crowding, deep bite, open bite, class II malocclusion with anterior proclination and class III malocclusion. The study group included 435 female patients with a mean age of (22 ± 3.8) undergoing orthodontic treatment at various orthodontic clinics in Jeddah, Saudi Arabia. Ethical committee clearance of Ibn Sina National College for medical sciences was obtained (approval no 017DP29112018). Each patient signed a consent form and agreed to volunteer participation. The study duration extended for a period of 10 months from Jan 2019.

Study group patients were chosen with the following criteria -

1. Healthy female patients between 18 and 30 years of age.
2. No craniofacial anomalies & syndromes
3. Normal temporomandibular joint
4. No noticeable facial asymmetry;
5. No missing or impacted teeth except third molars;
6. No previous orthodontic treatment experience;
7. No active caries or periodontal disease.

The sample size was calculated using the Sample Size Determination Program Ver. 2.0.1 and matching the previous study.¹³ The participants who have consented to be a part of the study completed the RSE and OQLQ questionnaires before starting the orthodontic treatment. The RSE consisted of a positive or a negative response on a four - point Likert scale ranging from 'strongly agree' to 'strongly disagree'.¹⁷ Out of 10 questions 5 were positive, and 5 were negative. For each negative statement, the answer was counted and added to the total score. The RSE was between 10 and 40, and a higher RSE score indicated greater SE. The OQLQ mainly assessed QOL in dentofacial deformity patients¹⁶ by measuring four principal components (facial aesthetics, function, self-awareness of facial deformity, and social aspects) on a four-point scale. OQLQ dimensions were scored such that lower scores indicated better QOL, and the scores ranged between 0 and 88.

Statistical Analysis

Frequencies and percentages were used for descriptive statistics for presenting categorical variables. The normality assumption (Shapiro-Wilk test, $P > 0.05$) showed that data was following a normal distribution, and hence mean and the standard deviation was used for continuous variables. Analysis of Variance (ANOVA) was used to compare the differences in mean scores of OQLQ - 22 and self-esteem between different age groups. A P - value less than 0.05 is considered statistically significant.

RESULTS

This study was done to assess the self-esteem and Orthognathic Quality of Life among female participants with different types of malocclusion. Self-esteem was measured

using RSE. The RSE scale was divided into two parts: Positive Self-esteem (PSE) with items 1, 3, 4, 7, 10 and Negative Self-esteem (NSE) with items 2, 5, 6, 8, 9. In PSE, strongly disagree (SD) = 1, Disagree (D) = 2, Agree (A) = 3, and Strongly Agree (SA) = 4, whereas in NSE the scoring was made in the opposite direction [SA = 1, A = 2, D = 3, SD = 4]. The recorded scores of self-esteem items for our study population are given in Table 1.

		Strongly Disagree (SD)	Disagree (D)	Agree (A)	Strongly Agree (SA)
1. On the whole, I am satisfied with myself.	N	63	4	56	209
	%	(19.0)	(1.2)	(16.9)	(63.0)
2. At times, I think I am no good at all.	N	182	105	2	43
	%	(54.8)	(31.6)	(0.6)	(13)
3. I feel that I have a number of good qualities.	N	63	5	73	191
	%	(19.0)	(1.5)	(22.0)	(57.5)
4. I am able to do things as well as most other people.	N	60	2	80	190
	%	(18.1)	(0.6)	(24.1)	(57.2)
5. I feel I do not have to be proud of.	N	165	138	3	26
	%	(49.7)	(41.6)	(0.9)	(7.8)
6. I certainly feel useless at times.	N	180	120	3	29
	%	(54.2)	(36.1)	(0.9)	(8.7)
7. I feel that I am a person of worth, at least on as equal plane with others.	N	44	6	80	202
	%	(13.3)	(1.8)	(24.1)	(60.8)
8. I wish I could have more respect for myself.	N	195	84	1	52
	%	(58.7)	(25.3)	(0.3)	(15.7)
9. All in all, I am inclined to feel that I am a failure.	n	192	113	3	24
	%	(57.8)	(34)	(0.9)	(7.2)
10. I take a positive attitude towards myself.	N	45	1	81	205
	%	(13.6)	(0.3)	(24.4)	(61.7)

Table 1. Scores of Self-Esteem Scale

Positive self-esteem (PSE): Items 1, 3, 4, 7, 10 [SA = 4. A = 3. D = 2. SD = 1]
 Negative self-esteem (NSE): Items 2, 5, 6, 8, 9 [SA = 1. A = 2. D = 3. SD = 4]

The RSE was between 10 and 40, and a higher RSE score indicated greater Self-esteem (SE). The mean self-esteem in our study was found to be 25.3 ± 3.33 . The mean PSE and NSE scores were found to be 16.29 ± 2.93 and 8.33 ± 2.44 respectively [Table 2]. When we compared the SE score between different types of malocclusion, it was found that there was no statistical significance seen in total SE and PSE scores, but NSE scores showed significant differences (< 0.001) [Table 2, Figure 1]. The mean NSE scores were higher in Class II Proclination (9.20 ± 2.69) and class II deep bite (8.82 ± 2.40). The post-hoc analysis with Bonferroni corrections showed that females who had Class II Proclination and class II deep bite type of malocclusion had significantly higher NSE scores when compared with Class I crowding ($P = < 0.001$ and $P = 0.001$). This means that females who had Class II proclination and class II deep bite type of malocclusion had significantly higher negative SE compared to other types.

		Malocclusion					Total	F	P Value
		Class I Crowding	Class I Open Bite	Class II Deep Bite	Class II Proclination	Class III			
PSE	Mean	16.84	16.36	15.94	16.41	16.09	16.29	1.055	0.379
	SD	3.62	2.68	2.58	2.63	3.03	2.93		
NSE	Mean	7.29	8.10	8.82	9.20	8.38	8.33	5.915	< 0.001
	SD	1.98	2.39	2.40	2.69	2.45	2.44		
Total	Mean	24.13	24.46	24.76	25.61	24.47	24.62	1.399	0.234
	SD	3.66	3.33	3.25	2.89	3.29	3.33		

Table 2. Comparison of Two Types of Self-Esteem Score between Different Malocclusions

P value < 0.05 is significant
 PSE: Positive self-esteem
 NSE: Negative self-esteem

Figure 1: Negative self-esteem scores in different types of malocclusion

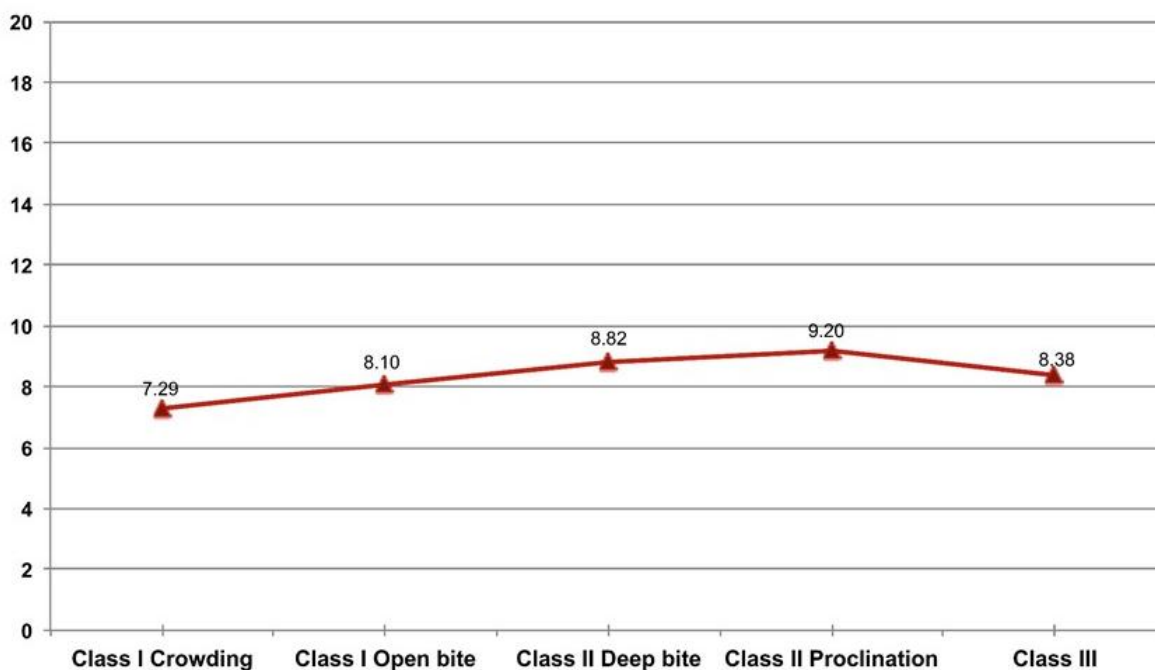


Figure 1. Negative Self-Esteem Scores in Different Types of Malocclusion

		Bothers me a lot (4)	Bothers me a little (2 - 3)	Not at all bothering (1)
1. I am self-conscious about the appearance of my teeth	N	42	234	56
	%	(12.7)	(70.5)	(16.9)
2. I have problems in biting	N	48	175	109
	%	(14.5)	(52.7)	(32.8)
3. I have problems in chewing	N	55	177	100
	%	(16.6)	(53.3)	(30.1)
4. There are some foods I avoid eating because the way my teeth meet makes it difficult	N	68	183	81
	%	(20.5)	(55.1)	(24.4)
5. I don't like eating in public places	N	70	170	92
	%	(21.1)	(51.2)	(27.7)
6. I get pains in my face or jaw	N	51	190	91
	%	(15.4)	(57.2)	(27.4)
7. I don't like seeing a side view of my face (profile)	N	69	190	73
	%	(20.8)	(57.2)	(22.0)
8. I spend a lot of time studying my face in the mirror	N	59	200	73
	%	(17.8)	(60.2)	(22.0)
9. I spend lot of time studying my teeth in the mirror	N	73	183	76
	%	(22.0)	(55.1)	(22.9)
10. I dislike having my photograph taken	N	46	210	76
	%	(13.9)	(63.3)	(22.9)
11. I dislike being seen on video	N	65	208	59
	%	(19.6)	(62.7)	(17.8)
12. I often stare at other people's teeth	N	55	209	68
	%	(16.6)	(63.0)	(20.5)
13. I often stare at other people's faces	N	62	201	69
	%	(18.7)	(60.5)	(20.8)
14. I am self-conscious about my facial appearance	N	52	211	69
	%	(15.7)	(63.6)	(20.8)
15. I try to cover my teeth when I meet people for the first time	N	65	210	57
	%	(19.6)	(63.3)	(17.2)
16. I worry about meeting people for the first time	N	71	197	64
	%	(21.4)	(59.3)	(19.3)
17. I worry that people will make hurtful comments about my appearance	N	110	161	61
	%	(33.1)	(48.5)	(18.4)
18. I lack confidence when I am out socially	N	82	187	63
	%	(24.7)	(56.3)	(19.0)
19. I do not like smiling when I meet people	N	81	187	64
	%	(24.4)	(56.3)	(19.3)
20. I sometimes get depressed about my appearance	N	62	202	68
	%	(18.7)	(60.8)	(20.5)
21. I sometimes think that people are staring at me	N	68	197	67
	%	(20.5)	(59.3)	(20.2)
22. Comments about my appearance really upset me, even when I know people are only joking	N	148	114	70
	%	(44.6)	(34.3)	(21.1)

Table 3. Score of Orthognathic Quality of Life Questionnaire (OQLQ - 22)

The Orthognathic Quality of Life Questionnaire (OQLQ) consisted of 22 questions measures positive to negative [Table 3]. The lower QOLQ scores indicate a better quality of life with a maximum score of 88. The mean total score in our study was found to be 51.78 ± 10.17. The mean scores of each four components of OQLQ are given in Table 4.

		Malocclusion					F	P- Value
		Class I Crowding	Class I Open Bite	Class II Deep Bite	Class II Proclination	Class III		
SA (Max core 32)	Mean	19.30	18.31	17.06	19.49	19.83	4.508	0.001
	SD	4.84	4.30	3.86	5.43	5.49		
FA (Max core 20)	Mean	10.14	9.61	10.65	11.66	11.53	5.667	< 0.001
	SD	2.75	1.86	2.84	3.21	3.14		
FC (Max core 20)	Mean	9.75	10.07	10.37	10.20	11.25	2.557	0.039
	SD	3.05	2.69	2.89	2.64	2.78		
AI (Max core 16)	Mean	8.62	7.69	8.81	8.83	9.17	3.130	0.015
	SD	2.16	2.02	2.64	2.77	2.80		
Total (Max core 88)		47.83	45.67	46.90	50.17	51.78	4.305	0.002
		9.07	7.49	9.72	10.93	10.17		

Table 4. Comparison of OQLQ Domains Based on Type of Malocclusion

SA=Social aspects; FA= Facial aesthetics; FC: Functional component; AI=Awareness impact
P value < 0.05 is significant

When we compared the mean total QOLQ score between different types of malocclusion, there were statistically

significant differences observed [Table 4]. The post hoc comparison with the Bonferroni test showed that Class II malocclusion had statistically significantly higher OQLQ scores than Class I Open bite (mean difference = 6.11, P = 0.004) and Class II Deep bite (mean difference = 4.88, P = 0.015).

DISCUSSION

In the present study, the reliability of the questionnaire was 0.712 for the self-esteem scale. Acceptable alpha was between 0.7 and 0.9 as per Bowling's recommendation, so questionnaire reliability was accepted.¹⁸

In this study, we have used the Index of Orthodontic treatment need (IOTN) 18. IOTN as a valid screening tool for orthodontic patients has been proven previously. Several studies have agreed that the IOTN - DHC accurately measures the severity of the malocclusion.^{19,20,21}

A high correlation between malocclusion and self-esteem of female patients is confirmed by this study, which also proves that enhancing dental aesthetics improves one's self-esteem. These results are in agreement with those of other studies.^{10,22}

Our study was done to find out the self-esteem of only female patients. When we compared the SE score between different types of malocclusion, it was found there was no statistical significance seen in total SE and PSE scores, but NSE scores showed significant differences. In our study, female patients with increased severity of malocclusions showed statistically significant lower self-esteem than those with mild malocclusions, which was in agreement with previous studies.^{11,21}

In severe malocclusions, oral functions such as phonetics, mastication, and lip profile were also affected along with aesthetics and these will limit social interaction leading to higher negative self-esteem.

Patients who had Class II proclination and class II deep bite type of malocclusion had significantly higher negative SE compared to other types. Our results showed significant contrast to another study, which concluded that adolescent females noticed crowding of maxillary anterior teeth more negatively than lip protrusion or overjet.²³

Our study confirms the findings of Sardenberg et al.²⁴ confirmed the effect of overjet on negative self-esteem. In previous research on an adolescent population, anterior crowding was associated with more negative self-esteem than the protrusion.

Our results indicated both abnormal lip protrusion and deep bite leads to lower RSE and OQLQ in adult female orthodontic patients. These results are similar to a previous study of self-esteem involving female Asian University students.²⁵ The aesthetic concerns of adult females seem to be markedly different from those of adolescent females.^{6,7,8}

As this study has shown, the OQLQ is suitable for evaluating the psychological effects of malocclusion in adult female orthodontic patients. Future studies need to address differences in OQLQ of adult female patients with diverse cultural backgrounds and changes in the OQLQ after completion of orthodontic treatment.

CONCLUSIONS

In this self-esteem study of treatment seeking adult female orthodontic patients, it was found that severe Class II - associated deep bite and protrusive lip profile may have lower SE and QOL scores than those with crowding, open bite, and class III malocclusion. Evaluating the psychological effects of malocclusion in adult females, OQLQ proves to be a valid tool.

Data sharing statement provided by the authors is available with the full text of this article at jemds.com.

Financial or other competing interests: None.

Disclosure forms provided by the authors are available with the full text of this article at jemds.com.

REFERENCES

- [1] Priya S. Evaluation of quality of life and self-esteem in patients with malocclusion. *Dent Oral Craniofac Res* 2015;1(3):63-5.
- [2] Cofré E, Rodríguez K. Impact of dentofacial esthetics in self-esteem. A review of the literature. *Int J Med Surg Sci* 2018;5(1):22-7.
- [3] De Couto Nascimento V, De Castro Ferreira Conti AC, De Almeida Cardoso M, et al. Impact of orthodontic treatment on self-esteem and quality of life of adult patients requiring oral rehabilitation. *Angle Orthod* 2016;86(5):839-45.
- [4] Afroz S, Rathi S, Rajput G, et al. Dental esthetics and its impact on psycho-social well-being and dental self confidence: a campus based survey of north Indian university students. *J Indian Prosthodont Soc* 2013;13(4):455-60.
- [5] Jung MH. An evaluation of self-esteem and quality of life in orthodontic patients: effects of crowding and protrusion. *Angle Orthod* 2015;85(5):812-9.
- [6] Graber LW, Lucker GW. Dental esthetic self-evaluation and satisfaction. *Am J Orthod* 1980;77(2):163-73.
- [7] Dimberg L, Arnrup K, Bondemark L. The impact of malocclusion on the quality of life among children and adolescents: a systematic review of quantitative studies. *Eur J Orthod* 2015;37(3):238-47.
- [8] Anthony SN, Zimba K, Subramanian B. Impact of malocclusions on the oral health-related quality of life of early adolescents in Ndola, Zambia. *Int J Dent* 2018;2018:7920973.
- [9] Heravi F, Farzanegan F, Tabatabaee M, et al. Do malocclusions affect the oral health-related quality of life? *Oral Health Prev Dent* 2011;9(3):229-33.
- [10] Zhou Y, Wang Y, Wang X, et al. The impact of orthodontic treatment on the quality of life a systematic review. *BMC Oral Health* 2014;14:66.
- [11] Badran SA. The effect of malocclusion and self-perceived aesthetics on the self-esteem of a sample of Jordanian adolescents. *Eur J Orthod* 2010;32(6):638-44.
- [12] Gazit-Rappaport T, Haisraeli-Shalish M, Gazit E. Psychosocial reward of orthodontic treatment in adult patients. *Eur J Orthod* 2010;32(4):441-6.
- [13] Phillips C, Beal KNE. Self-concept and the perception of facial appearance in children and adolescents seeking orthodontic treatment. *Angle Orthod* 2009;79(1):12-6.
- [14] McKiernan EX, McKiernan F, Jones ML. Psychological profiles and motives of adults seeking orthodontic treatment. *Int J Adult Orthodon Orthognath Surg* 1992;7(3):187-98.
- [15] Sinclair SJ, Blais MA, Gansler DA, et al. Psychometric properties of the rosenberg self-esteem scale: overall and across demographic groups living within the United States. *Eval Health Prof* 2010;33(1):56-80.
- [16] Cunningham SJ, Garratt AM, Hunt NP. Development of a condition-specific quality of life measure for patients with dentofacial deformity: I. Reliability of the instrument. *Community Dent Oral Epidemiol* 2000;28(3):195-201.
- [17] Rosenberg M. Society and the adolescent self-image. Revised edn. Middletown, CT: Wesleyan University Press Retrieved 1989:11.
- [18] Bowling A. Research methods in health: investigating health and health services. 4th edn. UK: McGraw-Hill Education 2014: p. 536.
- [19] Dawoodbhoj I, Delgado-Angulo EK, Bernabé E. Impact of malocclusion on the quality of life of Saudi children. *Angle Orthod* 2013;83(6):1043-8.
- [20] Hassan AH. Orthodontic treatment needs in the western region of Saudi Arabia: a research report. *Head Face Med* 2006;2(1):2.
- [21] Bellot-Arcís C, Almerich-Silla JM. Psychosocial impact of malocclusion in Spanish adolescents. *Korean J Orthod* 2013;43(4):193-200.
- [22] De Carvalho Sales Peres SH, Goya S, Cortellazzi KL, et al. Self-perception and malocclusion and their relation to oral appearance and function. *Cien Saude Colet* 2011;16(10):4059-66.
- [23] Shaw BA, Liang J, Krause N. Age and race differences in the trajectories of self-esteem. *Psychol Aging* 2010;25(1):84-94.
- [24] Sardenberg F, Martins MT, Bendo CB, et al. Malocclusion and oral health-related quality of life in Brazilian school children: a population-based study. *Angle Orthod* 2013;83(1):83-9.
- [25] Jung MH, Heo W, Baek SH. Effects of malocclusion on the self-esteem of female university students. *Korean J Orthod* 2008;38(6):388-96.