Medbiotech Journal

Research Paper MBTJ, 6(2): 65-71, 2022

Evaluation of Motivational factors in orthodontic treatment of malocclusion patients: a narrative review

Ahlam Rashid Alqaydi[1,*], Ameirah Alyammahi[2], Wafa Jaber Al Rahma[3], Shamsa Al Makhmari[4], Moza Mohammed Albalushi[5]

[1]Department of Orthodontics, Kalba Specialized Dental Center, Emirates Health Services Establishment, Sharjah, UAE.

[2]Department of Orthodontics, Fujairah Specialized Dental Center, Emirates Health Services Establishment, Fujairah, UAE.

[3]Dubai Spishalized Dental center, Dubai, United Arab Emirates

[4]Department of orthodontics, Alain medical center, Zayed military hospital, Abudhabi, United Arab Emirates.

[5]Al Mizhar Health Center, Dubai, United Arab Emirates

*Corresponding author

Received: 11 March 2022 Accepted: 05 April 2022 Published: 01 July 2022

Abstract

The physical, mental and social consequences of malocclusion can adversely affect the personal satisfaction of individuals in society. The motivation of the patient and his parents as well as the opinion of the orthodontist are two factors influencing the decision to start treatment. Knowing these motivations, maintaining and strengthening them is effective in achieving successful results of orthodontic treatment. This narrative review investigates the most important motivational factors and the tendency of orthodontic treatment in persons with malocclusion in different examinations. Most studies show that aesthetic and having regular teeth is the main motivation for orthodontic treatment. After aesthetic, two other important motivating factors are parents' interest and concern and dental advice. The child's relationship with his parents plays an important role in motivating the orthodontist as a motivating factor. Hence, it is essential to analyze the variables influencing the attitude and behavior of parents. Also, the role of the dentist in providing the necessary explanations to the patient is important for the patient's need for orthodontic treatment because it fundamentally affects the patient who needs this treatment. Other major motivating factors for orthodontic treatment include dissatisfaction with appearance, gender, age, intellectual level, social group, reality of the deformity. Understanding these factors can enable better resource planning and better assessment of treatment necessities and needs. However, most studies are limited to the children population, and on the other hand, few studies, especially on the motivation of the individual associated with the type and severity of malocclusion, and more studies are needed.

Keywords: Motivational factors, orthodontic treatment, malocclusion patients, narrative review

1. Introduction

Malocclusion is of the most widely recognized dental problem characterized by irregular teeth or misalignment between dental arches outside the normal range. (1). By and large, malocclusion is a developmental problem of the facial cranial complex that influences the jaw, tongue and facial muscles and leads to psychosocial disturbances, speech and chewing problems, increased risk of injury in accidents, periodontal problems, temporomandibular joint disease, bruxism and headaches (2). Etiological factors involved in malocclusion include genetic, environmental, ethnic, social, as well as harmful oral habits. Skeletal and dental alterations occur at three different spatial levels, including sagittal, transverse, and vertical in malocclusion (3,39,40).

Three classes of malocclusion (class I, II and III) are definite as per the relationship of the upper super durable first. In class I malocclusion, the molar relationship is typical, however the occlusal line is confused with dislodging or different causes, but in class II, the lower molars are distal to the upper molars and the occlusal line has no particular features. On the other hand, in the class III malocclusion, the lower molars are mesial relative to the upper molars and no particular feature is seen in the occlusal line (4, 5).

The prevalence of malocclusion without distinctions in gender orientation is accounted for to be 56% around the world, with the most elevated prevalence in Africa (81%) and Europe (72%), trailed by the United States (53%) and Asia (48%) (6). Because of contrasts in ethnic gatherings, age gatherings, methods of enlistment and assortment of malocclusion, the prevalence of malocclusion fluctuates all over the world

(7). In the United States, approximately 30% of people have normal occlusion, while the prevalence of class I malocclusion was between 50-55%. The prevalence was about 15% and less than 1% in class II and class III malocclusion, respectively (8). In population of Denmark, the prevalence of natural malocclusion was 14%, while the prevalence of class I, II, and III malocclusion was 58%, 24%, and 4%, respectively (9). In the Australian population, the prevalence of natural malocclusion, Class I malocclusion, Class II malocclusion and Class III malocclusion have been accounted for at 7.1%, 58.8%, 21.5% and 12.6%, respectively (10). Various studies have shown a significant variation in the prevalence of malocclusion in diverse parts of Iran, which has restrictions for applying the outcomes. A meta-analysis sudy by ESLAMIPOUR et al. in Iran (2016) showed that the predominance of typical malocclusion was accounted for to be 7.1%, Class I malocclusion 58.8%, Class II malocclusion 21.5%, and Class III malocclusion 12.6% (11). Assessment class malocclusions is perhaps of the main elements that assume a decisive part in diagnosis and treatment (12). Treatment options are different for each type of malocclusion. Some different treatment options include extracting the damaged tooth or teeth, removing the crown and performing endodontic treatment to prevent trauma to the tooth, and using orthodontics to move the tooth to the correct position (13). Currently, orthodontic treatment is an ideal way to correct misaligned teeth and jaw problems, especially in malocclusion, so that this kind of dental consideration is broadly accessible around the world and there is an unmistakable interest for treatment by patients. Then again, there is proof that orthodontic treatment has been efficacious in technically correcting malocclusion (14-16).

2. The role of motivation and tendency for orthodontic treatment in malocclusion

Malocclusion, in addition to being a disease, causes a person to deviate from the norm of beauty in society, and the main expectation of its treatment is to improve oral function and appearance (17). In orthodontics, the number of people who turn to orthodontic treatments to improve psychosocial problems related to facial appearance has increased compared to the past, and even in the goal of orthodontic treatments, more importance is given to the issue of beauty and facial appearance as a therapeutic goal (18). Regular teeth and a beautiful smile create self-confidence in social relations, while irregular and protruding teeth have a negative effect. Social criteria for facial appearance are different from those accepted by a dentist (19). Therefore, understanding the need for orthodontic treatment should be performed according to the common social and cultural criteria about the appearance of individual. In addition to social pressures, a person's self-impression of the appearance of their teeth may be involved as a psychosocial factor in their desire for orthodontic treatment (20). Therefore, in several studies, person dissatisfaction of appearance and demand for a better appearance was the primary motivation to request treatment, and this rate enhances with increasing severity of occlusion deviation from normal (21,38). Therefore, several factors are involved in motivating patients to decide to pursue orthodontic treatment and also these factors are diverse in different communities (22). In the study of Islamipour et al., Only 21.9% of patients definitely needed orthodontic treatment, however, only about 3% of patients had treatment, and this shows that the presence of malocclusion alone does not cause orthodontic treatment (23). It seems that patients' motivations as well as external factors influence the decision to start treatment. Apart from parents and peers, another external factor is the referral and recommendation of orthodontists (24). In the past, dentistry focused more on mere clinical and scientific findings, but today the effect of patients' preference and clinical and scientific evidence is the same. Thus, optimal orthodontic treatment from a dentist's point of view can cause patient dissatisfaction and the effect of this issue is greater when there is a contrast between the patient's motivations and treatment results (25, 26). So, dentist advice and individual motivations are both effective in treating. By knowing the motivations of patients and their

understanding of their need for treatment, it is possible to better understand their expectations of treatment and by fulfilling these expectations, provide patients with greater satisfaction after the end of treatment (27, 28). As mentioned, the motivational factors for orthodontic treatment in different societies are various. This narrative review investigates the most important motivational factors and the tendency of orthodontic treatment in patients with malocclusion in different examinations.

3. Literature Reviews

In the Trulsson et al study in Sweden showed that societal rules and beauty culture in society were the main significant motivation for orthodontic treatment in young people because these group were not fully aware of the impact of external factors and these people have started treatment by understanding their personality and making independent decisions (29). A study by Wedrychowska-Szulc et al. in Poland demonstrated that desire to improve beauty was the main significant motivating aspect for treatment in children, as with expanding age, girls were essentially more mindful of malocclusion than boys. Likewise, in this study detailed that a huge level of patients were urged to get orthodontic treatment at the demand their parents (30). The study by Henson et al in USA examined the effect of peers 'sports, social, leadership and educational abilities on adolescents' perceptions on dental beauty. Their results showed that the distinctions in rankings between ideal and non-ideal smiles were critical for understanding athletic execution, prominence, and administration capacity, but there was no significant difference in academic performance (31). Hoda M.A et al study in Saudi Arabia evaluated that only 69.4% of patients had a tendency to correct malocclusion, which was mainly for cosmetic improvement (32). A study by BENGT INGERVALL et al indicated that only 11 patients (4%) out of 278 malocclusion patients thought they needed orthodontic treatment, while 166 patients (60%) needed orthodontic treatment, and half of them needed orthodontics treatment was significant (33). The study of Eslamipour et al. in Iran demonstrated that the general motivation for orthodontic treatment was wide. Aesthetic motivation was the highest score, followed by functional and social motivation. Overall motivation and performance were significantly higher in men. The tendency to orthodontic treatment was moderate and there was no noteworthy variance between the two gender. The patient's motivation was the first priority and the parents the second priority was treatment (34). The study by Marques et al. exhibited that 78% of Brazilian children wanted orthodontic treatment, but 69% of their parents did not want orthodontic treatment for their child because of the high cost of orthodontic treatment. On the other hand, there was a significant relationship between the tendency to orthodontic treatment and the type of malocclusion, but there was no noteworthy connection between the tendency to orthodontic treatment and gender and age factors (35). The findings of a study by Adam S.Daniels et al expressed that parents were more persuaded contrasted with youngsters with get orthodontic treatment for their kids, particularly among patients who had recently been dealt with. The higher the patients' motivation for treatment, the more they helped out their orthodontists' treatment proposals, in any case, the parents' motivation for orthodontic treatment of their kid was not altogether connected with their youngsters' treatment collaboration (36). A study by Andrade Oliveira et al on adults who referred for orthodontic treatment showed that adult patients are more interested in advanced aesthetic treatment through attention to detail and greater understanding of primary malocclusion. Also, adult patients, after knowing the limitations of their treatment and trusting the orthodontist, display high satisfaction with the treatment results and show themselves as good patients for the indication and implementation of orthodontic treatment (37,41,42). Table 1 summarized studies which investigate motivational factors in orthodontic treatment of malocclusion patients

4. Conclusion

The physical, mental and social consequences of malocclusion can adversely affect the personal satisfaction of individuals in society. The motivation of the patient and his parents as well as the opinion of the orthodontist are two factors influencing the decision to start treatment. Knowing these motivations, maintaining and strengthening them is effective in achieving successful results of orthodontic treatment. Most studies show that aesthetic and having regular teeth is the main important motivation for orthodontic treatment. After aesthetic, two other important motivating factors are parents' interest and concern and dental advice. The child's relationship with his parents plays an important role in motivating the orthodontist as a motivating factor. Hence, it is essential to analyze the variables influencing the attitude and behavior of parents. Also, the role of the dentist in providing the

necessary explanations to the patient is important for the patient's need for orthodontic treatment because it fundamentally affects the patient who needs this treatment. Other major motivating factors for orthodontic treatment include dissatisfaction with appearance, gender, age, intellectual level, social group, reality of the deformity. Understanding these factors can enable better resource planning and better assessment of treatment necessities and needs. However, most studies are limited to the children population, and on the other hand, few studies, especially on the motivation of the individual associated with the type and severity of malocclusion, and more studies are needed.

Table 1: Literature reviews associated with motivational factors of orthodontic treatment in malocclusion patients

Authors (year)	Country	Purpose of the study	Study population	Consequence
Trulsson (2002)	Sweden	The effect of effective factors on the choice of young people for orthodontic treatment.	28 patients (11 young men) with 13-19 years	❖ Social culture and cosmetic in society were the most important motivation for orthodontic treatment ❖ Young people were not completely mindful of the effect of outside factors ❖ Young people have started treatment by understanding their personality and making independent decisions
Wedrychowska-Szulc (2010)	Poland	Assessing the motivation of patients and parents / guardians to refer to orthodontic treatment and determining the effect of age and gender in this cycle	674 children (365 girls and 309 boys) aged 7-18 years and 86 parents aged 19-42 years (57 females and 29 males)	❖ The most important motivating factor for treatment in children was the desire to improve beauty ❖ With expanding age, girls were significantly more aware of malocclusion than boys ❖ A significant percentage of patients were encouraged to receive orthodontic treatment at the insistence of their parents
Henson (2011)	USA	the effect of peers 'sports, social, leadership and educational abilities on adolescents' perceptions on dental beauty.	Smiling photos of the faces of 10 teenagers	❖ The distinctions in rankings among ideal and non-ideal grins were huge for understanding athletic performance, popularity, and leadership ability, but there was no significant difference in academic performance.
Hoda M.A (20٠٥)	Saudi Arabia	Evaluation of tendency towards malocclusion and need for orthodontic treatment	1459 pre-young adult and Saudi subjects with 9 to 17 years of age.	❖ Only 69.4% of patients had a tendency to correct malocclusion, which was mainly for aesthetic improvement
BENGT INGERVALL (١٩٧٣)	Sweden	Consciousness of malocclusion and craving for orthodontic treatment	278 patients with malocclusion	❖ Only 11 patients (4%) out of 278 malocclusion patients thought they needed orthodontic treatment, ❖ 166 patients (60%) needed orthodontic treatment, and half of them needed orthodontics treatment was significant.
Eslamipour (2014)	Iran	Evaluation of motivation and willingness to orthodontic treatment in	180 malocclusion patients aged 15-25 years	❖ Aesthetic motivation was the highest score, followed by functional and social motivation. ❖ Overall motivation and performance were significantly higher in men.

		patients with malocclusion		❖ The tendency to orthodontic treatment was moderate and there was no tremendous distinction between the two gender. ❖ The patient's motivation was the first priority and the parents the second priority was treatment
S Marques (2010)	Brazil	Determining the factors related to the craving for orthodontic treatment according to the point of view of adolescents and parents	403 people aged 14 to 18 years	❖ 78% of Brazilian children wanted orthodontic treatment, but 69% of their parents did not want orthodontic treatment for their child because of the high cost of orthodontic treatment. there was a huge connection between the tendency to orthodontic treatment and sort of malocclusion, but there was no critical connection between the propensity to orthodontic treatment and gender and age factors
Adam S.Daniels (2009)		Connection between persons' degrees of motivational treatment and therapeutic collaboration.	27 children (50.2% young men, 49.8% young girls; normal age, 13 years; age range, 7.11-16.11 years) and their parents.	❖ Parents were further interested than children to get orthodontic treatment for their children, especially among patients who had previously been treated. ❖ The higher the patients' motivation for treatment, the more they helped out their orthodontists' treatment proposals ❖ The parents' motivation for orthodontic treatment of their child not altogether connected with their children's treatment participation
Patrícia Gomide de Souza Andrade Oliveira (2013)	Brazil	Evaluate motivation, assumptions and fulfillment	54 adult	❖ Adult patients are more interested in advanced aesthetic treatment through attention to detail and greater understanding of primary malocclusion. ❖ Adult patients, after knowing the restrictions of their treatment and believing the orthodontist, show high fulfillment with the treatment results and show themselves as great patients for the sign and execution of orthodontic treatment.

References

1. Zou J, Meng M, Law CS, Rao Y, Zhou X. Common dental diseases in children and malocclusion. International journal of oral science. 2018;10(1):1-7.
2. Petrović Đ, Vukić-Ćulafić B, Ivić S, Đurić M, Milekić B. Study of risk factors associated with the development of malocclusion. Vojnosanitetski pregled. 2013;70(9):817-23.
3. Bernhardt O, Krey KF, Daboul A, Voelzke H, Kindler S, Kocher T, et al. New insights in the link between malocclusion and periodontal disease. Journal of clinical periodontology. 2019;46(2):144-59.
4. Javed O, Bernabé E. Oral Impacts on quality of life in adult patients with Class I, II and III malocclusion. ORAL HEALTH AND PREVENTIVE DENTISTRY. 2016.
5. Mageet A. Classification of skeletal and dental malocclusion: revisited. 2016.
6. Stomatologic SII. Worldwide prevalence of malocclusion in the different stages of dentition: A systematic review and meta-analysis. European journal of paediatric dentistry. 2020;21:115.
7. Alhammadi MS, Halboub E, Fayed MS, Labib A, El-Saaidi C. Global distribution of malocclusion traits: A systematic review. Dental press journal of orthodontics. 2018;23:40. e1-. e10.
8. Amer LA-F, Amer A-FM. Prevalence of Malocclusion and Orthodontic Treatment needs in Qena Governorate, Egypt: An Epidemiological study with reviewing similar studies in some countries.
9. Alhammadi MS, Halboub E, Fayed MS, Labib A, El-Saaidi C. Global distribution of malocclusion

traits: A systematic review. Dental press journal of orthodontics. 2018;23(6):40.e1-.e10.

10. Salim NA, Al-Abdullah MM, AlHamdan AS, Satterthwaite JD. Prevalence of malocclusion and assessment of orthodontic treatment needs among Syrian refugee children and adolescents: a cross-sectional study. BMC Oral Health. 2021;21(1):305-.
11. Eslamipour F, Afshari Z, Najimi A. Prevalence of Malocclusion in Permanent Dentition of Iranian Population: A Review Article. Iran J Public Health. 2018;47(2):178-87.
12. Zere E, Chaudhari PK, Sharan J, Dhingra K, Tiwari N. Developing Class III malocclusions: challenges and solutions. Clin Cosmet Investig Dent. 2018;10:99-116.
13. Guo L, Feng Y, Guo H-G, Liu B-W, Zhang Y. Consequences of orthodontic treatment in malocclusion patients: clinical and microbial effects in adults and children. BMC Oral Health. 2016;16(1):1-7.
14. Shaw W, Addy M, Ray C. Dental and social effects of malocclusion and effectiveness of orthodontic treatment: a review. Community Dentistry and Oral Epidemiology. 1980;8(1):36-45.
15. Williams S, Melsen B, Agerbaek N, Asboe V. The orthodontic treatment of malocclusion in patients with previous periodontal disease. British journal of orthodontics. 1982;9(4):178-84.
16. Azuma S, Kohzuki M, Saeki S, Tajima M, Igarashi K, Sugawara J. Beneficial effects of orthodontic treatment on quality of life in patients with malocclusion. The Tohoku journal of experimental medicine. 2008;214(1):39-50.
17. Masoumi Fakhabi SF, Abdollahi N, Fereshteh Housh A. The effect of three different malocclusions on the quality of life of 12 to 14 years old students in Rasht in 2019. Jour-nal of Dentomaxillofacial Radiology, Pathology and Surgery. 2020;9(3):7-12.
18. Tung AW, Kiyak HA. Psychological influences on the timing of orthodontic treatment. American Journal of Orthodontics and Dentofacial Orthopedics. 1998;113(1):29-39.
19. Kaur P, Singh S, Mathur A, Makkar DK, Aggarwal VP, Batra M, et al. Impact of Dental Disorders and its Influence on Self Esteem Levels among Adolescents. J Clin Diagn Res. 2017;11(4):ZC05-ZC8.
20. Yi S, Zhang C, Ni C, Qian Y, Zhang J. Psychosocial impact of dental aesthetics and desire for orthodontic treatment among Chinese undergraduate students. Patient Prefer Adherence. 2016;10:1037-42.
21. Tessarollo F, Feldens C, Closs L. The impact of malocclusion on adolescents' dissatisfaction with dental appearance and oral functions. The Angle orthodontist. 2011;82:403-9.
22. Laothong W, Cheng H-C. Comparison of factors affecting orthodontic treatment motivation of Taiwanese and Thai patients in two hospitals. Journal of Dental Sciences. 2017;12(4):396-404.
23. Eslamipour F, Borzabadi-Farahani A, Asgari I. Assessment of orthodontic treatment need in 11-to 20-year-old urban Iranian children using the Dental Aesthetic Index (DAI). World J Orthod. 2010;11(4):e125-32.
24. Samsonyanová L, Broukal Z. A systematic review of individual motivational factors in orthodontic treatment: facial attractiveness as the main motivational factor in orthodontic treatment. Int J Dent. 2014;2014:938274-.
25. Riley JL, 3rd, Gordan VV, Hudak-Boss SE, Fellows JL, Rindal DB, Gilbert GH, et al. Concordance between patient satisfaction and the dentist's view: findings from The National Dental Practice-Based Research Network. J Am Dent Assoc. 2014;145(4):355-62.
26. Pachêco-Pereira C, Pereira JR, Dick B, Arnaldo P, Flores-Mir C. Factors associated with patient and parent satisfaction after orthodontic treatment: A systematic review. American Journal of Orthodontics and Dentofacial Orthopedics. 2015;148:652-9.
27. Afrashtehfar KI, Assery MKA, Bryant SR. Patient Satisfaction in Medicine and Dentistry. Int J Dent. 2020;2020:6621848-.
28. Walia K, Belludi SA, Kulkarni P, Darak P, Swamy S. A comparative and a qualitative analysis of patient's motivations, expectations and satisfaction with dental implants. Journal of Clinical and Diagnostic Research: JCDR. 2016;10(4):ZC23.
29. Trulsson U, Strandmark M, Mohlin B, Berggren U. A qualitative study of teenagers' decisions to undergo orthodontic treatment with fixed appliance. Journal of orthodontics. 2002;29(3):197-204.
30. Petronytė D, Trakinienė G. Patient and parent motivation for orthodontic treatment and agreement between orthodontist, parent, patient perception using IOTN AC. Sveikatos mokslai= Health sciences in Eastern Europe Vilnius: Sveikatos mokslai, 2017, t 27, Nr 1. 2017.

31. Henson ST, Lindauer SJ, Gardner WG, Shroff B, Tufekci E, Best AM. Influence of dental esthetics on social perceptions of adolescents judged by peers. American journal of orthodontics and dentofacial orthopedics. 2011;140(3):389-95.
32. Hoda MA AL, Sulaiman ES EE. Attitude toward malocclusion and desire for orthodontic treatment among 9-17 year old Saudis. 2005.
33. Ingervall B, Hedegård B. Awareness of malocclusion and desire of orthodontic treatment in 18-year old Swedish men. Acta Odontologica Scandinavica. 1974;32(2):93-101.
34. Eslamipour F. Assessment of motivation and tendency in patients with malocclusion to refer to professional care centers in Isfahan. 2015.
35. Marques LS, Pordeus IA, Ramos-Jorge ML, Filogônio CA, Filogônio CB, Pereira LJ, et al. Factors associated with the desire for orthodontic treatment among Brazilian adolescents and their parents. BMC Oral Health. 2009;9(1):1-7.
36. Daniels AS, Seacat JD, Inglehart MR. Orthodontic treatment motivation and cooperation: A cross-sectional analysis of adolescent patients' and parents' responses. American Journal of Orthodontics and Dentofacial Orthopedics. 2009;136(6):780-7.
37. Oliveira PGdSA, Tavares RR, Freitas JCd. Assessment of motivation, expectations and satisfaction of adult patients submitted to orthodontic treatment. Dental press journal of orthodontics. 2013;18:81-7.
38. Nikraftar NS, Feyzi YF, Ramzani F, Nikbakht-Zadeh M, Amini M, Arezoomandan M, Shiehmorteza M, Arezoomandan R. Comparison of psychological symptoms and cognitive functions in patients under maintenance treatment with methadone or buprenorphine, current opioid users and healthy subjects. Asian Journal of Psychiatry. 2021; 58:102603.
39. Mirhashemi A, Khami MR, Kharazifard M, Bahrami R. The Evaluation of the Relationship Between Oral Habits Prevalence and COVID-19 Pandemic in Adults and Adolescents: A Systematic Review. Front Public Health. 2022;10: 860185. doi: 10.3389/fpubh.2022.860185.
40. Mirhashemi SA, Bahrami R. On recommended mouthwashes during COVID-19 pandemic: A review. Journal of Craniomaxillofacial Research. 2022;8(3):101-115.
41. Izadpanah F, Shiehmorteza M, Rahimpour A, & Moradi M. Prioritizing Medication Management Criteria of National Hospital Accreditation Standards Using FDANP Model. Journal of Pharmaceutical Research International, 2020; 32(3): 69-77.
42. Mirhashemi A, Janani R, Bahrami R, Chiniforush N. Evaluation of the photodynamic therapy with riboflavin and curcumin on shear bond strength of orthodontic bracket: An in vitro study. Photodiagnosis and photodynamic therapy. 2022; 38:102787. doi: 10.1016/j.pdpdt.2022.102787. Epub 2022; 26. PMID: 35231617.