


Article

Perceptions and Knowledge of Orthodontic Treatment by an Adult Group in Romania

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Abstract: This paper aims to study an adult population's perception and knowledge of orthodontic treatment within the context of Romania, aiming to underscore the pivotal role of this kind of treatment in improving oral health and enhancing quality of life. Acknowledging malocclusion as a prevalent oral health issue, it is observed that while an increasing number of people seek orthodontic treatment, significant misperceptions remain, emphasizing the need for patient adherence to and knowledge of the effective planification of orthodontic treatment plans. Utilizing a cross-sectional methodology, the authors developed a questionnaire and disseminated it via social media platforms to examine the attitudes and awareness levels among 132 Romanian adults regarding orthodontic treatment. The findings reveal a strong awareness concerning orthodontic procedures. Most of the subjects (61.4%) were of the opinion that, during orthodontic treatment, patients look good and 80.3% assessed the treatment as being expensive. In total, 73.5% of the participants were aware that during orthodontic treatment patients have food restrictions and that neglect can affect the treatment, while 78% thought that brackets and wires can break if care is not taken. Notably, respondents with prior orthodontic treatment showed a higher level of comprehension of the process, including an acknowledgment of the necessity for augmented oral hygiene practices and the implications of non-compliance. The results show a generally affirmative opinion on orthodontic treatment, with a recognition of its long-term benefits for oral health and aesthetics. Nevertheless, the perceived economic and physical barriers to access, underscore a need for patient education. In summary, understanding patient perceptions and knowledge of orthodontic treatment not only fosters enhanced patient–orthodontist relationships but also empowers dental professionals to customize educational strategies that amplify treatment efficacy. The study advocates for sustained efforts to disseminate information related to orthodontic care, promoting its benefits as a key aspect of oral health.

Keywords: malocclusion; orthodontics; knowledge; perception

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Introduction

Oral health, an important aspect of general health, is still one of the most frequently encountered health issues at global level, although dental caries and periodontal disease is highly preventable [1]. Another common oral health problem that can influence patients' quality of life is malocclusion, affecting people both psychosocially, due to its impact on aesthetics and functionality, including impeding mastication, speech, and swallowing [2]. Malocclusion has been established to be the third most common oral health problem [3], and a recent systematic review and meta-analysis on the prevalence of malocclusion in children and adolescents concluded that the worldwide prevalence was around 56% [4]. Consequently, the need for orthodontic treatment is imperative in terms of overcoming the associated problems and for patients to live a healthy life.

Patients are more aware of aesthetic concerns, thus the number of patients seeking orthodontic treatment has increased, but misconceptions about orthodontic treatment continue to persist.

Successful orthodontic treatment depends on a multitude of factors, but mainly on patient compliance. For the orthodontic treatment to proceed as planned, patients need to understand the importance of attending appointments, maintaining good oral hygiene, and limiting damage to appliances [5]. Consequently, it is very important for orthodontists' first step being to assess patient perceptions and knowledge of orthodontic treatment, to better address their needs. An orthodontist possessing prior information about the knowledge, attitude, and dental hygiene practices of patients can be a key part of the process of estimating a patient's compliance, but also an important aid in formulating solutions in order to improve compliance for better clinical outcomes [3].

On the other hand, factors that influence patients to avoid seeking orthodontic treatment are multifarious. In previously conducted studies, the main reason for a discouraged attitude was the high cost of treatment, followed by apprehension of pain, a time-consuming process, and a lack of awareness about the importance of oral hygiene during orthodontic treatment [6]. Multiple studies have been conducted worldwide in order to address the attitude of patients towards malocclusion and the need of orthodontic treatment, most of them finding that patients possess a good level of knowledge of orthodontic treatment but were found to be deficient in terms of attitudes and practice [3]. There has been a lack of these types of studies in Romania; therefore, the aim of the current study is to evaluate the knowledge and perceptions of the adult general population of Romania towards orthodontic treatment and to compare our findings with those from the rest of the world.

Materials and Methods

A cross-sectional study was conducted among the adult population of Romania. A structured questionnaire, comprising 15 questions across knowledge and attitudes, was administered. The questionnaire was formulated and written in Romanian and sent to the study participants through social media.

The questionnaire is composed of three parts—the first part includes questions regarding demographic information, such as age, gender, and level of education. The second part comprises questions that were assessed through 3 responses: one correct, one incorrect, and one reflecting uncertainty. The last part was a question regarding the participants' background in terms of orthodontic treatment. The answers were confidential; no other information was requested. The study sample included 132 participants above 18 years old and was conducted during February–March 2024.

The sample consisted of 132 adult participants (18–54 years old), 62.1% being females and 37.9% being males. The educational background of most participants (77.3%) was secondary studies (university/master's), 13.6% of the participants had a tertiary studies background (PhD/post-graduate studies), and 9.1% had only graduated from high school.

Results

In the studied group, the majority of the participants (61.4%, $n = 132$) thought that orthodontic treatment is not an esthetic concern and that patients look good during the treatment. Only 16.7% of subjects thought the opposite.

Regarding the financial cost, the majority of the participants (80.3%) thought that orthodontic treatment is expensive, with only 9.1% thinking the opposite.

The majority perception (78.8%) was that orthodontic treatment lasts for a long time, most thought that it is painful (48.5%), and most of the participants (40.2%) also thought that orthodontic treatment has a positive impact on both the social and personal aspects of patients' lives. The overall perception of the participants (97.7%) was that, after orthodontic treatment, patients smile more confidently, with only 0.8% thinking the opposite (Table 1).

Table 1. Perceptions of orthodontic treatment.

Question	True	False	Don't Know
Patients wearing orthodontic appliance are looking good	61.4% (81)	16.7% (22)	22% (29)
Orthodontic treatment is expensive	80.3% (106)	9.1% (12)	10.6% (14)
Orthodontic treatment lasts for a long time	78.8% (104)	8.3% (11)	12.9% (17)
Orthodontic treatment hurts	48.5% (64)	31.8% (42)	19.7% (26)
At the end of orthodontic treatment, patients smile more confidently	97.7% (129)	0.8% (1)	1.5% (2)

There are slight differences between participants' perceptions depending on whether they had or had not worn an orthodontic appliance in the past. The percentage of people deeming orthodontic treatment to be expensive was higher for the participants who had had an orthodontic treatment in the past than for those who had not. There were no significant differences regarding perceptions of the duration of the treatment (Table 2).

Table 2. Perceptions of orthodontic treatment, comparison between patients with and without braces.

Question	With Braces			Without Braces		
	True	False	Don't Know	True	False	Don't Know
Patients wearing orthodontic appliance are looking good	67% (36)	9% (5)	24% (13)	58% (45)	22% (17)	21% (16)
Orthodontic treatment is expensive	85% (46)	13% (7)	2% (1)	77% (60)	6% (5)	17% (13)
Orthodontic treatment lasts for a long time	87% (47)	11% (6)	2% (1)	73% (57)	6% (5)	21% (16)
Orthodontic treatment hurts	52% (28)	43% (23)	6% (3)	46% (36)	24% (19)	29% (23)
At the end of orthodontic treatment, patients smile more confidently	100% (54)	-	-	96% (75)	1% (1)	3% (2)

All the participants that had orthodontic treatment in the past thought that those who had received orthodontic treatment smile more confidently (Table 2).

Most of the participants (65.9%) did not think that patients are more prone to developing cavities during orthodontic treatment, and they were aware that during the treatment patients need to take better care of their oral hygiene: 90.9% considered the use of oral irrigators and interdental brushes a must and 79.5% thought that brushing needs to be carried out more frequently and rigorously (Table 2).

Most of the participants in the current study (73.5%) were aware that, during orthodontic treatment, patients have food restrictions and that neglect can affect the treatment, with 78% thinking that brackets and wires can break if care is not taken, and with the majority of the participants (73.5%) thinking that patients need to regularly visit their orthodontist, otherwise the situation can worsen—patient compliance being an important part of the success of an orthodontic treatment (Table 3).

Regarding the level of knowledge, participants who had had orthodontic treatment in the past had a higher level of awareness about the rules of orthodontic treatment and had a better understanding the role it plays. The opposite was observed only for the question regarding the failing to adhere to a dentist's recommendations (Table 4).

Regarding the effects of orthodontic treatment, most of the participants (83.3%) thought that orthodontic treatments harmonize teeth and bones and 84.1% thought that, after active treatment, patients need to wear a retainer in order to maintain the results (Table 4).

There were slight differences between the patients who had previously had orthodontic treatment and those who had not, even though the majority follows the same pattern of answers. Most of the participants who had not had orthodontic treatment in the past lean towards an "I don't know" answer. For example, regarding the notion that orthodontic treatment harmonizes teeth, most participants were aware of the effect, but there are differences between the group that had had braces before (92.6%) and those who had not had braces before (76.9%). For the same question, only 5.6% of the participants who had had braces before answered "I don't know", compared to 20.5% of those ones who had not had orthodontic treatment before (Table 4).

The same pattern is evident in the question regarding patient neglect—with only 5.6% of the patients who had had treatment answering "I don't know" and 24.4% of those who had not had treatment selecting the same answer.

Most of the participants in the study are aware that during orthodontic treatment patients have food restrictions (77.8% for the participants who had had braces before and 70.5% for the patients who had not had braces before), with 25.6% of those who had not had braces before answering "I don't know", compared to 5.6% of those who had had braces before (Table 4).

Regarding whether orthodontic treatment results in more cavities, from the group who had not had braces before, almost almost twice as many answered that they "don't know" compared to those who had had braces (18.5% vs. 34.6%) (Table 4).

Of the 132 participants in this study, only 59.1% had worn an orthodontic appliance in the past.

Table 3. Knowledge about orthodontic treatment among respondents.

Question	True	False	Do Not Know
Orthodontic treatment moves teeth	58.3% (77)	18.2% (24)	23.5% (31)
Orthodontic treatment harmonizes teeth and bones	83.3% (110)	3.8% (5)	12.9% (17)
During orthodontic treatment, toothbrushing must be done more often and rigorously	79.5% (105)	5.3% (7)	15.2% (20)
During orthodontic treatment, patients must use additional hygiene tools such as interdental brushes/oral irrigator	90.9% (120)	3% (4)	6.1% (8)
Orthodontic treatment determines more cavities	6.1% (8)	65.9% (87)	28% (37)
During orthodontic treatment, patients have food restrictions	73.5% (97)	9.1% (12)	17.4% (23)
Brackets and wires can break because of patients' neglect	78% (103)	5.3% (7)	16.7% (22)
If patients don't respect doctor's recommendation, the situation can worsen	73.5% (97)	4.5% (6)	22% (29)

Table 4. Knowledge about orthodontic treatment, comparison between patients with and without braces.

Question	With Braces			Without Braces		
	True	False	Don't Know	True	False	Don't Know
Orthodontic treatment moves teeth	74.1% (40)	18.5% (10)	7.4% (4)	47.4% (37)	17.9% (14)	34.6% (27)
Orthodontic treatment harmonizes teeth and bones	92.6% (50)	5.6% (3)	1.9% (1)	76.9% (60)	2.6% (2)	20.5% (16)
During orthodontic treatment, toothbrushing must be done more often and rigorously	96.3% (52)	3.7% (2)	-	67.9% (53)	6.4% (5)	25.6% (20)
During orthodontic treatment, patients must use additional hygiene tools such as interdental brushes/oral irrigator	96.3% (52)	3.7% (2)	-	87.2% (68)	2.6% (2)	10.3% (8)
Orthodontic treatment determines more cavities	5.6% (3)	75.9% (41)	18.5% (10)	6.4% (5)	59.0% (46)	34.6% (27)
During orthodontic treatment, patients have food restrictions	77.8% (42)	16.7% (9)	5.6% (3)	70.5% (55)	3.8% (3)	25.6% (20)
Brackets and wires can break because of patients' neglect	85.2% (46)	9.3% (5)	5.6% (3)	73.1% (57)	2.6% (2)	24.4% (19)
If patients don't respect doctor's recommendation, the situation can worsen.	72.2% (39)	9.3% (5)	18.5% (10)	74.4% (58)	1.3% (1)	24.4% (19)

Discussion

Malocclusion is a prevalent oral health condition, and how orthodontic treatment is perceived varies within a population. Patients' perceptions and knowledge play key roles in their decision regarding whether to pursue treatment or not, and their behavior has the greatest influence on the success of orthodontic treatment. Most previous studies focused on the awareness component of health behavior.

The current study found that the studied general population has a high level of knowledge about orthodontic treatment, but that this may be due to the majority of participants in the current study being women, since multiple studies have found women to have a greater awareness of orthodontic treatment than men [3,7].

The majority of the respondents thought that orthodontic treatment is expensive, in contrast to other studies where orthodontic treatment was considered to be highly affordable [3]. This might be a consequence of the fact that, in Romania, general dental treatments are reimbursed by the National Health Insurance scheme

at a rate of 60% on average, but there being no reimbursement for orthodontic treatments for adults. Thus, adults who seek orthodontic treatment need to cover their full treatment out of pocket [8].

The overall perception of the participants was that after orthodontic treatment, patients smile more confidently, similar to another study conducted in Malaysia [3].

The current study showed that respondents have a high level of knowledge about the effects of orthodontic treatment, being aware that patient neglect can negatively affect the outcome of the treatment, with the lowest level of knowledge being that orthodontic treatment moves teeth. It is thought that the experience of pain is a very important factor that influences patient attitudes towards orthodontic treatment [5,9,10] and the majority of the participants in this study thought that the treatment would be painful.

As for dental hygiene during treatment, patients were aware that they must use additional techniques in order to maintain a good level of hygiene, and that cavities are not a consequence of wearing an orthodontic appliance. Still, the need for frequent reinforcement of oral hygiene practices and motivation still exists, it already having been shown that constant reminders improve patient attitudes and oral health practices [11,12]. Multiple studies have described the appearance of a white spot lesion in the cervical area of a tooth after orthodontic treatment [13,14]. A study conducted in Romania showed that parents are still not aware on the benefits of fluoride use for white spots and had no correct information about the role of fluoride in oral health. Additionally, the habits of patients regarding fluoride use for their children remain inadequate [15].

Most of the participants were aware that during orthodontic treatment there are food restrictions, and that failure to respect a doctor's recommendations can lead to a worsening of their health condition.

The respondents in the current study were aware of the fact that, in order to maintain results, they need to wear a retainer.

Even though only 59.1% had worn an orthodontic appliance in the past, the level of knowledge was high and perceptions positive.

Conclusions

The current study shows that, overall, the majority of the studied population had a good level of understanding regarding orthodontic treatment, and a high level of knowledge about and a positive perception of it.

The majority of the participants in the current study consider orthodontic treatment to be expensive and long-lasting, and they are aware that their attitude can influence treatment outcomes.

Understanding the level of knowledge and perception of patients is a key factor in good collaboration between doctors and patients and helps dentists and their teams to better educate their patients.

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References

1. Petersen, P.E. World Health Organization global policy for improvement of oral health—World Health Assembly 2007. *Int. Dent. J* **2008**, *58*, 115–121. [[CrossRef](#)] [[PubMed](#)]
2. Masood, Y.; Masood, M.; Zainul, N.N.B.; Araby, N.B.A.A.; Hussain, S.F.; Newton, T. Impact of malocclusion on oral health related quality of life in young people. *Health Qual. Life Outcomes* **2013**, *11*, 25. [[CrossRef](#)] [[PubMed](#)]
3. Mathew, R.; Sathasivam, H.P.; Mohamednor, L.; Yugaraj, P. Knowledge, attitude and practice of patients towards orthodontic treatment. *BMC Oral. Health* **2023**, *23*, 132. [[CrossRef](#)] [[PubMed](#)]
4. Lombardo, G.; Vena, F.; Negri, P.; Pagano, S.; Barilotti, C.; Paglia, L.; Colombo, S.; Orso, M.; Cianetti, S. Worldwide prevalence of malocclusion in different stages of dentition: a systematic review and meta-analysis. *Eur. J. Paediatr. Dent.* **2020**, *21*, 115–122. [[PubMed](#)]
5. Abu Alhajja, E.S.; AlDaikki, A.; Al-Omairi, M.K.; Al-Khateeb, S.N. The relationship between personality traits, pain perception and attitude toward orthodontic treatment. *Angle Orthod.* **2010**, *80*, 1141–1149. [[CrossRef](#)] [[PubMed](#)]
6. Bailwad, S.A.; Bhattacharjee, D.; Ong, C.; Sinniah, K.; Ching, L.H.; Patil, N.; Jaunky, C. Attitude towards malocclusion and orthodontic treatment among 10–35 years old Malaysians. *Int. J. Adv. Res.* **2015**, *3*, 1316–1322.
7. Negi, N.; Bhardwaj, V.K.; Malhotra, A.; Jhingta, P.K.; Sharma, D. Knowledge, attitude and practice of patients undergoing fixed orthodontic treatment in Shimla, Himachal Pradesh: a questionnaire survey. *J. Res. Bede Athenaeum* **2018**, *9*, 1–8. [[CrossRef](#)]
8. Caramida, M.; Tâncu, A.M.C.; Imre, M.; Dumitrache, M.A.; Mihai, C.; Sfeatcu, R. Patients' Perspective on Their Experience of Dental Treatments Covered by Public Health Insurance in Romania—A Pilot Study. *Int. J. Environ. Res. Public Health* **2022**, *19*, 272. [[CrossRef](#)] [[PubMed](#)]
9. Abu Alhajja, E.S.; Abu Nabaa, M.A.; Al Maaitah, E.F.; Al-Omairi, M.K. Comparison of personality traits, attitude toward orthodontic treatment, and pain perception and experience before and after orthodontic treatment. *Angle Orthod.* **2015**, *85*, 474–479. [[CrossRef](#)] [[PubMed](#)]
10. Sergl, H.G.; Klages, U.; Zentner, A. Pain and discomfort during orthodontic treatment: causative factors and effects on compliance. *Am. J. Orthod. Dentofac. Orthop.* **1998**, *114*, 684–691. [[CrossRef](#)] [[PubMed](#)]
11. D'Cruz, A.; Aradhya, S. Impact of oral health education on oral hygiene knowledge, practices, plaque control and gingival health of 13-to 15-year-old school children in Bangalore city. *Int. J. Dent. Hyg.* **2013**, *11*, 126–133. [[CrossRef](#)] [[PubMed](#)]
12. Eppright, M.; Shroff, B.; Best, A.M.; Barcoma, E.; Lindauer, S.J. Influence of active reminders on oral hygiene compliance in orthodontic patients. *Angle Orthod.* **2014**, *84*, 208–213. [[CrossRef](#)] [[PubMed](#)]
13. Weisrock, G.; Terrer, E.; Couderc, G.; Koubi, S.; Levallois, B.; Manton, D.; Tassery, H. Naturally aesthetic restorations and minimally invasive dentistry. *J. Min. Intervention Dent.* **2011**, *4*, 23–30.
14. Nitu, R.L.; Sfeatcu, R.; Pasca, I.G.; Damian, L.R.; Dumitrescu, R.C.; Oancea, R. One-Year Follow-up Study on Minimally Invasive Treatment of Cariogenic or Non-cariogenic White Spot Lesions. *Timisoara Med.* **2022**, *2022*, 1. [[CrossRef](#)]
15. Cărămidă, M.; Dumitrache, M.A.; Părlătescu, I.; Pîrvu, C.; Tribuș, L. Parents' Knowledge and Behavior Regarding Fluoride Use for Their Children. *Timisoara Med.* **2021**, *2021*, 1. [[CrossRef](#)]

