

# Self-perceived Needs for Orthodontic Retreatment among Dental Students: A Qualitative Study

Peerapong Santiwong, Phattheera Phenphasit, Rachaporn Chatthanavej, Wathistha Sonjon, Sirada Patthanapuapun, Sunchan Anantapanyagul, Kawin Sipiyaruk

Faculty of Dentistry,  
Mahidol University,  
Bangkok, Thailand

**ABSTRACT** **Aims:** The aims of this research were to explore perceptions of Mahidol dental students toward orthodontic retreatment and to examine whether there were any influential factors in a dental school toward their decision to receive the retreatment. **Materials and Methods:** Mahidol dental undergraduates who were requesting orthodontic retreatment were recruited into this research. A semi-structure interview with a topic guide was conducted to collect in-depth information. All responses were recorded using a digital voice recorder and transcribed using a verbatim transcription technique. The data were then analyzed using a framework analysis. **Results:** The common reasons for requesting orthodontic retreatment among dental students were self-perceived esthetic and functional concerns. Knowledge and experiences of dental students could raise awareness of dental problems, so they were likely to detect even a small defect of their teeth. The students also worried if their dental problems were presented to patients or other dental students. In addition, although they were requesting for orthodontic retreatment, they felt quite worried with the complications they had learned from the dental program. The students also reported that these concerns could affect their psychological well-being. **Conclusion:** Dental knowledge and experiences as well as surrounding people such as their peers and patients in a dental school seemed to have impact on awareness of dental problems and a decision to receive orthodontic retreatment.

**KEYWORDS:** Dental education, dental knowledge, dental students, mental health, orthodontic treatment, self-perceived esthetics

Received : 03-03-21  
Revised : 14-03-21  
Accepted : 09-04-21  
Published : 30-07-21

## INTRODUCTION

Orthodontic treatment is expected among patients for the improvement of their dental appearances, leading to better quality of life.<sup>[1,2]</sup> Since dental appearance is a significant part of the smile, it was perceived as a very important factor of facial attractiveness. There appears to be significant impact of dental esthetics on psychosocial well-being.<sup>[3]</sup> Therefore, the correction of dental esthetics after orthodontic treatment tends to have positive psychological impact, leading to the improvement of oral health-related quality of life.<sup>[2,4]</sup>

Despite the positive impact of orthodontic treatment, patients may feel unsatisfied with their outcomes, and therefore the retreatment is perceived as important for them. The factors motivating the orthodontic retreatment consideration are remaining unpleasant of dental appearance and facial profile,<sup>[1]</sup> midline asymmetry,<sup>[2]</sup> as well as awareness of tooth relapse.<sup>[5]</sup>

**Address for correspondence:** Dr. Kawin Sipiyaruk,  
Department of Orthodontics, Faculty of Dentistry,  
Mahidol University, 6 Yothi Road, Ratchathewi,  
Bangkok 10400, Thailand.  
E-mail: kawin.sip@mahidol.ac.th

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** reprints@medknow.com

**How to cite this article:** Santiwong P, Phenphasit P, Chatthanavej R, Sonjon W, Patthanapuapun S, Anantapanyagul S, Sipiyaruk K. Self-perceived needs for orthodontic retreatment among dental students: A qualitative study. *J Int Soc Prevent Communit Dent* 2021;11:402-7.

Access this article online	
<b>Quick Response Code:</b> 	<b>Website:</b> www.jispcd.org
	<b>DOI:</b> 10.4103/jispcd.JISPCD_69_21

In addition, patients who have experience with orthodontic treatment are likely to concern about their dental appearance and face profile,<sup>[6]</sup> and therefore it is possible that they will request an orthodontic retreatment to meet their high expectation.

Not only dental undergraduates have knowledge in dentistry, but also they are surrounded by a group of people who have awareness of dental issues, so they tend to have high expectation of dental appearance. A study conducted in dental students demonstrates that around three quarters of them are aware of their dental esthetics, and it was found that perceptions toward the need of orthodontic treatment are different depending on their experiences with orthodontic service.<sup>[7]</sup> Another study also shows that third year dental students were the most conscious about their appearance, when compared with first year dental students, orthodontic patients, and laypeople.<sup>[8]</sup>

As dental students seem to have higher awareness of malocclusion, they may consider orthodontic retreatment important for them. In addition, those dental students who request orthodontic retreatment may have different reasons and levels of expectation for the retreatment. However, although qualitative studies regarding orthodontic treatment currently appear to be increasing,<sup>[9]</sup> there has been a scarce of literature regarding perceptions toward orthodontic retreatments, especially among dental students. Consequently, this study was conducted to explore perceptions of Mahidol dental undergraduates who were requesting orthodontic retreatment and to examine whether there are any influential factors in a dental school toward a decision to receive the retreatment.

## MATERIALS AND METHODS

This study employed a qualitative research approach, as it is suitable in exploring perceptions of participants toward orthodontic treatment.<sup>[9]</sup> Dental undergraduates at the Faculty of Dentistry, Mahidol University, Thailand who were requesting orthodontic retreatment were selected using a purposeful sampling, considering sex and year of study. This technique allowed the researchers to recruit participants who were able to provide in-depth information about the phenomenon inspected in this study.

A semi-structure interview with a topic guide was conducted, as it allowed participants to express their own opinions toward predetermined important questions and additional questions raised during an interview. The topic guide was constructed from previous literatures,<sup>[5,6,10,11]</sup> which covered the following issues:

(1) outcomes of the previous orthodontic treatment, (2) reasons and motivations for seeking orthodontic retreatment (dental knowledge, surrounding people, dental school environment), (3) expectations of orthodontic retreatment, and (4) concerns about orthodontic retreatment (possible complications). The questions in these topics were adapted constantly according to the interview data in order to explore further information in the next interviews.

The interviews were recorded using a digital voice recorder. All interview records were first transcribed in Thai, using a Verbatim transcription technique. They were then translated into English language by a researcher who was fluent in English. After that, the English version was blindly translated back into Thai. The two Thai versions were compared; if any content was not matching between the two Thai versions, the content of English version would be revised in order to enhance a validity of the translation. The data were analyzed using a framework analysis. This technique requires charting and sorting data, enabling key ideas and themes to be compared and interpreted through rigorous and transparent data management.<sup>[12]</sup>

This research was approved by the Faculty of Dentistry and the Faculty of Pharmacy, Mahidol University, Institutional Review Board (MU-DT/PY-IRB), reference number: MU-DT/PY-IRB 2019/060.3008 on August 30, 2019.

## RESULTS

There were 14 participants in this research including one third year, 10 fourth year, and three fifth year dental students. Of those participants, two were males and 12 were females. After the interview, four themes were identified, which were (1) awareness of orthodontic retreatment, (2) psychosocial aspects toward dental appearance, (3) expected outcomes of orthodontic retreatment, and (4) complications of orthodontic retreatment.

### Awareness of orthodontic retreatment

#### *Self-perceived esthetic concern*

Self-perceived esthetic concern was the major reason for orthodontic retreatment. Since the participants had been studying in the dental program, they had knowledge and experiences in dentistry, which could impact their perceptions and awareness toward dental esthetics. Although they were satisfied with the previous outcome at that time, they were able to realize other problems of their teeth, leading them into a consideration of orthodontic retreatment. A number of participants said that, as dental students, they had

more focus on their teeth and wanted to have an ideal dental appearance they had learned.

*“I have learned many courses. ... I knew more than I had ever known. ... It made me want to change my teeth to similar with what I had studied.”*

*(Student 9, female, 4th year)*

*“In the occlusion course .... I realized that I had class II malocclusion.”*

*(Student 11, female, 3rd year)*

Other participants reported that they felt satisfied with the outcomes, but their teeth relapsed secondary to not wearing retainers, leading to unfavorable changes such as spacing, malalignment, and midline discrepancy. In addition, a respondent noticed that her problem was caused from their parafunctional habit, together with not wearing retainers.

*“Now there were spaces, as I had not worn retainers.”*

*(Student 1, female, 4th year)*

*“I lost my retainers and until I got the new one, my teeth had already shifted.”*

*(Student 8, female, 4th year)*

*“I had tongue thrust ... and when I did not wear retainers ... my tongue pushed my anterior teeth outward.”*

*(Student 5, female, 4th year)*

#### Self-perceived functional concern

A functional concern was another reason leading to the orthodontic retreatment. The interviewees stated that they were able to realize their functional problems such as traumatic occlusion and food impaction, due to knowledge and experiences they had learned in the dental program. In other words, if they were not dental students, they might not concern these problems.

*“I had a traumatic occlusion ... it irritated my life so much, and sometimes it was a bit painful.”*

*(Student 6, female, 5th year)*

*“I have got loose contacts which always have food impaction similar to what I have just studied.”*

*(Student 14, male, 4th year)*

#### Influential factors from surrounding people in dental schools

##### Peer-related factor

Since the participants were spending most of their time in the dental school, they were surrounded by other people who had high awareness toward dental appearance such as their friends, dentists, or dental instructors. Some participants reported that they were informed about their dental imperfection from those

people, inducing them to consider the orthodontic retreatment.

*“Everyone here told me that my midline was shifted”*  
*(Student 12, female, 5th year)*

*“Other students told me that my teeth axis was not pretty, the alignment was not pretty ... some of my friends suggested me to have orthodontic retreatment.”*

*(Student 4, female, 4th year)*

*“My friend asked me why my teeth were still protruded, as I already had orthodontic treatment.”*

*(Student 5, female, 4th year)*

##### Patient-related factor

The students also believed that, as a dental student, patients might expect them to have perfect dental appearance. In addition, the participants thought that a good dental appearance could increase their confidence in their works, as it might make patients trust them.

*“Dental appearance of dentists should be perfect. When patients see, they will trust me.”*

*(Student 7, male, 4th year)*

*“I will be a dentist in the future. I would like to have good-looking teeth, as I worry that my patients may not feel good to have a treatment with me if they realized my malocclusion.”*

*(Student 10, female, 4th year)*

##### Psychosocial aspects toward dental appearance

As dental students, the participants were aware of their dental appearance, and they could notice even just a small defect. They also believed that surrounding people would pay attention to their teeth. One participant mentioned that she always kept watching her diastema, in order to check whether the space was wider or not. This issue might cause dental students to feel more worried and stressful, in addition to their learning.

*“My patients might want to get treatment from dentists who have good-looking teeth. It will increase confidence for both patients and myself.”*

*(Student 13, female, 5th year)*

*“I always blow air into interproximal areas of my anterior teeth to check if the space is bigger. I am so worried.”*

*(Student 1, female, 4th year)*

##### Expected outcomes of orthodontic retreatment

The purpose of dental esthetic improvement seemed to be the most common expected outcome, as informed by the participants. They also expected their teeth to have proper contacts preventing food impaction. It seemed

that the respondents decided to have orthodontic retreatment, in order to eliminate their unsatisfying outcomes from previous treatment.

*“I expected my protruded teeth would get back to their proper positions, and the midline would be corrected.”*

*(Student 2, female, 4th year)*

*“I wanted them to be perfect such as good alignment, proper occlusion, and no food impaction”*

*(Student 14, male, 4th year)*

### Complications of orthodontic retreatment

A variety of issues were taken into considerations for orthodontic retreatment among the participants. As dental students, they had known much information that they should consider before making a decision such as the risks of orthodontic retreatment. The risks they mentioned included root resorption, bone resorption, caries risk, pulp necrosis, and gingival recession.

*“I am worried about root resorption. Undergoing the treatment for several times would not be good. I am also afraid of gingival recession.”*

*(Student 3, female, 4th year)*

*“I am worried the most about proximal caries.”*

*(Student 6, female, 5th year)*

Moreover, undergoing orthodontic retreatment could be problematic to their everyday lives due to difficulties of chewing and eating. According to the busy life of dental students, they were afraid that, during orthodontic retreatment, they might need to spend more time for their meal during the short lunch break. Furthermore, they were worried that they might not have enough time to clean their teeth after lunch. It seemed that these concerns were raised due to their dental knowledge and experiences.

*“I am not sure I will have enough time for proper cleaning of my teeth after lunch.”*

*(Student 7, male, 4th year)*

## DISCUSSION

The common reasons to receive orthodontic retreatment were unsatisfied outcomes of both esthetic and functional concerns from previous treatment. However, the expectations of treatment were relevant to physical appearances rather than function which was similar to other studies.<sup>[13,14]</sup> As dental students, they would not feel confident with those imperfections, and therefore they had considered an orthodontic retreatment.

The results of this study demonstrated that dental students seemed to worry about their teeth leading to dissatisfaction of dental appearance including relapse, imperfect overbite and overjet, as well as changes in axis of incisor teeth. Some participants were aware that negative dental appearance, even a small defect, could impact the attractiveness of their smiles. Dental undergraduates seemed to be sensitive to esthetic factors affecting their smiles, and they appreciated ideal smiles more than non-dental students.<sup>[15]</sup> The results also indicated that functional problem influenced needs for orthodontic retreatment in some clinical students, but preclinical student was not likely to concern about functional problem. Clinical students perceived that an improper contact area was a factor that caused food impaction and difficulty in cleaning.

This study also found that lack of retainer wear led to tooth relapse, causing that orthodontic retreatment was requested. At that time, they had not been dental students yet, so they might not be fully aware of the importance of retainers. Other studies reported that the common reason for seeking orthodontic retreatment was irregularity of dentition due to not receiving retention after the first treatment or lacking cooperation to wear retainer as required.<sup>[6,16]</sup> Not wearing retainers led to unfavorable changes in tooth position after removing orthodontic fixed appliance. Moving back of teeth to original malocclusion or change of position after orthodontic treatment might be the result of soft tissue pressure and growth-related factor.<sup>[17]</sup>

Dental students highlighted that the more knowledge they had received from their study, the more dental awareness they had. This was concurrent with the previous research; dental students were more likely to be aware of their own dentition than laypeople.<sup>[7,8]</sup> Another study also found that most of the dental students who had knowledge about orthodontic treatment were aware of dental esthetics.<sup>[18,19]</sup> Therefore, they expected their dental appearance to be similar with what they had learned from their courses. In addition, dental students are likely to have the desire for orthodontic treatment.<sup>[20]</sup> However, dental students reported that they also worried about orthodontic retreatment, as they were aware of complications such as root resorption. Therefore, this implies that dental knowledge could play an important role in consideration of orthodontic retreatment in dental students.

Environments in a dental school should also be considered. The participants reported that they were told about their dental appearance by other people, who had high awareness of this issue. Environments where people live

can have influence on the ways they think.<sup>[21]</sup> In addition, as the students needed to perform clinical practice, they believed that, if they had a good dental appearance, they could be a role model for their patients. Therefore, they would feel confident to convince their patients to trust them when giving advice, leading to successful treatment. Not only dental knowledge but also environments in dental school had an influence on perceptions of the students toward their dental appearance, leading to a decision for orthodontic retreatment.

The findings of this research found that the students felt stressful or worried about their dental appearance. There was evidence that social and psychological well-being could be remarkably affected by self-perceived appearance of dental esthetics.<sup>[22]</sup> As they did not have positive perceptions toward their dental appearance, they would not feel confident with their smiles during a face-to-face communication, which could affect their social skills. There seems to be a correlation between psychological well-being and positive relationships with other people.<sup>[23]</sup> There is also evidence that expectations of orthodontic treatment are not only to improve dental appearance but also to enhance social relationships.<sup>[24]</sup> This issue should be taken into consideration for a dental program; it may not be fair if dental students need to worry about their appearance, as they have already been stressful with their study.

Due to the nature of the qualitative study, a small number of participants were recruited to gather in-depth information, and therefore the generalizability of the results was limited. Another limitation is that most of the participants in this research were studying in clinical years who already had clinical knowledge. Therefore, further quantitative research was recommended to collect data from a large number of respondents, covering both preclinical and clinical dental students. This would allow researchers to examine a relationship between dental experiences and a decision for orthodontic retreatment. Further research should also explore perceptions toward this point from a patient's point of view.

## CONCLUSION

Self-perceived esthetic and functional concerns seemed to be the common factors for requesting orthodontic retreatment among dental students. Dental knowledge and experiences acquired from the dental program could play an important role in a decision to receive orthodontic retreatment, as not only high expectations for their dental appearance but also complications of orthodontic retreatment were taken into their consideration. In addition, their concerns could be

raised by their peers or patients. Finally, a dental program should consider this issue, as it may impact psychological well-being among dental students.

## ACKNOWLEDGEMENTS

The authors would like to thank the research participants for their contributions to this study.

## FINANCIAL SUPPORT AND SPONSORSHIP

This research was supported by Faculty of Dentistry, Mahidol University, Thailand.

## CONFLICTS OF INTEREST

The authors declare no conflict of interest.

## ETHICAL POLICY AND INSTITUTIONAL REVIEW BOARD STATEMENT

This research was approved by the Faculty of Dentistry and the Faculty of Pharmacy, Mahidol University, Institutional Review Board (MU-DT/PY-IRB), reference number: MU-DT/PY-IRB 2019/060.3008 on August 30, 2019.

## PATIENT DECLARATION OF CONSENT

The authors declare that they have obtained consent forms from the research participants.

## DATA AVAILABILITY STATEMENT

The data are available on request from the corresponding author.

## REFERENCES

1. Klages U, Bruckner A, Guld Y, Zentner A. Dental esthetics, orthodontic treatment, and oral-health attitudes in young adults. *Am J Orthod Dentofacial Orthop* 2005;128:442-9.
2. Deng X, Wang YJ, Deng F, Liu PL, Wu Y. Psychological well-being, dental esthetics, and psychosocial impacts in adolescent orthodontic patients: A prospective longitudinal study. *Am J Orthod Dentofacial Orthop* 2018;153:87-96.e2.
3. Feng XP, Newton JT, Robinson PG. The impact of dental appearance on perceptions of personal characteristics among Chinese people in the United Kingdom. *Int Dent J* 2001;51:282-6.
4. Ukra A, Bennani F, Farella M. Psychological aspects of orthodontics in clinical practice. Part two: General psychosocial wellbeing. *Prog Orthod* 2012;13:69-77.
5. Kearney MK, Pandis N, Fleming PS. Mixed-methods assessment of perceptions of mandibular anterior malalignment and need for orthodontic retreatment. *Am J Orthod Dentofacial Orthop* 2016;150:592-600.
6. Ren Y, Boxum C, Sandham A. Patients' perceptions, treatment need, and complexity of orthodontic re-treatment. *Eur J Orthod* 2009;31:189-95.
7. Baswaraj, Jayasudha K, Kumarswamy K, Padmini M, Chandralekha B, Shruthi D. Dental students perception of orthodontic treatment. *J Indian Assoc Public Health Dent* 2015;13:79-82.
8. Tufekci E, Jahangiri A, Lindauer SJ. Perception of profile among laypeople, dental students and orthodontic patients. *Angle Orthod* 2008;78:983-7.
9. Almeida AB, Leite ICG, Silva GA. Evidence in orthodontics related to qualitative research. *Dental Press J Orthod* 2018;23:64-71.

10. Daniels C, Richmond S. The development of the Index of Complexity, Outcome and Need (ICON). *J Orthod* 2000;27: 149-62.
11. Stenvik A, Espeland L, Berset GP, Eriksen HM, Zachrisson BU. Need and desire for orthodontic (re-)treatment in 35-year-old Norwegians. *J Orofac Orthop* 1996;57:334-42.
12. Ritchie J, Lewis J, Nicholls CM, Ormston R. *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. London: Sage; 2014.
13. Al-Omiri MK, Abu Alhaija ES. Factors affecting patient satisfaction after orthodontic treatment. *Angle Orthod* 2006;76:422-31.
14. de Oliveira Meira ACL, Custodio W, Vedovello Filho M, Borges TM, de C Meneghim M, Santamaria M Jr, *et al.* How is orthodontic treatment need associated with perceived esthetic impact of malocclusion in adolescents? *Am J Orthod Dentofacial Orthop* 2020;158:668-73.
15. Omar H, Tai Y. Perception of smile esthetics among dental and nondental students. *J Educ Ethics Dent* 2014;4:54-60.
16. Chow L, Goonewardene MS, Cook R, Firth MJ. Adult orthodontic retreatment: A survey of patient profiles and original treatment failings. *Am J Orthod Dentofacial Orthop* 2020;158:371-82.
17. Littlewood SJ, Kandasamy S, Huang G. Retention and relapse in clinical practice. *Aust Dent J* 2017;62(Suppl 1):51-7.
18. Shekar S, Chandrashekar B, Bhagyalakshmi A, Avinash B, Girish M. Knowledge, attitude, and practices related to orthodontic treatment among college students in rural and urban areas of Mysore, India: A cross-sectional questionnaire study. *Indian J Dent Res* 2017;3:9-14.
19. Yildiz S, Dogan B. Self reported dental health attitudes and behaviour of dental students in Turkey. *Eur J Dent* 2011;5:253-9.
20. El Mourad AM, Al Shamrani A, Al Mohaimeed M, Al Sougi S, Al Ghanem S, Al Manie W. Self-perception of dental esthetics among dental students at King Saud University and their desired treatment. *Int J Dent* 2021;2021:6671112.
21. Manstead ASR. The psychology of social class: How socioeconomic status impacts thought, feelings, and behaviour. *Br J Soc Psychol* 2018;57:267-91.
22. Afroz S, Rathi S, Rajput G, Rahman SA. 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;13:455-60.
23. Ryff CD. Psychological well-being revisited: Advances in the science and practice of Eudaimonia. *Psychother Psychosom* 2014;83:10-28.
24. Twigge E, Roberts RM, Jamieson L, Dreyer CW, Sampson WJ. The psycho-social impact of malocclusions and treatment expectations of adolescent orthodontic patients. *Eur J Orthod* 2016;38:593-601.