

## Original Research Article

# Orthodontic treatment needs: parents and child perception

Nada Tashkandi<sup>1\*</sup>, Mashael Abdullah Al Sadoon<sup>2</sup>, Jumana Mohammed Albagshi<sup>2</sup>,  
Rana Mohammed Bin Mandeel<sup>2</sup>, Thuraya Adnan Albagshi<sup>2</sup>

<sup>1</sup>Department of Orthodontics and Dentofacial Orthopedics, Riyadh Elm University, Riyadh, Saudi Arabia

<sup>2</sup>College of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia

**Received:** 19 December 2021

**Revised:** 03 January 2022

**Accepted:** 04 January 2022

### \*Correspondence:

Dr. Nada Tashkandi,

E-mail: [nada.tashkandi@riyadh.edu.sa](mailto:nada.tashkandi@riyadh.edu.sa)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** Malocclusion is one of the most common oral cavity malformations. It has a variety of effects on dental health, function, aesthetics, and psychosocial condition. The suggested treatment for such a condition is orthodontic treatment. This study aims to assess the perceptions of orthodontic treatment needs of parents and their children with relation to their perception in Riyadh, Saudi Arabia.

**Methods:** This is a cross-sectional study that was conducted to study the perception of children and their parents about the need for orthodontic treatment. The data were collected at the pediatric clinics of Riyadh Elm university in Riyadh, Saudi Arabia, and included 379 parents and their school children aged 4-12 years. An interviewed questionnaire was used to collect the data from the children and their parents separately.

**Results:** The study found that the perception towards the need for orthodontic treatment of children and their parents was 44.6%, and 34.8% respectively. Also, a statistically significant difference was shown between the perception of children and their parents ( $p < 0.05$ ). The main factors affecting the perception was age, as the desire to have orthodontic treatment increased among children above age of 10 years. Other factors including satisfaction about chewing, teeth appearance, and social media altered the perception for orthodontic treatment need.

**Conclusions:** These findings could be essential for orthodontic treatment planning and increasing patient compliance. The difference between children and parents' perceptions can affect drive toward initial orthodontic visit.

**Keywords:** Orthodontic need, Orthodontic treatment, Perception, Patients, Child

## INTRODUCTION

Malocclusion is one of the most common oral cavity malformations. When the jaws are closed, it is characterized as an aberrant occlusion in which teeth are not in a normal position concerning adjacent teeth in the same jaw or opposing teeth.<sup>1</sup> A previous study was done to investigate the prevalence of malocclusion in the Riyadh region, Saudi Arabia. It concluded that occlusal status among school children is a predominance of Class I molar and canine. Normal overjet and overbite were frequent findings and the most prevalent malocclusion trait was crowding followed by spacing.<sup>2</sup> Malocclusion

has a variety of effect on dental health, function, aesthetics, and psychosocial condition.<sup>3-6</sup> Patients with malocclusion have high anxiety levels and the complexity of orthodontic treatment needs showed a significant impact on social appearance anxiety.<sup>7</sup>

Orthodontic treatment is one of the most effective strategies to improve malocclusions' oral health as well as their psychological well-being. As a result, the perception of malocclusion and the desire for improvement is spreading among younger generations.<sup>8,9</sup> Children's perception of orthodontic treatment need and satisfaction with the appearance of their teeth was statistically

associated with their mothers' perception.<sup>10</sup> Mothers are considered as surrogates for assessing their children's dental health-related quality of life. However, there have been disagreements in the literature about how well children's and parents' perceptions compare.<sup>9-11</sup> As a child matures into a teenager, the child's dependency on his or her parents gradually diminishes as they gain independence and autonomy.<sup>12</sup> Even though children are assumed to be less conscious of their orthodontic treatment needs than their parents, studies have shown that after orthodontic correction, children are more content and have higher self-esteem than before treatment.<sup>13</sup> This study is aimed towards assessing the perception level of orthodontic treatment needs of parents and their children in Riyadh Saudi Arabia.

## METHODS

A cross-sectional study was conducted to study the perception of children and their parents about the need for orthodontic treatment. The data were collected at the pediatric clinics of Riyadh Elm university in Riyadh, Saudi Arabia, and included 379 parents and their school children aged 4-12 years. The study was conducted between 2019 and 2020 and was approved by the ethical review board of Riyadh Elm University under FUGRP/2020/192/281/263. The sample was determined using simple randomization technique. All parents have consented for their children to be included in the study. The exclusion criteria of the study included children with missing anterior permanent teeth, craniofacial anomalies, children who refuse the clinical examination or have had a previous or ongoing orthodontic treatment, and parents who refuse to sign the consent form.

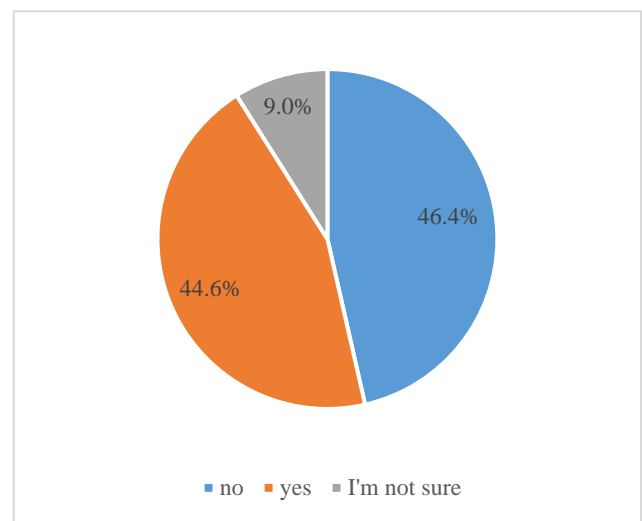
Separate interviews/questionnaires were conducted with the children and their parents. The variables studied were demographic characteristics including age, gender. Then, the results of the clinical examination were also included. Their perception about need for orthodontic care, satisfaction with the chewing and dental appearance using a closed-ended questions and a clinical examination utilizing the components of the index of orthodontic treatment need (IOTN) index. The questionnaire also included questions on social media and internet use to determine if it would affect the acceptance of their dental appearances. The clinical examination was carried out and performed by sixth-year dental students and an experienced supervising orthodontist. The study was reported following the strengthening the reporting of cohort studies in surgery (STROCSS) guideline.<sup>14</sup> The research was also registered in researchregistry with ID: researchregistry7369.

All of the statistical analysis steps were undertaken using the SPSS statistical package. Means and standard deviations were used to represent the qualitative data while numbers and percentages were used to represent the quantitative data. Comparison tests, including the Chi-square test, the one-way ANOVA/Tukey, student's t tests

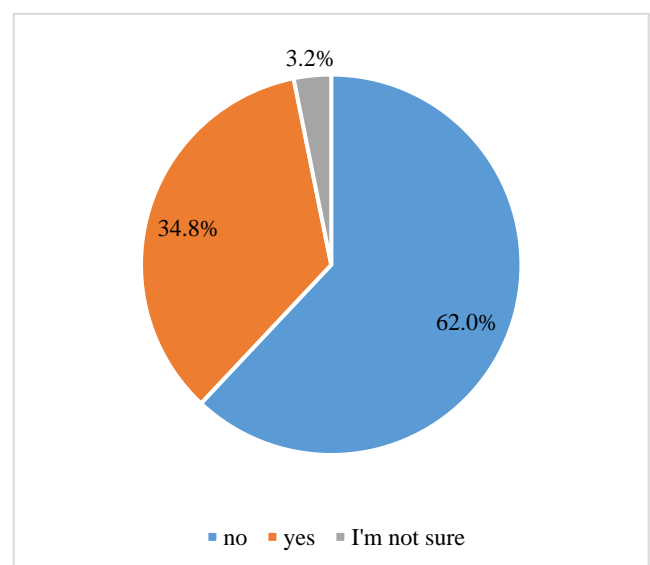
or Fischer test were used when deemed suitable to assess the potential association between the different variables of this study.  $P < 0.05$  indicates a significant association.

## RESULTS

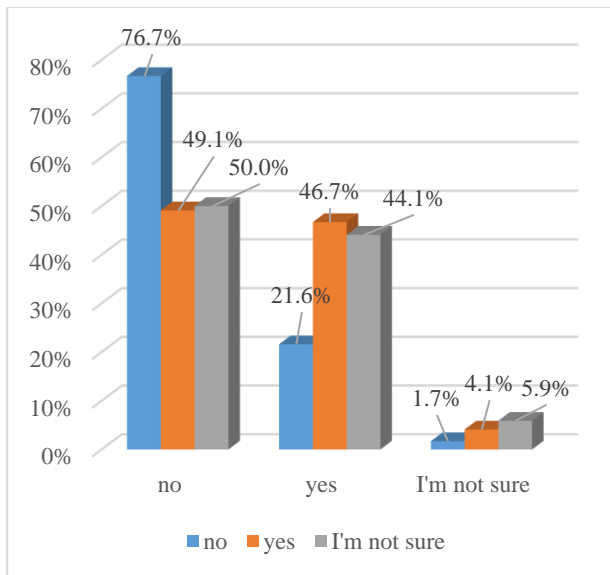
The 372 children and their parents participated in this study with 53.3% males, 41.4% with missing teeth, and 28.2% having crossbites. The mean age of the participants was  $7.5 \pm 2.4$ , mean of overjet was  $2.4 \pm 1.8$ , and overbite was  $36.7\% \pm 158\%$  (Table 1). Moreover, 44.6% of the children and 34.8% of their parents perceived that the child needs orthodontic treatment (Figure 1 and 2). Furthermore, the relationship between parents' perception and their child's perception on the need for orthodontic and the relationship was statistically significant was ( $p=0.000$ ) (Figure 3).



**Figure 1: Perception of child their needs for orthodontic treatment.**



**Figure 2: Perception of parents to their children needs for orthodontic treatment.**



**Figure 3: Relationship between parents' perception and child perception.**

**Table 1: Demographic and clinical characteristics.**

| Variables            | Categories     | N (%)          |
|----------------------|----------------|----------------|
| <b>Gender</b>        | Male           | 202 (53.3)     |
|                      | Female         | 177 (46.7)     |
| <b>Missing teeth</b> | No             | 222 (58.6)     |
|                      | Yes            | 157 (41.4)     |
| <b>Cross bite</b>    | No             | 272 (71.8)     |
|                      | Yes            | 107 (28.2)     |
|                      | <b>Mean±SD</b> | <b>Min-Max</b> |
| <b>Age (years)</b>   | 7.5±2.4        | 4-13           |
| <b>Overjet</b>       | 2.4±1.8        | -3-11          |
| <b>Overbite (%)</b>  | 36.7±158       | -400-285       |

Regarding the relationship between the perceptions of both children and parents with demographic characteristics of the children, age was a factor that

affected the participants' perception of the need for orthodontic treatment. Around 43%, 33%, and 64% of children in the age groups 4-6 years, 7-9 years, and ≥10 years of age had positive perceptions toward the need for orthodontic treatment. This relationship was statistically significant ( $p=0.000$ ) (Table 2). Regarding the perception of the parents, the study showed that their perception is also affected by the age in that 15.5%, 37.7%, and 62% of children in the age groups 4-6 years, 7-9 years, and ≥10 years of age had positive perception toward the need for orthodontic treatment. This relationship was statistically significant ( $p=0.000$ ) (Table 2).

Regarding the relationship between factors affecting the perception level of the child about the need for orthodontic treatment, satisfaction with chewing showed a statistically significant relationship with the perception for orthodontic treatment need ( $p=0.001$ ). In addition, 50% of the children who were satisfied with the chewing had no perception towards the need for the treatment. Regarding the "satisfied with the appearance of teeth" factor, it showed a statistically significant relationship with the perception ( $p=0.000$ ). In contrast, 33.2% of those satisfied with their teeth appearance perceived that they do not need the treatment (Table 3). The third factor was the effect of social media on the need for orthodontic treatment and satisfaction with their smiles. This showed a statistically significant relationship with the perception for orthodontic treatment need ( $p=0.000$ ) with 56.3% of the children believing that social media always affect their smile. In contrast, 33.8% showed that social media always affected their smile in having the perception belief for need of treatment. The other examined variables did not show any relationship with the perception of the child for orthodontic treatment (Table 3). The study showed that there was a relationship between the parents' perception about the need for orthodontic treatment for their children and some variables. All the examined variables showed a statistically significant relationship with perception as all  $p \leq 0.05$  (Table 4).

**Table 2: Relationship between perception of children and parents and demographic characteristics.**

| Variables          | Answers, N (%)             |           |           | $\chi^2$ | P value |
|--------------------|----------------------------|-----------|-----------|----------|---------|
|                    | No                         | Yes       | Not sure  |          |         |
| <b>Age (years)</b> | <b>Child perception</b>    |           |           |          |         |
| 4-6                | 75 (50.7)                  | 64 (43.2) | 9 (6.1)   | 24.7     | 0.000*  |
| 7-9                | 75 (54.3)                  | 46 (33.3) | 17 (12.3) |          |         |
| ≥10                | 25 (27.2)                  | 59 (64.1) | 8 (8.7)   |          |         |
| <b>Gender</b>      | <b>Child perception</b>    |           |           |          |         |
| Male               | 97 (48.0)                  | 87 (43.1) | 18 (8.9)  | 0.459    | 0.80    |
| Female             | 79 (44.6)                  | 82 (46.3) | 16 (9.0)  |          |         |
| <b>Age (years)</b> | <b>Parents' perception</b> |           |           |          |         |
| 4-6                | 118 (79.7)                 | 23 (15.5) | 7 (4.7)   | 54.9     | 0.000*  |
| 7-9                | 82 (59.4)                  | 52 (37.7) | 4 (2.9)   |          |         |
| ≥10                | 34 (37.0)                  | 57 (62.0) | 1 (1.1)   |          |         |
| <b>Gender</b>      | <b>Parents' perception</b> |           |           |          |         |
| Male               | 118 (58.4)                 | 77 (38.1) | 7 (3.5)   | 2.36     | 0.306   |
| Female             | 117 (66.1)                 | 55 (31.1) | 5 (2.8)   |          |         |

\*Statistically significant.

**Table 3: Factors affect the perception of child for the need for orthodontic treatment.**

| Variables   | Answers, N (%) |            |              | $\chi^2$ | P value |
|---|----------------|------------|--------------|----------|---------|
|   | No             | Yes        | I'm not sure |          |         |
| <b>Satisfied with chewing</b>   |                |            |              |          |         |
| No  | 41 (40.2)      | 57 (55.9)  | 4 (3.9)      | 17.7     | 0.001*  |
| Yes   | 134 (50)       | 107 (39.9) | 27 (10.1)    |          |         |
| I'm not sure  | 1 (11.1)       | 5 (55.6)   | 3 (33.3)     |          |         |
| <b>Satisfied with the appearance of teeth</b>                                     |                |            |              |          |         |
| No  | 36 (28.6)      | 81 (64.3)  | 9 (7.1)      | 40.7     | 0.000*  |
| Yes   | 132 (58.4)     | 75 (33.2)  | 19 (8.4)     |          |         |
| I'm not sure  | 8 (29.6)       | 13 (48.1)  | 6 (22.2)     |          |         |
| <b>How often do you use the internet/social media?</b>                            |                |            |              |          |         |
| Never   | 13 (43.3)      | 14 (46.7)  | 3 (10)       | 8.5      | 0.385   |
| At least every week   | 13 (65)        | 7 (35)     | 0 (0)        |          |         |
| Daily or most daily   | 48 (41)        | 58 (49.6)  | 11 (9.4)     |          |         |
| Several times a day   | 70 (51.5)      | 56 (41.2)  | 10 (7.4)     |          |         |
| Almost all the time   | 32 (42.1)      | 34 (44.7)  | 10 (13.2)    |          |         |
| <b>Using image altering software such as filters when taking photos</b>           |                |            |              |          |         |
| Always  | 27 (39.1)      | 38 (55.1)  | 4 (5.8)      | 7.3      | 0.123   |
| Sometimes   | 38 (40.4)      | 45 (47.9)  | 11 (11.7)    |          |         |
| No  | 111 (51.4)     | 86 (39.8)  | 19 (8.8)     |          |         |
| <b>Do you think social media use has affected your perception of your smile?</b>  |                |            |              |          |         |
| Always  | 120 (56.3)     | 72 (33.8)  | 21 (9.9)     | 22.7     | 0.000*  |
| Sometimes   | 47 (32.9)      | 84 (58.7)  | 12 (8.4)     |          |         |
| No  | 9 (47.4)       | 9 (47.4)   | 1 (5.3)      |          |         |
| <b>Do you think social media use has affected your child perception of smile?</b> |                |            |              |          |         |
| Yes   | 149 (66.2)     | 70 (31.1)  | 6 (2.7)      | 13       | 0.011*  |
| Sometimes   | 70 (52.6)      | 59 (44.4)  | 4 (3.0)      |          |         |
| No  | 16 (76.2)      | 3 (14.3)   | 2 (9.5)      |          |         |

\*Statistically significant.

**Table 4: Factors affect the perception of parents for the need for orthodontic treatment.**

| Variables   | Answers, N (%) |           |              | $\chi^2$ | P value |
|---|----------------|-----------|--------------|----------|---------|
|   | No             | Yes       | I'm not sure |          |         |
| <b>Satisfied with chewing</b>   |                |           |              |          |         |
| No  | 59 (55.1)      | 45 (42.1) | 3 (2.8)      | 10       | 0.041*  |
| Yes   | 169 (65.3)     | 83 (32.0) | 7 (2.7)      |          |         |
| I'm not sure  | 7 (53.8)       | 4 (30.8)  | 2 (15.4)     |          |         |
| <b>Satisfied with the appearance of teeth</b>                           |                |           |              |          |         |
| No  | 68 (41.5)      | 92 (56.1) | 4 (2.4)      | 61.3     | 0.000*  |
| Yes   | 155 (79.1)     | 33 (16.8) | 8 (4.1)      |          |         |
| I'm not sure  | 12 (63.2)      | 7 (36.8)  | 0 (0)        |          |         |
| <b>How often do your child use the internet/social media?</b>           |                |           |              |          |         |
| Never   | 22 (91.7)      | 1 (4.2)   | 1 (4.2)      | 18.3     | 0.019*  |
| At least every week   | 15 (60)        | 10 (40)   | 0 (0)        |          |         |
| Daily or most daily   | 67 (69.8)      | 28 (29.2) | 1 (1)        |          |         |
| Several times a day   | 87 (56.5)      | 60 (39)   | 7 (4.5)      |          |         |
| Almost all the time   | 22 (91.7)      | 1 (4.2)   | 1 (4.2)      |          |         |
| <b>Using image altering software such as filters when taking photos</b> |                |           |              |          |         |
| Always  | 20 (40)        | 28 (56)   | 2 (4)        | 12.9     | 0.012*  |
| Sometimes   | 67 (62)        | 37 (34.3) | 4 (3.7)      |          |         |
| No  | 148 (67)       | 67 (30.3) | 6 (2.7)      |          |         |

\*Statistically significant.

## DISCUSSION

This study examined the perception of children aged 4 - 12 years and their parents towards the need for orthodontic treatment. It also examined the main factors affecting their decision. The study showed that 44.6% of the children and 34.8% of their parents have believed that they required orthodontic treatment. Several related studies revealed that patients' and parent's points of view are very important in determining the orthodontic treatment plan.<sup>3,6,10,11</sup> The study found that there is a statistically significant relationship between the perception of parents and their child to have the orthodontic treatment. The patient and parents' concerns are important factors in making decisions about their child's treatment.

Orthodontic treatment decisions are also known to typically be a parental issue.<sup>15</sup> Future concerns about orthodontic treatment included feeling pain, the appearance of braces, being teased and missing school.<sup>16</sup> In relation, our study found several factors affecting the parents and their child's perception of orthodontic needs. Perception about the need for orthodontic treatment is affected by age in that the larger percentages of children who are  $\geq 10$  years of age and their parents have similarly positive percentages towards the need of orthodontic treatment 64.1% and 62%, respectively. This may be related to the fact that children aged 10-12 are going through an unaesthetic developmental change which may lead them to seek orthodontic treatment more often.<sup>17</sup> There was a difference between the perception of children in those aged 4-6 years and their parents. This can be attributed to the fact that younger children are not fully aware of orthodontic treatment needs. Furthermore, feelings of acceptance and love directed at parents may be stronger in preadolescents, thus the parental view of their needs is more significant when forming wants and demands which was consistent with previous studies.<sup>15,18</sup> On the other hand, our study did not find any relationship in the perception with regards to the patients' gender. However, a previous study showed that females had more desire to have orthodontic treatments when compared to males.<sup>19</sup> Furthermore, the perception was affected by other factors such as satisfaction with chewing. Those having problems in chewing and those who were not satisfied had positive perception. Nonetheless, perception level was affected by the chewing and mastication problem and mastication was only found to be associated with open bite malocclusion.<sup>20</sup> The appearance of teeth was another important factor affecting perception. A study found that teeth appearance is the major motivation for seeking orthodontic treatment and a desire to improve dental appearance.<sup>19</sup>

Social media affect the way we view the world and connect with it and is considered a major concern.<sup>21</sup> Almost anywhere they go, children nowadays have internet access and use it almost every day. Studies on the effect of media have shown to affect child social and

psychosocial development of children as well as the increased interest in cosmetic dentistry and orthodontics.<sup>21-23</sup> Viewing social platforms with high visual media significantly decreases satisfaction with the facial appearance in the short term.<sup>24</sup>

Our study limitation includes small sample size which does not represent the whole population. Furthermore, other parental factors were not explored such as family history of orthodontic treatment, genetic factors and parental education level. We encourage more studies to explore other factors that may affect the perception of orthodontic treatment in the future.

## CONCLUSION

There was a link between children's perceptions and those of their patients. The findings could be crucial for treatment planning and patient compliance in orthodontics. Preadolescents are less concerned with their dentofacial appearance and are more concerned with parental judgments and treatment should involve parental motivation to increase compliance. Appropriate patient consultation addressing their concerns may minimize anxiety and improve treatment acceptability.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee by Riyadh Elm University under FUGRP/2020/192/281/263.*

## REFERENCES

1. Davies SJ. Malocclusion-a term in need of dropping or redefinition? *Bri Dental J*. 2007;202(9):519-20.
2. Asiry MA. Occlusal Status among 12-16 Year-Old School Children in Riyadh, Saudi Arabia. *J Int Oral Health*. 2015;7(5):20-3.
3. Boeira GF, Salas MMS, Araújo DC, Masotti AS, Correa MB, Demarco FF. Factors influencing dental appearance satisfaction in adolescents: a cross-sectional study conducted in Southern Brazil. *Braz J Oral Sci*. 2016;15(1):08-15.
4. Samorodnitzky-Naveh GR, Geiger SB, Levin L. Patients' satisfaction with dental esthetics. *J Am Dental Asso*. 2007;138(6):805-8.
5. Mehl C, Wolfart S, Vollrath O, Wenz HJ, Kern M. Perception of dental esthetics in different cultures. *Int J Prosthodontics*. 2014;27(6):523-9.
6. Bhatia R, Winnier JJ, Mehta N. Impact of malocclusion on oral health-related quality of life in 10-14-year-old children of Mumbai, India. *Contemp Clin Dent*. 2016;7(4):445-50.
7. Atik E, Önde MM, Domnori S, Tutar S, Yiğit OC. A comparison of self-esteem and social appearance anxiety levels of individuals with different types of malocclusions. *Acta odontologica Scandinavica*. 2021;79(2):89-95.

8. Hoda MA AL, Sulaiman ES EE. Attitude toward malocclusion and desire for orthodontic treatment among 9-17 year old Saudis. 2005.
9. Alhummayani FM, Taibah SM. Orthodontic treatment needs in Saudi young adults and manpower requirements. *Saudi Med J*. 2018;39(8):822-8.
10. De Sousa ET, da Silva BF, Maia FB, Forte FD, Sampaio FC. Perception of children and mothers regarding dental aesthetics and orthodontic treatment need: a cross-sectional study. *Progress in orthodontics*. 2016;17(1):37.
11. Abanto J, Tsakos G, Paiva SM, Raggio DP, Celiberti P, Bönecker M. Agreement between children aged 5-6 years and their mothers in rating child oral health-related quality of life. *Int J paediatric dentistry*. 2014;24(5):373-9.
12. Jaeken K, De Llano-Pérula MC, Lemiere J, Verdonck A, Fieuws S, Willems G. Difference and relation between adolescents' and their parents or caregivers' reported oral health-related quality of life related to orthodontic treatment: a prospective cohort study. *Health Quality Life Outcomes*. 2019;17(1):1-8.
13. Harmsen IA, Mollema L, Ruiters RA, Paulussen TG, de Melker HE, Kok G. Why parents refuse childhood vaccination: a qualitative study using online focus groups. *BMC Public Health*. 2013;13:1183.
14. Agha RA, Borrelli MR, Vella-Baldacchino M. The STROCSS statement: strengthening the reporting of cohort studies in surgery. *Int J Surg*. 2017;46:198-202.
15. Brumini M, Slaj M, Katic V, Pavlic A, Trinajstić Zrinski M, Spalj S. Parental influence is the most important predictor of child's orthodontic treatment demand in a preadolescent age. *Odontology*. 2020;108(1):109-16.
16. Kazancı F, Aydoğan C, Alkan Ö. Patients' and parents' concerns and decisions about orthodontic treatment. *Korean J Orthod*. 2016;46(1):20-6.
17. Christopherson EA, Briskie D, Inglehart MR. Objective, subjective, and self-assessment of preadolescent orthodontic treatment need—a function of age, gender, and ethnic/racial background? *J Public Health Dentistry*. 2009;69(1):9-17.
18. Hanafi MH, Noor NM, Hassan MH. Inconsistency of Lesion Quantitative Assessment in 2D SUV and 3D SUV Quantification Techniques for [18F]-FDG PET/CT: A Phantom Study. 2017.
19. Kerosuo H, Abdulkarim E, Kerosuo E. Subjective need and orthodontic treatment experience in a Middle East country providing free orthodontic services: a questionnaire survey. *Angle orthodontist*. 2002;72(6):565-70.
20. Do Amaral BA, Gondim Filgueira AC, Da Silva-Neto JP, De Lima KC. Relationship between normative and self-perceived criteria for orthodontic treatment need and satisfaction with esthetics and mastication in adolescents. *Am J Orthodontics Dentofacial Orthopedics*. 2020;157(1):42-8.
21. Signorielli N. Children, television, and gender roles. Messages and impact. *J Adolescent Health Care*. 1990;11(1):50-8.
22. Theobald AH, Wong BK, Quick AN, Thomson WM. The impact of the popular media on cosmetic dentistry. *N Zeal Dental J*. 2006;102(3):58-63.
23. Best P, Manktelow R, Taylor B. Online communication, social media and adolescent wellbeing: A systematic narrative review. *Children Youth Services Review*. 2014;41:27-36.
24. Sampson A, Jeremiah HG, Andiappan M, Newton JT. The effect of viewing idealised smile images versus nature images via social media on immediate facial satisfaction in young adults: A randomised controlled trial. *J O rthodontics*. 2020;47(1):55-64.

**Cite this article as:** Tashkandi N, Al Sadoon MA, Albagshi JM, Mandeel RMB, Albagshi TA. Orthodontic treatment needs: parents and child perception. *Int J Community Med Public Health* 2022;9:590-5.