*Original Article*

# Desire for orthodontic treatment and associated factors among adolescents in southern Brazil

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## ABSTRACT

**Objective:** To estimate the prevalence of the desire for orthodontic treatment and investigate associated factors among adolescents in southern Brazil.

**Materials and Methods:** A cross-sectional study was carried out with 704 adolescents aged 12 and 13 years at municipal public schools in the city of Balneário Camboriú (southern Brazil). The adolescents answered a previously tested questionnaire addressing satisfaction with their dental appearance, speech function, chewing function, and the desire for orthodontic treatment. The parents/guardians answered a questionnaire addressing satisfaction with their child's dental appearance and socioeconomic variables. A trained and calibrated orthodontist collected clinical data on malocclusion using the Dental Aesthetic Index (DAI). Statistical analysis was performed using multivariate Poisson regression with robust variance.

**Results:** The prevalence of the desire for orthodontic treatment was 69.6% (490/704). In the adjusted analysis, the outcome was significantly more prevalent among girls ($P < .001$), those with difficulty chewing ($P = .026$), those dissatisfied with their dental appearance ($P < .001$), and those with greater malocclusion severity ($P < .001$). The following orthodontic characteristics were associated with the desire for orthodontic treatment in the multivariate model: diastema in anterior segment ($P < .001$), anterior maxillary irregularity ($P < .001$), maxillary overjet ≥6 mm ($P < .001$), and mandibular overjet ($P = .047$).

**Conclusions:** The desire for orthodontic treatment among 12- and 13-year-old adolescents is influenced by gender, dissatisfaction with one's dental appearance, difficulty chewing, malocclusion severity, and orthodontic characteristics. These findings should be considered together with normative indications regarding the need for orthodontic treatment in adolescents. (*Angle Orthod.* 2015;85:224–232.)


**KEY WORDS:** Orthodontics; Malocclusion; Desire; Motivation

## INTRODUCTION

The impact of malocclusion on quality of life has been the object of study in different populations.[1–6] Particular types of malocclusion seems to affect satisfaction with one's dental appearance, facial appearance, general appearance, and perceived attractivness.[2,7–9] The high prevalence rates in different populations demonstrate that malocclusion is a public health problem that requires the planning and implementation of intervention strategies.[10,11]

While orthodontic treatment is an effective manner to treat different types of malocclusion[12,13] and can lead to an improvement in quality of life,[4,13,14] the desire to undergo treatment has been explored little in the scientific literature. This desire seems to be influenced by social and cultural characteristics in different populations[15–18] as well as gender, self-perceived esthetics and function,[1,19–21] and malocclusion severity.[7,17,22,23] However, few studies have investigated the joint influence of these characteristics in adolescents. The motivations of adolescents and their parents regarding orthodontic treatment seem to contribute to

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cooperation during treatment, the prognosis of the case, and posttreatment satisfaction.[20,24,25] Thus, orthodontists and administrators of healthcare services should recognize this network of interrelations with the aim of achieving a favorable outcome for the patient as well as improving the cost effectiveness of the services offered.

The aims of the present study were to explore the demographic and socioeconomic factors as well as the perceptions of adolescents and their parents associated with the desire for orthodontic treatment among 12- and 13-year-old adolescents in southern Brazil and identify the orthodontic characteristics associated with this outcome.

## MATERIALS AND METHODS

### Subjects and Study Design

The present cross-sectional study was part of a larger study evaluating the prevalence of malocclusion and associated factors among adolescents in southern Brazil. The investigation received approval from the Human Research Ethics Committee of the Universidade Luterana. The parents/guardians of the adolescents signed a statement of informed consent. In addition, an affirmative agreement to participate in research was obtained from all adolescents.

The source population consisted of individuals aged 12 and 13 years enrolled at all of the municipal education centers (n = 11) in the city of Balneário Camboriú, which has a population of 100,000 and is located in the state of Santa Catarina. The inclusion criterion was age 12 or 13 years, as this is the age at which the permanent dentition is established, when most subjects can be evaluated using the Dental Aesthetic Index (DAI), and it is also the most adequate period for beginning orthodontic treatment. Adolescents in the mixed dentition phase and those with a history of orthodontic treatment were excluded from the study.

The calculation of the sample size was based on a source population of 1200 schoolchildren, an estimated 30% prevalence rate of malocclusion, a 95% confidence level, an 80% power, and a 2.5% margin of error. These parameters determined a minimum sample of 622 adolescents. Estimating a 30% nonresponse rate and the exclusion of 10% of the adolescents due to a history of orthodontic treatment, questionnaires were delivered to all 12- and 13-year-old students at all schools in the city.

### Questionnaires

The adolescents answered a structured questionnaire addressing sex, age, perceptions of dental appearance, speaking function, and chewing function. This questionnaire employed a five-point rating scale (very poor/poor/fair/good/very good) and was based on a previously used data collection instrument.[26,27] Dissatisfaction with one's dental appearance, speaking function, and chewing function was then dichotomized (yes = poor or very poor; no = fair, good or very good).The adolescents also answered a question that corresponded to the outcome of the study: "Would you like to undergo orthodontic treatment?" (no/yes). The questions were first administered to 35 students in a pilot study on two occasions with a 2-week interval. Reliability was determined using the kappa statistic, which demonstrated nearly perfect reproducibility for the five-point scale ($\kappa = 0.87$; 95% CI: 0.77–0.96) and perfect reproducibility for the outcome question ($\kappa = 1.00$).

The parents/guardians answered a structured questionnaire addressing socioeconomic status (based on the mother's schooling) and satisfaction with their child's dental appearance.

### Clinical Exam

The clinical exam was performed by an experienced orthodontist using a mouth mirror, gauze, wooden tongue depressor, and a periodontal probe (Community Periodontal Index)[28] following biosafety norms. Ethnicity and orthodontic characteristics (based on the DAI[29] recommended by the World Health Organization[28]) were recorded on each individual's clinical chart. The DAI involves the evaluation of 10 parameters of dentofacial anomalies related to clinical and radiographic aspects: missing teeth, crowding of the anterior segment, spacing in the anterior segment, diastema in the anterior segment, largest anterior maxillary irregularity, largest anterior mandibular irregularity, anterior maxillary overjet, anterior mandibular overjet, anterior open bite, and anteroposterior molar relationship. Based on these, DAI allows the categorization of normal occlusion or minor malocclusion ($\leq$25), definite malocclusion with elective treatment need (26 to 30), severe malocclusion with highly desirable treatment need (31 to 35), and handicapping malocclusion for which treatment is required ($\geq$36). Intraexaminer reliability was tested in a pilot study involving 20 12- and 13-year-old students examined on two occasions with a 2-week interval between examinations. The mean kappa coefficient was 0.86.

### Statistical Analysis

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS, version 16.0, Chicago, Ill). The chi-square test and Poisson regression with robust variance were used to test the

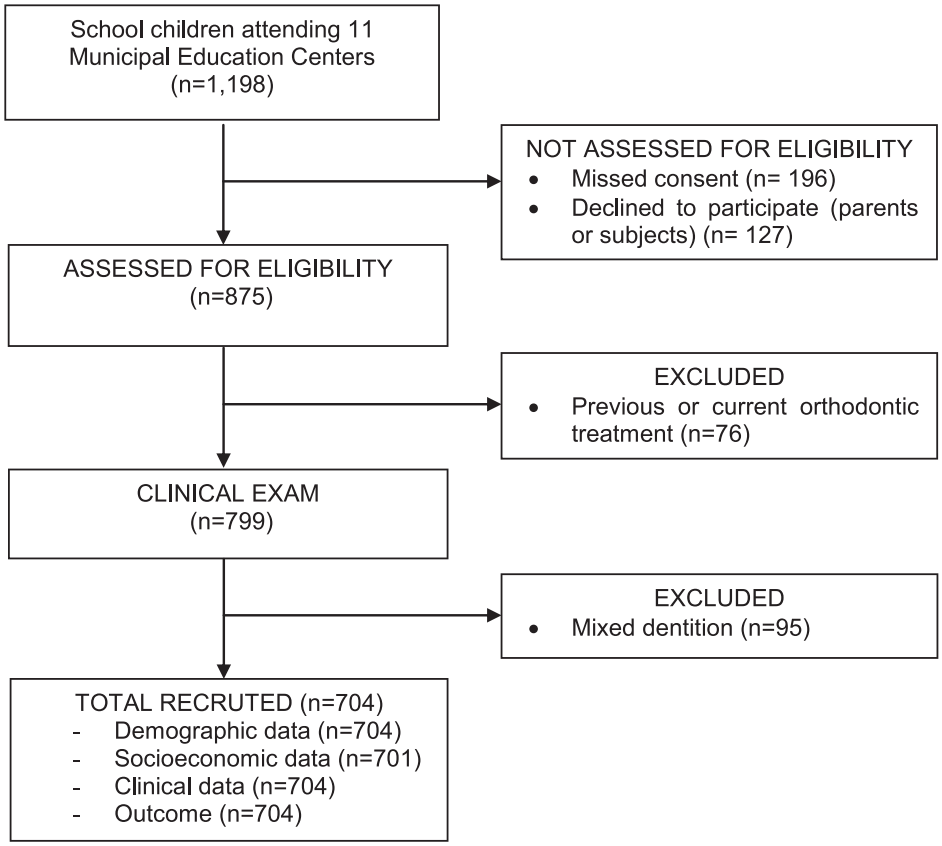


**Figure 1.** Flow diagram at each stage of recruiting study participants.

strength of the associations between the outcome (desire for orthodontic treatment) and demographic variables, socioeconomic variables, adolescent's perception of his/her dental appearance, parents' satisfaction with their child's dental appearance, and the DAI. In the crude model, separate prevalence ratios and 95% confidence intervals were estimated for the independent variables. The multivariate model began with all co-variables, which were successively eliminated (backward stepwise procedure) based on the largest *P* value (Wald test). Only variables with a *P* value $< .05$ remained in the model. A new model was then run to investigate associations between orthodontic characteristics (DAI) and the outcome. Univariate and multivariate Poisson regression with robust variance was performed following the same criteria in the previous analysis. "Missing teeth" was the only orthodontic characteristic not included as an independent variable due to the low frequency of subjects with missing teeth in the sample. The level of rejection of the null hypothesis was set to 5% ($P < .05$).

## RESULTS

The final sample consisted of 704 adolescents. Figure 1 shows the flowchart of the study. Similar distribution was found for gender (male: 53.1%; female: 46.9%) and age (12 years: 45.6%; 13 years: 54.4%). Most subjects were white (75.3%) followed by brown (18.7%), and black (6.0%). Mother's schooling ranged from 0 to 13 years (mean [SD]: 7.5 [3.3] years). The distribution of DAI scores was approximately symmetrical and ranged from 13 to 47 (mean [SD]: 53.3 [5.8] points; median [P25–P75]: 24 [21–28] points).

The prevalence of the desire for orthodontic treatment was 69.6% (490/704) and was significantly higher among adolescents with greater malocclusion severity ($P < .001$) (Table 1). Moreover, the outcome was significantly more prevalent among female adolescents ($P < .001$), those with difficulty chewing ($P = .007$), those dissatisfied with their dental appearance ($P = .003$), and those whose parents were dissatisfied with their child's dental appearance ($P < .001$). A significant positive correlation was found between parents' and adolescents' perception with dental appearance ($P < .001$; Spearman $r = 0.161$). The prevalence of parents' satisfaction with their child's dental appearance decreased with the increase in malocclusion severity from 73.8% (normal or minor malocclusion) to 48.9% (handicapping malocclusion) (chi-square test for linear trend: $P < .001$, not in a Table).

**Table 1.** Desire for Orthodontic Treatment According to Independent Variables

| Variables | N | (%) | Desire for Orthodontic Treatment n | (%) | |
|---|---|---|---|---|---|
| Total | 704 | (100.0) | 490 | (69.6) | P[a] |
| Sex | | | | | .000 |
| Male | 374 | (53.1) | 239 | (63.9) | |
| Female | 330 | (46.9) | 251 | (76.1) | |
| Age, y | | | | | .291 |
| 12 | 321 | (45.6) | 217 | (67.6) | |
| 13 | 383 | (54.4) | 273 | (71.3) | |
| Ethnicity | | | | | .113 |
| Black | 42 | (6.0) | 24 | (57.1) | |
| White | 530 | (75.3) | 378 | (71.3) | |
| Brown | 132 | (18.7) | 88 | (66.7) | |
| Mother's schooling, y | | | | | .471 |
| <5 | 176 | (25.1) | 128 | (72.7) | |
| 5–8 | 291 | (41.5) | 202 | (69.4) | |
| >8 | 234 | (33.4) | 157 | (67.1) | |
| Difficulty chewing | | | | | .007 |
| Yes | 153 | (21.7) | 120 | (78.4) | |
| No | 551 | (78.3) | 370 | (67.2) | |
| Difficulty speaking | | | | | .093 |
| Yes | 77 | (10.9) | 60 | (77.9) | |
| No | 627 | (89.1) | 430 | (68.6) | |
| Dissatisfaction with dental appearance | | | | | .003 |
| Yes | 133 | (18.9) | 107 | (80.5) | |
| No | 571 | (81.1) | 383 | (67.1) | |
| Parents' satisfaction with child's dental appearance | | | | | |
| Yes | 470 | (66.8) | 295 | (62.8) | .000 |
| No | 234 | (33.2) | 195 | (83.3) | |
| DAI[b] | | | | | .000 |
| ≤25 (normal or minor malocclusion) | 413 | (58.7) | 253 | (61.3) | |
| 26–30 (definite malocclusion) | 169 | (24.0) | 130 | (76.9) | |
| 31–35 (severe malocclusion) | 77 | (10.9) | 66 | (85.7) | |
| ≥36 (handicapping malocclusion) | 45 | (6.4) | 41 | (91.1) | |

[a] Chi-square test.
[b] DAI indicates Dental Aesthetic Index.

In the crude model, the same variables were associated with the outcome (Table 2). After the multivariate adjustments, the desire for orthodontic treatment was greater among female adolescents (PR: 1.18; 95% CI: 1.07–1.30), among those who reported difficulty chewing (PR: 1.12; 95% CI: 1.01–1.24), and among those who were dissatisfied with their dental appearance (PR: 1.15; 95% CI: 1.04–1.27). Moreover, the desire for orthodontic treatment was significantly greater in all categories of malocclusion: 25% greater among those with an elective treatment need (PR: 1.25; 95% CI: 1.12–1.39), 38% greater among those with severe malocclusion (PR: 1.38; 95% CI: 1.23–1.55), and nearly 50% greater among those with very severe to debilitating malocclusion (PR: 1.49; 95% CI: 1.32–1.69). Parents' dissatisfaction with their child's dental appearance lost its statistical significant after the multivariate adjustments.

Regarding orthodontic variables (Table 3), the outcome was significantly associated with crowding ($P = .036$), diastema in the anterior segment ($P = .008$), anterior maxillary irregularity ($P < .001$), maxillary overjet ($P = .003$), and abnormal molar relationship ($P = .002$). In the multivariate analysis (Table 4), the desire for orthodontic treatment was greater among those with diastema of 1 mm in the anterior segment (PR: 1.24; 95% CI: 1.07–1.44), among those with diastema ≥2 mm in the anterior segment (PR: 1.34; 95% CI: 1.14–1.57), among those with largest anterior maxillary irregularity between 1 and 2 mm (PR: 1.13; 95% CI: 1.01–1.26), among those with largest anterior maxillary irregularity ≥3 mm (PR: 1.48; 95% CI: 1.31–

**Table 2.** Crude and Adjusted Prevalence Ratios (PR) and 95% Confidence Intervals (95% CI) for Desire for Orthodontic Treatment According to Independent Variables[a]

| Variables | Crude Model | | | Adjusted Model | | |
|---|---|---|---|---|---|---|
| | PR | (95% CI) | *P* | PR | (95% CI) | *P* |
| Sex | | | .000 | | | .000 |
| Male | 1.00 | | | 1.00 | | |
| Female | 1.19 | (1.08–1.31) | | 1.18 | (1.07–1.30) | |
| Age, y | | | .294 | | | |
| 12 | 1.00 | | | | # | |
| 13 | 1.05 | (0.95–1.16) | | | | |
| Ethnicity | | | .183 | | | |
| Black | 1.00 | | | | # | |
| White | 1.25 | (0.95–1.63) | | | | |
| Brown | 1.17 | (0.87–1.56) | | | | |
| Mother's schooling, y | | | .460 | | | |
| <5 | 1.08 | | | | # | |
| 5–8 | 1.03 | (0.95–1.23) | | | | |
| >8 | 1.00 | (0.92–1.16) | | | | |
| Difficulty chewing | | | .003 | | | .026 |
| Yes | 1.17 | (1.05–1.29) | | 1.12 | (1.01–1.24) | |
| No | 1.00 | | | 1.00 | | |
| Difficulty speaking | | | .054 | | | |
| Yes | 1.14 | | | | # | |
| No | 1.00 | (1.00–1.29) | | | | |
| Dissatisfaction with dental appearance | | | .000 | | | .000 |
| Yes | 1.20 | (1.08–1.33) | | 1.15 | (1.04–1.27) | |
| No | 1.00 | | | 1.00 | | |
| Parents' satisfaction with child's dental appearance | | | .000 | | | |
| Yes | 1.00 | | | | # | |
| No | 1.33 | (1.21–1.45) | | | | |
| DAI[b] | | | .000 | | | .000 |
| ≤25 (normal or minor malocclusion) | 1.00 | | | 1.00 | | |
| 26–30 (definite malocclusion) | 1.26 | (1.12–1.41) | | 1.25 | (1.12–1.39) | |
| 31–35 (severe malocclusion) | 1.40 | (1.24–1.58) | | 1.38 | (1.23–1.55) | |
| ≥36 (handicapping malocclusion) | 1.49 | (1.32–1.68) | | 1.49 | (1.32–1.69) | |

[a] # indicates variables not in final model.
[b] DAI indicates Dental Aesthetic Index.

1.66), among those with maxillary overjet ≥6 mm (PR: 1.29; 95% CI: 1.11–1.49), and among those with mandibular overjet ≥1 mm (PR: 1.32; 95% CI: 1.01–1.73). The molar relationship lost is statistical significance after the adjustments for the other orthodontic variables.

No significant differences were found between respondents and nonrespondents regarding gender (female respondents: 46.9%; female nonrespondents: 48.2%; $P = .655$) or schooling (mean [SD] schooling among respondents: 6.6 [1.0] years; mean [SD] schooling among nonrespondents: 6.5 [0.9] years; $P = .083$).

## DISCUSSION

The indication for orthodontic treatment has historically been based on exclusively normative aspects perceived by orthodontists with the aim of achieving an "ideal occlusion."[30,31] However, patients are increasingly exposed to external motivations regarding treatment, such as pressure from family and friends as well as what is considered acceptable in their social surroundings.[20,22,32] These aspects, along with internal motivation related to the patient's self-perception and the extent to which treatment is desired, have often been relegated to a background position.[16,33]

The main finding of the present study is that more than two thirds of the adolescents wished to undergo orthodontic treatment, independently of their socioeconomic status, age, and ethnic group. This desire was greater among female adolescents and those with negative perception regarding their dental appearance and chewing function. Moreover, diastema in the anterior segment, anterior maxillary irregularity, and

**Table 3.** Desire for Orthodontic Treatment According to Dental Aesthetic Index Components

| Variables | N | (%) | Desire for Orthodontic Treatment n | (%) | P[a] |
|---|---|---|---|---|---|
| Crowding | | | | | .036 |
| No | 251 | (35.7) | 168 | (66.9) | |
| 1 Segment | 214 | (30.4) | 141 | (65.9) | |
| 2 Segments | 239 | (33.9) | 181 | (75.7) | |
| Spacing in anterior segment | | | | | .943 |
| No | 496 | (70.5) | 345 | (69.6) | |
| 1 Segment | 135 | (19.2) | 95 | (70.4) | |
| 2 Segments | 73 | (10.3) | 50 | (68.5) | |
| Diastema in anterior segment, mm | | | | | .008 |
| 0 | 624 | (88.6) | 424 | (67.9) | |
| 1 | 46 | (6.5) | 37 | (80.4) | |
| ≥2 | 34 | (4.8) | 29 | (85.3) | |
| Largest irregularity in maxilla, mm | | | | | .000 |
| 0 | 335 | (47.6) | 217 | (64.8) | |
| 1 to 2 | 330 | (46.9) | 236 | (71.5) | |
| ≥3 | 39 | (5.5) | 37 | (94.9) | |
| Largest irregularity in mandible, mm | | | | | .157 |
| 0 | 308 | (43.8) | 208 | (67.5) | |
| 1 to 2 | 376 | (53.4) | 265 | (70.5) | |
| ≥3 | 20 | (2.8) | 17 | (85.0) | |
| Maxillary overjet, mm | | | | | .003 |
| <2 | 154 | (21.9) | 106 | (68.8) | |
| 2 to 5 | 489 | (69.5) | 330 | (67.5) | |
| ≥6 | 61 | (8.7) | 54 | (88.5) | |
| Mandibular overjet | | | | | .290[b] |
| No | 695 | (98.7) | 482 | (69.4) | |
| ≥1 mm | 9 | (1.3) | 8 | (88.9) | |
| Anterior open bite | | | | | .248[b] |
| No | 690 | (98.0) | 478 | (69.3) | |
| Yes | 14 | (2.0) | 12 | (85.7) | |
| Molar relationship | | | | | .002 |
| Normal | 290 | (41.2) | 187 | (64.5) | |
| Difference of ½ cusp | 210 | (29.8) | 145 | (69.0) | |
| Difference of ≥1 cusp | 204 | (29.0) | 158 | (77.5) | |

[a] Chi-square test.
[b] Fisher exact test.

maxillary and mandibular overjet were also associated with the desire for treatment. These findings indicate that subjective and orthodontic characteristics perceived by the patient are important factors for orthodontists to take into consideration and underscore the importance of investigating aspects related to internal motivation during the initial appointment.[16,20,33]

Failing to consider the patient's desire and internal motivations for correction hinders the establishment of a prognosis for each case and increases the likelihood of lesser cooperation during treatment or even the abandonment of treatment.[25] Moreover, if the source of motivation is predominantly external, the patient is less likely to be satisfied at the end of treatment.[24,25]

The fact that female adolescents have a greater desire for orthodontic treatment has been reported in previous studies.[9,18,19] Nonetheless, there is no consensus in the literature on this gender issue, since some studies have found no such association,[7,10,17,34] Differences in the traits and even rights of each gender vary across cultures. However, it is generally recognized that women seek treatment more and are more self-critical regarding their appearance, which underlines the plausibility of the association detected in the present study.[16,19,34,35]

The satisfaction of adolescents with their dental and facial appearance has been reported to be associated with the desire for orthodontic treatment in different populations.[7,21,23,36] Oral health professionals generally recognize that esthetic issues are preponderant among internal motivations for treatment.[7,17,19–21,36,37] However, the subjectivity involved in self-perceived

**Table 4.** Crude and Adjusted Prevalence Ratios (PR) and 95% Confidence Intervals (95% CI) for Desire for Orthodontic Treatment According to Dental Aesthetic Index Components[a]

| | Crude Model | | | Adjusted Model | | |
|---|---|---|---|---|---|---|
| Variables | PR | (95% CI) | *P* | PR | (95% CI) | *P* |
| Crowding | | | .029 | | | |
| No | 1.00 | | | | | |
| 1 Segment | 0.98 | (0.86–1.12) | | | # | |
| 2 Segments | 1.13 | (1.01–1.27) | | | | |
| Spacing in anterior segment | | | .961 | | | |
| No | 1.00 | | | | | |
| 1 Segment | 1.01 | (0.89–1.14) | | | # | |
| 2 Segments | 0.98 | (0.83–1.16) | | | | |
| Diastema in anterior segment, mm | | | .002 | | | <.001 |
| 0 | 1.00 | | | 1.00 | | |
| 1 | 1.18 | (1.02–1.38) | | 1.24 | (1.07–1.44) | |
| ≥2 | 1.25 | (1.08–1.46) | | 1.34 | (1.14–1.57) | |
| Largest irregularity in maxilla, mm | | | .000 | | | <.001 |
| 0 | 1.00 | | | 1.00 | | |
| 1 to 2 | 1.10 | (0.99–1.22) | | 1.13 | (1.01–1.26) | |
| ≥3 | 1.46 | (1.31–1.63) | | 1.48 | (1.31–1.66) | |
| Largest irregularity in mandible, mm | | | .077 | | | |
| 0 | 1.00 | | | | | |
| 1 to 2 | 1.04 | (0.94–1.15) | | | # | |
| ≥3 | 1.26 | (1.03–1.53) | | | | |
| Maxillary overjet, mm | | | .000 | | | <.001 |
| <2 | 1.00 | | | 1.00 | | |
| 2 to 5 | 0.98 | (0.87–1.11) | | 1.02 | (0.90–1.15) | |
| ≥6 | 1.29 | (1.12–1.48) | | 1.29 | (1.11–1.49) | |
| Mandibular overjet | | | .039 | | | |
| No | 1.00 | | | 1.00 | | |
| ≥1 mm | 1.28 | (1.01–1.62) | | 1.32 | (1.01–1.73) | .047 |
| Anterior open bite | | | .057 | | | |
| No | 1.00 | | | | # | |
| Yes | 1.24 | (0.99–1.54) | | | | |
| Molar relationship | | | .005 | | | |
| Normal | 1.00 | | | | | |
| Difference of ½ cusp | 1.07 | (0.94–1.21) | | | # | |
| Difference of ≥1 cusp | 1.20 | (1.07–1.34) | | | | |

[a] # indicates variables not in final model.

esthetics and appearance indicates the need for a discussion of these concepts among the orthodontist, patient, and family during the initial appointment.

In the present study, the desire for treatment was more prevalent among adolescents with a perception of poor chewing function. While most previous investigations have not reported an association between an improvement in chewing function and the desire for orthodontic treatment, Li et al.[38] found a positive association between these variables. These findings demonstrate that esthetic aspects are not the only reason why adolescents seek treatment. It is interesting to note that an orthodontic characteristic that characterizes a normative diagnosis, namely the molar relationship, was not associated with the desire for treatment and generally does not constitute an important aspect in the patient's perception of treatment need. In contrast, other orthodontic characteristics associated with the desire for correction—diastema in the anterior segment, largest anterior maxillary irregularity, maxillary overjet, and mandibular overjet—are objective aspects that require special attention on the part of the orthodontist with regard to the diagnosis at the end of treatment. Moreover, as these conditions are characterized by frequent relapses, there is a need for adequate retention following the active treatment phase, as satisfaction with treatment is related to the maintenance of the results achieved.[39]

The present study has limitations that should be addressed. The DAI can underestimate the occurrence

of malocclusion, as it does not measure crossbite or asymmetry and midline deviation. However, this index has been incorporated into the International Collaboration Study of Oral Health Outcomes of the World Health Organization[28] and has been widely employed in epidemiologic studies.[3,40] Selection bias is unlikely to have occurred in this study. Despite the impossibility of estimating the desire for treatment among nonrespondents, the authors do not believe this aspect made a significant difference, as the baseline characteristics of the respondents and nonrespondents were very similar. Another aspect was the small number of questions for the detection of dissatisfaction with one's dental appearance and oral functions as well as the answers obtained with the use of scales and subsequently dichotomized as "yes" and "no." Nonetheless, despite not being previously validated, the data collection instruments demonstrated excellent reproducibility and enabled the evaluation of a large sample of subjects, providing more accurate estimates of the relationship between the perceptions of adolescents and their parents regarding the desire for orthodontic treatment.

The present findings can be generalized to populations with similar demographic and cultural characteristics to the population that lives in southern Brazil: predominantly white with a heterogeneous socioeconomic status and living in a developing country.

## CONCLUSIONS

- The prevalence of the desire for orthodontic treatment was high in the population studied, with higher rates found among female adolescents, those with severe malocclusion, and those with a poor perception of their dental appearance and chewing function.
- The orthodontic characteristics associated with desire for orthodontic treatment were diastema in the anterior segment, anterior maxillary irregularity, maxillary overjet, and mandibular overjet.
- These findings should be considered in conjunction with normative aspects that indicate the need for orthodontic treatment in adolescents.

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