children

MDPI

Article

Body Image and Psychological Impact of Dental Appearance in Adolescents with Malocclusion: A Preliminary Exploratory Study

Federica Sicari [1], Emanuele Maria Merlo [2,*], Giulia Gentile [2], Riccardo Nucera [2], Marco Portelli [2], Salvatore Settineri [2], Liam Alexander MacKenzie Myles [3] and Angela Militi [2]

[1] Department of Cognitive Sciences, Psychology, Educational and Cultural Studies (COSPECS), University of Messina, 98100 Messina, Italy; federica.sicari@unime.it
[2] Department of Biomedical, Dental Science and Morphological and Functional Images, University of Messina, 98100 Messina, Italy; giulia97gentile@libero.it (G.G.); riccardo.nucera@unime.it (R.N.); marco.portelli@unime.it (M.P.); settineri@unime.it (S.S.); angela.militi@unime.it (A.M.)
[3] Department of Experimental Psychology, University of Oxford, Oxford OX2 6GG, UK; liam.myles@stx.ox.ac.uk
* Correspondence: emerlo@unime.it

Abstract: Background: Body image and psychosocial functioning represent central challenges during adolescence and early adulthood. Malocclusion, defined as an irregularity in the alignment of the teeth, is known to negatively influence psychological outcomes. The current study aimed to elucidate the role of malocclusion, together with age, gender, and dental class, in body image and psychological functioning. Methods: A total of 126 participants aged from 12 to 19 years old (mean: 15.87, SD: 2.35, female participants: 52.4%, male participants: 47.6%) were recruited. Participants were visited at the University Hospital of Messina, Italy, and completed a sociodemographic questionnaire, the Body Image Concern Inventory (I-BICI), and the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ). Results: Significant correlations were found between age, dental class, the BICI, and the PIDAQ. In particular, age showed a positive and significant correlation with PIDAQ—total score. The correlations between occlusal status and the BICI variables were all significant and positive. All correlations between occlusal status and the PIDAQ variables were all significant and positive, except for dental self-confidence. The correlations between the variables of the PIDAQ and BICI instruments were all significant and positive, except for dental self-confidence, where the directions were significant and negative. Moreover, age, gender, and occlusal status predicted BICI and PIDAQ scores. Age was a positive predictor for PIDAQ self-confidence, gender for BICI and PIDAQ total scores, along with dysmorphic symptoms, social impact, psychological impact, and aesthetic concerns. Several significant gender differences were highlighted by the analyses, with higher scores in the female group on all the BICI variables, except symptom interference, and all the PIDAQ variables, except dental self-confidence. Conclusions: Malocclusion appeared to play a central role in the psychological, representational, and psychosocial life of the participants. This research suggests that malocclusion and dental issues influence the psychological, representational, and psychosocial life of adolescents. Further research is required to examine the psychological impact of dental problems.

Keywords: body image; clinical psychology; malocclusion; oral health; dental treatment innovation

Citation: Sicari, F.; Merlo, E.M.; Gentile, G.; Nucera, R.; Portelli, M.; Settineri, S.; Myles, L.A.M.; Militi, A. Body Image and Psychological Impact of Dental Appearance in Adolescents with Malocclusion: A Preliminary Exploratory Study. *Children* **2023**, *10*, 1691. https://doi.org/10.3390/children10101691

Academic Editor: Maria Grazia Cagetti

Received: 11 September 2023
Revised: 13 October 2023
Accepted: 13 October 2023
Published: 16 October 2023

1. Introduction

Malocclusion is defined as an irregularity in the alignment of the teeth or their relationships during dental occlusion beyond the norm [1]. This involves the two dental arches approaching each other when the jaws close. Dental problems deriving from malocclusion often negatively affect psychological functioning, particularly with respect to body image.

Body image has a central influence on psychological welfare during adolescence, a period of profound transformations in bodily representations [2]. This phase is characterized by somatic changes during pubertal development and changes in both one's personality and psychological flexibility [3,4]. As discussed in the scientific literature, the presence of psychopathology during childhood, adolescence, and early adulthood constitutes a contentious matter [4–6]. Some research suggests that adolescents evaluate their image on the basis of appearance, such as weight and facial appearance [7]. Relatedly, one's mouth entails an important role in body image, and influences biopsychosocial functioning [8]. Teeth acquire an aesthetic value with sexual and relational implications, such that imperfections (a societally-determined construct) can influence self-esteem and social acceptance [9]. The value assumed by the teeth during adolescence can impact craniofacial anomalies, which can contribute to psychological difficulties [10].

Several studies have analyzed the impact of dentofacial appearance on adolescent body perception [11,12], and have highlighted that alterations, such as malocclusions [13–15], and negative body image impact in terms of controlling behaviors, dissatisfaction, and mental health concerns [16–19].

Malocclusion is included by the World Health Organization (WHO) [20] in the category "Handicapping Dento Facial Anomaly" and is defined as "an alteration of craniofacial anatomy capable of influencing functionality, facial structure and psychological well-being". According to Houston et al. [21], malocclusion refers to a situation where teeth of the two arches do not align perfectly; this involves an imbalance in the size and position of facial bones and soft tissues, such as the lips, tongue, and cheeks. Edward Angle [22] classified malocclusion into first, second, and third classes based on the alignment of the teeth. According to the angle and as reported by Proffit and colleagues [23], classes concern an incorrect line during occlusion due to misalignment, rotations, or other issues (Class I), lower molars in a distal position against upper equivalent with no reference to the given line of occlusion (Class II), and lower molar in a mesial position with reference to its counterpart with no reference to the given line of occlusion (Class III).

These conditions entail not only implications for one's appearance but also functional effects, such as difficulty in swallowing and pronunciation; this can cause psychophysical discomfort [24]. Some types of malocclusions, if associated with severe dental crowding, can worsen hygiene, increasing the risk of cavities, gingivitis, or periodontal disease, and potentially further undermine the patient's body image and social relationships [25].

Cunningham and O'Brien [26] suggested that the most significant impact of malocclusion is expressed in the psychosocial domain. Occlusive deficits, associated in particular with the second and third classes, alter the facial biotype and may contribute to the onset of psychological difficulties [27,28].

Age and gender also appear to play a fundamental role in the consideration of appearance and psychological difficulties deriving from malocclusion. The acquisition of body awareness in subjects aged between 12 and 15 has a significant impact of dental appearance, particularly on self-esteem and psychosocial functioning [29–33]. Also, research suggests that female adolescents give more aesthetic value to dental characteristics than males [34,35], perhaps because society regards the face and smile as significant aspects of beauty and there are significant societal pressures for women to abide by beauty standards [36]. According to Johnston et al. [37], the number of female subjects who request an orthodontic consultation is higher than males. In fact, dental appearance has a greater impact on quality of life on women, as compared to men [38].

It is necessary to explore the psychological implications of malocclusion to aid understanding of potential interventions to improve wellbeing. Any treatments should improve oral-health-related quality of life (OHRQoL), physical health, the level of self-esteem, and psychological wellbeing [39]. Indeed, oral health has also been reported to influence one's bodily satisfaction [40–42]. The aim of the present study was to elucidate whether sociodemographic variables, psychological variables, and psychosocial variables are significantly related. The scope of the analyses was to elucidate any relationships between the above-

mentioned variables through examining correlations and gender differences. Accordingly, the following hypotheses were provided.

Study Hypotheses

Firstly, it was hypothesized that there would be significant correlations among age, occlusal status, psychosocial impact of dental aesthetics questionnaire (PIDAQ), and body image concern inventory (BICI). Secondly, it was hypothesized that there would be significant correlations between the BICI and PIDAQ. Thirdly, it was hypothesized that there would be dependencies between a set of predictors (age, gender, and occlusal status), BICI scores, and PIDAQ scores. Finally, it was hypothesized that there would be statistically significant differences among male and female groups with reference to the Body Image Concern Inventory (BICI) and Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ).

2. Materials and Methods

This was a cross-sectional exploratory study examining the relationships between clinical psychological variables and dental variables as part of normal clinical practice for people affected by malocclusion.

2.1. Power and Sample Size Calculation

Assuming an incidence of malocclusion in the general world population of 56% [43], an incidence in the sample under examination (orthodontics clinic) of 70%, considering an alpha significance level of 5%, the minimum number of subjects to be enrolled in order to have a statistical power of 90% is equal to 124 subjects. Therefore, a total sample of 126 subjects was enrolled.

2.2. Participants

The sample consisted of 126 subjects aged from 12 to 19 years old (mean: 15.87, SD: 2.35, female: 52.4%, male: 47.6%). The research involved patients from the Orthodontics clinic of the "Gaetano Martino" University Hospital of Messina, Italy, and aimed to explore clinical psychological issues related to dentistry. The evaluations included a clinical evaluation by dentists and psychological tests.

Two orthodontists examined the subjects' occlusal statuses, evaluating the molar relationship (first, second, and third classes of angle), including patients with moderate crowding of 3–5 mm. The samples had to satisfy all of the following criteria: buccal segment (canines and premolars) eruption was completed; there were no craniofacial anomalies, including cleft lip or palate; all first molars were in place with no proximal caries or restorations; there were no congenital missing teeth or impacted teeth mesial to the first molar; orthodontically untreated. Once the diagnosis of malocclusion was confirmed, the participants completed questionnaires with a licensed psychologist.

Every participant fully completed the questionnaires alone, including information regarding their activities, studies, gender, and age. The complete administration lasted around 30 min for each participant. Before adhering to informed consent or parental consent, participants and parents (if minors) were informed about the anonymous nature of the methods of data processing, as required by the procedures of the ethical committee evidenced by the approval (University of Messina Gaetano Martino University Hospital Ethical Committee approval number: 705; C.E. prot. n. 11–23; date: 6 April 2023).

2.3. Statistical Analysis

The data were expressed as means and standard deviations, and the categorical variables as numbers and percentages. The Spearman test was used to evaluate the correlations between variables. The Student's t-test compared means between gender groups. Multivariate linear regression was used to assess each of the dependencies with the aforementioned set of independent predictors. Statistical analyses were performed using SPSS 26.0 for the Window package. A p value smaller than 0.05 was considered to be statistically significant.

2.4. Instruments and Variables

2.4.1. Sociodemographic and Medical Variables

Data regarding age, gender, and occlusal status were collected.

2.4.2. Psychological Variables

The following questionnaires were administered individually in the University of Messina Gaetano Martino University Hospital. The model of administration was paper and pencil. All participants fully completed the questionnaire during the scheduled session.

For the evaluation of body image, the Italian Body Image Concern Inventory (I-BICI) was administered [44]. The instrument, designed and validated by Littleton and colleagues [45], aimed to measure the levels of appearance concerns, appearance checking and camouflaging, and social avoidance [46]. As reported by Luca and colleagues, the scale demonstrated excellent sensitivity (96%) and good specificity (67%) for the classification of subjects diagnosed with eating disorders, even with subclinical symptom levels [44]. Exploratory factor analysis supported a two-factor structure.

Items are rated on a 5-point Likert scale (1 = never, 5 = always). The test presents a two-factor structure: the first (dysmorphic symptoms) consists of 12 items referring to feelings of dissatisfaction and shame associated with participants' appearance; the second (symptom interference) consists of 7 items evaluating the impairment in psychosocial functioning associated with body perception. The Italian validation of the BICI confirmed the internal consistency of the original test, with a Cronbach's alpha of 0.93. With reference to the two factors, the alpha values corresponded to 0.92 and 0.76, respectively. The use of this test allowed the researchers to exclude subjects with dysmorphophobia and check for a negative body image. The highest scores, ranging from 19 to 95, indicate pathological outcomes. The tool has been successfully used in various clinical fields, as demonstrated by numerous reviews that highlight its role and properties [47–50].

The Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) (Italian version) [51] is a scale formulated for orthodontic needs assessment and aims to investigate the perception of malocclusion. In consideration of the fact that the orofacial region is an area of prime concern to individuals, the tool aims to capture the subject's experience through a series of items. Developed and validated by Klages and colleagues in 2005 [52], the instrument has been widely used and translated in several languages [53–56]. It is a test composed of 28 items and 4 subscales referring to "dental self-esteem" (6 items), "social impact" (8 items), "psychological impact" (5 items), and "aesthetic concern" (3 items). Items are rated on a 5-point Likert scale (1 = not at all, 5 = very much). The internal consistency of the Italian version of the PIDAQ, calculated using Cronbach's alpha coefficient, varies from 0.79 (aesthetic concerns) to 0.90 (dental self-esteem). The test results make it possible to assess the intensity of these concerns or beliefs, with higher scores corresponding to a greater impact of oral health on quality of life.

3. Results

The current study highlighted phenomena and difficulties experienced by subjects affected by malocclusion. The presentation of the results follows the hypotheses stated above.

Table 1 reports descriptive statistics for numerical variables.

Frequencies for occlusal class were 35.7% for the first class, 34.1% for the second class, and 30.2 for the third class.

Table 2 reports correlational analyses with reference to the first hypothesis.

The first hypothesis concerned the relationships among personal variables such as age and occlusal status, BICI Total Score, dysmorphic symptoms, symptom interference, PIDAQ total score, dental self-confidence, social impact, psychological impact, and aesthetic concerns. This hypothesis concerned correlational analyzes useful for the emergence of significant relationships between variables. As showed in Table 2, with respect to age, two significant and positive correlations were found. PIDAQ—total score and PIDAQ—dental self-confidence were significantly positively associated with age. With reference to occlusal

status, several correlations were found to be significant and positive. In these terms, relationships among occlusal status, BICI total score, dysmorphic symptoms, and symptom interference were significant and positive. Concerning occlusal status and PIDAQ, dental self-confidence did not show significant results. Significant and positive correlations were found between occlusal status and PIDAQ—social impact, psychological impact, and aesthetic concerns. No significant correlations were found with reference to BICI variables and age.

Table 1. Descriptive statistics.

	Mean	Standard Deviation
Age	15.87	2.35
BICI—total score	36.67	17.62
BICI—dysmorphic symptoms	32.08	15.19
BICI—symptom interference	4.58	3.24
PIDAQ—total score	49.41	15.06
PIDAQ—dental self-confidence	14.49	6.71
PIDAQ—social impact	14.84	8.45
PIDAQ—psychological impact	13.28	6.72
PIDAQ—aesthetic concerns	6.88	4.31

Table 2. Correlation analyses among age, occlusal status, BICI, and PIDAQ variables.

	Age	Occlusal Status
BICI—total score	0.047	0.601 **
BICI—dysmorphic symptoms	0.057	0.614 **
BICI—symptom interference	−0.061	0.364 **
PIDAQ—total score	0.176 *	0.357 **
PIDAQ—dental self-confidence	0.222 *	−0.167
PIDAQ—social impact	0.031	0.378 **
PIDAQ—psychological impact	0.001	0.310 **
PIDAQ—aesthetic concerns	−0.079	0.270 **

* $p < 0.05$ (two-tailed); ** $p < 0.01$ (two-tailed).

Table 3 reports correlational analyses referred to the third hypothesis.

Table 3. Correlation analyses among BICI and PIDAQ variables.

	BICI—Total Score	BICI—Dysmorphic Symptoms	BICI—Symptom Interference
PIDAQ—total score	0.556 **	0.565 **	0.379 **
PIDAQ—dental self-confidence	−0.259 **	−0.243 **	−0.301 **
PIDAQ—social impact	0.566 **	0.571 **	0.437 **
PIDAQ—psychological impact	0.543 **	0.542 **	0.428 **
PIDAQ—aesthetic concerns	0.663 **	0.417 **	0.371 **

** $p < 0.01$ (two-tailed).

The second hypothesis concerned correlational analyses between the instruments used. In particular, the variables of the Body Image Concern Inventory (I-BICI) scale were compared to the variables of the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ—Italian version) scale. As reported in Table 3, significant and positive correlations were found among all of BICI—total score and all PIDAQ variables. BICI total score showed positive and significant correlations with PIDAQ total score, social impact, psychological impact, and aesthetic concerns. The significant correlation between BICI total score and dental confidence was negative. Significant and positive correlations were found between BICI dysmorphic symptoms and PIDAQ total score, social impact, psychological impact, and aesthetic concerns. A negative and significant correlation was found between PIDAQ

dental self-confidence. Referring to BICY symptom interference, significant and positive correlations were found with PIDAQ total score, social impact, psychological impact, and aesthetic concerns. The correlation between BICI symptom interference and PIDAQ self-confidence was significant and negative. Considering these results, it was possible to attest to the negative and significant correlations referred to PIDAQ dental self-confidence, confirming decreasing levels of self-confidence corresponding to increasing levels of body image difficulties. On the contrary, increased levels of body image difficulties, dysmorphic symptoms, and symptom interference corresponded to higher levels of psychosocial difficulties related to dental pathology, as in the case of social and psychological impact and aesthetic concerns.

Table 4 reports linear regression analyses referred to hypothesis 3.

Table 4. Multivariate linear regressions among age, gender, occlusal status (predictors), and BICI and PIDAQ variables (dependent variables).

	Age		**Gender**		**Occlusal Status**	
	B (CI)	***p* Value**	**B (CI)**	***p* Value**	**B (CI)**	***p* Value**
BICI—total score	0.328 (−0.763/1.418)	0.553	6.795 (1.556/12.035)	0.011 *	11.297 (8.093/14.501)	0.000 *
BICI—dysmorphic symptoms	0.344 (−0.575/1.263)	0.460	6.219 (1.804/10.634)	0.006 *	10.097 (7.398/12.797)	0.000 *
BICI—symptom interference	−0.016 (−0.252/0.219)	0.891	0.576 (−0.554/1.707)	0.315	1.200 (0.508/1.891)	0.001 *
PIDAQ—total score	0.836 (−0.225/1.897)	0.121	6.405 (1.306/11.504)	0.014 *	5.181 (2.063/8.299)	0.001 *
PIDAQ—dental self-confidence	0.656 (0.159/1.153)	0.010 *	−0.310 (−2.697/2.077)	0.798	−1.176 (−2.636/.283)	0.113
PIDAQ—social impact	0.151 (−0.454/.756)	0.621	2.967 (0.061/5.873)	0.045 *	2.977 (1.200/4.754)	0.001 *
PIDAQ—psychological impact	0.093 (−0.395/0.580)	0.708	2.407 (0.058/4.756)	0.045 *	2.077 (0.647/3.507)	0.005 *
PIDAQ—aesthetic concerns	−0.034 (−0.348/0.279)	0.828	1.576 (0.071/3.081)	0.040 *	1.279 (0.359/0.359)	0.007 *

B, beta coefficient; CI, confidence interval. * $p < 0.05$ was considered as significant for the multivariate linear regression analyses.

The third hypothesis referred to regression analysis, in order to study causal relationships. Multivariate linear regressions were performed in order to evaluate possible dependencies among a set of predictors; specifically, age, gender, and occlusal status, and dependent variables of BICI and PIDAQ questionnaires. Starting from age, we found positive and significant relation that was referred to PIDAQ—dental self-confidence, highlighting how age was a significant predictor of dental self-confidence. A higher number of significant dependencies were found between gender, highlighting its role in the light of BICI—total score, BICI—dysmorphic symptoms, PIDAQ—total score, PIDAQ social impact, and PIDAQ aesthetic concerns. Considering occlusal status, significant dependencies were found with reference to all of BICI's factors and PIDAQ's total score, social impact, psychological impact, and aesthetic concerns. All significant dependencies were found were positive.

Table 5 reports differential analyses referred to the fourth hypothesis.

The fourth hypothesis concerned any statistically significant differences between the group of male and female participants. In this sense, the analyses referred to the variables of the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ—Italian version) and Body Image Concern Inventory (I-BICI) instruments. Most of the variables showed significant differences between groups. Starting from BICI—total score, a significant difference was found with higher mean scores in female group. BICI dysmorphic symptoms showed higher scores in the female group. Statistically significant differences were found

with reference to PIDAQ total score, PIDAQ social impact, PIDAQ psychological impact, and aesthetic concerns, with higher scores in the female group.

Table 5. Comparisons between male and female groups.

Variables	Male	Female	*p* Value
BICI—total score	31.216 ± 16.57	41.636 ± 17.18	0.001 *
BICI—dysmorphic symptoms	27.150 ± 14.29	36.575 ± 14.69	0.000 *
BICI—symptom interference	4.066 ± 2.82	5.060 ± 3.53	0.083
PIDAQ—total score	45.416 ± 12.80	53.045 ± 16.10	0.004 *
PIDAQ—dental self-confidence	15.083 ± 6.65	13.954 ± 6.77	0.348
PIDAQ—social impact	12.816 ± 7.24	16.697 ± 9.08	0.009 *
PIDAQ—psychological impact	11.700 ± 5.41	14.753 ± 7.48	0.010 *
PIDAQ—aesthetic concerns	5.816 ± 3.80	7.848 ± 4.55	0.007 *

* $p < 0.05$.

4. Discussion

The present study found significant correlations among dental aesthetics and body image, confirming the importance of clinical psychological dynamics in malocclusion and other medical conditions [25,26,57–59]. This is consistent with evidence that there can be psychological consequences deriving from physical conditions [60,61], particularly in chronic conditions [59,62–64]. Psychological distress, aesthetics, self-perception, and satisfaction appeared to be prominent in those with dental conditions [65–68]. Regarding age and occlusal status, recent studies appeared to be in line with the current results [69–72], suggesting that malocclusion is associated with negative psychological outcomes [73–75]. Some studies highlighted the importance of psychological functioning with reference to malocclusion [76,77]. The positive correlations reported in previous studies highlight that self-esteem and self-confidence decrease in the presence of dental difficulties, and can accompany body image difficulties [28,78].

The results pertaining to the first hypothesis appeared consistent with the literature, showing positive correlations between age and occlusal status. These results are consistent with recent studies that showed how malocclusion can affect psychological functioning [74,79,80]. Moreover, implications related to surgical treatments are well known [81–83], specifically linked to positive outcomes in psychological and social fields, as well as quality of life and satisfaction.

Relationships between BICI and PIDAQ scales and subscales were all significant. Dysmorphic symptoms, symptom interference, and BICI total score showed positive and significant relationships with all of the PIDAQ dimensions. Consistent with several relevant studies, the relationships between body image and psychosocial dynamics represent key dynamics in malocclusion [75,84,85]. Dysmorphic symptoms as well as related interference were correlated with sociality, as in the case of dental self-confidence, social impact, psychological impact, and aesthetic concerns. These results highlight the impact of physical phenomena in the participants. Similarly, consistent with the literature, dissatisfaction, body image concerns, quality of life, and mental health appeared to represent serious issues among dental patients [86–90]. Considering the psychosocial impact of malocclusion on adolescents and adult subjects, recent studies confirmed the negative role of malocclusion and other dental problems [91–95]. Subsequent psychosocial issues affect subjects' quality of life and undermine mental health.

The third hypothesis considered the role of some variables on body image and the psychosocial impact of dental appearance, as well as dental issues and related problems. These results suggested that age, gender, and occlusal status play a role. In particular, age appeared to be correlated with self-confidence, highlighting the positive role of aging on confidence and quality of life. This datum appears to be in line with other published articles [69,96], even if some contrary results suggest the need for more attention on the phenomenon [91].

Indeed, the impact of malocclusion has been discussed in some recent studies [97–100]. In this case, results are both related to dependencies and differences, with higher scores in female subjects for the latter. Considering significant dependencies, all were positive, addressing the role of gender and occlusal status in the involved patients. Age played a direct and predictive role in dental self-confidence, highlighted by a positive and significant correlation. The current and past literature confirm this finding [12,30,34,101–103]. Gender as a predictor was significant to BICI's total score and dysmorphic symptoms. Considering PIDAQ's dimensions, gender appeared to be a significant predictor for its total score, social impact, psychological impact, and appearance concerns. According to Džemidžić and colleagues [97], psychosocial problems related to malocclusion are common and similar in men and women, with a greater prevalence of appearance concerns in women. In line with these authors, other research studies highlighted the role of gender in the field of malocclusion [104–106]. In particular, Wan Hassan et al. [106] suggested that relationships among social impact and dental self-confidence can be influenced by gender. Results showed how predictors can play a relevant role in the onset of psychological maladjustment. Moreover, appearance-related differences have been shown to predict bullying [107–112]. Regarding the last predictor, occlusal status, several significant and positive dependencies were found, involving BICI's total score, dysmorphic symptoms and symptom interference, PIDAQ's total score, social impact, psychological impact, and aesthetic concerns. Jung [113], in 2010, directly highlighted the effect of this phenomenon on young subjects, showing how malocclusion can affect the self-esteem of young people. Furthermore, Banu and colleagues [114] and Helm et al. [115] analyzed variables such as dissatisfaction, self-perception, and body image and reported a significant impact of dental pathologies. Helm and colleagues [115], through a 15-year follow-up study, suggested how especially occlusal and space anomalies can interfere with body image and self-concept representations along the development phase.

With reference to the significant correlations identified in this study, BICI and PIDAQ variables appeared to maintain different effects between male and female groups. This fourth hypothesis was confirmed through analyses and showed significant differences in the BICI total score and dysmorphic symptoms, PIDAQ total score, social impact, psychological impact, and appearance-related concerns, with greater scores in female participants. Comparing body image results with the contemporary literature, gender differences in body appreciation are known, foreseeing greater efforts and maladjustment in women [116–118]. However, this point needs to be further investigated due to a lack of clear evidence.

An important point of discussion concerns the field of interventions. Given the data, it would be necessary to structure interventions useful for reducing maladaptive phenomena. According to a recent study by Crerand et al. [119], interventions to prevent body image disturbances and stigmatization are clinically indicated for both sexes. Some studies have considered interventions aimed at reducing the burden experienced by the patients, as well as intervening in psychosocial terms [120,121]. Despite results linked to psychological interventions, most of the studies are centered on psychological difficulties reduction through orthodontic interventions [26,88,90]. In these terms, it would be important to understand how subjective experience plays a fundamental role for the patient [122]. This entails the need to intervene on an individual level [123]. The conflict dynamics deriving from relational problems pertain to the psychosocial domain, where various interventions have demonstrated their effectiveness.

The data, together with the previously published literature, imply a psychological impact of malocclusion, suggesting the need for a better understanding of the onset and maintenance of clinical psychological difficulties.

5. Strengths and Limitations

The present study has several limitations, highlighting the need for further research. The participants were involved in clinical settings, so it would be necessary to extend the

number of participants to better reflect the population. Being a preliminary exploratory study, the present contribution only described participants' variables, preventing the extension of results to other populations. Future studies should include larger observation groups and provide for probabilistic sampling. Moreover, despite the fact that some consistent difficulties clearly emerged through analyses, affective and cognitive dynamics occurring to participants and responsible for the onset of mental sufferance were not included. In these terms, it would be fundamental to better understand dynamics leading subjects' experience and interfering with self-representation. Further studies should include other fundamental variables in order to deepen understanding of the outcomes and possible psychopathological structures. In conclusion, one of the major domains to take into consideration concerns the field of interventions. As is known in the literature, many of the interventions present refer to dental interventions. Studies referring to pre- and post-intervention evaluations highlight how medical intervention constitutes an opportunity for the reduction of dysmorphic phenomena. In this sense, there is greater attention. The number of studies that highlight the role of psychological interventions in reducing difficulties needs implementation. There emerges a clear need to study in depth the methodologies useful for the treatment of subjects, as well as the data relating to the interventions.

6. Conclusions

The present study considered clinical psychological phenomena related to malocclusion in a sample of adolescents and young adults. The results highlighted the impact of dental problems on psychological functioning, self-confidence, body image, and related psychosocial implications. The results highlighted how malocclusion constitutes a serious threat for adolescents' psychosocial functioning and self-representation constitution. The impact of such physical conditions on participants' mental health was consistent and clearly represented through significant values. Through the analyses, results appeared to be consistent with past and current trends in the literature, as well as innovative, considering the instruments used. Importantly, aging and worsening of the occlusal status corresponded with higher scores in body image and psychosocial functioning. In light of this, studying directions assumed by body image psychosocial impact of dental condition indexes was useful to understand mutual relationships in line with the significant correlations. Indeed, regression analyses confirmed the predictors' impact on body image and psychosocial difficulties deriving from malocclusion.

Author Contributions: F.S., S.S. and A.M. made significant contribution to the conception and design of the study. F.S., A.M. and E.M.M. made a significant contribution to the design of the diagnostic protocol, statistical analysis of data, and drafting of the manuscript. F.S., A.M. and E.M.M. made a significant contribution to the interpretation of data and comparison with the literature. G.G., R.N., M.P., S.S. and L.A.M.M. revised the manuscript and gave their approval. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of the University of Messina, Gaetano Martino University Hospital Ethical Committee (approval number and date: 705; C.E. prot. n. 11–23, 6 April 2023).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The datasets generated and analyzed during the current study are original and available on reasonable request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Jacobson, A. DAI: The Dental Aesthetic Index: Naham C. Cons, J. Jenny, and K. Kohout, Iowa City, Iowa: Distributed by Health Quest, 1986. *Am. J. Orthod. Dentofacial Orthop.* **1987**, *92*, 521–522. [CrossRef]
2. Myles, L.A.M. A Brief Overview of the Development of Body Representations across Infancy, Childhood and Adulthood. *Mediterr. J. Clin. Psychol.* **2022**, *10*, 1–13.
3. Confalonieri, E.; Grazzani, I. *Adolescenza e Compiti Di Sviluppo*; Unicopli: Trezzano sul Naviglio, Italy, 2002; ISBN 88-400-0764-4.
4. Costello, E.J.; Copeland, W.; Angold, A. Trends in Psychopathology across the Adolescent Years: What Changes When Children Become Adolescents, and When Adolescents Become Adults? *J. Child Psychol. Psychiatry* **2011**, *52*, 1015–1025. [CrossRef] [PubMed]
5. Roberts, R.E.; Attkisson, C.C.; Rosenblatt, A. Prevalence of Psychopathology among Children and Adolescents. *Am. J. Psychiatry* **1998**, *155*, 715–725.
6. Myles, L.; Merlo, E. Elucidating the Cognitive Mechanisms Underpinning Behavioural Activation. *Int. J. Psychol. Res.* **2022**, *15*, 126–132. [CrossRef] [PubMed]
7. Jones, D.C.; Vigfusdottir, T.H.; Lee, Y. Body Image and the Appearance Culture among Adolescent Girls and Boys: An Examination of Friend Conversations, Peer Criticism, Appearance Magazines, and the Internalization of Appearance Ideals. *J. Adolesc. Res.* **2004**, *19*, 323–339. [CrossRef]
8. Abbott, B.D.; Barber, B.L. Embodied Image: Gender Differences in Functional and Aesthetic Body Image among Australian Adolescents. *Body Image* **2010**, *7*, 22–31. [CrossRef] [PubMed]
9. Baker, S.R.; Mat, A.; Robinson, P.G. What Psychosocial Factors Influence Adolescents' Oral Health? *J. Dent. Res.* **2010**, *89*, 1230–1235. [CrossRef] [PubMed]
10. Meazzini, M.C.; Tortora, C.; Cohen, N.; Mazzoleni, F.; Balbo, N.; Donati, V.; Autelitano, L. Comparison of the Psychosocial Impact on Patients Affected by Cranio Facial Anomalies between Traditional Orthodontic Brackets and Aligners. *Int. J. Adolesc. Med. Health* **2020**, *34*, 357–365. [CrossRef] [PubMed]
11. Claudino, D.; Traebert, J. Malocclusion, Dental Aesthetic Self-Perception and Quality of Life in a 18 to 21 Year-Old Population: A Cross Section Study. *BMC Oral Health* **2013**, *13*, 3. [CrossRef]
12. de Paula, J.; Santos, N.C.; da Silva, E.T.; Nunes, M.F.; Leles, C.R. Psychosocial Impact of Dental Esthetics on Quality of Life in Adolescents: Association with Malocclusion, Self-Image, and Oral Health–Related Issues. *Angle Orthod.* **2009**, *79*, 1188–1193. [CrossRef] [PubMed]
13. Foster Page, L.A.; Thomson, W.M.; Ukra, A.; Baker, S.R. Clinical Status in Adolescents: Is Its Impact on Oral Health-related Quality of Life Influenced by Psychological Characteristics? *Eur. J. Oral Sci.* **2013**, *121*, 182–187. [CrossRef] [PubMed]
14. Kaur, P.; Singh, S.; Mathur, A.; Makkar, D.K.; Aggarwal, V.P.; Batra, M.; Sharma, A.; Goyal, N. Impact of Dental Disorders and Its Influence on Self Esteem Levels among Adolescents. *J. Clin. Diagn. Res. JCDR* **2017**, *11*, ZC05. [CrossRef] [PubMed]
15. Klages, U.; Esch, M.; Wehrbein, H. Oral Health Impact in Patients Wearing Removable Prostheses: Relations to Somatization, Pain Sensitivity, and Body Consciousness. *Int. J. Prosthodont.* **2005**, *18*, 106–111. [PubMed]
16. Agou, S.; Locker, D.; Muirhead, V.; Tompson, B.; Streiner, D.L. Does Psychological Well-Being Influence Oral-Health-Related Quality of Life Reports in Children Receiving Orthodontic Treatment? *Am. J. Orthod. Dentofac. Orthop.* **2011**, *139*, 369–377. [CrossRef]
17. Choi, S.-H.; Cha, J.-Y.; Lee, K.-J.; Yu, H.-S.; Hwang, C.-J. Changes in Psychological Health, Subjective Food Intake Ability and Oral Health-related Quality of Life during Orthodontic Treatment. *J. Oral Rehabil.* **2017**, *44*, 860–869. [CrossRef]
18. Dumitrescu, A.L.; Toma, C.; Lascu, V. Self-Liking, Self-Competence, Body Investment and Perfectionism: Associations with Oral Health Status and Oral-Health-Related Behaviours. *Oral Health Prev. Dent.* **2009**, *7*, 191–200.
19. Onyeaso, C.O. An Assessment of Relationship between Self-esteem, Orthodontic Concern, and Dental Aesthetic Index (DAI) Scores among Secondary School Students in Ibadan, Nigeria. *Int. Dent. J.* **2003**, *53*, 79–84. [CrossRef]
20. World Health Organization. *Oral Health Surveys: Basic Methods*; World Health Organization: Geneva, Switzerland, 2013; ISBN 92-4-154864-9.
21. Houston, W.J.B.; Tulley, W.J.; Campbell, A.C.; Poswillo, D.E.; Foster, M.E. *A Textbook of Orthodontics*; Wright Publishing: Albuquerque, NM, USA, 1992.
22. Angle, E.H. Classification of Malocclusion. *Dent Cosm.* **1899**, *41*, 350–357.
23. Proffit, W.R.; Fields, H.W.; Sarver, D.M. *Contemporary Orthodontics: Elsevier Health Sciences*; Elsevier: Philadelphia, PA, USA, 2006.
24. Nagarajan, S.; Pushpanjali, K. The Relationship of Malocclusion as Assessed by the Dental Aesthetic Index (DAI) with Perceptions of Aesthetics, Function, Speech and Treatment Needs among 14-to 15-Year-Old Schoolchildren of Bangalore, India. *Oral Health Prev. Dent.* **2010**, *8*, 221.
25. Owens, S.; Buschang, P.H.; Throckmorton, G.S.; Palmer, L.; English, J. Masticatory Performance and Areas of Occlusal Contact and near Contact in Subjects with Normal Occlusion and Malocclusion. *Am. J. Orthod. Dentofacial Orthop.* **2002**, *121*, 602–609. [CrossRef] [PubMed]
26. Cunningham, S.J.; O'Brien, C. Quality of Life and Orthodontics. In *Proceedings of the Seminars in Orthodontics*; Elsevier: Amsterdam, The Netherlands, 2007; Volume 13, pp. 96–103.
27. Andrade, A.S.; Gameiro, G.H.; DeRossi, M.; Gavião, M.B.D. Posterior Crossbite and Functional Changes: A Systematic Review. *Angle Orthod.* **2009**, *79*, 380–386. [PubMed]

28. Taghavi Bayat, J.; Hallberg, U.; Lindblad, F.; Huggare, J.; Mohlin, B. Daily Life Impact of Malocclusion in Swedish Adolescents: A Grounded Theory Study. *Acta Odontol. Scand.* **2013**, *71*, 792–798. [CrossRef] [PubMed]
29. Al-Sarheed, M.; Bedi, R.; Hunt, N.P. Orthodontic Treatment Need and Self-Perception of 11–16-Year-Old Saudi Arabian Children with a Sensory Impairment Attending Special Schools. *J. Orthod.* **2014**, *30*, 39–44. [CrossRef]
30. Martins-Júnior, P.A.; Marques, L.S.; Ramos-Jorge ML, M.L. Malocclusion: Social, Functional and Emotional Influence on Children. *J. Clin. Pediatr. Dent.* **2012**, *37*, 103–108. [CrossRef] [PubMed]
31. Mulasi-Pokhriyal, U.; Smith, C. Assessing Body Image Issues and Body Satisfaction/Dissatisfaction among Hmong American Children 9–18 Years of Age Using Mixed Methodology. *Body Image* **2010**, *7*, 341–348. [CrossRef]
32. Onyeaso, C.O.; Sanu, O.O. Perception of Personal Dental Appearance in Nigerian Adolescents. *Am. J. Orthod. Dentofacial Orthop.* **2005**, *127*, 700–706.
33. Trulsson, U.; Strandmark, M.; Mohlin, B.; Berggren, U. A Qualitative Study of Teenagers' Decisions to Undergo Orthodontic Treatment with Fixed Appliance. *J. Orthod.* **2002**, *29*, 197–204. [CrossRef]
34. Bellot-Arcís, C.; Montiel-Company, J.M.; Almerich-Silla, J.M. Psychosocial Impact of Malocclusion in Spanish Adolescents. *Korean J. Orthod.* **2013**, *43*, 193–200.
35. Twigge, E.; Roberts, R.M.; Jamieson, L.; Dreyer, C.W.; Sampson, W.J. The Psycho-Social Impact of Malocclusions and Treatment Expectations of Adolescent Orthodontic Patients. *Eur. J. Orthod.* **2016**, *38*, 593–601. [CrossRef]
36. Militi, A.; Sicari, F.; Portelli, M.; Merlo, E.M.; Terranova, A.; Frisone, F.; Nucera, R.; Alibrandi, A.; Settineri, S. Psychological and Social Effects of Oral Health and Dental Aesthetic in Adolescence and Early Adulthood: An Observational Study. *Int. J. Environ. Res. Public. Health* **2021**, *18*, 9022. [CrossRef]
37. Johnston, C.; Hunt, O.; Burden, D.; Stevenson, M.; Hepper, P. Self-Perception of Dentofacial Attractiveness among Patients Requiring Orthognathic Surgery. *Angle Orthod.* **2010**, *80*, 361–366.
38. Klages, U.; Bruckner, A.; Zentner, A. Dental Aesthetics, Self-Awareness, and Oral Health-Related Quality of Life in Young Adults. *Eur. J. Orthod.* **2004**, *26*, 507–514. [CrossRef]
39. Locker, D.; Allen, F. What Do Measures of 'Oral Health-related Quality of Life' Measure? *Community Dent. Oral Epidemiol.* **2007**, *35*, 401–411. [CrossRef] [PubMed]
40. Kiyak, H.A. Does Orthodontic Treatment Affect Patients' Quality of Life? *J. Dent. Educ.* **2008**, *72*, 886–894. [CrossRef]
41. Mahmood, T.M.A.; Kareem, F.A. Psychological Impact of Dental Aesthetics for Kurdish Young Adults Seeking Orthodontic Treatment. *Sci. J. Publ. Coll. Dent. Baghdad* **2013**, *2*, 28–37.
42. Rahbar, F. *Changes in Self-Esteem and Self-Concept as a Result of Orthodontic Treatment*; University of Southern California: Los Angeles, CA, USA, 2001; ISBN 0-493-38823-0.
43. Lombardo, G.; Vena, F.; Negri, P.; Pagano, S.; Barilotti, C.; Paglia, L.; Colombo, S.; Orso, M.; Cianetti, S. Worldwide Prevalence of Malocclusion in the Different Stages of Dentition: A Systematic Review and Meta-Analysis. *Eur. J. Paediatr. Dent.* **2020**, *21*, 115–122. [PubMed]
44. Luca, M.; Giannini, M.; Gori, A.; Littleton, H. Measuring Dysmorphic Concern in Italy: Psychometric Properties of the Italian Body Image Concern Inventory (I-BICI). *Body Image* **2011**, *8*, 301–305. [CrossRef]
45. Littleton, H.L.; Axsom, D.; Pury, C.L. Development of the Body Image Concern Inventory. *Behav. Res. Ther.* **2005**, *43*, 229–241.
46. Littleton, H.; Breitkopf, C.R. The Body Image Concern Inventory: Validation in a Multiethnic Sample and Initial Development of a Spanish Language Version. *Body Image* **2008**, *5*, 381–388.
47. Davitadze, M.; Malhotra, K.; Khalil, H.; Hebbar, M.; Tay, C.T.; Mousa, A.; Teede, H.; Brennan, L.; Stener-Victorin, E.; PCOS SEva team Robinson Lynne Sheikh Jameela Melson Eka Lathia Tejal Selvan Chitra. Body Image Concerns in Women with Polycystic Ovary Syndrome: A Systematic Review and Meta-Analysis. *Eur. J. Endocrinol.* **2023**, *189*, R1–R9. [CrossRef] [PubMed]
48. Thomas, S.B.; Kotian, S. A Systematic Review of Research on The Influence of The Media on Body Image. In Proceedings of the Conference Organizing Team. p. 43. Available online: https://www.researchgate.net/profile/Abdul-Kuzhiyengal-Mambra/publication/360791807_The_Proceedings_Book_of_One_Day_Conference/links/628bb64ccd5c1b0b34f0fce3/The-Proceedings-Book-of-One-Day-Conference.pdf#page=44 (accessed on 1 September 2023).
49. Veale, D.; Gledhill, L.J.; Christodoulou, P.; Hodsoll, J. Body Dysmorphic Disorder in Different Settings: A Systematic Review and Estimated Weighted Prevalence. *Body Image* **2016**, *18*, 168–186. [CrossRef] [PubMed]
50. Sarwer, D.B.; Spitzer, J.C. Body Image Dysmorphic Disorder in Persons Who Undergo Aesthetic Medical Treatments. *Aesthet. Surg. J.* **2012**, *32*, 999–1009. [CrossRef] [PubMed]
51. Settineri, S.; Rizzo, A.; Liotta, M.; Mento, C. Italian Validation of the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ). *Health* **2014**, *2014*, 49475. [CrossRef]
52. Klages, U.; Claus, N.; Wehrbein, H.; Zentner, A. Development of a Questionnaire for Assessment of the Psychosocial Impact of Dental Aesthetics in Young Adults. *Eur. J. Orthod.* **2006**, *28*, 103–111. [CrossRef]
53. Göranson, E.; Norevall, L.-I.; Bågesund, M.; Dimberg, L. Translation and Validation of the Swedish Version of the Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ) for Adolescents. *Acta Odontol. Scand.* **2021**, *79*, 241–247. [CrossRef]
54. Montiel-Company, J.M.; Bellot-Arcís, C.; Almerich-Silla, J.M. Validation of the Psychosocial Impact of Dental Aesthetics Questionnaire (Pidaq) in Spanish Adolescents. *Med. Oral Patol. Oral Cir. Bucal* **2013**, *18*, e168. [CrossRef] [PubMed]
55. Bucci, R.; Rongo, R.; Zito, E.; Galeotti, A.; Valletta, R.; D'Antò, V. Cross-Cultural Adaptation and Validation of the Italian Psychosocial Impact of Dental Aesthetics Questionnaire (PIDAQ). *Qual. Life Res.* **2015**, *24*, 747–752. [CrossRef]

56. Ngom, P.I.; Attebi, P.; Diouf, J.S.; Ba, K.D.; Diagne, F. Translation and Cultural Adaptation of a French Version of the Psychosocial Impact of Dental Aesthetics Questionnaire: PIDAQ. *Orthod. Fr.* **2013**, *84*, 319–331. [CrossRef]
57. Caputo, A.; Vicario, C.M.; Cazzato, V.; Martino, G. *Psychological Factors as Determinants of Medical Conditions, Volume II*; Frontiers Media SA: Lausanne, Switzerland, 2022; Volume 13, p. 865235. ISBN 1664-1078.
58. Merlo, E.M. Opinion Article: The Role of Psychological Features in Chronic Diseases, Advancements and Perspectives. *Mediterr. J. Clin. Psychol.* **2019**, *7*, 1–6.
59. Martino, G.; Caputo, A.; Vicario, C.M.; Feldt-Rasmussen, U.; Watt, T.; Quattropani, M.C.; Benvenga, S.; Vita, R. Alexithymia, Emotional Distress, and Perceived Quality of Life in Patients with Hashimoto's Thyroiditis. *Front. Psychol.* **2021**, *12*, 667237. [PubMed]
60. Myles, L.A.M.; Johnson, P.G.B. Parsimony: A Forgotten Principle in Clinical Psychology and Classics. *Mediterr. J. Clin. Psychol.* **2023**, *11*, 1–8.
61. Myles, L.; Merlo, E. Incongruities between Perceived Control and Desire for Control: Accounting for Depressive Symptomology in Adolescence. *Psychiatr. Psychol. Klin. J. Psychiatry Clin. Psychol.* **2022**, *22*, 40–44. [CrossRef]
62. Barchetta, S.; Martino, G.; Craparo, G.; Salehinejad, M.A.; Nitsche, M.A.; Vicario, C.M. Alexithymia Is Linked with a Negative Bias for Past and Current Events in Healthy Humans. *Int. J. Environ. Res. Public. Health* **2021**, *18*, 6696. [CrossRef]
63. Di Giacomo, D.; Ranieri, J.; Donatucci, E.; Perilli, E.; Cannita, K.; Passafiume, D.; Ficorella, C. Emotional "Patient-Oriented" Support in Young Patients with I–II Stage Breast Cancer: Pilot Study. *Front. Psychol.* **2018**, *9*, 2487.
64. Vita, R.; Caputo, A.; Quattropani, M.C.; Watt, T.; Feldt-Rasmussen, U.; Puleio, P.; Benvenga, S.; Martino, G. Quality of Life in Patients with Hyperthyroidism: Where Do We Stand? *Mediterr. J. Clin. Psychol.* **2020**, *8*, 1–28.
65. Araujo, M.T.d.S.; Squeff, L.R. Orthodontic Camouflage as a Treatment Alternative for Skeletal Class III. *Dent. Press J. Orthod.* **2021**, *26*, 1–28.
66. Brunharo, I.H.V.P. Surgical Treatment of Dental and Skeletal Class III Malocclusion. *Dent. Press J. Orthod.* **2013**, *18*, 143–149.
67. Silvola, A.-S.; Varimo, M.; Tolvanen, M.; Rusanen, J.; Lahti, S.; Pirttiniemi, P. Dental Esthetics and Quality of Life in Adults with Severe Malocclusion before and after Treatment. *Angle Orthod.* **2014**, *84*, 594–599. [CrossRef]
68. Uslu, O.; Akcam, M.O. Evaluation of Long-Term Satisfaction with Orthodontic Treatment for Skeletal Class III Individuals. *J. Oral Sci.* **2007**, *49*, 31–39. [CrossRef]
69. Hino, S.; Maeda-Iino, A.; Yagi, T.; Nakagawa, S.; Miyawaki, S. Effects of Sex, Age, Choice of Surgical Orthodontic Treatment, and Skeletal Pattern on the Psychological Assessments of Orthodontic Patients. *Sci. Rep.* **2022**, *12*, 9114. [PubMed]
70. Kabalan, R.M.; Tayyar, R.K.; Khattab, T.Z.; Hajeer, M.Y.; Khattab, T.Z. Characteristics and Dynamics of Smile in Patients with Skeletal Class II Malocclusion versus Class I Malocclusion Using Still Digital Video Captures: A Three-Group, Cross-Sectional, Comparative Study. *Cureus* **2022**, *14*, e30704. [PubMed]
71. Sarvera, D.M.; Ackermanb, J.L. Orthodontics about Face: The Re-Emergence of the Esthetic Paradigm. *Am. J. Orthod. Dentofacial Orthop.* **2000**, *117*, 575–576. [CrossRef] [PubMed]
72. Singh, S.; Singla, L.; Anand, T. Esthetic Considerations in Orthodontics: An Overview. *Dent. J. Adv. Stud.* **2021**, *9*, 55–60.
73. Zhang, M.; McGrath, C.; Hägg, U. The Impact of Malocclusion and Its Treatment on Quality of Life: A Literature Review. *Int. J. Paediatr. Dent.* **2006**, *16*, 381–387.
74. Georgina, A.M.; Sundar, J.S.; Srinivas, G. Psychological and Social Impact of Malocclusion in Children and Young Adults—A Review. *J. Oral Res. Rev.* **2023**, *15*, 61–64.
75. Dimberg, L.; Arnrup, K.; Bondemark, L. The Impact of Malocclusion on the Quality of Life among Children and Adolescents: A Systematic Review of Quantitative Studies. *Eur. J. Orthod.* **2015**, *37*, 238–247. [CrossRef]
76. Dhote, V.S.; Dharmadhikari, P.M.; Bahadure, R.N.; Thosar, N.R.; Dhote, A.V. Separation Anxiety—An Unseen Cause for Development of Abnormal Oral and Paraoral Habits and Malocclusion: A Review of Literature and Report of Two Cases. *Int. J. Clin. Pediatr. Dent.* **2021**, *14*, S199.
77. Majid, Z.S.A.; Abidia, R.F. Effects of Malocclusion on Oral Health Related Quality of Life (Ohrqol): A Critical Review. *Eur. Sci. J.* **2015**, *11*, 386–400.
78. Sun, Y.; Jiang, C. The Impact of Malocclusion on Self-Esteem of Adolescents. *Chin. J. Stomatol.* **2004**, *39*, 67–69.
79. Ribeiro, L.G.; Antunes, L.S.; Küchler, E.C.; Baratto-Filho, F.; Kirschneck, C.; Guimarães, L.S.; Antunes, L.A.A. Impact of Malocclusion Treatments on Oral Health-Related Quality of Life: An Overview of Systematic Reviews. *Clin. Oral Investig.* **2023**, *27*, 907–932.
80. Meger, M.N.; Fatturi, A.L.; Gerber, J.T.; Weiss, S.G.; Rocha, J.S.; Scariot, R.; Wambier, L.M. Impact of Orthognathic Surgery on Quality of Life of Patients with Dentofacial Deformity: A Systematic Review and Meta-Analysis. *Br. J. Oral Maxillofac. Surg.* **2021**, *59*, 265–271.
81. Pacha, M.M.; Fleming, P.S.; Johal, A. Complications, Impacts, and Success Rates of Different Approaches to Treatment of Class II Malocclusion in Adolescents: A Systematic Review and Meta-Analysis. *Am. J. Orthod. Dentofacial Orthop.* **2020**, *158*, 477–494.e7. [CrossRef]
82. Basso, I.B.; Gonçalves, F.M.; Martins, A.A.; Schroder, A.G.D.; Taveira, K.V.M.; Stechman-Neto, J.; Santos, R.S.; Guariza-Filho, O.; de Araujo, C.M. Psychosocial Changes in Patients Submitted to Orthodontic Surgery Treatment: A Systematic Review and Meta-Analysis. *Clin. Oral Investig.* **2022**, *26*, 2237–2251.

83. Cremona, M.; Bister, D.; Sheriff, M.; Abela, S. Quality-of-Life Improvement, Psychosocial Benefits, and Patient Satisfaction of Patients Undergoing Orthognathic Surgery: A Summary of Systematic Reviews. *Eur. J. Orthod.* **2022**, *44*, 603–613.
84. Kragt, L.; Dhamo, B.; Wolvius, E.B.; Ongkosuwito, E.M. The Impact of Malocclusions on Oral Health-Related Quality of Life in Children—A Systematic Review and Meta-Analysis. *Clin. Oral Investig.* **2016**, *20*, 1881–1894.
85. Prado, R.; Siqueira, C.; Ramos-Jorge, J.; de Paiva, S.M.; Melgaço, C.A.; Pazzini, C.A. Societal Perceptions of Dentofacial Appearances of Patients with Malocclusion: A Systematic Review. *Arq. Odontol.* **2016**, 61–66. [CrossRef]
86. Albino, J.E.; Lawrence, S.D.; Tedesco, L.A. Psychological and Social Effects of Orthodontic Treatment. *J. Behav. Med.* **1994**, *17*, 81–98.
87. de Oliveira Meira, A.C.L.; Custodio, W.; Vedovello Filho, M.; Borges, T.M.; Meneghim, M.d.C.; Santamaria, M., Jr.; Vedovello, S.A. How Is Orthodontic Treatment Need Associated with Perceived Esthetic Impact of Malocclusion in Adolescents? *Am. J. Orthod. Dentofacial Orthop.* **2020**, *158*, 668–673.
88. Imani, M.M.; Jalali, A.; Dinmohammadi, M.; Nouri, P. The Effect of Orthodontic Intervention on Mental Health and Body Image. *Open Access Maced. J. Med. Sci.* **2018**, *6*, 1132. [CrossRef]
89. Klima, R.J.; Wittemann, J.K.; McIver, J.E. Body Image, Self-Concept, and the Orthodontic Patient. *Am. J. Orthod.* **1979**, *75*, 507–516. [CrossRef]
90. Tabaie, S.R.S.; Tabaie, E.S.; Sadrabadi, F.S.; Rahmatinejad, P.; Valizadeh, S.; Pouyanfar, H. The Role of Orthodontic Treatment on Patient's Mental Health, Body Image, and Oral Health-Related Quality of Life Orthodontic Treatment and Its Effects on Psychological Factors. *Iran. J. Health Psychol.* **2022**, *5*, 37–46.
91. Ben Gassem, A.A.; Aldweesh, A.H.; Alsagob, E.I.; Alanazi, A.M.; Hafiz, A.M.; Aljohani, R.S.; Kurdi, Y.E.; Abu Hammad, O. Psychosocial Impact of Malocclusion and Self-Perceived Orthodontic Treatment Need among Young Adult Dental Patients. *Eur. J. Dent.* **2022**, *17*, 713–719. [CrossRef]
92. Dallé, H.; Vedovello, S.A.; Degan, V.V.; De Godoi, A.P.T.; Custódio, W.; de Menezes, C.C. Malocclusion, Facial and Psychological Predictors of Quality of Life in Adolescents. *Community Dent. Health* **2019**, *36*, 298–302.
93. Grewal, H.; Sapawat, P.; Modi, P.; Aggarwal, S. Psychological Impact of Orthodontic Treatment on Quality of Life—A Longitudinal Study. *Int. Orthod.* **2019**, *17*, 269–276. [CrossRef]
94. Iranzo-Cortés, J.E.; Montiel-Company, J.M.; Bellot-Arcis, C.; Almerich-Torres, T.; Acevedo-Atala, C.; Ortolá-Siscar, J.C.; Almerich-Silla, J.M. Factors Related to the Psychological Impact of Malocclusion in Adolescents. *Sci. Rep.* **2020**, *10*, 13471. [CrossRef]
95. Zheng, H.; Shi, Q.; Du, W.; Lin, F. The Psychosocial Impact of Dental Esthetics in Undergraduates with Borderline Malocclusion. *Comput. Math. Methods Med.* **2022**, *2022*, 2399323. [CrossRef]
96. Amuasi, A.A.; Acheampong, A.O.; Anarfi, E.; Sagoe, E.S.; Poku, R.D.; Abu-Sakyi, J. Effect of Malocclusion on Quality of Life among Persons Aged 7-25 Years: A Cross-Sectional Study. *J. Biosci. Med.* **2020**, *8*, 26. [CrossRef]
97. Džemidžić, V.; Redžepagić, V.L.; Jelesković, A.; Tiro, A. Psychosocial Impact of Malocclusion: Is There Gender Difference. *Balk. J. Dent. Med.* **2023**, *27*, 118–123. [CrossRef]
98. Liu, B.C.-L.; Lee, I.-C.; Lo, L.-J.; Ko, E.W.-C. Investigate the Oral Health Impact and Quality of Life on Patients with Malocclusion of Different Treatment Needs. *Biomed. J.* **2019**, *42*, 422–429. [CrossRef]
99. Olkun, H.K.; Sayar, G. Impact of Orthodontic Treatment Complexity on Oral Health-Related Quality of Life in Turkish Patients: A Prospective Clinical Study. *Turk. J. Orthod.* **2019**, *32*, 125. [CrossRef] [PubMed]
100. Rantavuori, K.; Silvola, A.-S.; Suominen, A.; Masood, M.; Suominen, A.L.; Lahti, S. Gender Differences in the Association between Malocclusion Traits and Oral Health-related Quality of Life in Finnish Adults. *Eur. J. Oral Sci.* **2023**, *131*, e12927. [CrossRef]
101. Figueroa, F.R.; Bancalari, C.; Cartes-Velásquez, R.; Sanhueza, M.; Palma, C. Prevalence of Malocclusion and Its Psychosocial Impact in a Sample of Chilean Adolescents Aged 14 to 18 Years Old. *J. Int. Dent. Med. Res.* **2017**, *10*, 14.
102. Tuominen, M.L.; Tuominen, R.J.; Nyström, M.E. Subjective Orthodontic Treatment Need and Perceived Dental Appearance among Young Finnish Adults with and without Previous Orthodontic Treatment. *Community Dent. Health* **1994**, *11*, 29–33. [PubMed]
103. Svedström-Oristo, A.-L.; Pietilä, T.; Pietilä, I.; Vahlberg, T.; Alanen, P.; Varrela, J. Acceptability of Dental Appearance in a Group of Finnish 16-to 25-Year-Olds. *Angle Orthod.* **2009**, *79*, 479–483. [CrossRef]
104. Dogan, S.; Krasniqi, D.; Ilijazi, D. Psycho-Social Impact of Malocclusion in Adolescents in Kosovo. *Community Dent. Health* **2021**, *38*, 71–75.
105. Lukez, A.; Pavlic, A.; Trinajstic Zrinski, M.; Spalj, S. The Unique Contribution of Elements of Smile Aesthetics to Psychosocial Well-being. *J. Oral Rehabil.* **2015**, *42*, 275–281. [CrossRef]
106. Wan Hassan, W.N.; Makhbul, M.Z.M.; Othman, S.A. Age and Gender Are Associated with the Component of Psychosocial Impact of Dental Aesthetics Questionnaire in Young People: A Cross-Sectional Study. *Children* **2022**, *9*, 496. [CrossRef]
107. Gleason, J.H.; Alexander, A.M.; Somers, C.L. Later Adolescents' Reactions to Three Types of Childhood Teasing: Relations with Self-Esteem and Body Image. *Soc. Behav. Personal. Int. J.* **2000**, *28*, 471–479. [CrossRef]
108. Seehra, J.; Fleming, P.S.; Newton, T.; DiBiase, A.T. Bullying in Orthodontic Patients and Its Relationship to Malocclusion, Self-Esteem and Oral Health-Related Quality of Life. *J. Orthod.* **2011**, *38*, 247–256. [CrossRef]
109. Tristão, S.K.d.P.C.; Ammari, M.M.; Tavares, M.C.; Pomarico, L.; Pintor, A.V.B.; Souza, I.P.R.d. Relationship between Malocclusion, Bullying, and Quality of Life in Students from Low Social Development Area: A Cross-Sectional Study. *Pesqui. Bras. Odontopediatria Clínica Integrada* **2023**, *23*, e220051. [CrossRef]

110. Khatib, O. Assessing the Correlation between Malocclusion and Lowered Psychosocial Well-Being. Master's Thesis, University of Manitoba, Winnipeg, MB, Canada, 2015.
111. Basha, S.; Mohamed, R.N.; Swamy, H.S.; Parameshwarappa, P. Untreated Gross Dental Malocclusion in Adolescents: Psychological Impact and Effect on Academic Performance in School. *Oral Health Prev. Dent.* **2016**, *14*, 63–69.
112. Spratt, C.J.; MacKenzie Myles, L.A.; Merlo, E.M. Eating Disorders in Men: A Comprehensive Summary. *J. Mind Med. Sci.* **2022**, *9*, 249–254. [CrossRef]
113. Jung, M.-H. Evaluation of the Effects of Malocclusion and Orthodontic Treatment on Self-Esteem in an Adolescent Population. *Am. J. Orthod. Dentofacial Orthop.* **2010**, *138*, 160–166. [CrossRef]
114. Banu, A.; Șerban, C.; Pricop, M.; Urechescu, H.; Vlaicu, B. Dental Health between Self-Perception, Clinical Evaluation and Body Image Dissatisfaction–a Cross-Sectional Study in Mixed Dentition Pre-Pubertal Children. *BMC Oral Health* **2018**, *18*, 74. [CrossRef]
115. Helm, S.; Kreiborg, S.; Solow, B. Psychosocial Implications of Malocclusion: A 15-Year Follow-up Study in 30-Year-Old Danes. *Am. J. Orthod.* **1985**, *87*, 110–118. [CrossRef]
116. He, J.; Sun, S.; Zickgraf, H.F.; Lin, Z.; Fan, X. Meta-Analysis of Gender Differences in Body Appreciation. *Body Image* **2020**, *33*, 90–100. [CrossRef]
117. Russell, S.L.; Gordon, S.; Lukacs, J.R.; Kaste, L.M. Sex/Gender Differences in Tooth Loss and Edentulism: Historical Perspectives, Biological Factors, and Sociologic Reasons. *Dent. Clin.* **2013**, *57*, 317–337.
118. Glowacki, J.; Christoph, K. Gender Differences in the Growing, Abnormal, and Aging Jaw. *Dent. Clin.* **2013**, *57*, 263–280. [CrossRef]
119. Crerand, C.E.; Rumsey, N.; Kazak, A.; Clarke, A.; Rausch, J.; Sarwer, D.B. Sex Differences in Perceived Stigmatization, Body Image Disturbance, and Satisfaction with Facial Appearance and Speech among Adolescents with Craniofacial Conditions. *Body Image* **2020**, *32*, 190–198. [CrossRef]
120. Zhu, L.; Wang, X. Cbct Measurement of the Upper Airway in Skeletal Class Iii Malocclusions and Effect of Psychological Intervention on Measurement Accuracy. *Psychiatr. Danub.* **2022**, *34*, 308.
121. Wang, F.; Liu, X.; Ruan, M. Influence of Personality Characteristics and Psychological Intervention on Treatment Satisfaction of Juvenile Orthodontic Patients. *J. Adv. Med. Sci.* **2020**, *3*, 17–20. [CrossRef]
122. Choma, B.L.; Shove, C.; Busseri, M.A.; Sadava, S.W.; Hosker, A. Assessing the Role of Body Image Coping Strategies as Mediators or Moderators of the Links between Self-Objectification, Body Shame, and Well-Being. *Sex Roles* **2009**, *61*, 699–713. [CrossRef]
123. Myles, L.A.M. Opinion Article: The Emerging Role of Computational Psychopathology in Clinical Psychology. *Mediterr. J. Clin. Psychol.* **2021**, *9*, 1–7.