

Original article

## Relationship between the level of knowledge about malocclusion and adolescents' psychological condition

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### ABSTRACT

**Background:** Malocclusion is a prevalent oral health problem among adolescents and may adversely affect facial aesthetics and psychological well-being. Adolescents' knowledge of malocclusion is assumed to influence their perceptions and psychosocial responses to this condition. **Objective:** To evaluate the relationship between adolescents' level of knowledge regarding malocclusion and their psychological condition. **Methods:** This descriptive analytic study employed a cross-sectional design involving 273 students aged 15–17 years from MAN 2 Parepare City, Indonesia. Knowledge level was assessed using a structured multiple-choice questionnaire, while psychological condition was evaluated using the Psychosocial Impact of Dental Aesthetic Questionnaire (PIDAQ). Data were analyzed using the Mann–Whitney test with a significance level of 0.05. **Results:** The majority of respondents demonstrated a moderate level of knowledge (91.6%), while more than half exhibited poor psychological condition (61.5%). Statistical analysis revealed no significant association between knowledge level of malocclusion and adolescents' psychological condition ( $p = 0.372$ ). **Conclusion:** Adolescents' level of knowledge regarding malocclusion is not significantly associated with their psychological condition.

**Keywords:** adolescent psychology; knowledge; malocclusion

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### INTRODUCTION

Adolescence is a critical stage of human development, representing a transitional period from childhood to adulthood. This phase is characterized by rapid physical, mental, and emotional changes that significantly influence various aspects of adolescents' lives.<sup>1</sup> Globally, approximately 16% of adolescents experience mental health problems, with prevalence varying across regions such as the United States, Europe, Canada, India, and the United Arab Emirates. Depression and anxiety disorders are the most common conditions, with a marked increase observed during late childhood and adolescence. Therefore, promoting healthy behaviors and improving quality of life during this period is essential.<sup>2</sup>

Various oral and dental conditions can affect oral function, one of which is structural

dental irregularity known as malocclusion.<sup>3</sup> If left untreated, malocclusion may result in facial and dental deformities.<sup>4</sup> Facial appearance—particularly the eyes and mouth—plays a dominant role in aesthetic perception. Compared with other facial components, dissatisfaction with facial appearance is frequently attributed to dental conditions, especially malocclusion.<sup>3</sup>

Data from the Indonesian Basic Health Research Survey (Riskesdas) in 2013 reported that the national prevalence of oral and dental problems was 25.9%, an increase from 23.4% in 2007. In South Sulawesi Province, the prevalence reached 36.2%, while only 38.8% of the population received dental and oral health care services.<sup>5</sup> Several orthodontic studies have demonstrated a very high prevalence of malocclusion among Indonesian adolescents. In 2006, the prevalence of malocclusion was

reported to be 89%, and according to Riskesdas, it remained high at approximately 80%.<sup>6</sup>

Malocclusion ranks as the third most common dental problem in Indonesia after dental caries and periodontal disease. It is defined as a deviation from ideal occlusion and is considered abnormal, encompassing disharmony in the proportion and position of the teeth, facial bones, and associated soft tissues such as the lips, cheeks, and tongue.<sup>7</sup> Malocclusion may be influenced by discrepancies between tooth size and maxillomandibular dimensions, deleterious oral habits, hereditary factors, developmental disturbances, malnutrition, trauma, and periodontal disease. These disturbances may occur during embryonic development, skeletal growth, muscle function, or mandibular growth patterns.<sup>8</sup>

Physical appearance, particularly facial appearance, plays a crucial role in adolescents' identity formation.<sup>3</sup> Facial and dental aesthetics are important determinants of self-concept and self-esteem during adolescence. An unattractive facial appearance may negatively affect psychological development at this stage of life.<sup>4</sup> Adolescents' perceptions of their facial appearance can influence psychological development from childhood into adulthood. Facial appearance has been shown to serve as a reference in the evaluation of personal characteristics such as personality, integrity, social competence, intellectual ability, and mental health, thereby contributing to more effective interpersonal relationships and greater self-confidence.<sup>9</sup>

A study conducted by Reddy reported that although adolescents generally possess some knowledge about malocclusion, many are unaware of its potential impacts. Moreover, only a small proportion of adolescents currently receive orthodontic treatment, making malocclusion a significant concern in oral and dental health care.<sup>10</sup>

Individuals with malocclusion experience reduced oral function and aesthetic deviations compared with those who have ideal occlusion.

The severity of malocclusion in adolescents may affect social relationships, psychological status, self-confidence, and satisfaction with appearance.<sup>4</sup> Malocclusion and irregular tooth alignment influence overall facial appearance, which may lead to decreased self-confidence during social interactions and negatively affect quality of life.<sup>8</sup> The relationship between malocclusion and social impact among adolescents indicates that malocclusion can cause significant social difficulties, particularly in individuals who place a high value on physical appearance.<sup>4</sup>

Information regarding standards of physical appearance is widely disseminated through social media and the internet. High levels of digital media and internet use among adolescents—especially those living in urban areas compared with rural areas—contribute to increased concern about physical appearance.<sup>3</sup> A study by Aikins demonstrated that the perceived need for orthodontic treatment due to malocclusion was highest among adolescents aged 16–18 years.<sup>11</sup>

Given the wide range of problems caused by malocclusion in adolescents, concern for aesthetic appearance is closely associated with adolescents' social development and peer relationships. Therefore, this study was conducted to investigate the relationship between the level of knowledge about malocclusion and adolescents' psychological condition.

## MATERIALS AND METHODS

This study was a descriptive analytic study with a cross-sectional design. The study subjects consisted of 273 students aged 15–17 years at MAN 2 Parepare City, selected using stratified random sampling. Students undergoing orthodontic treatment were excluded from the study.

The level of knowledge about malocclusion was measured using a questionnaire consisting of 20 multiple-choice questions. Psychological condition was assessed using the Psychosocial Impact of Dental Aesthetic Questionnaire

(PIDAQ). Statistical analysis was performed using the Mann–Whitney test with a significance level of 0.05.

## RESULTS

A total of 273 adolescents participated in this study. Based on sex distribution, the majority of respondents were female, accounting for 172 individuals (63.0%), while male respondents comprised 101 individuals (37.0%). This indicates that the study sample was dominated by female adolescents (Table 1).

Regarding age distribution, most respondents were 16 years old, totaling 146 individuals (53.5%). This was followed by

**Table 1.** Characteristics of respondents based on sex and age

Characteristic	Category	n	%
Sex	Male	101	37.0
	Female	172	63.0
Age (years)	15	100	36.5
	16	146	53.5
	17	27	9.9

**Table 2.** Distribution of knowledge level and psychological condition

Variable	Category	n	%
Knowledge	Low	17	6.2
	Moderate	250	91.6
	High	6	2.2
Psychological condition	Good	22	8.1
	Moderate	83	30.4
	Poor	168	61.5

respondents aged 15 years, with 100 individuals (36.5%), while the smallest proportion consisted of respondents aged 17 years, amounting to 27 individuals (9.9%). These findings show that the study population was predominantly composed of mid-adolescent individuals, with ages concentrated between 15 and 16 years.

Based on the data, the majority of adolescents have a moderate level of knowledge about malocclusion at 91.6%, yet most respondents exhibit a poor psychological condition reaching 61.5% (Table 2)

The Mann–Whitney test (Table 3) indicated no statistically significant relationship between the level of knowledge about malocclusion and adolescents' psychological condition ( $p > 0.05$ )

## DISCUSSION

The results showed that most respondents had a moderate level of knowledge. This finding is consistent with a study examining the relationship between parental knowledge and malocclusion in children with poor oral habits, which reported that the majority of respondents demonstrated a moderate level of knowledge (46%).<sup>12</sup>

Knowledge is acquired through information exposure. To further improve adolescents' knowledge regarding malocclusion, educational programs focusing on the causes, consequences, and prevention of malocclusion should be implemented. Increased awareness of preventive behaviors—such as avoiding thumb sucking, nail biting, and chin resting, which are known risk factors for malocclusion—may encourage individuals to adopt behaviors that reduce the risk of developing malocclusion.<sup>13</sup>

**Table 3.** Relationship between knowledge level about malocclusion and psychological condition

Knowledge level	Good n (%)	Moderate n (%)	Poor n (%)	p-value
Low	2 (11.8)	4 (23.5)	11 (64.7)	0.372
Moderate	18 (7.2)	76 (30.4)	156 (62.4)	
High	2 (33.3)	3 (50.0)	1 (16.7)	

\*Mann-Whitney test

The findings also indicated that more than half of the students at MAN 2 Parepare City experienced poor psychological condition, while those with good or moderate psychological condition accounted for less than half of the total respondents. This suggests that psychological well-being among adolescents remains a significant concern, regardless of their level of knowledge about dental conditions.

Based on the bivariate analysis using the Mann–Whitney test, a p-value of 0.372 ( $p > 0.05$ ) was obtained, indicating that there was no statistically significant relationship between students' level of knowledge about malocclusion and adolescents' psychological condition at MAN 2 Parepare City.

Several factors influence oral and dental health in developing countries, including attitudes and behaviors. Attitude is defined as an evaluative response that arises when individuals are motivated to achieve specific goals. Oral health behavior encompasses knowledge, attitudes, and actions related to concepts of oral health and disease, as well as preventive efforts.<sup>14</sup> Knowledge or cognition can influence individual behavior and represents an important predisposing factor, while attitude reflects an individual's readiness or willingness to act based on certain motivations. Health behavior is shaped by internal factors such as knowledge, perception, emotions, and motivation, as well as external factors including physical and social environments.<sup>13</sup>

According to Lawrence Green's theory (1980), human behavior is influenced by two main categories: behavioral and non-behavioral causes. Behavior itself is determined by three key factors: predisposing factors (knowledge and attitudes), enabling factors (availability of facilities, resources, and skills), and reinforcing factors (regulations, supervision, and social support).<sup>15</sup>

The Theory of Reasoned Action developed by Ajzen and Fishbein states that intention is the strongest predictor of behavior, and behavior will not occur without intention and interest. This theory links beliefs, attitudes, intentions, and

behavior, emphasizing that attitudes influence behavior through a rational decision-making process. In this context, low levels of oral health knowledge serve only as a predisposing factor and may not directly result in corrective behavior toward malocclusion, particularly in the absence of interest, motivation, or access to orthodontic treatment.<sup>16</sup>

The primary causes of malocclusion include hereditary factors, growth patterns, and developmental disturbances. Malocclusion is also influenced by other factors such as deleterious oral habits and trauma.<sup>17,18</sup> Malocclusion is considered a multifactorial condition influenced by both general (systemic) and local (dental) factors. General etiological factors include genetic inheritance, congenital anomalies, environmental influences, and functional habits that affect craniofacial growth and development, while local factors involve anomalies in the number, size, and shape of teeth, premature loss or prolonged retention of primary teeth, abnormal eruption paths, dental caries, and oral habits such as non-nutritive sucking, all of which can affect the normal occlusal relationship and contribute to the formation of malocclusion.<sup>19</sup>

The findings of this study are consistent with previous research involving elementary school children in Denpasar, which also found no relationship between the level of knowledge and the severity of malocclusion due to detrimental oral habits.<sup>12</sup>

## CONCLUSION

There is no significant relationship between adolescents' level of knowledge about malocclusion and their psychological condition. Aesthetic and social factors are likely to play a greater role in influencing adolescents' psychological well-being than knowledge level alone.

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