

A Descriptive Study on the Quality of Life of Young Adults Using Fixed Orthodontic Appliances in Padang City

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Abstract. The use of fixed orthodontic appliances among young adults has been increasing along with growing awareness of dental aesthetics and oral health. This study aimed to measure the impact of fixed orthodontic appliance use on the quality of life of users in Padang City using the Oral Health Impact Profile (OHIP-14) questionnaire. The reliability test showed a Cronbach's alpha value of 0.810, indicating that the instrument is reliable and valid. The study involved 112 respondents, the majority of whom were female (85.7%) and held a bachelor's degree (59.1%), with 39.1% having used the appliance for 0–1 year. The results showed that 37 respondents had a high quality of life, 50 had a moderate level, and 25 had a low level. These findings indicate that the use of fixed orthodontic appliances does not significantly reduce quality of life and emphasize the importance of orthodontic care that considers patients' psychosocial well-being.

Keywords: Quality of Life; Fixed Orthodontic Appliance; OHIP-14; Oral Health; Young Adults

1 Introduction

The use of fixed orthodontic appliances has become one of the primary solutions for managing malocclusion and improving facial aesthetics [1]. In recent years, public awareness of dental health and appearance has increased, particularly among young adults aged 18–25 years [2]. At this developmental stage, individuals are in the process of forming their personal identity, in which physical appearance plays a significant role in fostering self-confidence, social interactions, and overall quality of life [3]. Therefore, the motivation for using fixed orthodontic appliances in this age group is driven not only by functional needs but also by aesthetic demands [4].

Although fixed orthodontic appliances offer substantial long-term functional and aesthetic benefits, their use may also be accompanied by several temporary challenges that can affect patients' daily lives. Commonly reported issues include varying degrees of pain or discomfort following appliance activation, difficulties in chewing certain types of food, and alterations in speech patterns due to the presence of brackets and archwires that interfere with tongue movement [5]. In addition to these physical symptoms, individuals may experience psychological or emotional concerns, such as decreased self-confidence, heightened self-consciousness, or embarrassment when speaking or engaging in social interactions, particularly during the early phase of treatment when the appliance is still highly noticeable [6].

These physical and psychosocial challenges may influence multiple dimensions of quality of life, including physical functioning, emotional well-being, and social participation [7]. Research has consistently shown that at the onset of orthodontic treatment, patients often report a temporary decline in Oral Health-Related Quality of Life (OHRQoL), driven by discomfort, functional limitations, and altered social experiences.

However, this decline is generally transient. As patients gradually adapt to the presence of the orthodontic appliance, their symptoms diminish, functional capacity improves, and psychological adjustment occurs. Consequently, OHRQoL tends to improve over time, eventually surpassing initial levels as treatment progresses and patients begin to perceive the benefits of improved dental alignment and facial aesthetics [8].

Theoretically, Oral Health-Related Quality of Life (OHRQoL) is a multidimensional construct that reflects the extent to which oral health conditions influence an individual's physical comfort, psychological well-being, and social functioning [9]. This concept acknowledges that oral health is not merely the absence of disease, but also encompasses the broader impacts of oral conditions on daily activities, emotional states, interpersonal interactions, and overall life satisfaction.

One of the most widely used and psychometrically validated instruments for assessing OHRQoL is the Oral Health Impact Profile, particularly its shortened version, the OHIP-14. This instrument evaluates seven core dimensions: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and social handicap [10]. Each dimension captures a different aspect of the ways in which oral health problems may affect an individual's daily experiences—ranging from difficulties in speaking or eating, to emotional distress, reduced confidence, and restrictions in social participation.

Through the OHIP-14, researchers are able to obtain a comprehensive and systematic understanding of how orthodontic appliance use influences users' lived experiences and psychosocial well-being. The instrument provides structured insights into both the immediate challenges and longer-term impacts of orthodontic treatment, enabling a nuanced evaluation of the treatment's overall effect on quality of life. This makes OHIP-14 a valuable tool for monitoring patient adaptation, identifying areas requiring clinical attention, and informing strategies to enhance patient comfort and support during orthodontic therapy.

Previous studies have predominantly focused on adolescents and children, with greater emphasis placed on functional and aesthetic aspects rather than on psychosocial dimensions [11]. Meanwhile, research examining the impact of fixed orthodontic appliance use on the quality of life of young adults—particularly within the Indonesian context—remains notably limited. Existing studies tend to prioritize functional and aesthetic outcomes, without sufficiently addressing the deeper psychosocial implications of orthodontic treatment [12]. In fact, sociocultural factors—such as perceptions of appearance, comfort, and social interaction—can substantially influence an individual's subjective experience throughout the course of orthodontic therapy. Emerging literature highlights the importance of considering self-efficacy and cultural background when assessing OHRQoL in orthodontic patients, underscoring the need for locally grounded data to support health services that are contextually relevant and responsive to patient needs [13].

In light of these gaps, the present study aims to address the research deficit by investigating the impact of fixed orthodontic appliance use on the quality of life of young adults in Padang City. This study adopts a multidimensional approach encompassing physical, psychological, and social aspects, allowing for a comprehensive and holistic understanding of users' experiences. By integrating these dimensions, the research seeks to provide a more nuanced analysis of how orthodontic treatment affects daily functioning, emotional well-being, and social engagement, ultimately contributing evidence that can inform culturally sensitive and patient-centered orthodontic care.

2 Method

This study adopted a quantitative descriptive approach utilizing a cross-sectional research design. The cross-sectional framework was deemed appropriate as it facilitates the assessment of the quality of life among fixed orthodontic appliance users at a single point in time, thereby enabling the characterization of current conditions without the influence of temporal variability. This methodological approach further allows for an objective estimation of the association between fixed orthodontic appliance use and multiple domains of quality of life—including physical, psychological, and social dimensions—among young adults residing in Padang City.

Data collection relied on the Oral Health Impact Profile (OHIP-14), an extensively validated and internationally standardized instrument for evaluating Oral Health-Related Quality of Life (OHRQoL). The OHIP-14 consists of 14 items distributed across seven conceptual domains: functional limitation, physical pain, psychological discomfort, physical disability, social discomfort, psychological disability, and social disability. Each item was assessed using a 5-point Likert scale (0 = never, 1 = hardly ever, 2 = occasionally, 3 = fairly often, 4 = very often), allowing for the quantification of both the frequency and severity of impacts experienced by respondents. The multidimensional structure of the OHIP-14 supports comprehensive measurement of subjective oral-health impacts on daily functioning and psychosocial well-being.

Psychometric evaluation revealed robust internal consistency, with a Cronbach's Alpha coefficient of 0.810, exceeding the commonly accepted threshold of 0.70 for reliable scales. Item-total correlation analyses indicated adequate discriminatory power across all items, thereby affirming the construct validity and appropriateness of the instrument within this population. These results suggest that the OHIP-14 demonstrates stable psychometric properties when applied to young adult orthodontic patients in the Indonesian context.

The study population comprised young adults aged 18–25 years undergoing fixed orthodontic treatment in Padang City. A purposive sampling strategy was implemented to ensure that the selected respondents met the predefined inclusion criteria: [1] currently undergoing fixed orthodontic treatment for a minimum duration of six months, [2] absence of systemic diseases with potential effects on oral health status, and [3] provision of informed consent to participate in the study. A total sample size of 112 participants was obtained, which was considered adequate for descriptive and correlational analyses while sufficiently representing the demographic characteristics of the target population.

Data were collected through both direct (paper-based) and online questionnaire distribution to accommodate accessibility and ensure broader reach among eligible participants. Prior to data collection, respondents received comprehensive information regarding the study's objectives, confidentiality assurances, and instructions for completing the questionnaire independently. This procedure was implemented to enhance response accuracy and minimize potential biases associated with interviewer-assisted data collection.

Statistical analyses were conducted using standard statistical software packages. Descriptive statistics, including measures of central tendency and dispersion, were utilized to summarize respondent demographics and overall OHRQoL scores across the seven OHIP-14 dimensions. To explore the relationship between orthodontic treatment duration and quality of life outcomes, correlational analyses were performed using appropriate parametric or nonparametric tests based on data distribution characteristics. The significance level for all statistical tests was set a priori at $\alpha = 0.05$.

The application of this methodological framework enables the systematic characterization of subjective quality-of-life outcomes among young adults using fixed orthodontic appliances. Furthermore, the integration of multidimensional OHRQoL measurement provides a comprehensive understanding of the physical, psychological, and social implications of orthodontic treatment, thereby contributing contextually relevant evidence to support patient-centered and culturally informed clinical practice.

3 Result

This study involved a total of 112 respondents aged 18–25 years who were undergoing fixed orthodontic treatment in Padang City. Based on demographic characteristics, the majority of participants were female (85.7%) and most had completed an undergraduate degree (59.1%). Regarding treatment duration, 39.1% of respondents had used fixed orthodontic appliances for 0–1 year, while the remaining participants had been in treatment for more than one year.

Analysis of the OHIP-14 questionnaire revealed that most respondents reported a high level of quality of life (33%), followed by those reporting moderate (45%) and low (22%) quality of life. Although several frequently reported complaints were noted—including physical discomfort during mastication, difficulties in speech articulation, and changes in dietary patterns—most respondents demonstrated the ability to adapt to these challenges. These findings suggest that the use of fixed orthodontic appliances does not substantially impair overall quality of life among young adult users. Instead, although temporary discomfort is present, its impact appears to be manageable and does not significantly hinder daily functioning.

Psychometric evaluation of the OHIP-14 instrument produced a Cronbach's Alpha coefficient of 0.810, indicating a high level of internal consistency and reliability. The item validity analysis showed that all statements exhibited positive and statistically significant correlations with the total score, confirming the instrument's validity for assessing the quality of life of fixed orthodontic appliance users in this population.

Correlation analysis between the duration of appliance use and quality-of-life scores demonstrated a weak yet positive association. This indicates that the longer respondents had been undergoing orthodontic treatment, the greater their level of adaptation to discomfort and functional limitations. This adaptive response may reflect improved psychological acceptance, reduced perceived interference, and enhanced social adjustment over time. Such findings align with existing literature suggesting that orthodontic patients typically experience an initial phase of discomfort, followed by a gradual improvement as they adjust both physically and psychosocially to the appliance. Overall, these results underscore the dynamic nature of OHRQoL during orthodontic therapy and highlight the role of adaptation in shaping patient experiences.

4 Discussion

The findings of this study indicate that the use of fixed orthodontic appliances among young adults in Padang City does not produce a significant negative impact on quality of life. This result is consistent with previous research, which suggests that positive perceptions of aesthetic improvement and enhanced self-confidence may offset the physical discomfort experienced during orthodontic treatment [14].

Psychologically, early adulthood is a developmental stage in which individuals place considerable emphasis on physical appearance [15][16] and social acceptance [17]. The use of fixed orthodontic appliances may enhance self-confidence as improvements in dental appearance and smiling aesthetics become more noticeable [18][19]. Although functional disturbances—such as mild pain, difficulty eating, and soft tissue irritation—are commonly experienced during the initial phase of treatment, respondents generally perceived these symptoms as a normal and acceptable part of the process toward achieving the desired outcome.

From a social perspective, some respondents reported feelings of embarrassment or discomfort when speaking in public, particularly during the early stages of appliance use. However, over time, most respondents indicated that the orthodontic appliance no longer interfered with their social activities. This finding aligns with studies demonstrating that adult orthodontic patients are able to achieve social adjustment after the initial adaptation period, typically occurring within the first few months of treatment [20].

The findings of this study are supported by previous evidence indicating that, after completing the initial adjustment phase, patients experience an improvement in quality of life during the continued adaptation period. This improvement is attributed to enhanced facial appearance and the completion of the treatment phase, which typically involves discomfort [21]. Among young adults, noticeable improvements in quality of life generally occur after treatment, when the outcomes align with their expectations [22]. Moreover, users of fixed orthodontic appliances report better quality of life as oral health status improves [23]. Individuals who initially had poor self-image and difficulties in social interaction also demonstrate significant enhancement in their

quality of life and self-perception after undergoing fixed orthodontic treatment [24]. These findings suggest that the psychological and social impacts of fixed orthodontic appliances are temporary and adaptive rather than permanent.

Demographic characteristics of the respondents further indicate that most belonged to higher educational groups, which may influence their positive perceptions of the long-term benefits of orthodontic treatment. Higher levels of knowledge appear to increase individuals' ability to manage physical discomfort and maintain oral hygiene during treatment, thereby contributing to better quality of life. This assertion is consistent with previous findings showing that higher education is associated with better knowledge and attitudes toward orthodontic care [25].

Overall, the present study underscores the importance of a holistic approach in orthodontic services—one that integrates not only functional and aesthetic considerations but also patients' psychosocial well-being. Dental health professionals should provide comprehensive education and psychological support to facilitate patients' adaptation during treatment, ensuring that their quality of life remains well-maintained.

5 Conclusion

Based on the findings of this study, it can be concluded that the use of fixed orthodontic appliances among young adults in Padang City does not exert a substantial negative impact on overall quality of life. The majority of respondents reported moderate to high levels of quality of life, despite experiencing initial discomfort such as pain, difficulty chewing, and temporary speech alterations during the early stages of treatment. These symptoms were generally transient and effectively managed through natural adaptation processes as well as guidance provided by dental health professionals.

Psychological and social dimensions were shown to play a critical role in shaping the experiences of individuals undergoing fixed orthodontic treatment. Enhanced self-confidence resulting from improvements in dental aesthetics contributed positively to emotional well-being and social interaction. These findings indicate that the success of orthodontic treatment is influenced not only by clinical outcomes but also by patients' subjective perceptions of appearance, comfort, and self-image.

In light of these results, it is recommended that dental practitioners provide comprehensive patient education regarding the adaptation process, oral hygiene maintenance, and strategies for managing discomfort throughout treatment. A patient-centered approach may help preserve quality of life, enhance adherence to treatment, and improve overall satisfaction with clinical outcomes.

Furthermore, future research should consider employing longitudinal designs with larger sample sizes to observe changes in quality of life over time and to better capture the dynamic nature of patient adaptation. Psychological variables, including self-confidence, social support, and satisfaction with appearance, should also be examined in greater depth to develop a more comprehensive understanding of how fixed orthodontic

appliances affect the multidimensional aspects of quality of life.

Overall, this study contributes valuable insights into the multidimensional impacts of orthodontic treatment and provides an empirical foundation for the development of more holistic, patient-oriented dental health services aimed at optimizing patient well-being.

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