

(RESEARCH ARTICLE)



Effects of orthodontic treatment on the oral health-related quality of life of Malagasy patients

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Abstract

Orthodontic treatment can have a significant impact on patient's quality of life. The objective of this study was to analyze the effects of orthodontic therapy on the quality of life of Malagasy patients.

A descriptive cross-sectional study was conducted among 106 individuals undergoing orthodontic treatment in Antananarivo and Mahajanga, Madagascar, between April and June 2024. Sampling was exhaustive: all patients present during the survey period were included. The independent variables were age and gender, while the dependent variable was the reported change in quality of life. Data were collected using a pre-established, tested, and validated questionnaire. The tools used to assess quality of life included the OHIP-14 (Oral Health Impact Profile), GOHAI (General Oral Health Assessment Index), and CPQ (Child Perception Questionnaire). Statistical analysis was performed using SPSS software version 20.0 for Windows.

More than two-thirds of participants (77.4%) reported a change in their quality of life during treatment. The most frequently reported effects included stress (41.5%), feelings of self-consciousness (41.5%), sleep disturbances (45.3%), difficulties with speech (74.5%), chewing (86.8%), and pain.

Orthodontic treatment appears to affect the quality of life of Malagasy patients negatively. Orthodontists should consider these impacts to enhance patient management and comfort throughout the treatment process.

Keywords: Orthodontic Treatment; Quality of Life; Pain; Oral Health; Orthodontic appliance; Malocclusion; Malagasy patient

1. Introduction

Dental malocclusions represent one of the most common oral health conditions observed in children and adolescents worldwide. According to the World Health Organization (WHO), malocclusion ranks third among the most prevalent oral health disorders, following dental caries and periodontal diseases [1].

Orthodontic treatment aims to correct malocclusions, improve oro-facial functions, and restore the aesthetic appearance of the smile. However, this type of intervention can have a significant impact on the quality of life of patients throughout the various stages of treatment [1,2].

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Recent studies have highlighted that the effects of orthodontic treatment on quality of life can vary depending on the phase of treatment: it may either impair or improve it [3,4]. Among the various dimensions affected, psychological discomfort and distress appear to play a major role in both the perception of improvement and deterioration of quality of life [5].

These elements emphasize the importance for orthodontists to consider these variations throughout treatment, anticipate them, and effectively communicate them to patients from the initial phase of care [1].

The aim of this study was to analyze the impact of orthodontic treatment on the quality of life of Malagasy patients.

2. Materials and Methods

The study was conducted in specialized orthodontic practices located in the cities of Antananarivo and Mahajanga, Madagascar. Antananarivo is the capital of the country, while Mahajanga is a major city on the western coast. Both locations have several qualified orthodontists.

This is a descriptive epidemiological study of a cross-sectional type. The survey was conducted over a period of three months, from April to June 2024.

The study population consisted of Malagasy patients undergoing orthodontic treatment, regardless of age and gender. All patients wearing orthodontic appliances, whether fixed, removable, functional, or aligner-type, and who had attended a follow-up visit during the study period, were included. Patients who missed their appointments or declined to participate in the survey were excluded. Patients who had completed their treatment, those in the retention phase, and those undergoing oro-myofunctional rehabilitation only were not included.

The sampling method was exhaustive. All patients present in the practices at the time of the survey were considered. The total sample comprised 110 patients, of which 106 were retained for analysis, distributed between Antananarivo (72 patients) and Mahajanga (34 patients).

The independent variables were age and gender. The dependent variable was the change in quality of life.

Data were collected using a pre-established, tested, and validated questionnaire. Information was gathered through individual interviews conducted directly by the surveyors. Several validated tools were used to assess quality of life: the OHIP-14 (Oral Health Impact Profile), the GOHAI (General Oral Health Assessment Index), and the CPQ (Child Perception Questionnaire).

Statistical analysis was performed using the SPSS 20.0 software (Statistical Package for the Social Sciences) on Windows.

3. Results

Table 1 Distribution of subjects according to epidemiological profiles

	Sample size (N)	Percentage (%)
Age range		
Under 10 years old	3	2,8
10 à 20	59	55,7
21 à 30	33	31,1
31 à 40	6	5,7
Over 40 years old	5	4,7
Total	106	100,0
Gender		
Male	37	34,9

Female	69	65,1
Total	106	100,0

Table 2 Distribution of subjects according to change in quality of life

Sample size (N)		Percentage (%)
Change in quality of life		
Yes	82	77,4
No	24	22,6
Total	106	100,0

Table 3 Distribution of subjects according to the psychological impact of orthodontic treatment

	Feeling stress		Feeling Psychologica insécurité	
	Sample size (N)	Percentage (%)	Sample size (N)	Percentage (%)
Never	62	58,5	62	58,5
Rarely	19	17,9	23	21,7
Sometimes	17	16,0	20	18,9
Often	7	6,6	1	,9
Always	1	,9	–	–
Total	106	100,0	106	100,0

Table 4 Distribution of subjects according to the impact of orthodontic treatment on functions

	Sleep Disruption		Difficulty Speaking		Difficulty Chewing	
	Sample size (N)	Percentage (%)	Sample size (N)	Percentage (%)	Sample size (N)	Percentage (%)
Never	58	54,7	27	25,5	14	13,2
Rarely	28	26,4	27	25,5	20	18,9
Sometimes	15	14,2	28	26,4	44	41,5
Often	4	3,8	16	15,1	20	18,9
Always	1	,9	8	7,5	8	7,5
Total	106	100,0	106	100,0	106	100,0

Table 5 Distribution of subjects according to the impact of pain on quality of life

	Pain Limiting Activities		Pain Affecting Daily Habits	
	Sample size (N)	Percentage (%)	Sample size (N)	Percentage (%)
Never	55	51,9	61	57,5
Rarely	25	23,6	33	31,1
Sometimes	14	13,2	10	9,4
Often	11	10,4	2	1,9
Always	1	,9	–	–
Total	106	100,0	106	100,0

4. Discussion

The objective of this study was to evaluate the impact of orthodontic treatment on the quality of life of Malagasy patients. Although this topic has been extensively explored in other regions of the world, data concerning the Malagasy population remain very limited. Therefore, we aimed to better understand how Malagasy patients perceive the repercussions of orthodontic treatment on their quality of life.

One of the challenges of the study was the absence of a standardized tool for assessing quality of life in a population composed of both children and adults. For example, the CPQ (Child Perception Questionnaire) applies only to children [6]. Moreover, evaluations were conducted at different stages of treatment, which may have influenced patients' responses.

Regarding the characteristics of our sample, the majority consisted of females (65.1%) and young adolescents (Table 1). This female predominance is well-documented in the literature, with women generally placing greater importance on aesthetics than men [5,7]. Despite recent advances in adult orthodontics, our study still revealed a predominance of adolescent participants. A systematic review by Ferrando-Magraner et al. also found that most studies on the impact of orthodontics on quality-of-life involved individuals aged 11 to 18 years [1,5].

In our study, 77.4% of participants reported experiencing a change in their quality of life during treatment (Table 2). This decline in quality of life has been described by other authors, particularly during the first week of treatment, due to pain, discomfort, and functional limitations associated with wearing orthodontic appliances [3,4,7,8].

From a psychological perspective, some patients reported feelings of stress and psychological insecurity related to the treatment (Table 3). Fewer than half of the participants in our study expressed such feelings. Results vary across studies. Chen et al. noted that psychological stress was one of the most significant effects during the first week following appliance placement [3]. In contrast, Liu observed a gradual improvement in psychosocial well-being from the first week, with significant enhancement over six months [8].

Orthodontic treatment has also been associated with a negative impact on self-esteem and life satisfaction in certain cases [9].

In our survey, 45.3% of patients (48 individuals) reported experiencing sleep disturbances (Table 4), which were mostly observed at the beginning of treatment or after appliance activation. Pain and discomfort caused by the appliances were the main contributing factors.

Additionally, 74.5% of participants reported speech difficulties. These articulation problems were perceived either by the patients themselves or by those around them. Orthodontic appliances can interfere with the pronunciation of certain phonemes [3]. Bernabé et al. also reported that orthodontic appliances affected at least one daily performance function, such as speech or eating [10].

Finally, pain had an impact on the daily activities of some patients. Less than half expressed dissatisfaction with their ability to carry out routine tasks, and some reported being unable to work due to pain (Table 5). Pain and discomfort are frequently cited as the most challenging aspects of orthodontic treatment. Orthodontists need to address these issues early on to better prepare and support their patients. Clear and proactive communication about potential sensations can often reduce the reliance on analgesics [11].

5. Conclusion

Orthodontic treatment can affect patients' daily life, including eating, sleeping, and psychological well-being. Pain plays an important role but tends to decrease as treatment continues.

Orthodontic treatment appears to affect the quality of life of Malagasy patients negatively. Orthodontists should consider these impacts to enhance patient management and comfort throughout the treatment process.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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