Dentika Dental Journal

Journal homepage: https://talenta.usu.ac.id/dentika

The Impact of Periodontal Disease on the Quality of Life of People in Timor-Leste measured by the OHIP-TL 24

Daniel da Costa Pinto[1,2] iD , Mutiara Dewi Pangaribuan[3] iD, Sondang Pintauli[4] iD

[1] Doctoral Program in Dental Science, Faculty of Dentistry, Universitas Sumatera Utara, Medan, 20155, Indonesia. 4
[2] Ministry of Health, Democratic Republic of Timor-Leste
[3] Master's Program in Dental Science, Faculty of Dentistry, Universitas Sumatera Utara, Medan, 20155, Indonesia.
[4] Department of Dental Public Health/Preventive, Faculty of Dentistry, Universitas Sumatera Utara, Medan, 20155, Indonesia

Corresponding Author: sondangp@yahoo.com

ABSTRACT

Oral health plays an essential role in overall well-being, with periodontal disease being the second most common condition after dental caries. Several studies have shown that the condition significantly affects physical, psychological, and social aspects of life. Therefore, this study aims to evaluate the impact of periodontal disease on quality of life using the Oral Health Impact Profile Timor-Leste version (OHIP-TL 24). An analytical cross-sectional design was used with 150 randomly selected respondents, divided into 3 age groups. These included adolescents (15–19 years), adults (35–44 years), and the elderly (>65 years), with 30 individuals in each group. Periodontal status was assessed using the CPITN index (WHO), and quality of life was measured through the OHIP-TL 24 questionnaire. Data were then analyzed using the Spearman's rho test. The results showed that the mean CPI score was 1.074 ± 0.56, with the highest treatment needs found in category TN II. Treatment needs were identified in 74% of adolescents, 64% of adults, and 86% of the elderly. The results also showed a significant correlation ($p < 0.05$) between periodontal disease and decreased quality of life, particularly in the 35–44 age group. In conclusion, periodontal status tends to deteriorate and negatively impact quality of life, showing the need for context-specific oral health interventions in Timor-Leste.

Keywords: Periodontal Disease, Periodontal Index, Quality of Life, OHIPTL-24

ABSTRAK

Kesehatan gigi dan mulut berperan penting dalam kesejahteraan secara keseluruhan, dimana penyakit periodontal merupakan masalah kedua paling umum setelah karies. Kondisi ini berdampak signifikan pada aspek fisik, psikologis, dan sosial. Penelitian ini bertujuan mengevaluasi hubungan penyakit periodontal menggunakan Community Periodontal Index dengan kualitas hidup menggunakan Oral Health Impact Profile versi Timor Leste (OHIP-TL 24) pada masyarakat di Timor-Leste. Desain yang digunakan adalah analitik potong lintang dengan 150 responden yang dipilih secara acak dan dibagi dalam tiga kelompok usia: remaja (15–19 tahun), dewasa (35–44 tahun), dan lansia (>65 tahun), masing-masing 30 orang. Status periodontal diukur menggunakan indeks CPITN (WHO), dan kualitas hidup dinilai melalui kuesioner OHIPTL-24. Analisis menggunakan uji Spearman rho. Nilai rata-rata CPI adalah $1,074 \pm 0,56$, dengan kebutuhan perawatan tertinggi pada kategori TN II. Kebutuhan perawatan ditemukan pada 74% remaja, 64% dewasa, dan 86% lansia. Hasil menunjukkan korelasi signifikan ($p<0,05$) antara penyakit periodontal dan penurunan kualitas hidup, terutama pada kelompok usia 35–44 tahun. Sebagai kesimpulan semakin bertambah usia, status periodontal cenderung memburuk dan berdampak negatif terhadap kualitas hidup, sehingga diperlukan intervensi kesehatan gigi dan mulut yang sesuai konteks lokal di Timor-Leste.

Kata kunci: Penyakit Periodontal. Indeks Periodontal. Kualitas Hidup. OHIPTL-24

1. Introduction

Teeth and oral cavity play a very important role in the life of every individual, particularly for food digestion, physical functions, and social functions [1]. Given this role, it is essential to maintain dental and oral health to avoid complications, such as caries and periodontal disease. Recent reports have shown that there is an increase in the prevalence of periodontal disease in Southeast Asia. According to the Global Burden of Disease Study 2019, periodontitis affects approximately 19% of the global adult population, representing more than one billion cases globally [GBD, 2019]. This disease has been shown to affect multiple dimensions of quality of life, including functional impairments, physical discomfort, emotional distress, and both physical and psychological challenges [2]. In addition, it not only causes pain and discomfort but also affects general health and individual well-being. Several studies have found a correlation between periodontitis and various dimensions of quality of life [3].

Periodontal disease is the second most prevalent oral health condition after dental caries in the Indonesian population, making it an issue that requires significant public health attention [4]. It is a progressive disorder that generally begins with a bacterial infection. The buildup of bacteria within dental plaque first affects the gingival tissues, triggering inflammation and gradually damaging the tooth-supporting structures. When left untreated, the disease can advance and ultimately result in tooth loss [5].

Periodontal tissues are most commonly affected by gingivitis and periodontitis. In cases of periodontitis, the damage extends to the periodontal ligament and the alveolar bone. This process also disrupts the attachment between the teeth and the gingiva, leading to a deepening of the gingival sulcus [6]. In Indonesia, the 2018 Basic Health Research (Riskesdas) survey reported that 74.1% of individuals aged 15 years and older exhibited signs of periodontal disease. Additional data indicated that the prevalence of periodontitis was slightly higher among women than men (74.7% vs. 73.2%) [7].

Assessing the oral health status of populations now heavily relies on the concept of dental health-related quality of life. In the context of periodontal disease, this quality of life is understood as a complex, multidimensional framework that includes personal assessments of oral health, overall physical and mental well-being, functional restrictions, treatment expectations, and satisfaction. To better understand how dental health affects patients' daily lives, the OHIP-14 (Oral Health Impact Profile) was introduced in the past decade. This validated questionnaire helps to evaluate the impact of dental disorders on multiple dimensions, including physical discomfort, emotional well-being, social interactions, as well as cultural influences [8,9].

According to previous studies, poor oral health in the elderly significantly affects their overall well-being and stands as a major issue in public health. Globally, the elderly often suffer from poor oral health characterized by tooth loss, dental caries, and periodontal disease. The necessity to maintain oral health continues despite aging and declining general health. Poor oral health among this population has been reported to increase the risk of various health disorders [10]. Moreover, previous studies have showed an association between tooth count and oral health-related quality of life. According to Dahl et al., results by Lahti et al. and Nutall et al. showed a significant correlation between tooth loss and higher OHIP-14 scores. This is consistent with the study by Gupta, which identified an association between periodontal condition and quality of life in adolescents. The results also showed that periodontal health tended to deteriorate with increasing age. Hijryana's study showed that approximately 75% of older adults aged 51 and over experienced periodontal disease [11]. Johnson also stated that periodontal disease, over time, affected quality of life. These results show the long-term impact of periodontal disease on the quality of life among the elderly [10,12]. Therefore, this study aims to analyze the impact of periodontal status on the quality of life using Oral Health Impact Profile Timor Leste version (OHIP-TL 24) among the people in Timor-Leste.

2. Materials and Methods

This study used an analytical cross-sectional design, consisting of residents of Timor-Leste within 3 age groups, namely adolescents (15–19 years), adults (35–44 years), and older adults (>65 years). Participants included individuals belonging to the defined age groups and having at least 20 natural teeth. Individuals with systemic diseases known to affect periodontal health, such as uncontrolled diabetes mellitus or immunodeficiency disorders, were excluded from the study. A total of 150 participants were recruited using simple random sampling, with 50 allocated to each age group. The sample size was determined based on the minimum requirement for correlation analysis with a confidence level of 95% and statistical power of 80%, ensuring sufficient precision for the analysis.

The severity of periodontal disease and treatment needs were assessed using the Community Periodontal Index of Treatment Needs (CPITN) developed by the World Health Organization (WHO). The CPITN was selected because it was a standardized, widely used tool for screening periodontal status and identifying treatment needs in large-scale population surveys.

Oral health–related quality of life was assessed using the OHIP-TL 24, a culturally adapted extension of the OHIP-14 that was validated for the Timor-Leste population by Pinto et al. The OHIP-TL 24 contains 24 items organized into eight dimensions: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, handicap, and cultural factors. Each item is scored on a five-point Likert scale ranging from 0 ("never") to 4 ("very often"), with higher scores indicating a greater negative impact on quality of life. The questionnaire was self-administered under the supervision of trained data collectors to ensure completeness and accuracy [13].

All responses were entered into a computerized database and analyzed using Spearman's rho correlation test to evaluate the relationship between periodontal status and quality of life. Ethical approval for the study was granted by the Ethics Committee of Universitas Sumatera Utara, Medan, Indonesia (Ref. No. 418/KEPK/USU/2024).

3. Results

Regarding the periodontal status of the participants, the average CPI score was 1.074 ± 0.56. When analyzed by age group, the average CPI score for ages 15-19 years was 1.09 ± 0.52, with a decrease in scores for ages 35 to 44 years, and an increase for ages >65 years, with a score of 1.14 ± 0.48. The highest percentage of periodontal treatment needs in each age group was in category TN II, which was 74% for ages 15-19 years, 64% for ages 35-44 years, and 86% for ages >65 years (Table 1).

Table 1. Periodontal Status in Timor-Leste by Age Group

Periodontal Status	n	Age groups (years old)					
		15-19 (n=50)		35-44 (n=50)		>65 (n=50)	
		$\bar{x} \pm SD$	n (%)	$\bar{x} \pm SD$	n (%)	$\bar{x} \pm SD$	n (%)
CPI		1.09±0.52		0.98±0.67		1.14±0.48	
TN 0	11		1 (2)		6 (12)		6 (12)
TN I	26		11 (22)		12 (24)		12 (24)
TN II	112		37 (74)		32 (64)		32 (64)
TN III	1		1 (2)		0		0

TN = *Treatment Need*

On the OHIPTL-24 instrument, a higher OHIPTL-24 score reflected lower oral health. The OHIPTL-24 results for the Timor-Leste population showed that 62.7% of participants fell into the "good" category, 30% were categorized as "very good," 6.7% were rated as "fair," and only 0.7% were classified under the "poor" category (Table 2).

Table 2. Description of the Quality of Life of the People of Timor-Leste

Quality of Life Category	n	%
Very good (skor 0-24)	45	30
Good (skor 25-48)	94	62.7
Simply (skor 49-72)	10	6.7
Bad (skor >72)	1	0.7
TOTAL	150	100%

These results showed a relationship between periodontal status and quality of life using OHIPTL-24. A significant correlation was observed between CPI and OHIP, with a moderate degree of correlation and a positive direction. This suggested that as the CPI score increased, showing a more severe periodontal disease, the OHIP score also increased. This showed a worse quality of life associated with periodontal status (p=0.000; r=0.311).

Table 3. Correlation of Oral Health Status and Quality of Life

Periodontal Status	Skor OHIPTL-24	
	Spearman Correlation (r)	*p*
CPI	0,311**	0,000

**Correlation was significant at the 0.01 level (2-tailed).

4. Discussions

The results of this study showed the periodontal status with an average CPI (Community Periodontal Index) score of 1.074±0.56. Furthermore, the highest CPI score was 3, showing significant periodontal inflammation in some participants. Periodontitis was a significant dental health issue in the region. These results suggested that periodontitis remained a major oral health concern in the region, as supported by the CPI scores reflecting signs of periodontal disease in some participants.

When analyzed by age group, the majority of treatment needs fell under Treatment Need II (TN II), which included oral hygiene education, scaling, and the removal of plaque-retentive factors. Specifically, TN II needs were present in 74% of adolescents (15–19 years), 64% of adults (35–44 years), and 86% of the elderly (>65 years). These results supported a previous study by Eltas *et al.*, which identified a relationship between periodontal health and oral health-related quality of life in adults. The OHIP-14 scores observed in those with gingivitis and periodontitis were higher than in periodontally healthy individuals ($p < 0.05$) [14]. Similarly, Hijryana *et al*. showed that approximately 75% of individuals aged 51 and above suffered from periodontal disease. Their study could be used by dentists, community health workers, and policy makers in Indonesia to understand the prevalence, severity, and extent of the negative impacts of periodontal disease on older people's quality of life [15]. Consistent with these results, DSouza *et al.* also showed that poor periodontal health impacted the oral health-related quality of life among the adult population [16].

The OHIP-14 response scoring method consisted of 2 methods, namely, simple score (SS) and additive score (ADD). In the ADD method, assessment was carried out by summing all responses from the 24 OHIPTL-24 questions according to the weight of each response category: "never" = 0, "rarely" = 1, "sometimes" = 2, "often" = 3, and "always" = 4. The maximum possible score was 96, with higher scores showing poorer perceived oral health. Based on OHIPTL-24 results, 62.7% of participants were classified in the "good" category, 30% in "very good", 6.7% in "fair", and only 0.7% in the "poor" category (Table 2).

The analysis results showed a correlation between periodontal status and quality of life. A significant correlation was observed between CPI and OHIP, with a moderate degree of correlation and a positive direction, showing that as periodontal status worsened, quality of life declined. (p=0.000; r=0.311).

Oral health played a significant role in the overall health and well-being of elderly individuals. Deterioration in oral and dental conditions could adversely affect systemic health, contributing to a lower quality of life in this population [17]. The difference in quality of life for each person was influenced by the quality of life questionnaire scores based on 7 concepts of questions. Furthermore, the explanation of these 7 concepts related to dental problems in the elderly included changes in pronunciation when speaking, disturbed taste, having or not having toothaches, experiencing tooth pain when chewing food, feelings of inferiority, and feelings of embarrassment. Others included satisfaction with food chewing results, interrupting or stopping eating due to tooth pain, difficulty relaxing, feelings of anxiety, feelings of irritation, disruption of daily work due to dental problems, dissatisfaction with life due to teeth, or inability to perform activities related to tooth function due to systemic diseases [18].

The relationship between oral hygiene and quality of life highlights how daily dental care practices can shape key aspects of an individual's overall well-being. Oral hygiene routines such as regular tooth brushing, flossing, and periodic dental checkups play a direct role in maintaining oral health [19]. Evidence shows that individuals who practice good oral hygiene have a lower likelihood of developing dental conditions such as caries and periodontal disease, which consequently reduces the risk of tooth pain, tooth loss, and impaired chewing function [20]. In addition, good oral hygiene can contribute to greater self-confidence and improved social interaction, as healthy teeth support both facial aesthetics and comfortable communication. A study by Patel, published in the Journal of Clinical Periodontology, reported that individuals with good oral hygiene were more likely to experience better overall quality of life, particularly in relation to psychological and social well-being. These findings underscore the need to promote oral hygiene education as a core component of dental health strategies aimed at enhancing overall quality of life [21,22].

Periodontal disease affects the supporting structures of the teeth, including the gingiva, periodontal ligament, cementum, and alveolar bone. It is generally classified into two main types, gingivitis and periodontitis, both of which arise from the colonization of harmful bacteria within the dental biofilm. As the disease advances, it can interfere with daily physical functions, producing symptoms such as pain, infection, and difficulty chewing, all of which can diminish quality of life [12]. This condition is especially common among older adults, as the aging process naturally brings systemic degeneration and reduced organ function, making the population more susceptible to various illnesses, including periodontal disorders. Age-related changes in periodontal tissues may accelerate disease progression when not properly managed. In addition, the structural strength of periodontal tissues tends to decline over time, lowering their ability to withstand irritants like bacterial plaque and increasing the likelihood of tissue damage [11].

5. Conclusion

In conclusion, this study showed a correlation between periodontal disease and quality of life among individuals in Timor-Leste, showing that poor periodontal health significantly affected overall well-being. As age increased, the severity of periodontal disease worsened, thereby negatively impacting quality of life. To enhance well-being and quality of life in Timor-Leste, oral health interventions must consider local social and cultural contexts.

6. Acknowledgement

7. Conflict of Interest

The authors declared no conflicts of interest.

References

Nurmala I, Rahman F, Nugroho A, Erlyani N, Laily N, Yulia Anhar V. Promosi Kesehatan. Surabaya: Airlangga University Press; 2018.

Baiju R, Peter E, Varghese N, Sivaram R. Oral health and quality of life: Current concepts. J Clin Diagn Res. 2017; 11: 21–6.

Elkhaira R, Kasuma N, Putra AE. Perbedaan jumlah koloni bakteri asam laktat pada keadaan sehat dengan periodontitis kronis. B-Dent 2019; 6: 119–25.

Yenti A. Perbedaan kualitas hidup masyarakat yang menderita karies gigi, gingivitis dan periodontitis di wilayah kerja Puskesmas Air Tabit Kecamatan Payakumbuh Timur. Menara Ilmu. 2017; 11: 13–9.

Saputri D, Masulili SLC. Perawatan periodontal pada pasien dengan periodontitis agresif (laporan kasus). Cakradonya Dent J 2015; 7: 773–7.

Anwar AI, Adnan AP, Ayub AA. Hubungan antara status periodontal dan status gigi geligi usia dewasa masyarakat Kelurahan Malino Kabupaten Gowa. Cakradonya Dent J 2018; 10: 71–7.

Rahmayanti AW, Suryanti N, Suwargiani AA. Caries experience, periodontal condition, and quality of life of pregnant women. J Kedokt Gigi Univ Padjadjaran 2020; 32: 212–9.

Wijaksana IKE. Periodontal chart dan periodontal risk assessment sebagai bahan evaluasi dan edukasi pasien dengan penyakit periodontal. J Kesehat Gigi 2019;6:19–25.

Jackson J, Asia A, Fitri AN. Gambaran kualitas hidup terkait kesehatan gigi dan mulut pecandu narkoba. J Ked Gigi Terpadu 2020; 1: 12–7.

Melati CA, Susilawati S, Rikmasari R. Gambaran kualitas hidup pasien lansia pengguna gigi tiruan lepasan di RSGM Unpad. Maj Kedokt Gig Indones 2017; 3: 133–8.

Anwar AI. The correlation between dental health status and the quality of life in the elderly in District Malili, Luwu Timur. J Dentomaxillofac Sci 2014; 13: 160.

Al-Bitar KM, Garcia JM, Han S, Guentsch A. Association between periodontal health status and quality of life: A cross-sectional study. Front Oral Health 2024; 5: 1–7.

Pinto D, Pintauli S, Rahardjo A, Sibarani R. Validity and reliability of the Timor Leste version instruments for measuring oral health-related quality of life. J Int Dent Med Res 2024; 17: 777–82.

Eltas A, Uslu MO, Eltas SD. Association of Oral Health-related Quality of Life with Periodontal Status and Treatment Needs. Oral Health Prev Dent 2016; 14(4): 339-47.

Hijryana M, MacDougall M, Ariani N, Saksono P, Walls AWG. Periodontal Disease and Oral Health-Related Quality of Life in the Older Population in Indonesia. JDR Clin Trans Res 2022; 7(3): 277-88.

DSouza H et al., Comparison of oral health-related quality of life and its association with the periodontal status among the adults: A questionnaire-based study. Ann Afr Med 2023; 22 (2): 224-8.

Novawaty E, Puspitasari Y, Bachtiar WN. Hubungan tingkat keparahan maloklusi dengan kualitas hidup mahasiswa fakultas kedokteran gigi. E-GiGi 2023; 12: 55–9.

Kuswanto. Hubungan pengetahuan tentang kesehatan gigi dan mulut dengan kejadian penyakit periodontal pada masyarakat. J Penelit Perawat Prof 2024; 6: 1333–6.

Sari M, Jannah NF. Gambaran pengetahuan kesehatan gigi mulut, perilaku kesehatan gigi mulut, dan status gigi lansia di panti wreda Surakarta. J Surya Masy 2021; 3:86–94.

Agustina L, Suharja ES, Nugroho C. Perilaku pemeliharaan kesehatan gigi dan mulut dengan status periodontal lansia penderita diabetes melitus. J Ilm Keperawatan Gigi 2024; 5: 28–34.

Ratmini NK, Arifin. Hubungan kesehatan mulut dengan kualitas hidup lansia. J Ilmu Gizi 2011; 2: 139–47.

Perkasa RDP, Rahmi E, Ilmiawati I. Hubungan antara kehilangan gigi dan kesehatan gigi dengan kualitas hidup lansia di Puskesmas Lubuk Buaya Kecamatan Koto Tangah. Andalas Dent J 2018; 6: 42–8.