

Cardiological, dental profile and quality of life related to oral health of patients with history of rheumatic fever

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Abstract:

Objective: This study aimed to characterize the cardiological and dental profiles of patients with rheumatic fever (RF) and assess the impact on their oral health-related quality of life (OHRQoL). **Methods:** A cross-sectional study was conducted from March to December 2023. Clinical analysis included the DMFT index and OHI-S, along with medical record review, economic stratification (Brazilian Association of Research Companies questionnaire), panoramic radiographs, and OHRQoL assessment (OHIP-14). Participants were patients followed at the Rheumatic Fever League, Heart Institute, University of São Paulo Medical School. **Results:** The study included 83 predominantly female patients (90.4%), with a mean age of 47 years. Most were Afro-Brazilian (61.4%) and from lower-middle economic classes with limited education. Rheumatic heart disease (RHD) was present in 97.5%, mainly affecting the mitral valve. Infective endocarditis was observed in 6%. The mean DMFT was 19.6, with an average of nine missing teeth. The OHI-S was satisfactory in 50%. Among 52 radiographed patients, 55.7% had dental caries, 78.8% had periapical lesions, and 76.8% were at moderate to high risk of periodontal disease. Despite poor oral health indicators, OHRQoL scores showed minimal impact. **Conclusion:** Despite significant oral health issues, these did not substantially impact the OHRQoL of the studied population.

Keywords: Rheumatic fever; Rheumatic heart disease; Oral health; Oral health-related quality of life.

INTRODUCTION

Rheumatic fever (RF) is an autoimmune disease that develops secondary to a non-suppurative tonsillitis infection caused by Lancefield group A beta-hemolytic streptococcus, in a susceptible host^{1,2}. Clinically, RF presents with polyarthritis, cardiac involvement leading to valve damage, fever, and, in some cases, Sydenham's chorea¹. As the valve lesions progress, rheumatic heart disease (RHD) may develop, potentially resulting in rheumatic heart failure, atrial fibrillation, ischemic embolic events, and a heightened risk of infective endocarditis (IE)^{1,2}.

According to the 2021 Cardiovascular Statistics in Brazil, RHD is the leading cause of valve disease in the country³. The mitral valve is most commonly affected, and stenosis is present in 90% of cases and regurgitation

Statement of Clinical Significance

The oral health of the population with a history of rheumatic fever has been shown to be precarious, highlighting the importance of oral care and the creation of preventive dental measures for those at high risk of Infective Endocarditis.

in 55 to 60%³. Predisposing factors for RF include a low socioeconomic status, age range of 5 to 14 years, and genetic susceptibility^{1,4}. Although both sexes are equally affected by RF, RHD is more prevalent in women¹.

IE, although rare, is a significant concern in dentistry because of the oral cavity's role as a reservoir for microorganisms and a potential site for opportunistic infections. Among patients with RHD, 10 to 15% of IE cases stem from oral foci of infection, influenced by oral hygiene, socioeconomic factors, and oral health conditions⁵⁻⁷.

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Given the medical and dental implications of RHD, it is crucial to understand the medical and dental profiles of patients with RF in the Brazilian population, as well as the impact of oral health-related quality of life (OHRQoL). Such an understanding could encourage the development of preventive dental care protocols for this population, thereby reducing the risk of IE among patients with a history of RF and RHD in Brazil. Thus, this study aimed to characterize the cardiological and dental profiles of patients with RF and/or RHD, and to assess the impact on their OHRQoL.

METHODS

This cross-sectional study utilized clinical evaluations, a medical records review, and questionnaires administered to participants enrolled in the League to Combat Rheumatic Fever at the Heart Institute of the Hospital das Clínicas, Faculty of Medicine, University of São Paulo. Data collection occurred between March and December 2023.

Sample

The study sample comprised individuals aged 18 years and older who were consecutively evaluated at the Rheumatic Fever League, with a documented diagnosis of RF and/or RHD through the application of the Jones Criteria⁸. Patients over 18 years of age with neuropsychomotor impairments that precluded their ability to provide informed consent, participate in interviews, or comprehend oral hygiene instructions were excluded from the study. All participants were verbally informed about the study's objectives, associated risks, and the epidemiological nature of the research, which precluded the provision of dental treatment.

Patient identification, demographic data, habits, and medical and dental history

Data were collected from information recorded in the electronic medical records at the patients' last medical appointment. Collected information included demographic data, cardiac diagnosis, affected anatomical structures and/or devices, comorbidities, history of cardiac surgery, and previous episodes of IE.

Additionally, after their medical evaluation by the Rheumatic Fever League, the patients were interviewed to gather further information, including marital status, self-declared ethnicity and occupation.

Dental history was also assessed, including the timing of the last dental visit- if it occurred in the last

6 months, 1 year ago, between 2 and 3 years ago or more than 3 years ago-, access to dental care — report of difficulty in accessing dental care due to general health condition-, and oral hygiene practices such as brushing frequency — once, twice, three times or more-, flossing, and mouthwash use.

Socio-economic assessment

The socio-economic assessment used a validated socio-economic questionnaire endorsed by the Brazilian Association of Research Companies (BARC) for the Brazilian Economic Classification Criterion (BECC)⁷. This questionnaire evaluates factors including education level, presence of comfort items in the household, estimated family purchasing power, and access to public services such as piped water and paved streets. Each response was categorized and coded according to the points and cutoffs provided by the BARC, allowing for the determination of each participant's economic class (Supplementary Table 1).

OHRQoL

The OHRQoL of the patients was assessed using the validated Portuguese version of the Oral Health Impact Profile-14 (OHIP-14) questionnaire, a condensed version of the 49-question OHIP-49 questionnaire⁹. The OHIP-14 includes 14 questions designed to evaluate perception across 7 conceptual domains: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and social disadvantage. Participants were asked to indicate the frequency of each event over the past 6 months using a 5-point Likert scale: never (0), almost never (1), occasionally (2), quite often (3), and often (4). Average scores were calculated for both the overall study population and age groups defined by the Brazilian Institute of Geography and Statistics (IBGE). The total questionnaire score ranges from 0 to 56, with higher scores indicating a greater impact of oral health on daily life and thus poorer OHRQoL.

Clinical and radiological dental assessment

The clinical examination involved assessment of the average number of decayed, missing, and filled teeth (DMFT index) and the Simplified Oral Hygiene Index (OHI-S). It was conducted under artificial white light directed at the oral cavity, with the patient seated in a conventional chair. The assessor stood facing the patient for optimal visualization of the oral cavity¹⁰.

Table 1. Demographic characteristics and economic classification of the study sample (n=83).

Demographic data	n	%
Sex		
Female	75	90.4
Male	8	9.6
	83	100
Age range (years)		
20–29	2	2.4
30–39	18	21.7
40–49	31	37.3
50–59	22	26.5
60–69	7	8.4
70–79	3	3.6
	83	100
Ethnicity		
White	31	37.3
Black	10	12.0
Brown	41	49.4
Indigenous	0	0.0
Asian	2	2.4
	83	100
Nationality		
Brazil	82	97.6
Chile	1	1.2
	83	100
Birthplace		
São Paulo	42	50.6
Bahia	20	24.1
Minas Gerais	4	4.8
Ceará	3	3.6
Paraná	3	3.6
Pernambuco	3	3.6
Piauí	2	2.4
Sergipe	1	1.2
Acre	1	1.2
Espírito Santo	1	1.2
Maranhão	1	1.2
Paraíba	1	1.2
-	1	1.2
	83	100
Economic classification		
A	1	1.2
B1	1	1.2
B2	18	21.7
C1	31	37.3
C2	25	30.1
D–E	7	8.4
	83	100

The DMFT index for permanent teeth was obtained following the World Health Organization methodology¹⁰. This involved identifying decayed teeth (D), missing teeth or those requiring extraction (M), and filled teeth (F), which were then summed to determine the individual DMFT index. The average DMFT index was calculated by summing the DMFT index of each individual and dividing by the number of participants in each age group (i.e., in 10-year intervals from 20 to 79 years of age), based on the Brazilian Population Projection conducted by the BIGS¹¹. The DMFT index was classified as very low (0.0–1.1), low (1.2–2.6), moderate (2.7–4.4), high (4.5–6.5), and very high (≥ 6.6), both for the total sample and for each age group.

Dental plaque was assessed using the OHI-S¹². Plaque evidence was recorded based on the extent of coverage on specific teeth and surfaces. Quantitative indices were classified as good, fair, or poor. Following the assessment, patients received an oral hygiene kit containing a toothbrush and fluoridated toothpaste, along with an illustrative folder demonstrating the modified Bass technique and dental floss use¹³.

Panoramic radiographs were analyzed to assess the total tooth count, caries, periodontal conditions, restorations, endodontic treatments, and bone loss^{14,15}. Despite its inherent limitations, panoramic radiography of the jaws was selected for the radiographic analysis in this study, as it was the only digital imaging modality available at the hospital facility where the research was conducted.

The criteria for radiographically categorizing all teeth in relation to periapical lesions were based on the “Periapical Index” classification proposed by Ørstavik et al.¹⁶, and later modified and described by Hommez et al.¹⁵. Images corresponding to scores 3, 4, and 5, as defined by this tool, were considered. When applied to teeth with more than one root, the root with the highest severity was taken into account.

For the radiographic analysis of alveolar bone loss, the Periodontal Bone Loss Index developed by Tiller et al.¹⁷, was applied. The recorded measurements were calibrated and configured in millimeters using ImageJ software, version 1.51c (National Institutes of Health, Bethesda, MD). The posterior teeth with the most severe bone loss were identified and analyzed, and the following formula was applied: $\{[(JEC-ABC)/(JEC-A)] \times 100\}$, where JEC is the cemento-enamel junction, ABC is the alveolar crestal bone junction, and A is the root apex. The obtained value was normalized by the patient’s age (in years), and the resulting index was used to classify

the individual's risk of periodontal disease according to the scale proposed by the authors¹⁷.

Statistical analysis

The statistical analysis was performed using absolute numbers, means, and medians, with frequencies displayed as percentages.

Ethical aspects

All patient data were handled in accordance with research ethics guidelines. This study received approval from the Research Ethics Council under number 66423323.9.0000.5418.

RESULTS

Demographic data

A total of 83 patients participated in the study, including 75 women and 8 men. Of these patients, 81 (97.5%) were diagnosed with RHD. The mean age of the sample was 47 years, with a median age of 45 years. Most patients were from the states of São Paulo (n=42, 50.6%) and Bahia (n=20, 24.1%), with only one patient being Chilean. Regarding ethnicity, 49.4% identified as Brown and 37.3% as White. According to the BIGS classification, which combines Black and Brown categories, 61.4% of the population identified as Black.

The sample was stratified using the BARC questionnaire, revealing higher percentages for economic classes C1 (37.3%) and C2 (30.1%). In terms of education, 38 patients (45.8%) reported that the head of the family had completed secondary school, while approximately 19% (n=16) had completed primary school II or had not finished secondary school. Only 12 patients (14.5%) reported completing higher education, while 11 patients (13.3%) had completed primary school I or had not completed primary school II, and 6 patients (7.2%) were either illiterate or had not completed primary school I. Additionally, 3.6% of the sample (n=3) reported lacking access to piped water or paved roads. Further demographic characteristics and economic classifications of the participants are detailed in Table 1.

Medical profile

Eighty-one patients (97.5%) presented with some form of valvular heart disease (Table 2), while only 2 patients did not exhibit cardiac sequelae of RF. Mitral-aortic lesions were reported in 20.9% of patients, followed by mitral insufficiency and double mitral lesions, each

accounting for approximately 13.0%. The mitral valve and the mitral-aortic combination were the most common, with frequencies of 40.8% and 29.1%, respectively, among the 83 patients. Thirty-three patients (39.8%) underwent heart surgery. However, detailed descriptions of cardiac device usage were lacking, with only 7.2% of patients (n=6) having a biological prosthesis in the aortic valve position, 6.0% (n=5) having a mechanical prosthesis in the mitral valve position, and 4.0% (n=4) having a biological prosthesis in the mitral valve position. Among the 83 patients, only 5 had a history of IE, and 27.7% (n=23) still received benzathine penicillin G every 21 days for secondary prophylaxis of RF.

Regarding comorbidities, systemic arterial hypertension, dyslipidemia, and hypothyroidism were reported in 32.4%, 17.1%, and 9.5% of patients, respectively. Table 3 presents the cardiological aspects of the study participants, including the affected valves, cardiac devices, and occurrences of IE. Table 4 displays the most common comorbidities.

Dental profile

Regarding habits and professional care related to oral health, nearly half of the sample (49.4%) reported consulting a dental surgeon or receiving dental treatment within the last 6 months, while 21.7% visited a professional more than 3 years ago. Twenty-two patients (26.5%) reported difficulty accessing dental care at some point in their lives because of their general health history.

Approximately 51% (n=43) of the patients reported practicing oral hygiene three times a day or more, while 43.4% (n=36) brushed their teeth twice a day, and only 4 individuals brushed once a day. Additionally, 48.2% (n=40) of the sample reported daily use of dental

Table 2. Distribution of identified valve diseases.

Valvulopathies	n	%
Mitral lesion	35	33.33
Mitral insufficiency	14	13.33
Mitral stenosis	7	6.67
Double mitral lesion	14	13.33
Aortic lesion	8	7.62
Aortic insufficiency	7	6.67
Double aortic lesion	1	0.95
Mitral-aortic lesion	22	20.95
Others	40	38.10
Total	105	100

floss, 25.3% (n=21) used it sporadically, and 22 patients reported not flossing at all. Mouthwash was not used by 57.8% (n=48), while 24.1% (n=20) used it daily and 18.1% (n=15) used it occasionally.

The DMFT index for this sample was 19.6. When analyzed by age group, the average indices were 23.8, 25.6, and 26.7 for the age groups 50–59 years, 60–69 years, and 70–79 years, respectively. The lowest DMFT

index (6.0) was observed in the age group 20–29 years (Figure 1). The average number of decayed teeth, missing teeth, and filled teeth in the total sample was 1.3, 9.0, and 9.2, respectively.

Oral hygiene according to the OHI-S classification was considered good in 50.0% of the sample (n=40), regular in 43.8% (n=35), and poor in only 5 patients. Three patients were edentulous; thus, the OHI-S was not applied.

Analysis of oral infection foci using panoramic radiographs was possible for 52 patients who underwent radiographic examination, revealing an infection focus in 98% of these patients. In total, 1907 teeth were assessed; of these, 15.3% (n=292) showed bone loss, 3.6% (n=68) had caries in dentin without pulp involvement, 7 had caries with pulp involvement, 1.2% (n=23) had an enlarged pericementary space, and 10 had furcation lesions. The other oral foci found are detailed in Table 5.

Regarding apical periodontitis, based on the Periapical Index, 31.3% (n=25) of patients with teeth (n=51) had periapical alterations scored between 3 and 4, with an average of 0.4 teeth scored as 3 and an average of 0.2 teeth scored as 4. We identified 31.3% of patients with periapicopathies scored as 2, with an average of 0.6 teeth. No teeth were found to have periapicopathy corresponding to a score of 5. The number of patients with teeth showing periapicopathy based on radiographic image scores is shown in Figure 2. In some cases, the same patient had more than one periapical lesion or teeth with different scores.

Regarding the bone loss index, 38.4% (n=20) were at high risk and 38.4% (n=20) were at moderate risk. The average age of patients at high risk was 54.3 years (median, 48 years), and that of patients at moderate risk was 45.1 years (median, 45 years). Twenty-three percent of the patients were at low risk, with a mean age of 43.3 years and a median of 46 years (Figure 3).

OHRQoL

Patients' OHRQoL was assessed using the OHIP-14 questionnaire, focusing on the 6 months preceding the questionnaire administration. The mean scores for the functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and social disadvantage domains were 0.42, 1.69, 1.57, 1.14, 1.05, 0.78, and 0.83, respectively, for the overall study population.

Analysis of OHRQoL by age group (Table 6) revealed higher mean scores in the domains of physical pain (2.28), physical disability (1.72), social disability

Table 3. Cardiologic characteristics of the study sample.

Damaged valve	n	%
Aortic	7	6.8
Mitral	42	40.8
Mitral-aortic	30	29.1
Tricuspid	24	23.3
Total	103	100
Devices	n	%
Mechanical aortic prosthesis	1	1.2
Aortic biological prosthesis	6	7.2
Mitral biological prosthesis	4	4.8
Mitral-aortic biological prosthesis	2	2.4
Mechanical mitral prosthesis	5	6.0
Mitral-aortic mechanical prosthesis	2	2.4
Others	2	2.4
No cardiac devices	61	73.5
Total	83	100
Infective endocarditis	n	%
No	78	94.0
Yes	5	6.0
Total	83	100

Table 4. Distribution of clinical comorbidities.

Comorbidities	n	%
Systemic arterial hypertension	34	32.4
Dyslipidemia	18	17.1
Hypothyroidism	10	9.5
Depression	9	8.6
Generalized anxiety disorder	9	8.6
Stroke	8	7.6
Rheumatoid arthritis	5	4.8
Epilepsy	5	4.8
Osteoarthritis	3	2.9
Fibromyalgia	2	1.9
Diabetes mellitus	1	1.0
Hepatopathy	1	1.0
Total	105	100

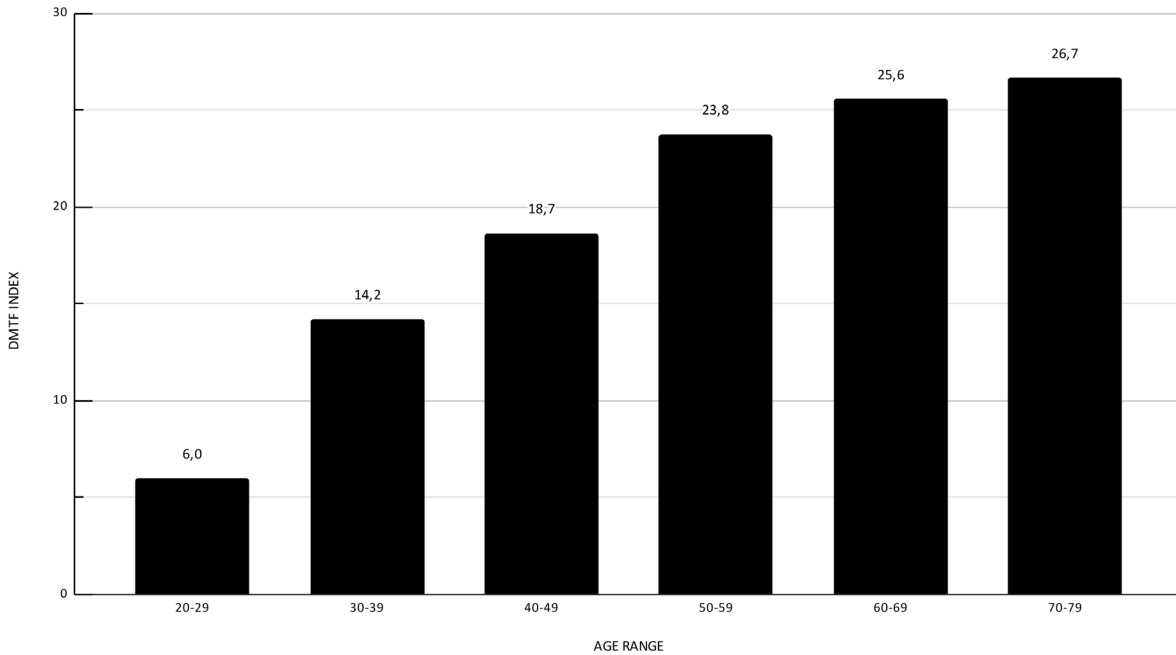


Figure 1. Decayed, missing, and filled teeth index by age group.

Table 5. Radiographically analyzed foci of oral infections.

Focus of oral infection	n	%	Average	Median
Dentin caries	68	3.6	1.31	1.0
Dentin/pulp caries	7	0.4	0.13	0.0
Residual root	6	0.3	0.12	0.0
Apical periodontitis	57	3.0	1.10	0.0
Furcation lesion	10	0.5	0.19	0.0
Enlarged pericementary space	23	1.2	0.44	0.0
Root resorption	2	0.1	0.04	0.0
Bone loss	292	15.3	5.62	5.0
Semi-included third molar	10	0.5	0.19	0.0
Total	475			
Total number of teeth analyzed	1907			

(1.17), and social disadvantage (1.11) among individuals aged 30–39 years. Psychological disability (1.41) was more pronounced in those aged 50–59 years, while the 70–79 year age group exhibited greater functional limitation (1.67) and psychological discomfort (3.00). Each domain of the questionnaire has a maximum score of 8 points, with scores closer to this maximum indicating a greater impact on patients' quality of life.

DISCUSSION

This cross-sectional study primarily included a female population (90.3%), consisting predominantly of

middle-aged adults, with a mean age of 47 years, who presented significant cardiac complications resulting from RF, including a high incidence of IE. This aligns with existing literature suggesting that while the sex distribution of RHD is similar up to the age of 15 years, women are more severely affected as they age, although the reasons for this remain unclear¹⁸. Despite their unsatisfactory oral health, OHRQoL did not appear to be significantly affected, raising concerns about the lack of awareness regarding the importance of maintaining oral health.

Most participants self-identified as Black and were categorized within economic classes C1 and C2

according to the BARC stratification. Approximately 45% had completed primary school, while 7.2% were illiterate or had not completed primary school, indicating a generally low level of education and limited access to information. Despite the scarcity of robust epidemiological studies in low- and middle-income

countries, there is consensus regarding the high prevalence of RHD in impoverished and marginalized populations¹⁸. Environmental and socioeconomic factors, such as overcrowded living conditions, malnutrition, education, and limited access to healthcare, are closely associated with RF^{19,20}.

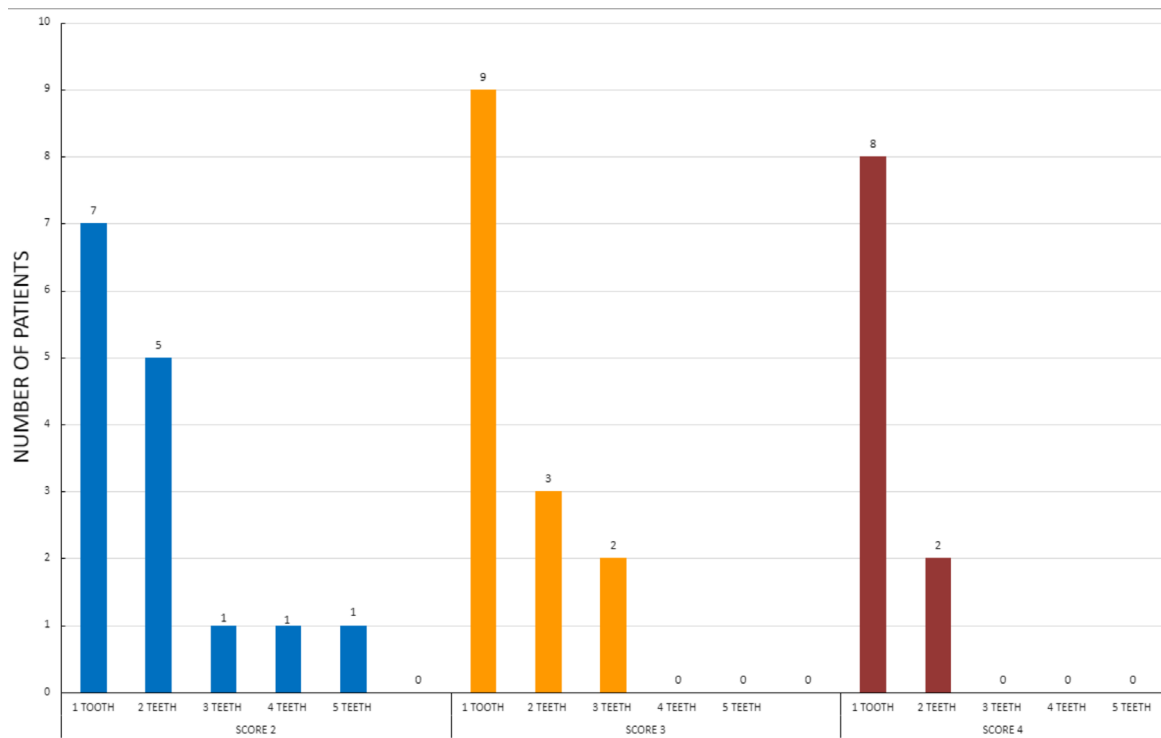


Figure 2. Number of patients and number of teeth with apical periodontitis scores of 2, 3, and 4 in the periapical index, applied to radiographic images.

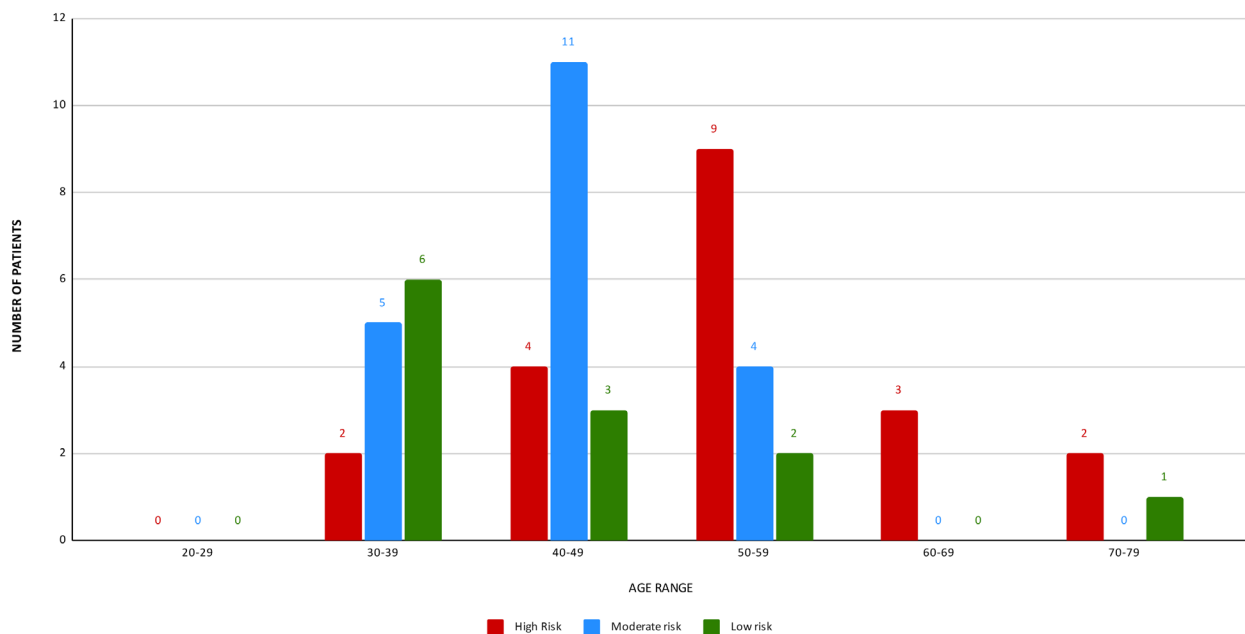


Figure 3. Bone loss according to age range and classified by risk for periodontal disease.

Table 6. Oral health-related quality of life based on mean score for each domain of OHIP-14 by age group (years).

Age range	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Domain 7
General	0.42	1.69	1.57	1.14	1.05	0.78	0.83
20–29	0.00	0.00	1.00	0.00	0.00	0.00	0.00
30–39	0.56	2.28	2.00	1.72	1.22	1.17	1.11
40–49	0.19	1.48	1.32	0.94	0.90	0.81	0.94
50–59	0.45	1.91	1.64	1.23	1.41	0.86	0.77
60–69	0.57	0.71	0.86	0.71	0.43	0.00	0.43
70–79	1.67	2.00	3.00	1.00	1.00	0.00	0.00

The highest prevalence rates of RHD in Brazil are concentrated in the northern and northeastern regions³, which typically have a lower Human Development Index and sparse population density, leading to limited access to healthcare services. Residents often face challenges such as long distances and transportation difficulties when trying to reach public health facilities²¹. In this study, most participants were from São Paulo (southeast region) and Bahia (northeast region), aligning with national epidemiological trends. However, the study was conducted at a specialized cardiac care center in São Paulo, which explains the predominance of individuals from São Paulo in the sample.

Regarding the medical profile, 97.5% of the study population presented with valvular heart disease, either involving native valves or as users of valve prostheses. The mitral valve was most commonly affected, either alone or in combination with aortic valve lesions. Chronic damage to the mitral valve is strongly associated with the sequelae of RF, particularly stenosis and regurgitation^{3,22}. In this sample, mitral insufficiency and double mitral lesions were the most prevalent valve disorders observed. Notably, within the Brazilian Unified Health System, 50% of valve surgeries are related to RHD. In this study, approximately 39% of patients had undergone corrective or replacement valve surgery.

RHD is recognized as a predisposing factor for IE. In this study, five patients (6% of the total), all female, had a history of IE with unspecified etiological agents. Although IE predominantly affects older men, particularly those over the age of 65 years²², this study revealed a notable occurrence of IE within the cohort. Globally, IE rates range from 0.01% to 0.02% per year, equating to approximately 10 to 20 cases per 100,000 inhabitants annually²³. A study by Montano et al.²⁴, conducted at the same institution, showed that 51.9% of patients with valvular heart disease who developed IE due to oral bacteria also had RHD.

Hypertension and dyslipidemia were the most prevalent comorbidities, affecting 34 and 18 patients, respectively. This is consistent with the broader landscape of cardiovascular diseases in Brazil, where systemic arterial hypertension is one of the most common conditions, affecting approximately 43.2 individuals per 1,000 annually. According to the Global Burden of Disease Study 2019, the mortality rate attributed to systemic arterial hypertension increases significantly with age, peaking at 104.8 per 100,000 inhabitants³.

In assessing oral health, the DMFT index of the study sample was notably high at 19.6. This was especially clear when stratified by age group, with higher values observed in older age groups, particularly those aged 50–79 years. This indicates a compromised oral health status. These findings are consistent with a recent study of the Brazilian population (SB Brasil-2023)²⁵, which reported an average DMFT index of 23.55 for individuals aged 65–74 years, however, with values significantly higher than those observed in the 33–44 age group, which reported an average DMFT index of 10.70. Although the DMFT index indicated poor oral health, 50.0% of the sample exhibited good oral hygiene during the clinical examination and 43.8% engaged in regular oral hygiene according to the OHI-S assessment. This can be attributed to the fact that more than half of the sample maintained satisfactory daily oral hygiene practices, brushing their teeth three times or more per day.

Supporting these findings, 55.7% of the 52 patients evaluated radiographically had at least one tooth with a carious lesion, with or without pulp involvement. It is estimated that approximately 34% of the world's population lives with untreated caries, and chronic oral diseases are closely related to a low socioeconomic status. In 2023, the SB Brasil survey showed that caries and periodontal disease were the most prevalent oral diseases in the population, as observed in the present sample, with caries more common in children and adolescents and periodontal disease more severe in adults over 35 years of age²⁵.

Apical periodontitis, indicated by scores of 3 and 4, was observed in 49% of the sample. Notably, while a score of 2 is not incorporated into the proposed methodology¹⁵, 31% of participants displayed radiographic evidence consistent with this score, highlighting the significant role of endodontic pathology as a potential source of infection within this subset of the studied population.

Limited research exists on the oral health status of individuals with a history of RF or RHD. A clinical investigation conducted in 2012 assessed 44 adult patients with severe RHD scheduled for cardiac surgery in an African hospital. The results revealed a poor plaque index in 31.8% of patients, with radiographic findings predominantly showing caries, periapical pathologies, and residual roots²⁶. Similarly, a cross-sectional study in Turkey demonstrated that children aged 5 to 12 years with acute RF or RHD exhibited higher rates of dental caries and poorer plaque indices than did healthy children, indicating suboptimal oral health²⁷.

These results highlight the severity of caries and periodontal diseases, which remain highly prevalent in the Brazilian population. This underscores the importance of non-pharmacological interventions, including improved access to basic sanitation, medical care, and dental services. In populations with valvular heart disease secondary to RF, these measures should be prioritized to ensure comprehensive care and timely definitive therapeutic interventions, given the high risk of infectious endocarditis⁹.

Overall, the study findings suggest that oral health conditions have a limited impact on OHRQoL. Higher mean values ranging from 2.9 ± 5.4 to 3.5 ± 6.8 were reported in a study comparing OHRQoL in patients with heart failure and ventricular assist devices, indicating relatively low impairment in this population. Both psychosocial impact and oral function domains were comparable between the two groups, with a slightly higher psychosocial impact in the ventricular assist device group (± 4.3)²⁸. In another study assessing OHRQoL in patients with periodontal disease and associated cardiovascular conditions, higher mean scores were observed in the physical pain domain (4.16) than in the psychological discomfort domain (0.57)²⁹. In our sample, physical pain (1.69) and psychological discomfort (1.57) demonstrated significant effects, reflecting the precarious oral health status observed and its potential implications.

While these findings may not be fully representative, they raise concerns regarding the oral health

status of this population. The lack of significant impact on quality of life may indicate reduced demand for dental care— a phenomenon that is directly associated with the normalization of severe oral diseases in contexts of low socioeconomic and educational levels, as observed in this sample. Consequently, the perception of the importance of oral health care may be distorted by the prominence of actual functional, psychological, and social limitations, leading to the persistence of oral health problems and, therefore, an increased risk of infective endocarditis.

Further clinical and epidemiological studies may be designed to investigate the extent to which the context of rheumatic fever and rheumatic heart disease influences patients' oral health, as well as how oral conditions may negatively affect their overall health.

Limitations

A portion of the sample did not undergo panoramic radiography of the jaws, limiting the ability to radiographically analyze potential foci of oral infection. Additionally, the periodontal condition was assessed radiographically due to the specific risk of infective endocarditis (IE) in the studied population, considering that the panoramic radiography was the only digital oral radiographic examination available within the hospital unit, thereby limiting the scope of the investigation. Given the objective of the study and its descriptive and exploratory nature, no specific associations or causal relationships were proposed in the analysis of the data obtained.

CONCLUSION

The results of our analysis, conducted on a sample of patients with a history of RF from a tertiary referral hospital in Brazil, revealed that the majority were middle-aged adults, predominantly female, of Black ethnicity, with low levels of education, and nearly all presented with RHD. These results underscore the importance of initiatives focused on the promotion and prevention of oral health, as well as the need for interdisciplinary and comprehensive care for these patients. Such care should include referrals across relevant specialties, given the high risk of infective endocarditis associated with oral bacteria in this population. Despite of challenging oral health context, our study did not find evidence of a significant impact of oral health conditions on the OHRQoL of these individuals.

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AUTHORS' CONTRIBUTIONS

MOB: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Writing – original draft, Writing – review & editing. GSS: Conceptualization, Supervision, Validation, Writing – review & editing. RFS: Writing – review & editing. ILIN: Validation, Writing – review & editing. RSN: Validation, Writing – review & editing. FT: Writing – review & editing. PAV: Writing – review & editing. ARSS: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – review & editing. TCPM: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – review & editing.

CONFLICT OF INTEREST STATEMENT

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Competing interests: The authors have no relevant financial or non-financial interests to disclose.

Ethics approval: This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee (no. 66423323.9.0000.5418).

DATA AVAILABILITY STATEMENT

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

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