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(ISSN: 2814-2098) RATSIMANDRESY NAOMY NAMBOARINTSOA[1]*

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" QUALITY OF LIFE RELATED TO THE ORAL HEALTH OF EDENTULOUS PATIENTS IN MAHAJANGA MADAGASCAR."

QUALITY OF LIFE RELATED TO THE ORAL HEALTH OF EDENTULOUS PATIENTS IN MAHAJANGA MADAGASCAR

Authors: RATSIMANDRESY Naomy Namboarintsoa[1], Rasoarivony Marie Angela[2], Razanadraisoa Albertine[1], EDWIN Constand Claudel[3], RALAIARIMANANA Liantsoa Fanja Emmanuel[1]

[1] :Dental prosthetics department at the Institutd'Odonto-Stomatologie Tropicale de Madagascar (IOSTM)
[2] :Private dental practice in Mahajanga
[3] :Public Health section at the Institutd'Odonto-Stomatologie Tropicale de Madagascar (IOSTM)

Correspondingauthor: RATSIMANDRESY Naomy Namboarintsoa, Dental prosthetics department at the Institutd'Odonto-Stomatologie Tropicale de Madagascar (IOSTM), University of Mahajanga Madagascar

Abstract

The aim of this study was to determine the relationship between quality of liferelated t oral health of edentulous patients and wearing dentures.

This was a cross-sectional, analytical study of 384 edentulous people, with or without dentures, in the city of Mahajanga Madagascar. The OHIP-14 score, the number of missing teeth, the edentulous area, the type of edentulous, the edentulous arch, whether or not a dental prosthesis was worn, the type of dental prosthesis and the quality of life were evaluated.

We observed that the majority (82.8%) of the study population did not wear dentures. Quality of life was related to the number of missing teeth, edentulous area type of edentulous according to the OHIP-14 score. People who wore dental prostheses had a better quality of life than those who did not.

It is vital to raise awareness of the need to wear dental prostheses and to provide information about the impact of edentulous on quality of life.

In the future, a longitudinal study will be necessary.

Key words: Edentulousness, prosthesis, quality of life, OHIP-14

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INTRODUCTION

Edentulousness is the condition of being missing teeth and is a public health problem because of its prevalence and handicap [1].

According to the World Health Organization's (WHO) 2022 report on oral health in the world, the global average prevalence of Edentulousness is almost 7% in people aged 20 or over. For people aged 60 or over, the estimated global prevalence is much higher, at 23% [2].

In high-income countries, the prevalence of Edentulousness is 10.5% on average, including 39% in North America, compared with 3% in less-developed countries [3].

In Madagascar, data on the prevalence of Edentulousness is still lacking, but the prevalence of common dental diseases (dental caries and periodontal disease), which are the main causes of Edentulousness, is very high, ranging from 80 to 98%, affecting both children and adults [4].

However, according to the available data, the rate of denture wearers is still low. In 2010, in Antsirabe, 63.3% of edentulous people had not their teeth restored [5]. In Fianarantsoa, a study conducted in 2016 found that 59.3% of edentulous people were not wearing dentures [6].

There are many causes of Edentulousness, such as untreated caries, periodontitis or periodontal disease and dental trauma. And Edentulousness can be disturbing in functional, aesthetic, social and above all psychological terms, all of which can have an impact on edentulous patients' quality of life.

The consequences of Edentulousness can be prevented or avoided by prosthetic restorations, which play important functional, aesthetic and psychological roles.

So, faced with all these situations, two questions arise: how is the quality of life of edentulous people in the town of Mahajanga? And does wearing a dental prosthesis improve their quality of life?

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The aim of this study was to determine the relationship between the oral health-related quality of life of edentulous people and the wearing of dental prostheses.

The specific objectives were to:

- describe the socio-demographic characteristics of the study population;

- identify the characteristics of edentulous patients in the study population;

- assess the oral health-related quality of life of edentulous patients;

- compare the oral health-related quality of life of the study population wearing dentures with that of the study population not wearing dentures;

MATERIALS AND METHODS

The study was carried out in the city of Mahajanga, Madagascar. Mahajanga is the largest city on the west coast and the capital of the Boeny Region, located at the mouth of the Betsiboka River on the Mozambic Channel. It is the most visited tourist town by foreigners and nationals thanks to its abundant landscape and its natural, maritime and mining resources.

Type of study

This was a cross-sectional analytical study.

Study period

Data was collected from March 2024 to June 2024.

Study population

The study population consisted of edentulous patients with or without dentures. Individuals who agreed to take part in the survey were included in the study. Those with incorrectly completed survey forms were excluded.

Sampling was accidental.

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The sample size was calculated using the classic Andersen formula

$$n = \frac{z^2 p(1-p)}{i^2}$$

n= sample size

z = confidence interval of 1.96

p = prevalence

i= margin of error = 0.05

As we had not found a well-defined prevalence of edentulousness for Madagascar, we used an arbitrary prevalence of 50%, i.e. p = 0.5.

$$n = \frac{1.96^2 \text{ x } 0.5\ (1-0.5)}{0.05^2} = 384.16$$

According to this formula, the sample size was 384.

Data was collected using a survey form containing a questionnaire to assess the quality of life linked to the oral health of edentulous people: the OHRQoL questionnaire, with the OHIP-14 score. The survey was carried out using a telephone equipped with the Open Data Kit (ODK) collect version 1.17.2 application.

Study variables

These included:

1. independent variables such as

- variables related to the sociodemographic profile of the patients such as: age, gender, profession.

- variables related to the characteristics of the edentulous tooth such as: number of missing teeth, arch involved, edentulous sector (anterior, posterior, anterior and posterior), classification of the edentulous tooth, wearing of dental prostheses, type of dental prosthesis.

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2. The dependent variable was quality of life: this was assessed using the OHIP-14 score

. High OHIP-14 scores indicate a deterioration in quality of life, whereas low scores indicate a better quality of life [7].

Data analysis

Once the data had been extracted from the ODK database, they were processed and analyzed on a computer using Statistical Package for the Social Sciences (SPSS) version 25.0 for Windows. Descriptive statistics such as mean, standard deviation and frequency were used to analyze the data. Independent "t" and ANOVA tests were performed to compare means between continuous variables, and the Chi-square test for categorical variables, with a level of statistical significance of $p<0.05$.

RESULTS

Table I: Distribution of the study population by socio-demographic characteristics

Socio-demographic characteristics	N	%	
Age			Minimum age = 18 years
Under 50years	297	77.3	Maximum age = 89 years
50 yearsand over	87	22.7	Averageage = 37.6±15.16 years
Gender			
Male	141	36.7	Sex-ratio = 0.58
Female	243	63.3	
Occupation			
Primarysector	83	21.6	

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Secondarysector	44	11.5
Tertiarysector	154	66.9
Total	384	100.0

N: numbers

%: percentages

Table I provides information on the socio-demographic characteristics of the study population. In terms of age, the study population ranged from 18 to 89 years, with an average age of 37.6 ± 15.16 years. The under-50 age group was in the majority (77.3%).

In terms of gender, 63.3% were women, with a sex ratio of 0.58.

In terms of occupation, 66.9% of respondents worked in the tertiary sector.

Table II: Distribution of the study population according to edentulous characteristics

Edentulous characteristics	N	%	
Number of missingteeth			
1 to 5 teeth	295	76.8	
6 to 10 teeth	44	11.5	Mean number of missing teeth = 4.89±5.32 teeth
More than 10 teeth	45	11.7	
Edentulousarch			
Maxilla	73	19.0	
Mandible	109	28.4	
Both arches	202	52.6	

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Edentuloussector		
Anterior	28	7.3
Posterior	260	67.7
Antero-posterior	96	25.0
Type		
Partial	351	91.4
Total	9	2.3
Subtotal	24	6.3
Classification		
Class I	52	13.5
Class II	47	12.2
Class III	262	68.2
Class IV	23	6.0
Total	384	100.0

Table II provides information on the characteristics of edentulousness: 76.8% of the study population had between one and five missing teeth, and the average number of missing teeth per person was 4.89±5.32 teeth. The edentulousness mainly affected the two arches, with a percentage of 52.6%. The posterior sector was the most common, with a percentage of 67.7%. As for the type of Edentulousness, partial edentulousness was in the majority at 91.4%. And according to the classification, class III edentulousness predominated at 68.2%.

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Table III: Distribution of the study population according to the mean OHIP-14 score and the number of missing teeth

Number of missing teeth	Mean OHIP-14 score	F	p
1 to 5 teeth	7.6 ± 6.4		
6 to 10 teeth	10.2 ± 5.9	26.8	0.000***
More than 10 teeth	15.6 ± 10.6		
Total	8.8 ± 7.4		

Depending on the number of teeth missing, those with one to five teeth missing had a mean OHIP-14 score of 7.6 ± 6.4. Those with six to ten teeth missing had an average OHIP-14 score of 10.2 ± 5.9. And those with more than ten missing teeth had a mean OHIP-14 score equal to 15.6 ± 10.6. This result is highly statistically significant (F = 26.8; p = 0.000) (Table III).

Table IV: Distribution of the study population according to the mean OHIP-14 score by edentulous area

Edentulous area	Mean OHIP-14 score	F	p
Anterior	10.2 ± 8.1		
Posterior	7.5 ± 6.4	14.8	0.000***
Anterior and posterior	12.1 ± 8.6		
Total	8.8 ± 7.4		

Compared to the edentulousarea, thoseedentulous in the anteriorsectoralonehad a mean OHIP-14 score equal to 10.2 ± 8.1; thoseedentulous in the posteriorsectorhad a mean score equal to 7.5 ± 6.4 and thoseedentulous in both the anterior and

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posteriorsectorshad a mean OHIP-14 score equal to 12.1 ± 8.6. This resultwashighlysignificant (F = 14.8; p = 0.000) (Table IV).

Table V: Distribution of study population according to mean OHIP-14 score and denture wear

Denture wear	Mean OHIP-14 score	t	p
Yes	7.4 ± 6.8		
No	9.1 ± 7.4	3.1	0.03*
Total	8.8 ± 7.4		

Concerning denture wearing (table V), thosewhowore dentures had a mean OHIP-14 score equal to 7.4 ± 6.8, and thosewhodidn'thad a mean score equal to 9.1 ± 7.4. This result is statistically significant (p = 0.03).

DISCUSSION

Socio-demographiccharacteristics

The study population was predominantly female (63.3%). The averageage was 37.6 ± 15.16 years, with thoseaged 50 and over accounting for 22.7% of cases. And in terms of occupation, those who worked in the tertiary sector predominated (63.3%).

In a similar study carried out in Poland in 2022, a sample of 1,112 participants aged between 20 and 79 was drawn. Of these, 54.85% were women. Nineteen-point eighty-seven percent (19.87%) of participants were over 65. The average age was 48.72. A large majority (65.20%) worked in the tertiary sector [8].

Characteristics of Edentulousness

Our study population had an average of 4.89±5.32 missing teeth per person. This is significantly lower than the mean number of missing teeth found by Ratsimandresy and *al*. in Fianarantsoa in 2016, which was 8.57 [6], and that found by Rodakowska and

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al. In Poland in 2022, which was equal to 7.88 [8]. On the other hand, this average was roughly equal to that found by Mbodj and *al*. In Senegal in 2011, which was 4.4 [9].

According to the KENNEDY classification, class III was the mostfrequent, with a percentage of 68.2%. This value is higher than that found by Bouassaloand*al*. in 2023, KENNEDY class III was 75.2% of edentulous arches [10].

Edentulousness and denture wear

In ourstudy, only 17.2% of the study population wore dentures. This is consider ably lower than the 62.0% found by Malicka et al. [11]. In 2016, Ratsimandresy and *al*. suggested that the number of missing teeth was a factor in denture wear. Indeed, the greater the number of missing teeth, the greater the motivation to have dentures [6].

Moreover, in a 2014 study in Senegal, Gueye and *al*. reported the same finding, that edentulous patients with dentures were made up of those with more than nine missing teeth, and that only 9.8% of patients with one to four missing teeth had under gone prosthetic restoration [12].

In fact, the OHIP-14 score riseswith the number of missing teeth; in other words, the higher the number of missing teeth, the worse the quality of life related to oral health. The same finding was made by Anbarserri and *al*. who found that patients with tooth loss in categories 1-5, 6-10 and>10 hadmean OHIP-14 scores of 10.51 ± 10.36, 13.46 ± 10.06 and 21.46 ± 14.41 respectively. A statistically significant difference in OHIP-14 score was observed between the different categories of tooth loss ($p = 0.005$). Participants with more than 10 teeth lost had significantly higher OHIP-14 scores than those in categories 1-5 and 6-10 ($p<0.05$). They concluded that the greater the tooth loss, the higher the OHIP-14 score and the greater the damage to oral health [13].

Edentulous area

Depending on the edentulous area, those with anterior and posterior edentulousness had higher mean OHIP-14 scores than those with anterior or posterior edentulousnessa lone. And it was anterior edentulousness that was associated with

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poor quality of life. This result concurs with that of Imam and *al*. who found that one or more missing anterior teeth were significantly associated with higher OHIP-14 total scores (worse for oral health-related quality of life) (17.2 vs. 25.1; p = 0.04) [14].

Denture wear

According to denture wear, a significant difference in mean OHIP-14 score was found between those who wore dentures and those who did not (p = 0.03). Those who did had a better quality of life than those who did not. This result corroborates the findings of Kendeand *al*. In fact, they found that oral health-related quality of life improved rapidly in the month following prosthetic treatment (76% of patients)and showed further but moderate improvement in the 6 to 12 months following treatment in subjects wearing dentures, as indicated by the reduction in OHIP-14 scores [15].

The study by Fouda and *al*. also confirmed the same finding, stating that prosthetic treatment had a positive impact on oral health-related quality of life, which improved after treatment, particularly in the social domain. There is an association between prosthetic restoration in edentulous patients and the OHIP-14 score [16].

CONCLUSION

In this study, those with more than ten missing teeth had a mean OHIP-14 score equal to 15.6 ± 10.6. And those with dentures had a mean OHIP-14 score equal to 7.4 ± 6.8.

This study showed that wearing dentures improved oral health-related quality of life in edentulous patients.

Given that our study was a cross-sectional study, in the future, a longitudinal study will be considered with the aim of determining the evolution of the improvement in oral health-related quality of life in edentulous patients after prosthetic restoration.

Références

1. Coulibaly B, Kéita DB, Touré K, Kamissoko K, Diallo B, Traoré L et al. Assessment of dental prosthesisneeds in patients at the hepato-gastroenterology department of CHU-Gabriel. Available on https://www.revues.ml/index.php/msp/article/view/1795/1252.

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" QUALITY OF LIFE RELATED TO THE ORAL HEALTH OF EDENTULOUS PATIENTS IN MAHAJANGA MADAGASCAR."

2. World Health Organization, Global Oral Health Status Report. Non-communicable DiseasesDepartment, 20 Avenue Appia [online]. Availableon: https:/www.who.int /Heath-topics /oral-Heath. (Consulté le 10/07/23)

3. World HealthOrganization. World healthstatistics 2014. [Online]. Availableon : https://iris.who.int/bitstream/handle/10665/131954/9789240692688_fre.pdf;jsessionid=CDE9DAC80DDB40B9A8891BA39B83AA33?sequence=1

4. Ranivoharilanto E. Oral health in Madagascar: Current situation and outlook Available on :www.aoi-fr.org.

5. Rasoamanarivo N, RalaiairamananaLFE, Ramaroson J, RakotoAlson S, Ralison G. Treatmentwithremovable partial dentures in Antsirabe:proposals for improvement. ROSMEL. 2010 ; 1 :34-41

6. Ratsimandresy NN, Andriamamimalala MH, Rakotondratsara MA, Ralaiarimanana LFE. Knowledge, attitudes and practices of the population of the city of Fianarantsoa regarding the replacement of missingteeth. ROSMEL. 2020 ; 18 : 01-10

7. Slade GD, Spencer AJ. Development and evaluation of the oral health impact profile. Community Dent Health. 1994 ;11 :03–11

8. Rodakowska E, Jamiolkowski J, Baginska J, Kaminska I, Gabiec K, Stachurska Z, Kondraciuk M, Dubatowka M, Kaminski KA. Oral Health-Related Quality of Life and Missing Teeth in an Adult Population: A Cross-Sectional Study from Poland. Int J Environ Res Public Health. 2022 Jan 31;19(3):1626. doi: 10.3390/ijerph19031626. PMID: 35162649; PMCID: PMC8834766.

9. Mbodj EB, Diouf M, Faye D, Ndiaye A, Seck MT, Ndiaye C, Diallo PD. Prostheticrehabilitation: needsassessment in Senegalese dental practices. Bulletin de pathologie exotique. 2011 ;104(5) : 355-6.

10. Bouassalo KM, Adam S, Dabo PS, Hémou P, Kébina B, Béténora B, Fagbegnon OSA, Baglo FE, N'bouké BJ, Bissa H, Agoda PP, Gueye M. Profile of partial

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Edentulousnessaccording to the Kennedy-Applegate classification in a Lomé dental care facility (Togo). Rev Sen OdontolStomatolChir Maxillo-fac 2023 ;20(2) :56-60.

11. Malicka B, Skośkiewicz-Malinowska K, Kaczmarek U. The impact of socioeconomic status, general health and oral health on Health-Related Quality of Life, Oral Health-Related Quality of Life and mental health among Polish older adults. BMC Geriatr. 2022 Jan 3 ;22(1) :2. doi: 10.1186/s12877-021-02716-7. PMID :34979959 ;PMCID : PMC8722217

12. Gueye M, Mbodj EB, Dieng L, Thioune N, Toure A, Seck MT. Socio economic characteristics of patients rehabilitated with removable prostheses: a pilot study in an Odontology Department in Senegal. Rev IV Odonto-Stomatol.2014 ; 2(16) : 21-6.

13. Anbarserri NM, Ismail KM, Anbarserri H, Alanazi D, AlSaffan AD, Baseer MA, Shaheen R. Impact of severity of tooth loss on oral-health-related quality of life among dental patients. J Family Med Prim Care. 2020 Jan 28;9(1):187-191. doi: 10.4103/jfmpc.jfmpc_909_19. PMID: 32110588; PMCID: PMC7014884.

14. Imam AY. Impact of Tooth Loss Position on Oral Health-Related Quality of Life in Adults Treated in the Community. J Pharm Bioallied Sci. 2021 Nov;13(Suppl 2): S969-S974. doi: 10.4103/jpbs.jpbs_87_21. Epub 2021 Nov 10. PMID :35017909 ;PMCID : PMC8686957.

15. Kende D, Szabó G, Marada G, Szentpétery A. Protetikaiterápiáslehetoségekeletminoségregyakorolthatása [Impact of prosthetic care on oral health related quality of life]. FogorvSz. 2008 Apr ;101(2) :49-57. Hungarian. PMID : 18664095.

16. Fouda SM, Gad MM, Ellakany P, Zayat ME, AlGhamdi M, Abdelrahman H, El-Din MS. Impact of prosthetic rehabilitation on oral health-related quality of life of Saudi Adults: A prospective observational study with pre–post design. The Saudi Dental Journal 2024 (36) :1000–5.