Scientific Research Publishing

Open Journal of Stomatology, 2022, 12, 355-362
https://www.scirp.org/journal/ojst
ISSN Online: 2160-8717
ISSN Print: 2160-8709

Prosthetic Status of Partially Edentulous Congolese Adults and Causes of Non-Prosthetic Rehabilitation

Guyguy Mayunga[1*], Désiré Mashinda[2], Jean-Paul Sekele[1], Jacques Bolenge[3], Daniel Tokembe[1], Grevisse Bindele[1], Cedrick Makonko[1], Joseph Lutula[1]

[1]Dental Prosthesis Department, Faculty of Dental Medicine, University of Kinshasa, Kinshasa, DR Congo
[2]Public Health School of Kinshasa, Faculty of Medicine, University of Kinshasa, Kinshasa, DR Congo
[3]Periodontology Department, Faculty of Dental Medicine, University of Kinshasa, Kinshasa, DR Congo
Email: *guyguymayungam@gmail.com, *guyguy.mayunga@unikin.ac.cd

How to cite this paper: Mayunga, G., Mashinda, D., Sekele, J.-P., Bolenge, J., Tokembe, D. Bindele, G., Makonko, C. and Lutula, J. (2022) Prosthetic Status of Partially Edentulous Congolese Adults and Causes of Non-Prosthetic Rehabilitation. *Open Journal of Stomatology*, **12**, 355-362.
https://doi.org/10.4236/ojst.2022.1212032

Received: September 22, 2022
Accepted: December 19, 2022
Published: December 22, 2022

Abstract

Context: Prosthetic treatments for partial edentulism aim to restore or improve oral functions such as mastication, phonation and aesthetics. They have an impact on nutritional status, general health and quality of life. **Objectives:** To determine the frequency and determinants of wearing dental prostheses in partial edentulous Congolese adults as well as the reasons of prosthetic non-rehabilitation. **Methods:** Partial edentulous patients attending five medical-dental centers in Kinshasa were included in this cross-sectional study. Each patient completed a questionnaire and underwent a clinical examination. Chi-square test was used for searching associations between variables and logistic regression for determinants. The significance level was 0.05. **Results:** Three hundred partial edentulous patients with an average age of 40.3 ± 15.9 years participated in this study. 11% (CI: 7.5% and 14.5%) of partial edentulous Congolese adults wore a dental prosthesis. Age was the independent determinant of denture wearing. Young adults (under 30) were 5 times more likely to not wear dentures than older people. The absence of discomfort was the major reason for not prosthetic rehabilitation (32%) followed by finances (30%). **Conclusion:** Very few partially edentulous Congolese adults were prosthetics wearer. Age was the only determinant.

Keywords

Prosthetic Status, Determinants, Congolese

1. Introduction

Loss of teeth caused by oral diseases (in particular dental caries, periodontal dis-

eases, and others), can lead to an imbalance of the stomatognathic system, occlusal disorders, migration of neighboring teeth, extrusion of antagonistic teeth, and temporomandibular disorders [1] [2]. They can also affect some daily life activities such as speaking, smiling, chewing, taste and quality of life [1] [3]. Both removable and fixed dentures are standard treatments for tooth loss [4]. They aim to restore or improve oral functions such as chewing, phonation and aesthetics [1] [5]. These prosthetic devices preserve both teeth and residual oral structures [6]. Thus, they influence the nutritional status, general health and quality of life of edentulous people [7] [8]. Replacement of missing teeth with dentures is less common, especially in developing countries [9]. The prevalence of wearing dentures varies from country and from region within the same country. Indeed, in Malaysia nearly 37.7% of the population had dentures [10]. However, in China this prevalence was 4% [11] and in India varied from 1% to 17% [4] [12] [13] [14] [15]. Akinboboye and col. in 2014 and Olabasi and col. in 2012 in Nigeria found 11.4% and 14.5% of denture wearers, respectively[16] [5]. Prostheses were made more in women [17] [18] [19]. Denture costs and freedom from discomfort were linked to the low prevalence of dentures [4] [19]. Denture use reflects access to dental care. So collecting data on prosthetic status of the population is an important step in planning dental services for population health care [4] [8].

In Democratic Republic of Congo (DR Congo), data reflecting prosthetic coverage and influence of some factors on this coverage in adults are lacking.

Thus, the objective of this study was to determine frequency and determinants of wearing dental prostheses in partial edentulous Congolese adults as well as the reasons of prosthetic non-rehabilitation.

2. Methods

2.1. Type and Setting of Study

This multicenter cross-sectional study was conducted in five dental institutions in Kinshasa during the period from October 2019 to December 2020. This study was a part of a global assessment of partial édentulous on Congolese adults.

2.2. Study Population and Sample

Patients who were present at either location and met the inclusion criteria (age at least 18 years, with at least one missing tooth) were invited to participate in the study. Patients unable to answer to questionnaire, with an acute dental problem were excluded. The convenient sampling methodology was adopted.

2.3. Data Collection

The patients completed a questionnaire containing the socio-demographic parameters, oral health status and prosthetic parameters. Then the trained investigators carried out clinical examination for checking presence of prosthesis and type of prosthesis worn.

Prosthetic status and reason of no prosthetic rehabilitation were our dependents variables. Sociodemographic characteristics such as age, gender, level of education and occupation were our independent variables.

2.4. Statistical Analysis

The data collected was analyzed in SPSS 20.0. The descriptive data were presented in form of tables of frequencies, means and standard deviations. The effects of each independent variable or their association with the dependent variables were assessed by Chi-square test and binary logistic regression. All statistical analyzes and confidence intervals were tested with a significance level of 0.05 ($\alpha = 0.05$).

2.5. Ethical Considerations

The study received approval of ethics committee of Public Health School of Faculty of Medicine of University of Kinshasa. Anonymity principle was respect during the collection, analysis and publication of results. Participants freely consented after be briefed about study.

3. Results

Three hundred partial edentulous patients, whose mean age was 40.3 ± 15.9 years, with extremes ranging from 18 to 87 years, participated in this study. Table 1 describes characteristics of study population. Women were more representative with a Sex ratio Female/Male of 1.48. Mature adults (30 to 59 years old) were majority (52.3%). 63.3% of participants had a higher level of education. 56% of patients had a regular paid job. Figure 1 shows that approximately one person on ten (11%) had a dental prosthesis. Confidence interval of prosthetic frequency varies between 7.5% and 14.5%. So majority (89%) of partial edentulous has never been prosthetically rehabilitated. Table 2 shows that of all socio-demographic factors,

Table 1. Sociodemographic characteristics of the study population.

Variables		n (300)	%
Gender	Male	121	40.3
	Female	179	59.7
Age	60 years and over	50	16.7
	30 to 59 years	157	52.3
	Under 30 years	93	31.0
Instruction	High level	190	63.3
	Primary or secondary	110	36.7
Occupation	Unemployed	130	43.3
	Employed	170	56.7

Legend: n: effective.

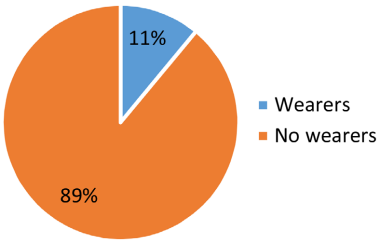

Figure 1. Prosthetic status of partial edentulous Congolese adults.

Table 2. Distribution of prosthetic status according to sociodemographic characteristics.

Variables		n (%)	Prosthetic Status		*p*
			Wearers n (%)	No wearers n (%)	
Gender	Male	121 (40.3)	12 (10)	109 (90)	0.05
	Female	179 (59.7)	22 (12)	157 (88)	
Age	60 years and over	50 (16.7)	9 (18)	41 (82)	**0.02**
	30 to 59 years	157 (52.3)	21 (13)	136 (87)	
	Under 30 years	93 (31.0)	4 (4)	89 (96)	
Instruction	High level	190 (63.3)	24 (13)	166 (87)	0.35
	Primary or secondary	110 (36.7)	10 (9)	100 (91)	
Occupation	Unemployed	130 (43.3)	13 (10)	117 (90)	0.52
	Employed	170 (56.7)	21 (12)	149 (88)	

Legend: n: effective.

Table 3. Determinants of no rehabilitation prosthetic.

Variable		*p*	OR (IC 95%)
Age		**0.03**	
	60 years and over		1.00
	30 to 59 years	0.42	1.42 (0.60 - 3.34)
	Under 30 years	0.01	4.88 (1.42 - 16.78)

Légende: OR: odd Ratio; IC: Intervalle de confiance.

only age was statistically associated with prosthesis wearing ($p < 0.05$). Prosthetic rehabilitation was more in old people (18%) and less in young adults (4%). Table 3 shows that age was the only independent determinant of prosthesis wearing. Compared to old people, young adults had a 5-fold increased risk of not wearing dentures. Figure 2 shows that main reason for not prosthetic rehabilitation was absence of discomfort (32%), followed by financial problems (30%) and lack of information (26%). Table 4 shows that reasons of no prosthetic rehabilitation were associated with education. Among patients at Primary or Secondary level, finances were the major reason (38%) followed by lack of information

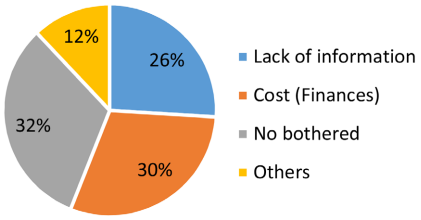

Figure 2. Reasons of no prosthetic rehabilitation.

Table 4. Distribution of reasons of no prosthetic rehabilitation according to sociodemographic characteristics.

Variables		Reasons of no prosthetic rehabilitation					
		n (261)	Lack of information n (%)	Costs (Finances) n (%)	No bothered n (%)	Others n (%)	*p*
Gender	Male	108 (41.4)	30 (27.8)	30 (27.8)	34 (31.5)	14 (13.0)	0.84
	Female	153 (58.6)	37 (24.2)	48 (32.4)	51 (33.3)	17 (11.1)	
Age	60 years and over	40 (15.3)	6 (15.0)	16 (40.0)	14 (35.0)	4 (10.0)	0.35
	30 to 59 years	13 (4.9)	36 (26.9)	38 (28.4)	40 (29.9)	20 (14.9)	
	Under 30 Years	87 (33.3)	25 (28.7)	24 (27.6)	31 (35.6)	7 (8.0)	
Instruction	High level	164 (62.8)	37 (22.6)	41 (25.0)	62 (37.8)	24 (14.6)	**0.01** *
	Primary or Secondary	97 (37.2)	30 (30.9)	37 (38.1)	23 (23.7)	7 (7.2)	
Occupation	Unemployed	114 (43.7)	28 (24.6)	35 (30.7)	40 (35.1)	11 (9.6)	0.71
	Employed	147 (56.3)	39 (26.5)	43 (29.3)	45 (30.6)	20 (13.6)	

Legend: n: effective.

(30.9%). But, in patients with a higher level of education, the major reason was absence of discomfort (37.8%), followed by finances 25%. Statistically a significant difference was found (p = 0.01). Gender, age and occupation were not associated with reason of no prosthetic rehabilitation.

4. Discussion

The objective of this study was to determine frequency and determinants of dental prosthesis in partial edentulous Congolese adults as well as reasons of prosthetic no rehabilitation. Of 300 participants, 11% (7.4% - 14.5%) had prostheses (**Figure 1**). This shows that a few number of Congolese population has access to various dental treatments other than dental extractions. Our results confirm those of studies conducted in Nigeria (11.4% and 14.5%) and India (8.1%) [5] [13] [16]. However, these results are much lower at 53.6% in Poland [2]. The results observed in DR Congo as in Nigeria and India reflect type of dental care based on the model of access on demand and third party payment. In European countries such as Poland, the mutual health system provides access to dental care to a large part of the population. In addition, study in Poland concerned only old people.

A slight female predominance on wearing prosthesis (12% of women and 10% of men) was observed but no statistical association was founded between gender and wearing prosthesis. This shows that aesthetic need of Congolese population was express in the same way in both sexes. Our results corroborate those of Joseph and col., George and col. in India and Borawska in Poland [14] [18]. However, they are contradictory with those of Zainab and col. who founded significant predominance of women [1]. In Shenoy and col. study's predominance was male [17]. In these last two studies, populations consisted of subjects over 60 years of age.

Our results showed that highest frequency of dental prosthesis was found in old people (18%) while young adults had lowest frequency (4%). A significant association was found between age and prosthesis wearing. Univariate analysis showed that age was an independent determinant of denture wearing. Young adults were 5 times less likely to have prosthesis than mature adults and old people. Financial dependence and location of tooth loss may justify this low use of dental prostheses.

Nine percent of the partial edentulous with a primary or secondary level of education and 13% of those with a higher level had a dental prosthesis. Nevertheless, there was no link between level of education and prosthesis wearing. One-tenth of partial edentulous unemployed (10%) wore dentures against 12% of those employed. Despite this, no significant association existed between occupation and prosthesis wearing.

When asked about reasons of no prosthetic rehabilitation, 32% of patients were not bother by teeth loss. For 30% patients, cost of prosthesis was the barrier for the acquisition of prostheses. Twenty six percent (26%) patients did not have prostheses by lack of information. 13.5% patients had other reasons such as lack of time, bad prosthetic experience of a friend or a family member. Prosthetic inexperience of some dental surgeons was also reasons for absence of prostheses. In studies conducted in Nigeria and India, absence of discomfort was also major reason of no prosthetic wearing [1] [16]. In one region in India, finances were the main reason [4]. Of all socio-demographic factors, only level of education was significantly associated with reasons for no prosthetic rehabilitation. Indeed, for subjects with higher-level of education major reason was absence of discomfort. However, for subjects at primary or secondary level, the main reason was financial problems followed by lack of information. This was justified by lack of employment for majority of subjects at primary or secondary level and by lack of access to information, especially health and oral health.

The Covid 19 Pandemic influenced this study. Indeed, it affected DR Congo when data collection was at beginning. Some study centers were eliminated from study because of diminution of patients or temporary closure of dentistry department. Despite this difficulty, data from this study constitute evidence that specifies the place occupied by prosthetic care in dental therapeutic arsenal in DR Congo. Covid 19 pandemic affected also size of that study.

5. Conclusion

This study showed that very few partial edentulous Congolese adults wore prosthesis and age was the independent determinant of prosthetic wearing. Reasons for this low prevalence of prosthesis were absence of discomfort caused by edentulism, finances and lack of information. Thus, it is important to carry out studies to determine clinical characteristics of partial edentulism that does not cause discomfort. Research must be initiated to improve quality of dental prostheses by reducing their costs. A National system of mutual dental care and prosthetic care in particular must be created. A large project of vulgarization of dental and prosthetic care must be initiated.

The Contribution of the Authors

GM: Principal investigator, concept, design, data collection, statistical analysis and manuscript writing. DT, GB, CM: Data collection and writing. JB, JPS: design, data analysis and manuscript writing. JL, DM: Principal supervisor and assistant supervisor, conception, design, data collection, data analysis and manuscript writing.

Acknowledgements

The authors thank all the authorities of the Department of Dentistry, the Faculty of Medicine of the University of Kinshasa and those of the medical-dental institutions that hosted this work.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Zainab, S., Ismail, S.N.M., Norbanee, T.H. and Ismail, A.R. (2008) The Prevalence of Denture Wearing and the Impact on the Oral Health Related Quality of Life among Elderly in Kota Bharu, Kelantan. *Archives of Orofacial Sciences*, **3**, 17-22.

[2] Borawska, M.W., Malyszko, J., Rokicka, D.C. and Mysliwiec, M. (2012) Prosthetic Status and Treatment Needs for Lost Masticatory Function in Haemodialisis Patients. *Archives of Medical Science*, **8**, 81-87. https://doi.org/10.5114/aoms.2012.27286

[3] Ando, A., Ohsawa, M., Yaegashi, Y., *et al.* (2013) Factors Related to Tooth Loss among Community-Dwelling Middle-Aged and Elderly Japanese Men. *Journal of Epidemiology*, **23**, 301-306. https://doi.org/10.2188/jea.JE20120180

[4] Shah, V.R., Shah, D.N. and Parmar, C.H. (2012) Prosthetic Status and Prosthetic Need among the Patients Attending Carious Dental Institutes of Ahmedabad and Gandhinagar District, Gujarat. *The Journal of Indian Prosthodontic Society*, **12**, 161-167. https://doi.org/10.1007/s13191-012-0126-9

[5] Olabisi, A.A. and Ifeanyi, C.E. (2012) Teeth Retention, Prosthetic Status and Need among a Group of Elderly in Nigeria. *Dentistry*, **2**, Article No. 117. https://doi.org/10.4172/2161-1122.1000117

[6] Gueye, M., Dieng, L., Mbodj, E.B., *et al.* (2015) Besoin en réhabilitation prothétique dentaire: Enquête évaluative dans une population urbaine de Dakar. *Revue du-collège d'Odonto-stomatologie Africain et de Chirurgie maxillo-faciale*, **22**, 29-33.

[7] Nikolovska, J. and Kenig, N. (2014) Oral Health Related Quality of Life (OHRQOL) in Patients Wearing Fixed Partial Dentures. *Collegium Antropologicum*, **38**, 987-992.

[8] Yamamoto, T., Kondo, K., Aida, J., Suzuki, K., *et al.* (2014) Social Determinants of Denture/Bridge Use: Japan Gerontological Evaluation Study Project Cross-Sectional Study in Older Japanese. *BMC Oral Health*, **14**, Article No. 63. https://doi.org/10.1186/1472-6831-14-63

[9] Khalifa, N., Allen, P.F., Abu-bakr, N.H. and Abdel-Rahman, M.E. (2012) Factors Associated with Tooth Loss and Prosthodontic Status among Sudanese Adults. *Journal of Oral Science*, **54**, 303-312. https://doi.org/10.2334/josnusd.54.303

[10] Fang, H.P., En, L.J., Meei, T.I., *et al.* (2018) Impact of Tooth Loss and Preference for Tooth Replacement among Clinic Attendees at a Public University. *Journal of Dentistry Indonesia*, **25**, 108-113. https://doi.org/10.14693/jdi.v25i2.1237

[11] Zhang, Q., Witter, D.J., Bronkhorst, E.M. and Creugers, N.H.J. (2011) Dental and Prosthodontic Status of an over 40 Years-Old Population in Shandong Province, China. *BMC Public Health*, **11**, Article No. 420. https://doi.org/10.1186/1471-2458-11-420

[12] Patil, V.V., Shigli, K., Hebbal, M. and Agrawal, N. (2012) Tooth Loss, Prosthetic Status and Treatment Needs among Industrial Workers in Belgaum, Karnataka, India. *Journal of Oral Science*, **54**, 285-292. https://doi.org/10.2334/josnusd.54.285

[13] Bansal, V., Veeresha, K.L., Sogi, G.M., Kumar, A. and Bansal, S. (2013) Assessment of Dental Prosthetic Status and Needs among Prisoners of Haryana, India. *The Journal of Indian Prosthodontic Society*, **13**, 303-307. https://doi.org/10.1007/s13191-013-0268-4

[14] Joseph, A.G., Janakiral, C. and Mathew, A. (2016) Prosthetic Status, Needs and Oral Health Related Quality of Life (OHRQOL) in the Elderly Population of Aluva, Inde. *Journal of Clinical and Diagnostic Research*, **10**, ZC05-ZC09. https://doi.org/10.7860/JCDR/2016/19298.8768

[15] Sharma, K., Acharya, S., Singhal, D.K. and Singla, N. (2019) Prosthetic Treatment Need and Associated Life Course Determinants in Partially Edentulous Adults of Age 18-34 Years in Udupi Taluk: A Cross-Sectional Study. *The Journal of Indian Prosthodontic Society*, **19**, 20-25. https://doi.org/10.4103/jips.jips_156_18

[16] Akinboboye, B., Azodo, C. and Soroye, M. (2014) Partial Edentulism and Unmet Prosthetic Needs amongst Young Adult Nigeria. *Odonto-Stomatologie Tropicale*, **37**, 47-52.

[17] Shenoy, R.P. and Hegde, V. (2011) Dental Prosthetic Status and Prosthetic Need of the Institutionalized Elderly Living in Geriatric Homes in Mangalore: A Pilot Study. *ISRN Dentistry*, **2011**, Article ID: 987126. https://doi.org/10.5402/2011/987126

[18] George, B. (2013) Prosthetic Status and Treatment Needs of Prisoners in Central Prison, Chennai. *The Journal of Indian Prosthodontic Society*, **13**, 265-268. https://doi.org/10.1007/s13191-012-0206-x

[19] Abdurahiman, V.T., Khader, M.A. and Jolly, S.J. (2013) Frequency of Partial Edentulism and Awareness to Restore the Same: A Cross Sectional in the Age Group of 1-25 Years among Kerala Student Population. *The Journal of Indian Prosthodontic Society*, **13**, 461-465. https://doi.org/10.1007/s13191-012-0246-2