Research Article | Nepal Journal of Health Sciences | Submitted: 08/03/2024 Accepted: 14/06/2024 Published: 30/06//2024

Prevalence of Edentulousness among Patient visiting a Tertiary Care Centre

Anisha Pandey,[1] Srijan Singh Basnet[2] , Ajay Neupane[3]

[1]*Department of Prosthodontics and Maxillofacial Prosthetics, College of Medical Sciences- Teaching Hospital, Nepal;*

[2]*Dental surgeon, College of Medical Sciences-Teaching Hospital, Nepal.*

[4]*Senior Consultant Dental Surgeon, Bharatpur Government Hospital, Chitwan.*

ABSTRACT

Introduction: Absence of teeth i.e., edentulism is a common oral health issue worldwide and is an under evaluated disability. It is a preventable oral disability which brings major impact on overall health of individuals affecting the function, aesthetics, comfort and psychology. So, it should be identified and awareness for its management should be done so as to improve the quality of life of an individual.

Objective: The purpose of this study was to collect baseline data on edentulism in the Nepalese population so that community-level awareness and educational programs could explain the importance of replacement lost teeth with prosthesis.

Methods: The study was conducted in the College of Medical Sciences in the department of Oral medicine and Radiology and in the department of Prosthodontics from the patient visiting in these OPD for five months duration. Data were recorded in proforma and classified as complete / partial edentulous and further classified into Kennedy's classification. The data were recorded and analyzed in SPSS 20.

Result: Out of 301 patients, 24 (8%) had total edentulism, while 277 (92% had partial edentulism). Of the partially edentulous individuals, 90 showed just maxillary edentulism, 148 showed only mandibular edentulism, and 39 showed both maxillary and mandibular edentulism.

Conclusion: Females were more likely than males to exhibit partial edentulism. Females showed more Kennedy's Class III classification than males. Both had equal complete edentulism. The mandibular arch showed more partial edentulism than the maxillary arch.

Keywords: Edentulous; Kennedy's; mandibular arch; maxillary arch.

INTRODUCTION

Complete or partial edentulism is one of the indicator of the oral health of a population[1] which is common health issues worldwide.[2] It is a sequalae of tooth loss which in recent times is showing a declined trend in many developed country.[3,4] It is one of the major oral health problem among older adults which not only weakens normal function, comfort, aesthetics and speech whereas it also leads to undesirable

Correspondence
Dr. Anish Pandey
Email: anish.reakeey@gmail.com
Citation
Pandey A, Basnet SS. Prevalence of Edentulousness among Patient visiting a Tertiary Care Centre. Nepal J Health Sci. 2024 Jan-Jun;4(1): 85-91.

sequela like occlusal discrepancies, migration and spacing of surrounding teeth, supra eruption, loss of space, temporomandibular joint disorders and other unfavorable conditions. Several studies showed that various factors like education, socio-economic status, lifestyle and belief, attitude towards dental care are associated with this condition.[5,6] Several studies have shown that edentulism is more prevalent in poorer populations. Also gender wise edentulism is found to be more common in in females. Developing countries showed increasing complete and partial edentulism day by day.[7,8]

The main objective of this study was to determine the prevalence of edentulism and the type of partial edentulism in the population visiting a tertiary care center at the College of Medical Sciences. This study also aimed to determine the prevalence of both complete and partial edentulism in the maxillary and mandibular arches in males and females.

METHODS

A descriptive observational study was conducted at the departments of Oral Medicine and Radiology and Prosthodontics at the College of Medical Sciences in Bharatpur, Nepal, from July 2023 to December 2023, on patients who visited the departments. The Institutional Review Committee at the same institution provided ethical approval under the reference number CMS-TH-IRC/2023-49.

The sample size was calculated by using the following formula:

$N = Z^2pq/e^2$; Taking p = 8.58%[9]; q = 1-p; Z = 1.96; e = 4%

A total of 188 samples were calculated. Nonetheless, by using convenience sampling, we were able to find 301 individuals during the duration of our three-month trial, of which 24 had complete edentulism and 277 had partial edentulism. The inclusion criteria were clinically diagnosed edentulism cases who visited CMS-TH's oral medicine & radiology, and prosthodontics departments. Exclusion criteria included inadequate demographic or clinical data, patients under 20 years, and follow-up cases.

Data was collected using a pre-formed proforma. The proforma's first portion had demographic information about the patient, while the second section contained clinical examination and edentulism information. Information on the different kinds of edentulism, whether complete or partial, was recorded. The partial edentulism was further classified into Kennedy's classification where Class I is bilateral edentulous area posterior to remaining natural teeth, Class II is unilateral edentulous area posterior to remaining natural teeth, Class III is edentulous area bounded both side by natural teeth and Class IV is single but bilateral edentulous area anterior to remaining natural teeth. Informed written consent of the patient was taken prior to data collection.

Data was entered into Microsoft Excel, and statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 20. Descriptive statistics for categorical variables, including Kennedy's classification in the maxillary and mandibular arch and based on gender, were calculated using frequency and percentage.

RESULTS

Out of 301 research participants, 24 had complete edentulism, resulting in a prevalence of 8%. The mean age of completely edentulous patients was 66.67±10.66 years, with a range of 45-85 years. Similarly, the mean age of partially edentulous patients was 42.23±15.84 years, with a range of 16-76 years.

The remaining study participants (277) had partial edentulism (92%). Out of all the patients, 90 (29.9%) had just maxillary edentulism, 148 (49.2%) had only mandibular edentulism, and 39 (13%) had both. The partially edentulous patients were classified using Kennedy's classification.

Table 1 shows that among the patients with maxillary edentulism including both complete and partial edentulism, 63 (48.83%) shows Kennedy's class III classification, followed by Class I in 32 (24.80%), Class II in 26 (20.15%) and class IV in 8 (6.20%) of the study participants.

Table 2 shows that among the patients with mandibular edentulism including both complete and partial edentulism, 135 (72.19%) shows Kennedy's class III classification, followed by Class II in 28 (14.97%), Class IV in 13 (6.95%) and class I in 11 (5.88%) of the study participants.

Table 3 shows that among the total study participants showing maxillary edentulism, it was found that majority of the patients were females, i.e., 84 of them, where 36 of them i.e., 42.85% showed Kennedy's class III classification, followed by 25 (29.77%) showing Kennedy's class I and 17 (20.23%) showing Kennedy's class II. Similarly, among the male participants, majority of the participants i.e., 27 (60%) showed Kennedy's class III classification followed by 9 (20%) showing Kennedy's class II and 7 (15.5%) showing Kennedy's class I.

Table 4 shows that among the total study participants showing mandibular edentulism, it was found that majority of the patients were females, i.e., 105 of them where 74 of them i.e., 70.47% showed Kennedy's class III classification, followed by 18 (17.14%) showing Kennedy's class II and 7 (6.67%) showing Kennedy's class IV. Similarly, among the male participants, majority of the participants i.e., 21 (50%) showed Kennedy's class III classification followed by 10 (23.80%) showing Kennedy's class II and 6 (14.28%) showing Kennedy's class IV.

Table 1: Maxillary Kennedys' Classification.

Kennedy's classification	Frequency	Percentage
I	32	24.80
II	26	20.15
III	63	48.83
IV	8	6.20
Total	129	100

Table 2: Mandibular Kennedy Classification.

Kennedy's classification	Frequency	Percentage
I	11	5.88
II	28	14.97
III	135	72.19
IV	13	6.95
Total	187	100

Table 3: According to the gender for maxillary edentulism.

Kennedy's classification	Frequency	
	Male N (%)	Female N (%)
I	7 (15.55)	25 (29.77)
II	9 (20)	17 (20.23)
III	27 (60)	36 (42.85)
IV	2 (4.44)	6 (7.15)
Total	45 (100)	84 (100)

Table 4: According to gender for mandibular edentulism.

Kennedy's classification	Frequency	
	Male N (%)	Female N (%)
I	5 (11.90)	6(5.71)
II	10 (23.80)	18 (17.14)
III	21 (50)	74 (70.47)
IV	6 (14.28)	7 (6.67)
Total	42 (100)	105 (100)

DISCUSSION

Out of 301 participants the prevalence of complete edentulism is 7.3% and partial edentulism is 92.7%. the prevalence of edentulism varies from country to country and from one region to another region. It can be because of the factors like life style, socio-economic circumstances, education, knowledge regarding oral health and beliefs, attitudes towards dental care.[5]

In this study 22 (7.3%) were completely edentulous which seems to be lower as seen in China (9%) and South Africa (8.5%) in an

extensive survey conducted to assess Complete edentulism among older adults, 50 years and above including several other countries. It can be because of factors like socio-economic status, age, geographical variation and oral health awareness of the population.[9] In the Partial edentulism it has been seen that Kennedy's classification III is more common similar to that of study conducted in Nepalese population previously.[10-13] Similar result was shown in the study conducted in Iraqi population as wel.[14,15] It can be because of the increased first molar extraction. First molar is the first permanent tooth to erupt in oral cavity and as it remains for higher time in oral cavity there is higher chance of being affected by carries or periodontal diseases which leads to extraction. This study showed least common is class IV (6.91%) as in study conducted on Kashmir population.[15,16]

Our study shows that Kennedy's class III is more common in both maxillary and mandibular arches with 63 patients showing maxillary edentulism and 135 of them showing mandibular edentulism. Class III in mandibular arch is more common than in maxillary arch which is contrary to study conducted by Sapkota et al.[11] It also can be because mandibular first molar is first permanent tooth to erupt in oral cavity and is prone to caries or periodontal diseases.

According to gender female participants were more than male participants among which female participants showed more partial edentulism than male as in study conducted by Prabhu et al and Kaira et al.[17,18] It could be because female is not aware about the dental problems and is dependent on family members for the treatment. It is also similar to study conducted by Sapkota B et.al which is contradictory to study conducted by Nagaraj et al and Saha et al.[11,19,20]

As in this study participants were based on convenience sampling in single tertiary care centre so the finding might not be generalized to larger population. Further study could be done nation wise.

CONCLUSIONS

This study found a comparable prevalence of edentulism as previous studies conducted in Nepal, with an increase in Kennedy's Class III. As edentulism is a preventable condition, early education, awareness, and treatment could reduce its occurrence.

Conflict Of Interest: None.

NJHS

REFERENCES

1. Brodeur JM, Benigeri M, Naccache H, Olivier M, Payette M. Trends in the level of edentulism in Quebec between 1980 and 1993. J Can Dent Assoc. 1996;62(2):159-60. [PubMed | Full Text |DOI]

2. Vos T, Barber RM, Bell B, Bertozzi-Villa A, Biryukov S, Bolliger I, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: A systematic analysis for the Global Burden of Disease Study 2013. Lancet [Internet]. 2015;386(9995):743–800. Available from: http://dx.doi.org/10.1016/S0140-6736(15)60692-4 [PubMed | Full Text |DOI]

3. Madhankumar S, Mohamed K, Natarajan S, Kumar VA, Athiban I, Padmanabhan T V. Prevalence of partial edentulousness among the patients reporting to the Department of Prosthodontics Sri Ramachandra University Chennai, India: An epidemiological study. J Pharm Bioallied Sci. 2015;7(Suppl 2):S643–7 [PubMed | Full Text |DOI].

4. Vadavadagi S V, Srinivasa H, Goutham GB, Hajira N, Lahari M, Reddy GTP. Partial edentulism and its association with socio-demographic variables among subjects attending dental teaching institutions, India. J Int oral Heal JIOH. 2015;7(Suppl 2):60. [PubMed | Full Text |DOI]

5. Müller F, Naharro M, Carlsson GE. What are the prevalence and incidence of tooth loss in the adult and elderly population in Europe? Clin Oral Implants Res. 2007;18:2–14. [PubMed | Full Text |DOI]

6. Begum SKS, Reddy VCS, Kumar RVSK, Sudhir KM, Srinivasulu G, Ali SKN. Tooth loss prevalence and risk indicators among adult people visiting community health centers in Nellore district, Andhra Pradesh: A cross-sectional study. J Indian Assoc Public Heal Dent. 2016;14(4):413–8. [PubMed | Full Text |DOI]

7. Millar WJ, Locker D. Edentulism and denture use. Heal Rep. 2005;17(1):55–8. [PubMed | Full Text |DOI]

8. Bedos C, Brodeur J-M, Boucheron L, Richard L, Benigeri M, Olivier M, et al. The dental care pathway of welfare recipients in Quebec. Soc Sci Med. 2003;57(11):2089–99. [PubMed | Full Text |DOI]

9. Acharya L, Gupta A, Shrestha P, Poudyal S, Poudel S. Edentulousness among Patients Visiting a Dental Unit of a Tertiary Care Centre: A Descriptive Cross-sectional Study. J Nepal Med Assoc. 2023;61(258):119–22. [PubMed | Full Text |DOI]

10. Pradhan D, Shrestha L, Dixit S, Shrestha A. Prevalence of Type of Partial Edentulousness among the Population of Bhotenamlang, Sindhupalchowk, Nepal: An Observational Study. Int J Sci Res [Internet]. 2017;6(9):666–8. Available from: https://www.ijsr.net/archive/v6i9/ART20176705.pdf[Full Text |DOI]

11. Sapkota B, Adhikari B, Upadhaya C. A Study of Assessment of Partial edentulous patients based on Kennedy's classification at Dhulikhel Hospital Kathmandu University Hospital. Kathmandu Univ Med J. 2013;11(4):325–7. [PubMed | Full Text |DOI]

12. Rana SB, Acharya B, Bhochhibhoya A, Sharma R, Acharya J, Mainali A. Patterns of partial edentulism based on Kennedy's classification among patients reporting to Nepal Medical College and Teaching Hospital. J Kathmandu Med Coll. 2018;7(4):153–7.[Full Text |DOI]

13. Manandhar P, Ranjit R, Tuladhar SL, Bhandari A. Prevalence of partial edentulism among the patients visiting a Tertiary Health Care Center in the Western Region, Nepal. J Gandaki Med Coll Nepal. 2021;14(2):93–9. [Full Text |DOI]

14. Hatim NA, Muhammed SA, Hasan NH. Psychosocial profile of patient with missing teeth and refuses treatment. Al-Rafidain Dent J. 2003;3(2):88–95. [Full Text |DOI]

15. Fayad MI, Baig MN, Alrawaili AM. Prevalence and pattern of partial edentulism among dental patients attending College of Dentistry, Aljouf University, Saudi Arabia. J Int Soc Prev Community Dent. 2016;6(Suppl 3):S187–91. [PubMed | Full Text |DOI]

16. Lone MA, Shah SA, Mir S. Pattern of partial edentulism based on Kennedys classification among dental patients in Kashmir: retrospective study. Int J Appl Dent Sci. 2019;5(2):209–12. [Full Text |DOI]

17. Nayana Prabhu NP, Sandeep Kumar SK, D'Souza M, Veena Hegde VH. Partial edentulousness in a rural population based on Kennedy's classification: an epidemiological study. 2009; [Full Text |DOI]

18. Jain R, Dabral E, Dayakara HR, Asopa V. To study the prevalence of complete edentulousness among rural and urban population of Udaipur district of Rajasthan in relation to age and gender. Eur J Prosthodont. 2013;1(1):21. [Full Text

|DOI]

19. Nagaraj E, Mankani N, Madalli P, Astekar D. Socioeconomic factors and complete edentulism in north Karnataka population. J Indian Prosthodont Soc. 2014;14(1):24–8. [PubMed | Full Text |DOI]

20. Saha M, Bansal S, Singh R, Chahar V, nd RG-I com. Prevalence of Complete Edentulousness among Rural and Urban Population of Malwa, Madhya Pradesh. IjocrwebCom [Internet]. 2018;6(2):74–8. Available from: http://ijocrweb.com/pdf/2018/April-June/15_DR SAKSHI 2_.pdf [Full Text |DOI]