



## **Factors influencing the choice of healthcare facility and relevant reasons for tooth extraction among south Indian population**

**Potluri Raja Sekhar<sup>1</sup>, Ravoori Srinivas<sup>2</sup>, Pachava Srinivas<sup>3</sup>**

<sup>1</sup>Assistant Professor, Department of Public Health Dentistry, Sibar Institute of Dental Sciences, Guntur, Andhra Pradesh, India.

<sup>2</sup>Professor, Department of Public Health Dentistry, Sibar Institute of Dental Sciences, Guntur, Andhra Pradesh, India.

<sup>3</sup>Professor & Head, Department of Public Health Dentistry, Sibar Institute of Dental Sciences, Guntur, Andhra Pradesh, India.

<sup>1</sup>**Corresponding Author's E-mail:** [sekharpotluri91@gmail.com](mailto:sekharpotluri91@gmail.com)

### **ABSTRACT**

*The study aimed at exploring preferences of health care facility and the reasons behind extraction of permanent teeth through a cross-sectional survey among adult individuals in a city from South India. A total of 400 individuals with ages ranging from 25 to 44 years and who underwent permanent tooth extractions were included. Data regarding socio-demographic information, general health status, reasons and potential risk factors for tooth extraction were investigated. Participants were grouped into two groups (N1 and N2) based on their preference of infirmary. The mean age of the participants is  $34.2 \pm 6.0$  years (N1) and  $33.5 \pm 6.3$  years (N2). There is a significant association between the groups regarding education status ( $P=0.000$ ), place of residence ( $P=0.000$ ) and smoking habit ( $P=0.018$ ) with tooth extractions. Tooth pain (46.5%), followed by dental caries and periodontitis, were found to be the common reasons for tooth extraction. Tooth pain, caries, and periodontal disease were found as the most common causes for tooth extraction. Smoking and tooth extractions seems to be having an association. Information detailing different socio-economic, behavioral, and psychological factors behind the increased tooth-related problems and their consequences helps further in providing better primary health care and education initiatives strategies.*

**KEYWORDS:** Reasons, tooth extraction, South India

Received 19.10.2023

Revised 21.11.2023

Accepted 25.12.2023

### **INTRODUCTION**

It is undeniably true that oral health is an integral part of general health and is essential for the well-being of an individual [1]. Tooth loss, termed as a significant event [2] in a person's life, which consistently reduces the quality of life, self-esteem, and daily functioning of individual [3, 4]. Tooth loss events can lead to a significant inflation of costs for replacement and ought to be considered as a proper result for the viability of long-term oral infection counteraction measures<sup>5</sup> So detailed knowledge of the reasons and consequences of teeth loss can be valuable in determining whether the level of oral hygiene is good or on the other hand, if the available oral care is adequate and accessible for the community.

Many surveys have been carried out to assess the oral health status within comparable populaces previously and furthermore a greater part of records was made accessible for the equivalent. Be that as it may, not even one of them actually detailed the exact information on how the individual's choice of health care facility varies and based on what factors they tend to avail those facilities. As the present study population comes transcendently under the global working-age population (those aged 15 to 64 years), missing work hours and time spent for dental visits in these group of population [6, 7] often do play an important aspect to determine the root cause behind an increased or decreased frequency of dental extractions and utilisations of health care facilities. So it was viewed indispensable to explore the choice of treatment facility and to elicit the reasons behind the loss of permanent teeth, thereby aiding ways for the better improvement and conservation of oral health.

With this intention, the present study was conducted with an objective to explore the choice of treatment facilities and the various reasons behind extraction of tooth, through seeking potential correlations

between tooth loss and several variables including age, gender, education, place of residence, and other socio-economic factors.

## **MATERIAL AND METHODS**

### **Study area and study subjects:**

A cross-sectional questionnaire survey was conducted among a randomly selected population (n=400) visiting the outpatient department of a dental institution and private-run native dental clinics located in and around Guntur city of Andhra Pradesh, a southern state of India. Study area is often considered the most densely populated place and has likewise been perceived as one of the main medical hubs all over India, constituting around 600 recognized medical and dental care hospitals, teaching institutions and charity organizations carrying out several healthcare services [8]. Majority of dental care services in the present study area have been carried out by private practitioners as the availability of government provided services was minimal.

**Study procedure and data collection:** An initial pilot study was carried out among individuals (n=20) in order to test the reliability of questionnaire and obtained a Cronbach's reliability score of 0.969, which helped to outline the final study process.

After obtaining informed consent, the study subjects were interviewed face to face using a semi-structured questionnaire in both English as well as local vernacular i.e., Telugu, which holds information on socio-demographic characteristics, oral hygiene habits, any other adverse risk factors like smoking, alcohol consumption, and systemic illnesses, and the reasons for teeth extraction. As the participants comprised from both rural and urban areas, the socio-economic status of the study participants was considered as per modified B.G. Prasad's Social classification [9]. The study was carried out over a period of six months until adequate information was accomplished. Ethical approval for the study was obtained from the institutional ethics committee (Pr.154/IEC/SIBAR/2018) necessary authorizations to perform the survey from private clinics was obtained.

For convenience, the study sample was grouped into two categories, one group with participants (N1=200) visiting institutions for dental treatment and another group (N2=200) with individuals visiting private dental clinics.

### **Inclusion and exclusion criteria:**

-Participants aged 25-44 years and those given consents were included.

-Those needed extractions for orthodontic purposes, third molar impactions, and those unable to cooperate owing to severe pain or illnesses were excluded.

**Training and calibration of the interviewer:** A single trained and calibrated examiner conducted one-to-one interviews and recorded the responses. Intra-examiner reliability expressed as Kappa statistics [10] was calculated and obtained a reliability value of 0.90.

**Statistical analysis:** Collected data were compiled in Microsoft Excel worksheets and analyzed using IBM SPSS (Statistical Package for Social Sciences) software for windows version 20.0 (SPSS Inc., Chicago, Illinois, USA). Descriptives and inferential statistics were performed. Pearson's Chi-square test was carried out to determine the association between categorical variables. The level of significance at  $P < 0.05$ .

## **RESULTS**

### **Socio-demographic characteristics:**

The mean age of the participants is  $34.2 \pm 6.0$  years in the institution group (N1) and  $33.5 \pm 6.3$  in the clinic visiting subjects group (N2) of which, majority were females, constituting around 57.3% and had more tooth extractions when compared to their male counterparts (42.7%).

Based on age group, study, participants were classified into two groups i.e., 25-34 and 35-44 years for the convenience. Majority were between 25-34 years (50.5%), among which 57% were visiting dental clinics for treatments. There is a statistically significant difference ( $P=0.00$ ) found with regard to education status, where 29% of study participants in the first group (N1) and 51% in second group (N2) were graduates, and only a few were illiterates (8.2%). In relation to place of residence, a large number of participants visiting both institution (64.5%) and private clinics (80%) were from urban area, whereas a significant difference ( $P=0.00$ ) was observed between both groups where majority participants visiting the dental institution (35.5%) were from rural area when compared to those visiting private dental clinics (20%). It was observed that a vast number (59%) of study participants belonged to Social class I of B G Prasad socio-economic classification [9] (Table.1).

Majority study subjects didn't have the habit of smoking and alcohol consumption (**Fig.1 & Fig.2**), but it was found that, there is a significant ( $P=0.018$ ) association between smoking and tooth extractions. Regarding the brushing habits, 85% study participants said that they brush only once daily with tooth

brush (96%) and only a few mentioned use of indigenous brushing methods like neem stick, etc. Tooth pain (46.5%) was found as the most common reason for undergoing extraction of permanent teeth in both the groups, 47% in the institution group (n=94) and 46% in the clinics group (n=92), respectively. Whereas dental caries and periodontal disease are the latter (Table 2). There is a significant association ( $P=0.001$ ) between gender and reasons behind extractions, where majority female participants have visited a dental clinic and undergoing extraction only when there is tooth pain compared to males (Table 3).

Overall tooth pain and dental caries were found the most predominant reasons for individuals visiting dental treatment facilities and undergoing dental extractions along with some other reasons like periodontal problems, unable to attend multiple appointments, unable to bear extra treatment costs, etc. Whereas the preference of treatment facility found to be unanswered and ambiguous, as majority of patients mentioned financial aspects and the appointment scheduling seems to be the reasons.

## DISCUSSION

Results from the present cross-sectional survey found that, majority of study participants seeking treatment from private clinics were younger compared to those visiting dental institution. Age is usually termed as an important factor that determines the utilization of dental services. It is evident from a community-based cross-sectional study conducted by Thomas S (2011)<sup>11</sup> in order to assess the availability and utilisation of dental care facilities by the Indian population, where it was observed that as age increases, utilization of dental services tends to decrease. Hence proving the present study findings. This is similar to the findings from a study conducted by Kakatkar et al (2011)<sup>12</sup> to determine barriers in regular dental and home care, where younger age individuals visited a dentist more commonly compared to older aged. The phenomenon behind could be that, younger age individuals have more knowledge and interest in oral health care due to various reasons such as esthetic, social, and psychological, contrasting to the findings observed in a study conducted by Bommireddy *et al* [13], to assess oral healthcare-seeking behaviors in South Indian population, where it found that, as age increases, individuals seeking health care also increases.

A community-based cross-sectional survey conducted by Thomas S [11] observed that, 90% of the participants who were older-aged utilized private dental care for getting treatments over government infirmaries and dental institutions, as compared to the present study, where majority older aged participants chose dental institutions over private dental clinics, as it justifies the expensive treatment costs at private clinics led them to seek care at dental institutions, where the treatment costs were better tolerated and a wide range of diagnostic and treatment facilities were present at single location.

Although some studies [14-15] found that, dental fear and anxiety were more commonly found in females, it is intriguing to find that dental care utilization was higher among females when compared to males in the present study. It is undoubtedly because of the fact that, females having a greater tendency to expect good outcomes in treatment while perceiving that this phenomenon only happens when there is regular dental attendance. This can be comparable to a survey conducted by Thompson AE et al [16] to understand the healthcare-seeking behaviour with regard to mental health concerns using a QUALICOPC survey method, where it was found that females were better in seeking dental care compared to males, and also are more conscious with regard to facial esthetics. This logics the females seeking earlier dental care, and a less frequency of tooth extractions than their male counterparts.

The results of the present survey showed that caries and tooth pain as the most common reasons for extraction of teeth. Nearly half of the study participants underwent extractions of permanent teeth due to dental pain, whereas more than one-fourth were due to dental caries. Furthermore, this finding provides an add-on to the verity that, dental caries is found to be one of the most common causes for tooth loss in both developing countries as well as the developed countries [17]. All these findings were consistent with the studies conducted by Anand PS *et al* [18], Jafarian M and Etebarian A [19] and Shah A *et al* [20]. In a study conducted by Al Qudah M *et al* [21], the authors given an explanation that dental caries is the disease of the younger age groups as their study found dental caries as the most frequent cause for teeth extraction (34.8%), followed by periodontal diseases (30.6%) and malocclusions (9.8%).

The highest number of patients undergoing extractions due to pain were found attending institutions, whereas a higher number of patients undergoing extractions due to caries were visiting dental clinics ( $P=0.001$ ). Same with the present study where higher number of extractions due to dental caries can be comparable to a study conducted by Alsaegh MA *et al* [22], where it was found that dental caries was the major reason (44.6%) for teeth extractions, 23.4% for wisdom teeth related extractions and 18.1% for periodontal diseases. These findings indicate that providing better awareness about alternate tooth-saving procedures and complex treatment options and giving more access to oral health care knowledge and care may substantially reduce consequences which were related to increased permanent teeth extraction rates.

It is found to be necessary to say that the present study was proven noteworthy of eliciting the reasons and conditions that has been and behind the extraction of permanent tooth and various related characteristics, which may be generalized to a larger extent of population as the sampling process included a subset that was selected from the general population. Certain limitations do prevail in a majority of researches involving human subjects. Likewise in the present survey, the most significant limitations detected were the presence of sampling bias, where only certain individuals were included from a large heterogeneous population, along with the presence of social desirability bias, where the study participants had a tendency to answer the questions in a manner that will be viewed favorably to the researcher.

**Table 1: Demographic characteristics of study participants**

Variables	Institution (N1)	Clinics (N2)	Frequency (%)	P Value
<b>Age group</b>				
<b>Mean age**</b>	34.2±6.0	33.5±6.3	-	
25-34 years	88	114	202 (50.5)	0.009*
35-44 years	112	86	198 (49.5)	
<b>Gender</b>				
Male	56	115	171 (42.8)	0.000*
Female	145	84	229 (57.3)	
<b>Education status</b>				
Illiterate	29	4	33 (8.3)	0.000*
Primary school	39	12	51 (12.8)	
High school	46	11	57 (14.2)	
Inter	28	71	99 (24.8)	
Graduate	58	102	160 (40.0)	
<b>Place of residence</b>				
Urban	129	160	289 (72.3)	0.001*
Rural	71	40	111 (27.8)	
<b>Socio-economic status (modified B.G Prasad, 2018)<sup>9</sup></b>				
Class I				0.003*
Class II	115	121	236 (59)	
Class III	56	39	95 (23.7)	
Class IV	19	33	52 (13)	
Class V	10	7	17 (4.2)	
	0	0	0	

\*P<0.05 is considered statistically significant, \*\*expressed as Mean± SD

**Table 2: Distribution of study participants based on reasons for tooth extraction**

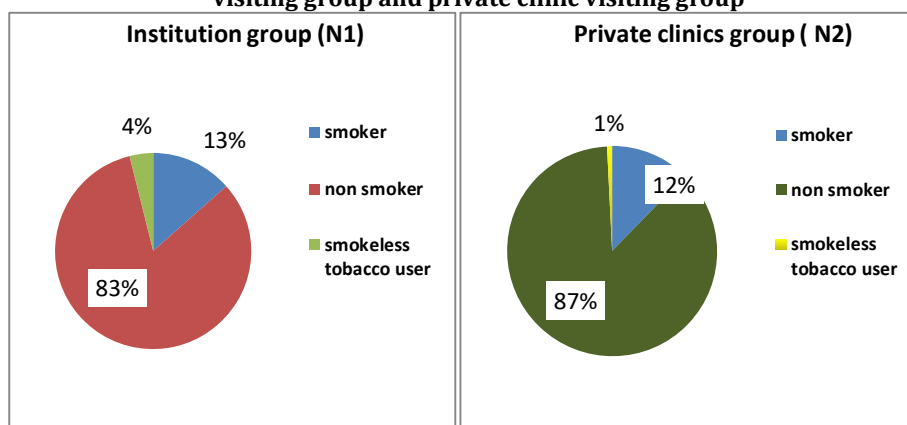
Reasons for tooth extraction	Institution	Clinics	Frequency (%)
Dental caries /cavity	46	58	104 (26.0)
Tooth Pain	94	92	186 (46.5)
Not interested in other treatments	19	2	21 (5.3)
Loose teeth/periodontitis	21	12	33 (8.3)
Trauma/fractures	13	14	27 (6.8)
Financial problems	4	14	18 (4.5)
Clinic not accessible/unable to attend appointments	1	4	5 (1.3)
Other reasons	2	4	6 (1.5)

**Table.3 Distribution of study participants by sex group and dental diseases**

Gender	Reasons leading to undergo dental extraction				Total (N)
	Dental caries	Tooth pain	Loose teeth/ periodontitis	Other reasons	
Females	61	107	22	33	229
Males	43	79	11	44	171
Total	104	186	33	77	400

\*p = 0.001 (considered statistically significant). Chi-square test was used to find 'p' value

**Figure 1 & 2: Distribution of study participants according to the habit of smoking in the institution visiting group and private clinic visiting group**



## CONCLUSION

Detailed knowledge and information concerning the reasons responsible behind the extraction of permanent tooth were useful in planning effective public health preventive and education measures, policy related strategic actions in the context of providing more accessible and affordable oral health care to the populations, so that the consequences and complications of tooth loss and its related general and oral health related adverse effects and the quality of life of the individuals can be better prevented.

## ACKNOWLEDGEMENTS

I wish to thank my guide, colleagues, and also our institution for their constant contributions and support throughout the study.

**Funding:** Nil

**Conflict of interest:** None

**Ethical approval:** obtained

## REFERENCES

- Petersen PE. (2003). The World Oral Health Report Continuous improvement of oral health in the 21st century – the approach of the WHO Global Oral Health Programme. Geneva: WHO, :3.
- Bergendal B. (1989). The relative importance of tooth loss and denture wearing in Swedish adults. *Community Dent Health* ;6:103-11.
- Nikias M. (1985). Oral disease and quality of life. *Am J Public Health*;75:11-2.
- Fiske J, Davis DM, Frances C, Gelbier S. (1998). The emotional effects of tooth loss in edentulous people. *Br Dent J*;184:90-3; discussion 79.
- De Angelis P., Passarelli P.C., Gasparini G., Boniello R., D’Amato G., De Angelis S. (2020). Monolithic CAD-CAM lithium disilicate versus monolithic CAD-CAM zirconia for single implant-supported posterior crowns using a digital workflow: A 3-year cross-sectional retrospective study. *J. Prosthet. Dent.* ;123:252–256.
- Working-age population (indicator). Organisation for Economic Co-operation and Development (OECD). 2022.
- Kelekar U, Naavaal S. (2018). Hours Lost to Planned and Unplanned Dental Visits Among US Adults. *Prev Chronic Dis*;15:170225.
- Andhra Pradesh Pollution Control Board, Govt. of Andhra Pradesh. [https://pcb.ap.gov.in/ Attachments%20270519/BioMedical/HcfList/Guntur%20district.pdf](https://pcb.ap.gov.in/Attachments%20270519/BioMedical/HcfList/Guntur%20district.pdf)
- Pandey VK, Aggarwal P, Kakkar R. (2018). Modified BG Prasad’s Socio-economic Classification-2018: The need of an update in the present scenario. *Indian J Comm Health.* 30, 1: 82-84.
- Viera AJ, Garrett J.M (2005). Understanding Inter observer Agreement: The Kappa Statistic. *Fam Med*; 37(5):360-363.
- Thomas S. (2011). Barriers to seeking dental care among elderly in a rural South Indian population. *J Indian Acad Geriatrics.* 7:60–5.
- Kakatkar G, Bhat N, Nagarajappa R, Prasad V, Sharda A, Asawa K, Agrawal A. (2011). Barriers to the utilization of dental services in Udaipur, India. *Journal of Dentistry (Tehran, Iran).* ;8(2):81.
- Bommireddy VS, Pachava S, Viswanath V, Talluri D, Ravoori S, Sanikommu S. (2017). Oral health care-seeking behaviors and influencing factors among South Indian rural adults: A cross-sectional study. *J Indian Assoc Public Health Dent*;15:252-7.

14. Liddell A, Locker D. (1997). Gender and age differences in attitudes to dental pain and dental control. *Community dentistry and oral epidemiology*. 25(4):314-8.
15. Fukai K, Takaesu Y, Maki Y. (1999). Gender differences in oral health behavior and general health habits in an adult population. *The Bulletin of Tokyo Dental College*. 40(4):187-93.
16. Thompson AE, Anisimowicz Y, Miedema B, Hogg W, Wodchis WP, Aubrey-Bassler K. (2016). The influence of gender and other patient characteristics on health care-seeking behaviour: a QUALICOPC study. *BMC family practice*. 17(1):1-7.
17. Ahmedani MS, Bakht NS, Bakht KS, Khalid E. (2021). Inequalities in the Oral Healthcare Sector: Trends in the 21st Century. *Ann Case Report*. 6:726.
18. Anand PS, Kuriakose S. (2009). Causes and Patterns of Loss of Permanent Teeth among Patients Attending a Dental Teaching Institution in South India. *J Contemp Dent Pract*. 10(5):19-26
19. Jafarian M, Etebarian A. (2013). Reasons for extraction of permanent teeth in general dental practices in Tehran, Iran. *Medical Principles and Practice*. 22(3):239-44.
20. Shah A, Faldu M, Chowdhury S. (2019). Reasons for extractions of permanent teeth in western India: A prospective study. *International Journal of Applied Dental Sciences*; 5(1): 180-184.
21. Al Qudah M, Al Waeli H, Al Rashdan H. (2012). The reasons for dental extraction of permanent teeth in a Jordanian population, including considerations for the influence of social factors. *Smile Dental Journal*. ;7:34-42.
22. Alsaegh MA, Albadrani AW. (2020). Pattern and Reasons for Permanent Tooth Extractions at Dental Clinics of the University of Science and Technology of Fujairah, UAE. *The Open Dentistry Journal*. 22;14(1).

#### **CITATION OF THIS ARTICLE**

Potluri R S, Ravoori S, Pachava S Factors influencing the choice of healthcare facility and relevant reasons for tooth extraction among south Indian population. *Bull. Env.Pharmacol. Life Sci.*, Vol 13 [2] January 2024: 211-216