
Psychological Effects of Missing Maxillary Anterior Teeth on Daily Life

Dr. Daksh Kedia^{1*}, Dr. Gaurav Jha², Dr. Ojas Desai³, Dr. Saurabh Jain⁴, Dr. Vikramsingh Deshmukh⁵

^{1,2,3,4,5}Post graduate student, department of oral and maxillofacial surgery, Bharati Vidyapeeth dental college and hospital, Pune, India.*

Corresponding Email: ^{1}dakshkedia@yahoo.com*

Received: 03 January 2023

Accepted: 26 March 2023

Published: 03 May 2023

Abstract: Background: *The orofacial region's appearance and functionality are crucial parts of human life that can be impacted by tooth loss and lower quality of life. The purpose of this study was to determine how anterior tooth loss affected patients' quality of life and dental satisfaction.*

Methods: *100 control subjects without missing teeth and 100 partly edentulous patients with missing anterior teeth were enrolled in the study. By age, gender, and educational attainment, the control participants were comparable to the patients. The impact of dental issues on daily life and dental satisfaction was evaluated using a dental impact on daily living questionnaire. Patients' daily activities, contentment with their looks, pain thresholds, dental comfort, overall performance, and eating abilities are all significantly impacted by tooth loss ($p=0.000$). The patients' overall satisfaction with their dentition and daily living was unaffected by their age or education level. Females, however, were less satisfied than males with their eating, general performance, and looks ($p=0.003$, 0.005 , and 0.007 , respectively). Patients' overall satisfaction ($p=0.028$) and their contentment with their look, dental comfort, general performance, and eating dimensions ($p=0.001$, 0.048 , 0.011 , and 0.009 , respectively) all showed significant associations with the number of missing anterior teeth.*

Conclusion: *Regardless of individual characteristics like age, gender, and educational level, tooth loss has a definite impact on patients' happiness with their dentition. The degrees of satisfaction with dentition and daily living decline as tooth loss increases.*

Keywords: *Maxillary Anterior Teeth, Dental Impact on Daily Living, Dental and Mental Health.*

1. INTRODUCTION

Helping patients achieve a sufficient degree of happiness with their oral cavity and dentition is one of the most essential objectives of dental care. With regard to how they affect appearance, performance, and function, dentofacial issues have been proven to have a negative impact on patients' happiness with their dentition^{2,3}.

Dental professionals need a clear understanding of the patients' attitudes about their teeth and how this affects their daily lives. According to Strauss and Hunt, dental disease may affect a person's ability to live comfortably, enjoy life, have relationships, succeed at work, and have a positive self-image⁴. Different aspects of life quality and pleasure with the dentition can be influenced by a variety of factors, including the capacity to chew, taste, pain, speech, and aesthetics².

Dental ailments can lower quality of life even if it rarely poses a threat to life. The clinical status and psychological dimensions should be assessed whenever we evaluate dental needs since numerous aspects of oral status have distinct effects on people's everyday lives. Pain, speech, aesthetics, fear, chewing, and eating have undeniable impacts on quality of life^{2,5}. Tooth loss and oral functionality are seen as signs of oral health^{7,2,6}. Due to its psychological, social, functional, and financial effects on people⁸, tooth loss is particularly significant. The overall health effects of tooth loss include eating disorders, weight loss, and communication and appearance-related social handicaps⁹.

Patients experience substantial emotional and confidence repercussions as well as challenges accepting tooth loss.¹⁰

Dental caries, periodontal disease, or other causes, such as dental trauma, may cause tooth loss. However, tooth loss also results from complex interactions between socio-behavioural, clinical, and patho-physiological factors^{20,21}. Preventing tooth loss and maintaining masticatory abilities improve physical and social activities²²⁻²⁴. One's daily activities are closely tied to tooth loss²⁴.

The majority of earlier research on the effects of tooth loss focused on the ability to chew, nutrient intake, and mastication related to aging, which in turn affects physical activity and mental health²²⁻²⁸.

The majority of earlier research has demonstrated that replacing missing front teeth is more important than posterior ones²⁹⁻³⁷, and that the position of missing teeth has a bigger impact on a person's assessment of their subjective need for tooth replacement.

The relationship between anterior tooth loss and psychosocial factors including quality of life and satisfaction with one's dentition has not been explored in great depth in the literature. This study looked into how daily living and dental satisfaction might be impacted by losing an upper anterior tooth. The potential impacts of patient gender, age, education, and the number of missing anterior teeth on quality of life and happiness with the dentition were also looked into.

2. METHODS

The study included 100 patients who presented to the oral and maxillofacial surgery department at Bharati Vidyapeeth Dental College and Hospital, Pune, who were partially



edentulous and seeking dental treatment for missing teeth. The chosen patients were 18 years of age or older in order to understand and score the questionnaire, had not previously had any treatment for their edentulous spaces, and did not have any medical conditions (including mental problems). Each patient underwent an evaluation to determine the number and location of their missing teeth, and those who had at least one missing upper anterior tooth and no missing upper posterior or lower teeth were included. The assessment also included patients' dental and medical histories, complaints, and personal information regarding name, age, sex, education, occupation, address and marital status.

Assessment of patient satisfaction and quality of life was carried out using the Dental Impact on Daily Living Questionnaire (DIDL) and its scale (Figure 1) ^{2,38,39}. This questionnaire was validated for the Jordanian population in previous studies and was found valid and reliable⁴⁰⁻⁴². The DIDL measures the impact and proportional importance of each dimension (weight of the dimension) to the patient. The DIDL consists of 36 items grouped into five dimensions: comfort, appearance, pain, performance, and eating restriction, and impacts for each item are scored. Each dimension's weight is determined individually by dividing the sum of its replies by the entire possible scale score. The sum of the scores for each dimension is multiplied by the weight of the dimension in order to create the overall score. A DIDL score is then calculated by adding the weighted dimension scores. All sample participants' DIDL scores ranged from -1 to +1.

The questionnaire was given to the patients, and the researcher watched over them as they answered the questions. Each patient received a thorough explanation of the dimensions and the scoring procedures for the questionnaire.

The DIDL was selected for this study because it is a simple and quick instrument that can be used by patients and physicians, and it can be finished in a reasonably short amount of time. According to the literature, this test is regarded as being trustworthy, accurate, and repeatable.^{2,38-42}

Appearance dimension:

1. I am satisfied with my teeth in general.
2. I am satisfied with the appearance of my teeth.
3. I am satisfied with the colour of my teeth.
4. I am satisfied with the position of my teeth.

Pain dimension:

5. I feel spontaneous pain in my teeth.
6. I feel dental pain when eating or drinking hot or cold.
7. I changed my food because of pain.
8. I feel pain in my jaw joint.

Oral Comfort dimension:

9. I have worries with my teeth.
10. I suffer from food packing between my teeth.
11. I have halitosis and bad smelling breath.
12. I have loose teeth.
13. I am not satisfied with my gums.
14. I have bleeding gums.
15. I have sensitivity to hot or cold due to gum recession.

General performance dimension:

16. My work capacities affected by the appearance of my teeth.
17. My work capacities affected by ability to eat and talk.
18. My contact with people is affected by the appearance of my teeth.
19. My contact with people is affected by my ability to eat and talk.
20. My contact with people is affected by dental pain.
21. My romance is affected by dental pain.
22. My romance is affected by my ability to eat and talk.
23. My self-confidence is affected by appearance of my teeth.
24. I feel embarrassment because of my teeth.
25. My romance is affected by the appearance of my teeth.
26. I try to avoid showing my teeth when I smile.
27. I am not satisfied with my smile.
28. My work capacity is affected by pain.
29. I feel stress because of pain.
30. I sleep badly because of pain.

Eating and chewing dimension:

31. I am satisfied with the capacity to chew.
32. I am satisfied with chewing in general.
33. I am satisfied with the capacity to bite.
34. I am satisfied with biting in general.
35. I did not change the way of food preparation because of teeth.
36. I did not change the type of food because of teeth.

Figure 1. Dental Impact on Daily Living Questionnaire items and their respective dimensions

In this study, 100 control participants without missing teeth were enrolled. By age, sex, and educational attainment, they were comparable to the study sample. Following the formal announcement, they were chosen from among the Indian community, including university students and workers. To rule out the possibility of tooth loss, each of them underwent a clinical evaluation. The control group was only comprised of individuals who did not currently have any active dental diseases or missing teeth (apart from third molars). The DIDL questionnaire and accompanying scale were utilised to assess dental satisfaction in the control group.

Both the patients and the controls received an invitation to take part in the study. Before being enrolled in the study, each subject received a brief explanation of the study and was

asked for their informed consent. SPSS was used to analyse the data (Statistical Package for the Social Sciences, version 11.0, SPSS Inc., Chicago, IL, USA). The Pearson correlation test was performed to analyse the relationship between the variables, and the ANOVA test was utilised to compare the control and patient groups. For all statistical analyses, the significance level was set at $P \leq 0.05$.

3. RESULTS

Hundred patients (44 women and 56 men) and hundred controls, who matched the patients group by age, sex and education, were recruited into this study, aged 20-46 years (mean: 32.4 years, SD: 9.6); controls 19-42 years (mean: 30.4 years, SD: 8.1). There were four patients who obtained primary education (up to the age of 16), 62 patients who received secondary education (up to level A), and 34 patients who received tertiary education (university or college). The educational levels of the control group were equivalent to those of the patient group. The distribution of missing teeth among the patients is shown in Table 1. According to the DIDL questionnaire's overall satisfaction scores, 64% of patients were unsatisfied with their teeth and scored below 0, 36% were only somewhat satisfied and scored between 0 and 0.69, and none were completely satisfied. In terms of overall satisfaction, the greatest score was +0.6 while the lowest was -0.77. (mean: -0.2; SD: 0.14).

Table 1: Distribution of missing teeth among the patients group

Number of missing teeth	Number of patients
1	10
2	16
3	20
4	24
5	16
6	14

In terms of the control group, it was discovered that none of the controls received a score below 0, 24% were moderately content and received a score between 0 and 0.69, and 76% were completely satisfied with their teeth. In terms of overall satisfaction, +1 was the best score and +0.25 was the lowest (mean: 0.71; SD: 0.18). Table 2 lists patient and control satisfaction with each DIDL questionnaire dimension. It is fairly obvious that the control group had higher levels of satisfaction with each dimension. Age, gender, and educational attainment of the individuals were connected with both the overall satisfaction scores and the specific scores for each question's component. None of these variables significantly influenced the individuals' overall satisfaction or satisfaction with each questionnaire dimension in the control group ($p > 0.05$). However, no statistically significant variations in patient satisfaction scores between younger and older patients were found within the patient group ($p > 0.05$). Female patients reported lower levels of satisfaction than male patients with regard to eating, overall performance, and attractiveness ($p = 0.003, 0.005, \text{ and } 0.007$, and $r = -0.341, -0.316, \text{ and } -0.309$, respectively). Both genders had similar levels of overall satisfaction as well as satisfaction with pain and comfort ($p > 0.05$). Patients' satisfaction with

their oral health decreased as their education level increased ($p=0.013$ and $r = -0.283$). The number of anterior teeth missing and patients' overall satisfaction showed a strong link ($p=0.028$, $r= -0.252$) and patients' satisfaction with appearance, oral comfort, general performance, and eating dimensions ($p= 0.001$, 0.048 , 0.011 and 0.009 respectively, $r= -0.46$, -0.228 , -0.356 and -0.367 respectively). The degree of satisfaction decreases as tooth loss increases. The total satisfaction scores and all individual dimension satisfaction levels were substantially different across the groups according to the ANOVA test. Compared to the patients' group, the control group expressed more satisfaction with their dental health. There were significant differences between the groups in terms of overall satisfaction, appearance, pain, mouth comfort, general performance, and eating satisfaction ($p=0.000$, $F= 182.7$, 192.97 , 194.97 , 373.7 , 275.8 , and 184.7 , respectively).

Table 2 Scores of individual satisfaction dimensions in the study sample

Dimension	Dissatisfied (%)		In Between (%)		Satisfied (%)	
	Patients	Control	Patients	Control	Patients	Control
Appearance	96	18	4	2	0	80
Pain	70	2	20	6	10	92
Oral Comfort	84	2	10	2	6	96
General Performance	92	10	6	2	2	88
Eating and Chewing	74	4	14	0	12	96

4. DISCUSSION

The Dental Impact of Everyday Life, a socio-dental instrument, was utilised in this study because, in contrast to other socio-dental indicators, it evaluates oral health, the impact of dentistry on daily life, and respondents' perceptions of the relative importance of each dimension. Additionally, a single impact score is provided to evaluate the overall oral impact because impacts rarely occur individually. The significant impacts should be considered to determine needs because there are considerable connections between quality of life and clinical oral status. The DIDL does not weight dimension ratings and then aggregate the weighted results into a single score, as do instruments like the Oral Health Impact Profile (OHIP). A respondent can specify whether a problem is solely internal or if it has interpersonal or social implications on the DIDL and OHIP. The instrument was chosen for this investigation since it has undergone validity and reliability testing^{2,38-42}. Female participants were less satisfied with their appearance, general performance, and eating than male participants were, while there being no difference in the participants' overall pleasure, satisfaction with discomfort, and oral comfort dimensions. This could be attributed to the fact

that women are more concerned with their looks and functionality than men are. Previous research^{24,43} showed that women were more negatively impacted by tooth loss in terms of eating and physical activity. It was discovered that patients' satisfaction with their dental comfort decreased with increasing educational attainment. This could be explained by the idea that as patients' levels of education rise, so do their needs. The number of anterior teeth missing was highly correlated with patients' overall contentment, as well as satisfaction with eating, dental comfort, attractiveness, and overall performance. The more anterior teeth missing, the lower the levels of satisfaction. This is consistent with earlier research's findings that showed function and wellbeing were significantly impacted by the number of missing teeth⁴⁴⁻⁵⁰. A very low correlation between contentment with the dentition and the quantity of lost posterior teeth, according to Rosenoer and Sheiham⁵¹, was found.

In this study, tooth loss had some effects on patients' attitudes of their smile. Patients with partial dentition had considerably greater degrees of dissatisfaction with their looks, pain, oral comfort, overall performance, and eating than did controls. This may be explained by the possibility that tooth loss may have an adverse impact on oral functions and aesthetics, changing some of these features negatively and causing patients to become dissatisfied with their dentition and way of life. When all functional, psychological, and economic ramifications are taken into account, prior research have found a negative correlation between tooth loss and quality of life⁸. According to Omar et al.⁵², aesthetics may have an impact on how food is chewed, hence there is a need for an index that distinguishes the aesthetic component from chewing and occlusion. Therefore, factors other than function also have an impact on masticatory performance. As a result, a lot of people with decreased masticatory function can still chew, and if their teeth seem okay, they don't need to have their dentition changed^{27,52}. According to Kayser⁵³, social processes like aesthetics and communication were more significant than chewing and human psychology is highly influenced by aesthetics³⁵. The study's findings are amongst the first to examine how tooth loss affects people's oral health and quality of life in India. Personality factors may have a part in determining how satisfied people are with their dentition, which may have an impact on the findings of this study. Future studies should take into account examining the correlation between individuals with missing teeth, personality profiles and the satisfaction with their dentition.

Conclusion:

The contentment with several aspects of the dentition and oral functions, such as chewing, speaking, oral comfort, general performance, communication, smiling, and appearance, is negatively impacted by tooth loss. Patients' opinions of their dental care and quality of life will be impacted as a result. Patients' perceptions of contentment with their dentition are influenced by the number of missing anterior teeth. Specialists should take this into account in order to design treatments that are appropriate for their patients and prevent the detrimental consequences of tooth loss on their quality of life. They must also socio-psychologically prepare their patients to accept the given treatment for tooth loss.

5. REFERENCES

1. Strauss RP, Hunt RJ. Understanding the value of teeth to older adults: influences on the quality of life. *J Am Dent Assoc* 1993 124: 105-110.



2. Locker D, Slade G. Oral health and the quality of life among older adults: the oral health impact profile. *J Can Dent Assoc* 1993 59: 830-844.
3. Cushing AM, Sheiham A, Maizels J. Developing socio-dental indicators--the social impact of dental disease. *Community Dent Health* 1986 3: 3-17.
4. Reisine S, Locker D. Social, psychological, and economic impacts of oral conditions and treatments. In Cohen LK and Gift HC (eds) *Disease Prevention and Oral Health Promotion*. p33. Copenhagen: Munksgaard, 1995.
5. Casanova-Rosado JF, Medina-Solis CE et al. Lifestyle and psychosocial factors associated with tooth loss in Mexican adolescents and young adults. *J Contemp Dent Pract* 2005 3: 70-77.
6. Petersen PE, Yamamoto T. Improving the oral health of older people: the approach of the WHO Global Oral Health Programme. *Community Dent Oral Epidemiol* 2005 33: 81-92.
7. Scott BJ, Leung KC, McMillan AS et al. A transcultural perspective on the emotional effect of tooth loss in complete denture wearers. *Int J Prosthodont*. 2001 14: 461-465.
8. Fure S, Zickert I. Incidence of tooth loss and dental caries in 60-, 70- and 80-year-old Swedish individuals. *Community Dent Oral Epidemiol* 1997 25: 137-142.
9. Thomson W, Poulton R, Kruger E et al. Socio-economic and behavioural risk factors for tooth loss from age 18 to 26 among participants in the Dunedin Multidisciplinary Health and Development Study. *Caries Res* 2000 34: 361-366. 13. Reich E, Hiller KA. Reasons for tooth extraction in the western states of Germany. *Community Dent Oral Epidemiol* 1993 21: 379-383.
10. Morita M, Kimura T, Kanegae M et al. Reasons for extraction of permanent teeth in Japan. *Community Dent Oral Epidemiol* 1994 22: 303-306.
11. Chestnutt I, Binnie V, Taylor M. Reasons for tooth extraction in Scotland. *J Dent* 2000 28: 295-297.
12. Linden G, Mullally B. Cigarette smoking and periodontal destruction in young adults. *J Periodontol* 1994 65: 718-723.
13. Ong G. Periodontal reasons for tooth loss in an Asian population. *J Clin Periodontol* 1996 23: 307-309.
14. Phipps KR, Stevens VJ. Relative contribution of caries and periodontal disease in adult tooth loss for an HMO dental population. *J Public Health Dent* 1995 55: 250-252.
15. Albandar J, Streckfus C, Adesanya M et al. Cigar, pipe, and cigarette smoking as risk factors for periodontal disease and tooth loss. *J Periodontol* 2000 71: 1874-1881.
16. Gilbert GH, Miller M, Duncan RP et al. Tooth-specific and person-level predictors of 24 month tooth loss among older adults. *Community Dent Oral Epidemiol* 1999 27: 372-385.
17. Gilbert GH, Duncan RP, Shelton BJ. Social determinants of tooth loss. *Health Serv Res* 2003 38: 1843-1862.
18. Nagai H, Shibata H, Haga H. Chewing ability in relation to physical health status. *Jpn J Geriatr* 1990 27: 83-88.
19. Teraoka A, Nagai H, Shibata H et al. Effects of eating ability on physical activities in elderly. *J Dental Health* 1992 24: 2-6.



20. Yoshida Y, Hatanaka Y, Imaki M et al. Epidemiological study on improving the QOL and oral conditions of the aged- Part I: The relationship between the status of tooth preservation and QOL. *J Physiol Anthropol Appl Human Sci* 2001 20: 363-368.
21. Boretti G, Bickel M, Geering AH. A review of masticatory ability and efficiency. *J Prosthet Dent* 1995 74: 400-403.
22. Gilbert GH, Foerster U, Duncan RP. Satisfaction with chewing ability in a diverse sample of dentate adults. *J Oral Rehabil* 1998 25: 15-27.
23. Elias AC, Sheiham A. The relationship between satisfaction with mouth and number and position of teeth. *J Oral Rehabil* 1998 25: 649-661.
24. Zitzmann NU, Marinello CP. Survey of treatment-seeking complete denture wearers concerning tooth loss, retention behavior and treatment expectations. *Schweiz Monatsschr Zahnmed* 2006 116: 229-236.
25. Watson MR. Masticatory ability-cineradiographic observations. *J Dent* 1973 1: 54.
26. Bjorn AL, Owall B. Partial edentulism and its prosthetic treatment. A frequency study within a Swedish population. *Swed Dent J* 1979 3: 15-25.
27. Osterberg T, Hedegard B, Sater G. Variation in dental health in 70- year old men and women in Goteborg, Sweden. A cross-sectional epidemiological study including longitudinal and cohort effects. *Swed Dent J* 1984 7: 29-48.
28. Tervonen T. Condition of prosthetic constructions and subjective needs for replacing missing teeth in a Finnish adult population. *J Oral Rehabil* 1988 15: 505-513.
29. Spratley MH. Posterior edentulousness and the prescription of partial dentures. *Aust Dent J* 1988 33: 43-46.
30. Owall BE, Taylor RL. A survey of dentitions and removable partial dentures constructed for patients in North America. *J Prosthet Dent* 1989 61: 465-470.
31. Schuurs AH, Duivenvoorden HJ, Thoden Van Velzen SK et al. Value of teeth. *Community Dent Oral Epidemiol* 1990 18: 22-26.
32. Razack IA, Jaffar N, Jalalludin RL et al. Patients' preference for exodontia versus preservation in Malaysia. *Community Dent Oral Epidemiol* 1990 18: 131-132.
33. Liedberg B, Norlen P, Owall B. Teeth, tooth spaces, and prosthetic appliances in elderly men in Malmo, Sweden. *Community Dent Oral Epidemiol* 1991 19: 164-168.
34. Leao A. The development of measures of dental impacts on daily living. PhD thesis. London University; 1993.
35. AL-Omiri MK. Tooth wear impacts on daily living. PhD thesis. Queen's University; 2002.
36. Abu Hantash RO. Personality and satisfaction with dental implants. MSc thesis. Jordan University of Science and Technology; 2004.
37. Al-Omiri MK, Abu Alhaija ES. Factors affecting patient satisfaction after orthodontic treatment. *Angle Orthodontics* 2006 76: 422-431.
38. Abu Hantash RO, AL-Omiri MK, AL-Wahadni AM. Psychological impact on implant patients' oral health related quality of life. *Clin Oral Impl Res* 2006 17: 116-123.
39. Miura H, Miura K, Sumi Y et al. Relationship between chewing ability and health practice among the elderly residing in a rural community. *J Gerodontology* 2001 15: 248-253.



40. Agergerg G, Carlsson GE. Symptoms of functional disturbances of the masticatory system. A comparison of frequencies in a population sample and in a group of patients. *Acta Odontol Scand* 1975 33: 183-190.
41. Wayler AH, Chauncey HH. Impact of complete dentures and impaired natural dentition on masticatory performance and food choice in healthy aging men. *J of Prosth Dent* 1983 49: 427-433.
42. Carlsson GE. Masticatory efficiency: the effect of age, the loss of teeth and prosthetic rehabilitation. *Int Dent J* 1984 34: 93-97.
43. Agergerg G. Mandibular function and dysfunction in complete denture wearers – a literature review. *J Oral Rehabil* 1988 15: 237-249.
44. Witter DJ, Cramwinckel AB, Van Rossum GMJM et al. Shortened dental arches and masticatory ability. *J Dent* 1990 18: 185-189.
45. Witter DJ, Van Elteren P, Kayser AF et al. Oral comfort in shortened dental arches. *J Oral Rehabil* 1990 17: 137-143.
46. Locker D. The burden of oral disorders in a population of older adults. *Community Dent Health* 1992 9: 109-124.
47. Rosenoer LM, Sheiham A. Dental impacts on daily life and satisfaction with teeth in relation to dental status in adults. *J Oral Rehabil.* 1995 22: 469-480.
48. Omar SM, McEwen JD, Ogston SA. A test for occlusal function. The value of masticatory efficiency test in the assessment of occlusal function. *Br J Orthodont* 1987 14: 85-90.
49. Kayser AF. How much reduction of the dental arch is functionally acceptable for the ageing patient? *Int Dent J* 1990 40: 183-188.