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Missing Teeth and its Impact on Oral Function of the Patients Visiting Dental Colleges in and Around Capital City of Nepal

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ABSTRACT

Introduction: In the present scenario oral diseases are more prevalent in the large population. Missing teeth is one of them which have negative impact on oral health related quality of life.

Objectives: The aim of this study was to investigate how tooth loss affects the oral health related quality of life through an Oral Health Impact Profile-14 (OHIP-14) questionnaire among patients visiting the six different Dental Colleges in and around Kathmandu, Nepal.

Methodology: The descriptive cross-sectional study was conducted from June 10 to December 15, 2021. Patients visiting the prosthodontics outpatient department (OPD) during the study period were enrolled until the desired sample size of 380 was met. Co-investigators assigned in every dental colleges were responsible for the data collection. Data was obtained from a questionnaire based on the OHIP-14 form, additional questions and a clinical examination. Data from completed forms were entered into Microsoft excel and analyzed with SPSS 21.

Results: Mean age of the participants was 47.6 years. Out of 380 participants 119 (48 %) were males and rest were females. The mean number of missing teeth was 5, and the mean total OHIP-14 score was 21.57±12.55. The most frequently impacted dimensions for the OHIP-14 were "Physical pain" (77 %) and "Psychological discomfort" (82.5 %). Similarly, 367 (96.8 %) of the investigated population experienced some form of impact due to missing teeth on their OHRQoL.

Conclusion: A large majority of the patients visiting different Dental Colleges experienced an impact on their OHRQoL due to the missing teeth.

INTRODUCTION

Oral disease is the prevalent condition that may affect the person during any point of their lifetime and considered as a public health burden.¹⁻³ About 3.5 billion populations are affected by the oral diseases.⁴ The concern here is regarding, the incidence of dental caries and periodontitis, that leads to edentulism.^{5,6}

Dental caries is a chronic progressive multifactorial disease resulting in demineralization of the inorganic portion of the tooth and dissolution of the organic portion eventually leading to the tooth loss and that may have impact of oral health related quality of life of patients.⁷ The bone loss due to periodontal disease can eventually lead to increased tooth mobility and discomfort, and may result in tooth loss.⁸ Tooth loss may be associated with decrease in the masticatory efficiency/function and poor nutritional status. When exposed to pain, problems with chewing, eating, and smiling as well as communication due to missing, fractured, or discolored teeth can occur, thus impacting social life, leading to lower self-esteem, and ultimately lowering quality

of life.⁸

The Oral Health Impact Profile (OHIP) was constructed in 1994 by Slade and Spender, as an instrument to measure the Oral health related quality of life (OHRQoL).⁹ The original form consisted of 49 questions that measured how an individuals' quality of life is affected by oral health through the seven dimensions suggested by the WHO. To ease the effort required from clinicians and make the form more efficient, a shorter version was constructed from the original 49 questions. The shorter form still investigates the original seven dimensions but only consisted of 14 questions, two questions for each dimension. The Oral Health Impact Profile – 14 questions (OHIP-14) was found to have a good reliability, validity and precision compared to the original OHIP-49 version.¹⁰ The OHIP-14 format is one of the most used and known instruments used to measure OHRQoL and has been translated and validated into several different languages all around the world.¹⁰ In 2014 Vikram and Singh translated and validated version of the original OHIP-14 in the native language of Nepal, Nepali.¹¹ The aim of this study was to investigate how tooth loss affects the oral health related quality of life through an Oral Health Impact Profile-14 (OHIP-14) questionnaire among patients visiting the six different Dental Colleges in and around Kathmandu, Nepal.

METHODOLOGY

The cross-sectional observational study was performed at six different Dental Colleges (Kantipur Dental College, Nepal Medical College and Teaching Hospital, Kathmandu Medical College and Teaching Hospital, Peoples Dental College and Hospital, Maharajgunj Medical Campus and Kathmandu University School of Medical Sciences) in and around Kathmandu Valley, Nepal. Except one Kathmandu University School of Medical Sciences, Dhulikhel which is a community based Dental College remaining five Dental Colleges are private owned. Ethical clearance was obtained from Nepal Health Research Council (Ref. No.: 2553) before starting the data collection. Data collection took place between June 10 to December 15, 2021.

Sample size of 376 was calculated by utilizing the following formula for finite population:

$$\text{Sample size, } n = \left\{ \frac{z^2 p(1-p)}{e^2} \right\} / \left[1 + \left\{ \frac{z^2 p(1-p)}{e^2 N} \right\} \right]$$

$Z=1.96$ at confidence level = 95%; $p=0.5$ (50%) {this type of study is first of its kind, so 50 % prevalence is taken} with Margin of error (e) = 0.05 (5%); $N= 18000$, total number of patients visiting dental OPD for replacing missing teeth to the respective dental colleges in 6 months duration. However, 380 participants were included in the present study.

The study was designed as a questionnaire based on OHIP-14. The first page of the form consisted of a consent form. The second page consisted of eight questions regarding gender, age, reason for visiting the dentist etc. The third page of the form consisted of the validated version of the OHIP-14 questionnaire.¹²

When the entire questionnaire was completed, the investigator checked for questions left unanswered. If so, the participant was asked to answer the question(s) to the best of their abilities. Investigators who were assigned by the Principle investigator

were always present with the participant if any questions arose. In the event of the participant or relative not being able to answer or read the questions in any of the given languages, help was given from the assigned focal person in respective Dental Colleges. The Nepali version of the additional questions and consent form was used in all the Dental Colleges.

Inclusion criteria included were patient with at least one missing tooth, 18 years or older patients, patients who have had their teeth extracted a month earlier for various reason. Exclusion criteria included were treatment by extraction of the relevant tooth less than 4 weeks prior to questioning, only missing the third molar or molars, tooth gap closed with fixed dental prosthesis, medically compromised patients, patients who do not give consent to be the part of the study.

Participants who had extracted their teeth within the last four weeks were excluded from the study. Since pain or discomfort, as well as impairment of the chewing ability and ability to speak post extraction might affect the answers given in the questionnaire. The Patients and their relatives who were visiting the hospital were asked if they wanted to take part in the study while waiting in the waiting room.

Before agreeing to participate in the study the participant was asked to read and agree to a consent form based on the Declaration of Helsinki.¹² The consent form was given and written in Nepali.

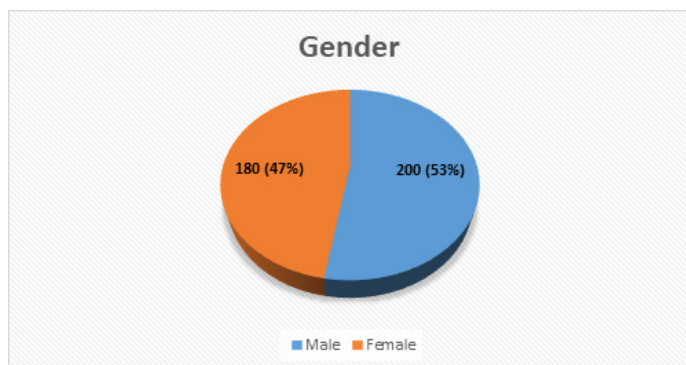
During status collection, a brief oral examination was performed by visually inspecting the oral cavity recording missing teeth only. When participants were questioned about the reason for missing the teeth, the participant's subjective view was used to answer the question.

The OHIP-14 questionnaire is a standardized form that evaluates each question through 5 different answers and score these answers accordingly; from never (score 0) to very often (score 4). The results from the 14 questions were then summarized to give a perceptive score of the subjectively OHRQoL of the participant on a scale from 0 to 56. The total additive OHIP score could then be used to measure how much one or several missing teeth affect the OHRQoL. The seven subgroups in the OHIP-14 form could then be compared against each other to evaluate how they affect the total OHIP score in relation to each other.

Completed forms were analyzed with IBM Statistical Package of Social Science (SPSS) Statistics version 21 to find means, median, standard deviation and to perform frequency analyses. Data from the questionnaires were represented in the tabular form with their frequency.

RESULTS

The results collected were analyzed using the SPSS 21 version. None of the participants in the study scored 0. Out of 380 participants 200 were male and 180 females (Figure 1). However, we did not differentiate the patients according to the age.



In this study, 164 (43.2 %) of the participants reported that they hardly had any problem with pronouncing words. However, 41 (10.8 %) of the participants reported that they very often had the problem pronouncing the words. Similarly, 180 (47.4 %) of the participants reported that they had no problem with the taste sensation due to problems with teeth or wearing dentures.

Fig 1: Gender-wise distribution of the participants.

Table 1: Response of the participants about oral health related quality of life with missing teeth.

SN	Questions	Response by the participants n (%)			
		1	2	3	4
1	Have you had trouble pronouncing any words because of problems with your teeth, mouth or denture?	164 (43.2)	89(23.4)	86 (22.6)	41 (10.8)
2	Have you felt that your sense of taste has worsened because of problems with your teeth, mouth or dentures?	180 (47.4)	110 (28.9)	64 (16.8)	25 (6.6)
3	Have you had painful aching in your mouth?	103 (27.1)	212 (55.8)	49 (12.9)	16 (4.2)
4	Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth or dentures?	85 (22.4)	141 (37.1)	103 (27.1)	51 (13.4)
5	Have you felt self-conscious because of problems in your teeth, mouth or dentures?	105 (27.60)	150 (39.5)	93 (24.5)	32 (8.4)
6	Have you felt tense because of problems in your teeth, mouth or dentures?	85 (22.4)	135 (35.5)	124 (32.6)	36 (9.5)
7	Has your diet been unsatisfactory because of problems in your teeth, mouth or dentures?	112 (29.5)	136 (35.8)	76 (20)	56 (14.7)
8	Have you had to interrupt meals because of problems in your teeth, mouth or dentures?	112 (29.5)	122 (32.1)	87 (22.9)	59 (15.5)
9	Have you found it difficult to relax because of problems in your teeth, mouth or dentures?	173 (45.5)	143 (37.6)	52 (13.7)	12 (3.2)
10	Have you been a bit embarrassed because of problems in your teeth, mouth or dentures?	100 (26.3)	117 (30.8)	118 (31.1)	45 (11.8)
11	Have you been a bit irritable with other people because of problems in your teeth, mouth or dentures?	187 (49.2)	129 (33.9)	53 (13.9)	11 (2.9)
12	Have you had difficulty doing your usual jobs because of problems in your teeth, mouth or dentures?	167 (43.9)	138 (36.3)	63 (16.6)	11 (2.9)
13	Have you felt that life in general was less satisfying because of problems in your teeth, mouth or dentures?	149 (39.2)	136 (35.8)	89 (23.4)	6 (1.6)
14	Have you been totally unable to function because of problems in your teeth, mouth or dentures?	189(49.7)	140 (36.8)	41 (10.8)	10 (2.6)

In the present study, 212 (55.8 %) of the participants reported that they occasionally had painful ache in the mouth. Out of total, 141 (37.1 %) of the patients reported occasional uncomfotability eating foods because of the problems with teeth, mouth or dentures and 22.4% of them said they hardly had any problem. Similarly, 150 (39.5 %) of the participants said that they occasionally feel conscious regarding the problems in teeth, mouth or dentures and 93 (24.5%) of the participants fairly often feel the consciousness.

In this study, 135 (35.5%) of the participants feel occasionally tense due to problems in their teeth, mouth or dentures. Also,

124 (32.6 %) participants fairly often feel that and 136 (35.8 %) of the participants reported that they occasionally had problem with diet because of problems in teeth. Similarly, 56 (14.7%) of the patients reported they very often have the problem with diet because of the problems in mouth and 59 (15.5 %) of the participants complained that they very often have to interrupt meals because of the problem in teeth, mouth or dentures. Out of total participants, 122 (32.1 %) of the participants reported to have the problem occasionally 173 (45.5 %) of the participants feel very rarely the difficulty to relax because of the problems with teeth, mouth or dentures. However, 52 (13.7 %) of the

participants feel fairly often problem to relax.

In this study, 118 (31.1 %) of the participants feel fairly often embarrassed because of the problems in teeth, mouth or dentures. However, 100 (26.3 %) of the participants had rare feelings of embarrassment due to problems in teeth, mouth or dentures. Similarly, 129 (33.9 %) of the participants occasional feel irritable with other people because of the problems in their teeth, mouth or dentures. However, 187 (49.2 %) reported very rare feeling of the same. Also, 138 (36.3 %) of the participants occasionally felt difficulty doing usual jobs because of the problems in their mouth, teeth or denture. One participant however did not answer this question.

In the present study, 136 (35.8%) of the participants occasionally feel that life was less satisfying because of the problems in their teeth, mouth or dentures and 89 (23.4 %) of the participants fairly often felt so. Similarly, 140 (36.8 %) of the participants occasionally felt totally unable to function because of problems in their teeth, mouth or dentures. However, 189 (49.7 %) of the participants very rarely experienced so. The Total mean OHIP-14 Score of 28.08 with Standard Deviation 8.64 was obtained in our study. Minimum score being 14 and Maximum Score being 53 (Table 2).

Table 2: Mean and Standard deviation of Oral Health Impact Profile-14 (OHIP-14).

Total number of participants	Maximum	Minimum	Mean±Standard deviation
380	14.00	53.00	28.08±8.64

DISCUSSION

Batista et al. did a randomized study in Brazil, on 248 participants who were 20-64 years old, presented a total mean OHIP-score of 10.21±1.16 and 57 % of the participants were fully dentate.¹³ They found that most important impact were psychological discomfort, physical pain and physiological disability. This was the similar finding in our study where significant numbers of patients reported psychological discomfort, physical pain and physiological disability. They also reported that Missing teeth in the anterior region were more likely to present a higher total OHIP-score compared to teeth missing in the posterior region. However, our study did not analyze the missing teeth anterior or posterior region. Our study means OHIP- score was 28.09±8.64, this may be due to increase number of sample size and that none of the participants in our study answered option with 0 score.

A similar study done in Jönköping Sweden, the mean total OHIP-score was 6.4±7.1 in a study population of 519 randomly selected participants, aged 20-80 years.¹⁴ The Swedish study presented the findings with most impact on; physical pain, psychological disability and psychological discomfort. This finding is similar like our study. Among all the participants in this study, 21 % reported no problems in the oral cavity, however in our study 55.8 % of the participants reported occasional problems in oral cavity.

Acharya et al. In India did the clinical examination combine with OHIP questionnaires among 414 dentate participants (18-80

years old) in the waiting room at a dental care center, they found that the mean total OHIP score 11.8±8.4.¹⁵ Among the OHIP-14 findings, physical pain, psychological discomfort, physiological disability and psychological disability had most impact on the total score, which was similar to our study.

Jakob et al. in their study in patients visiting Kantipur Dental College and Hospital in Kathmandu Nepal found out that Participants visiting the KDCH presented a similar pattern and the dimensions where the most impact was found in physical pain, psychological discomfort and psychological disability.¹⁶ This finding is similar to our findings.

Mannu et al., found that Nepalese population found it difficult answering in English and chances of mistake while answering prevails, that was the reason our study was conducted only in Nepali language which made it easy for the participants to answers and less confusion among the participants.¹¹

This study did not take into consideration the reason for the extraction neither it correlated the participants knowledge about the loss of the teeth. Since no dental records were available this study can, therefore, only present the self-reported reason for the missing teeth.

CONCLUSION

Most of the participants reported that missing teeth often/ always affects their oral health related quality of life like pain, difficulty, problems during pronunciation, irritability, social embracement, etc. Based on the findings of the present study, it can be concluded that missing tooth/teeth may affect the oral health related quality of life.

RECOMMENDATIONS

This study recommends to conduct a study with large sample size and geographical area to increase the reliability of the findings.

LIMITATIONS OF THE STUDY

Since this is cross-sectional study carried out in and around the Kathmandu district, it can-not be generalized into the entire population.

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CONFLICT OF INTEREST: None.

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