Oral health perceptions, practice, dental caries prevalence, severity and related quality of life among adults aged 35 - 44 years in Jorpati, Nepal

Shrestha N[1], Acharya J[2], Bishet S[1]

Department of Conservative Dentistry and Endodontics, Nepal Medical College and Teaching Hospital, Kathmandu, Nepal.[2]Department of Community and Public Health Dentistry, Nepal Medical College and Teaching Hospital, Kathmandu, Nepal.

Corresponding Author: Dr. Nameeta Shrestha, MDS, Department of Conservative Dentistry and Endodontics, Nepal Medical College and Teaching Hospital, Kathmandu, Nepal; e-mail: nameetashrestha@gmail.com

ABSTRACT

The occurrence of dental caries, its distribution, oral health (OH) perceptions and related quality of life (QoL) among 35-44 year old adults were assessed since oral health is an integral component of general health. Oral health related quality of life (OHRQoL) was measured using the Oral Health Impact Profile (OHIP-14) and dental caries status was recorded according to World Health Organization (WHO) index (1997) in 145 adults visiting College of Dental Sciences and Hospital, Nepal Medical College (CODSH- NMC), Kathmandu. Dental caries was diagnosed in 120 (82.8%) adults, and 59 (40.7%) of them had a high DMFT score. The number of missing and decayed teeth was found to be significantly correlated with the components of the Oral Health Impact Profile-14. The older participants who were educated above higher secondary level and female participants reported a poorer Oral health related quality of life. The male participants reported better Oral Health Impact Profile-14 scores, were more satisfied with their current level of oral health and also had low DMFT scores. The largest impact on the performance of daily activities was related to decayed and missing teeth and a higher DMFT score. Participants with a higher average of intact teeth reported less impact on their daily activities. A patient-based assessment of oral health status in addition to normative assessment is, therefore, essential to the measurement of health. These findings are important since measures of quality-of-life are increasingly being used to supplement clinical indicators to explore the individuals' perspectives on their health and health care and is an essential part of assessing oral health.

Keywords: Dental caries, adults, Oral health related quality of life, Oral Health Impact Profile-14.

INTRODUCTION

A current review of the available epidemiological data from many countries clearly indicates that there is a marked increase in the prevalence of dental caries. This global increase in dental caries prevalence affects children as well as adults, primary as well as permanent teeth, and coronal as well as root surfaces. A very extensive and comprehensive National Health Survey was conducted in 2004 throughout the entire country of India which reported the prevalence of dental caries among 35-44 years old individuals to be 80.2%.[1] A recent study done in Nepal showed the caries prevalence among 35-44 year olds to be 80.84%.[2]

Quality of life (QoL) is defined by WHO as "an individual's perception of his or her position in life in context of the culture and value systems in which the individual lives and in relation to that individual's goals, expectations, standards, and concerns".[3] Reisine concluded in her study that traditional measures of oral health status (DMFT and CPI), should be linked to measures of social outcomes in order to place dental conditions within the broader context of health status in terms that are relevant to policy makers.[4] OHRQoL is considered as an important outcome of dental care.[5] Evidence suggests that there exists an interrelationship between oral and general health.[6] The World Oral Health Report (2003) stated clearly that the relationship between OH and general health is proven by evidence. OH and general health are related in four major ways:

1. Poor OH is significantly associated with major chronic diseases
2. Poor OH causes disability
3. OH issues and major diseases share common risk factors
4. General health problems may cause or worsen OH conditions.[7]

Despite great success in improving the OH of populations globally, problems still remain in many communities around the world, particularly among the underprivileged groups in developing countries. Early detection of disease is, in most cases, crucial to control of the oral condition. A thorough naked-eye oral examination with adequate light can identify many oral conditions in the early stages.[8]Dental caries is the major OH condition in developing countries, affecting 60-

90% of school children and vast majority of adults.[7] WHO recommends basic OH surveys in five selected age-groups (i.e., 5 years, 12 years, 17-18 years, 35-44 years, and 65-74 years) in order to estimate the magnitude of the problem and to plan intervention activities.[9]

Therefore, keeping in mind the paucity of literature on dental problems in adults and the public health importance of dental caries, this study was planned to provide some baseline information on the OH needs of the adult population visiting a hospital in Jorpati, Kathmandu valley.

Therefore, the purpose of this study was to evaluate the oral health related quality of life (OHRQoL) among Nepalese adults aged 35-44 years in Jorpati, Nepal and to determine its relationship with their perceived oral health (OH) status, satisfaction with OH and perceived treatment need. Assessment of dental caries status by prevalence and severity was also done.

MATERIALS AND METHODS

This was a cross sectional study conducted among 145 adults in Nepal Medical College in Jorpati, Kathmandu valley. A previous study done in Nepal showed the caries prevalence among 35-44 year olds to be 80.84%, which was the prevalence used for estimating the sample size in this study.[2] This derived a total of 145 adults in the study using the formula for sample size estimation.[10] College of Dental Sciences & Hospital, Nepal Medical College (CODSH-NMC) was selected out of the 6 dental colleges in Kathmandu Valley by purposive sampling. The inclusion criteria comprised of patients between the age group of 35-44 years visiting CODSH-NMC, from July to September 2015 who were willing to participate in the study and signed a consent form, and those who were able to read and write in the Nepali language. From the patients attending the hospital during the data collection period, participants belonging to the age group of 35-44 years were selected based on the selection criteria. Adults with any systemic condition, including diabetes and hypertension, those that provided incomplete data for analysis, and those who were not willing to participate were excluded from the study. Age was recorded as age at last birthday, rounded off to 6 months, and this information was taken from the participant's citizenship or identification card.

To measure OHRQoL especially in population-based studies, the Oral Health Impact Profile (OHIP-49) has been formulated.[11] The OHIP is a questionnaire with established validity and reliability and has been used in a wide range of OHRQoL studies.[12] The OHIP instrument has become a very popular means to detect effectiveness of oral health care methods both in clinical as well as research settings.[13] Due to the length of the original instrument, it became quite impractical to administer it and therefore a shorter version of 14 questions was formulated (OHIP-14) and subsequently the validity and reliability when checked was found to be as reliable as the original questionnaire.[14]

As the OHIP-14 was developed in English, it became difficult to administer this questionnaire in non-English speaking nations and in places where the local dialect was different from English. Consequently, this instrument was translated into different languages like Brazilian, Mandarin, Taiwanese, Sinhalese and many others as pertaining to the different geographical areas.[15-18] The OHIP-14 instrument was translated into Nepali and a study, the first of its kind in Nepal, was done to test its psychometric properties in terms of reliability and validity. The Nepalese version of the OHIP-14 instrument could be imperative to measure the OHRQoL in the Nepalese population.[5]

Information for the study was collected using a self-administered questionnaire. The questionnaire was a modified version of a previously tested and used questionnaire, and was divided into six sections.[5,9,19] Section A was designed to obtain the demographic profiles of the subjects; which included age, gender and educational status. Section B was concerned with the subject's OHRQoL. The short version of the Nepalese OHIP consists of 14 items that measure the seven domains, namely functional limitation, physical pain, physical disability, psychological discomfort, psycho disability, social disability and handicap of persons that could arise as a result of problems with their teeth, mouth or dentures.[5] Section C dealt with the subject's perceived OH status.[19] This was categorized into Good (0-7) and Poor (8-14). Sections D and E were related to their satisfaction with OH and their perceived need for dental treatment on a "yes" or "no" basis respectively.[19]

For the OHRQoL measures, questions assessed the OHRQoL on the Likert's scale which, for, the sake of analysis, the additive (ADD) score was calculated by adding up the response codes (0 = yes, 1 = no). The ADD score ranged from 0 to 14. In our study, a higher score (8-14) indicated better OHRQoL. Percentages were calculated for the categorical variables and mean and standard deviations were calculated for the continuous variables. The null hypothesis tested in this study was there would be no association between OHRQoL and perceived OH status, satisfaction with OH, and perceived treatment need.

The sixth section recorded the participants' dental status. The subjects were screened for evaluation of dental caries using mouth mirror and probe under natural illumination, as per the standards of the WHO-OH Survey protocol. WHO-OH assessment form (1997) was modified and used for clinical examination of dental caries status of the adults.[9] Decayed, missing and filled teeth were recorded and scored with the Decayed, Missing and Filled Teeth (DMFT) index.

Prevalence of dental caries was calculated as:

Prevalence = Total number of adults who have at least ≥ 1DMFT ÷ Total number of adults examined

Severity of dental caries was calculated as = Group DMFT = Individual DMFT / Total number of adults examined

To determine level of Severity using DMFT, it was done as follows:[20]

High Caries: Scores above >4.4

Moderate: Scores ranging from 2.7- 4.4

Low: Scores below <2.6

The data obtained was tabulated and analyzed using Software Package for Social Science (SPSS) version 17. Descriptive Statistics were calculated, and Pearson's Chi Square test and Fischer Exact Test were used to test levels of association.

ETHICAL ISSUES

The project was submitted to and approved by the Research Ethical Sub-Committee, Nepal Medical College (RESC-NMC, Reference number- 02-072/073).

RESULTS

A total of 145 adults aged 35-44 years were studied. The age group of 35-39 years comprised of 86 adults (59.3%) and 59 (40.7%) were between the age group of 40-44 years. Of the total participants, 72 (49.7%) were males and 73 (50.3%) were females, and 35 (24.1%) had had no formal education at all (Table 1). The prevalence of dental caries was found to be 82.8% (Fig.1). A high DMFT score was reported in 59 (40.7%) of the participants (Fig 2).

Table 1: Distribution of the population

Variables	n	%
Age		
35-39 years	86	59.3
40-44 years	59	40.7
Gender		
Male	72	49.70
Female	73	50.3
Education		
None	35	24.1
Primary	31	21.4
Secondary	21	14.5
> Secondary	58	40.0

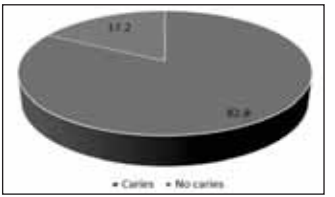

Fig. 1. Prevelence of dental caries

The OHIP-14 scores are as follows: 133 (91.72%) of the study population admitted to having functional limitation due to problems with their teeth, mouth or dentures. Psychological discomfort that was attributed to problems in teeth, mouth or dentures was reported by 111 (76.55%) of the participants. Of this, 34 (30.6%) reported psychological discomfort due to missing teeth in their mouth. Physical pain and disability of the OHIP-14 was reported by 128 (88.28%) of the participants. Of this, 103 (80.5%) of the participants had decayed teeth. Psycho disability was admitted by 123 (84.83%) of the participants. Of this, 68 (55.3%) belonged to the age group of 35-44 years and 55 (44.7%) belonged to the age group of 40-44 years. Social disability was seen in 117 (80.69%) of the total participants studied. Finally, 131 (90.34%) expressed a feeling of handicap due to problems with their teeth, mouth or dentures. Of this, 61 (46.6%) were females and 70 (53.4%) were males. From among those who expressed a feeling of handicap on the OHIP-14 the number of participants that were educated above secondary school were 55 (42.0%) (Tables 2 & 6).

Of the study population, 105 (72.4%) reported "good" OHIP-14 score. Of this, 59 (56.2%) were males and 46 (43.8%) were females. From among those who had "Good" OHIP-14 score, the number of participants that were educated above secondary school were 46 (43.8%).

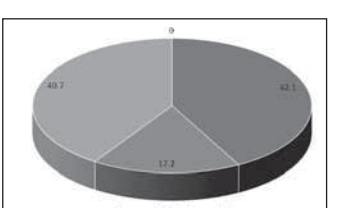

Fig. 2. Severity of dental caries

Table 2: OHIP-14 score

	YES		NO	
	n	%	n	%
Functional limitation Trouble pronouncing any word/ worsened sense of taste	133	91.72	12	8.28
Psychological discomfort Self-conscious/ embarrassed	111	76.55	34	23.45
Physical pain & disability Discomfort eating any food/ had ulcer Avoid eating some food/ interrupt meals	128	88.28	17	11.72
Psycho disability Felt tense/ difficult to relax	123	84.83	22	15.17
Social disability Bit irritable/ difficulty doing usual jobs	117	80.69	28	19.31
Handicap Life less satisfying/ totally unable to function	131	90.34	14	9.66

Table 3: Perceived level of oral health

	n	%
Very good	1	0.7
Good	17	11.7
Average	97	66.9
Poor	30	20.7

The participants that were satisfied with their current level of OH were 63 (60.0%). Low DMFT score was reported by 66 (62.9%) of the participants.(Table 7). The perceived level of OH was reported to be "Average" by 97 (66.9%) of the study population (Table 3). For the purpose of analysis, Perceived Level of OH was regrouped into "Good" and "Poor". "Poor" perception of OH was reported by 127 (87.59%) of the participants. Of this number, 69 (54.3%) were females and 58 (45.7%) were males (Table 8), and 71 (55.9%) were unsatisfied with their current level of OH.(Table 8).For the purpose of analysis, Satisfaction with Current Level of OH was regrouped into "Satisfied" and "Unsatisfied". Satisfaction with current level of OH was expressed by 73 (50.34%) of the study population. Of this number, only 26 (35.6%) were females and 47 (64.4%) were males (Table 8). All findings were statistically significant (P<0.05).

Of the total number of participants, 138 (95.2%) decided they need some kind of dental treatment (Table 4).

Table 4 : Perceived treatment nee

	n	%
YES	138	95.2
NO	7	4.8

Table 5: OHRQoL

	Age		Gender		Education				Decayed		Missing	
	35-39	40-44	M	F	None	Primary	Secondary	>Secondary	At least 1	No caries	At least 1	No missing
A. Functional Limitation												
YES	60.2	39.8	51.1	48.9	22.6	21.8	15.0	40.6	81.2	18.8	39.1	60.9
NO	50.0	50.0	33.3	66.7	41.7	16.7	8.3	33.3	100	0	41.7	58.3
P-value		0.548		0.367				0.620		0.128		1.000
B. Psychological Discomfort												
YES	59.5	40.5	53.2	46.8	25.2	21.6	14.4	38.7	79.3	20.7	30.6	69.4
NO	58.8	41.2	38.2	61.8	20.6	20.6	14.7	44.1	94.1	5.9	67.6	32.4
P-value		1.000		0.170				0.941		0.067		0.000
C. Physical Pain and Disability												
YES	57.8	42.2	52.3	47.7	23.4	22.7	12.5	41.4	80.5	19.5	38.3	61.7
NO	70.6	29.4	29.4	70.6	29.4	11.8	29.4	29.4	100.0	0	47.1	52.9
P-value		0.432		0.120				0.231		0.044		0.599
D. Psycho Disability												
YES	55.3	44.7	52.0	48.0	23.6	22.8	13.0	40.7	80.5	19.5	37.4	62.6
NO	81.8	18.2	36.4	63.6	27.3	13.6	22.7	36.4	95.5	4.5	50.0	50.0
P-value		0.020		0.247				0.548		0.125		0.344
E. **Social Disability**												
YES	57.3	42.7	53.8	46.2	19.7	24.8	12.8	42.7	80.3	19.7	39.3	60.7
NO	67.9	32.1	32.1	67.9	42.9	7.1	21.4	28.6	92.9	7.1	39.3	60.7
P-value		0.393		0.057				0.013		0.164		1.000
F. Handicap Score												
YES	58.8	41.2	53.4	46.6	21.4	20.6	16.0	42.0	80.9	19.1	36.6	63.4
NO	64.3	35.7	14.3	86.7	50.0	28.6	0	21.4	100.0	0	64.3	35.7
P-value		0.781		0.009				0.039		0.129		0.081

Table 6: OHIP - 14

	Good (%)	Poor (%)	P- Value
Age			
35-39	58.1	62.5	0.707
40-44	41.9	37.5	
Gender			
Male	56.2	32.5	0.015
Female	43.8	67.5	
Education			
None	18.1	40.0	0.022
Primary	24.8	12.5	
Secondary	13.3	17.5	
>Secondary	43.8	30.0	
Perceived level of oral health			
Good	15.2	5.0	0.156
Poor	84.8	95.0	
Satisfaction with current level of oral health			
Satisfied	60.0	25.0	0.000
Unsatisfied	40.0	75.0	
Perceived treatment need			
YES	93.3	100	0.19
NO	6.7	0	
DMFT Low	62.9	42.5	0.038
DMFT High	37.1	57.5	

Table 7: Perceived Level of Oral Health

	Good (%)	Poor (%)	P- Value
Age			
35-39	61.1	59.1	1.000
40-44	38.9	40.9	
Gender			
Male	77.8	45.7	0.012
Female	22.2	54.3	
Education			
None	16.7	25.2	0.825
Primary	22.2	21.3	
Secondary	11.1	15.0	
> Secondary	50.0	38.6	
DMFT Low	44.4	59.1	0.310
DMFT High	37.1	57.5	

DISCUSSION

Not many studies on OH status in this age group have been conducted in Nepal. A study done in Bhairawa, Saptari in 2013 showed the prevalence of dental caries to be 80.84%.[2] The study utilized objective measures of dental diseases – presence of dental caries and periodontal diseases. It has been recognized that objective measures of disease provide little insight into the impact of oral disorders on daily living and QoL and hence do not provide adequate measure of the effect of OH on quality of life.[19] Measures of QoL are increasingly being used to supplement clinical indicators to explore the individual's perspectives on their health and health care, and it is an important part of assessing OH.[21]

Table 8: Satisfaction

	Satisfied (%)	Unsatisfied (%)	P -Value
Age			
35-39	56.2	62.5	0.500
40-44	43.8	37.5	
Gender			
Male	64.4	34.7	0.000
Female	35.6	64.4	
Education			
None	19.2	29.2	
0.195	22.2	21.3	
Primary	26.0	16.7	
Secondary	11.0	18.1	
>Secondary	43.8	36.1	
DMFTLow	57.5	56.9	
1.000			
DMFTHigh	42.5	43.1	

In the present study, the number of missing teeth and dental caries status were found to be significantly correlated with psychological discomfort and physical pain and disability of the OHIP-14 respectively. Similar results were reported in a study done by Acharya in 2008.[22] High frequencies of physical pain and disability were also reported by Saub on a group of Malaysian adults.[23] In our study, psycho disability was found more in the older group. This could suggest that the older population is more likely to perceive greater impact on their QoL because of a life-time experience of oral ill health.[19]

Participants that were educated above higher secondary had a significant correlation with social disability and a feeling of handicap of the OHIP-14, although they had an overall "good" OHIP-14 score. Perhaps, the less educated populations with little access to and scarcely any dental treatment had learned to live with the OH impacts on their lives, and even the most severe of these are not considered reasons for social disability or a feeling of handicap.[24-25]

In our study, the male participants perceived a higher sense of 'handicap' due to their oral status than females, contrary to results seen in another study by Acharya.[22] More number of male participants had a better OHIP-14 score and perception of their OHRQoL than the female participants. In a study done by Antonio Blanco-Aguilera *et al*, according to the regression model, a one-unit increase in gender, i.e. being female rather than male, increases the OHIP-14 score by almost 4 points, keeping all other variables in the regression model constant.[26] These data were similar to those obtained by Rusanen *et al*, who concluded that women reported poorer OHRQoL than men with malocclusion and temporomandibular disorders.[27] The female participants were also less

satisfied with their current level of OH compared to the male participants. This may suggest that women are more responsive to social expectations of the importance of esthetics in comparison to their male counterparts. Men may be less self-conscious about their appearance.[28] Peres *et al* also reported that female adolescents had greater dissatisfaction with their dental appearance.[29]

The perceived level of OH was "average" in our study, while a study done on military cadets reported 60% of the cadets having a "good" or "excellent" opinion of their OH.[19] The reason could be that military cadets are generally subjected to a thorough dental examination prior to their enlistment and may have had dental treatment undertaken to address the more serious conditions experienced. The fact that 93% of the cadets were males could have also influenced the result.[19]

A positive correlation with statistical significance was also found between OHIP-14 and DMFT. Similar results were reported by Biazevic *et al*.[30]

Kieffer and Hoogstraten found that people who rated their OH as good or very good reported considerably less symptoms than people who rated their OH as fair or poor.[31] In our study and another done by Antonio Blanco-Aguilera *et al*, patients who rated their OH status as poor and were unsatisfied with their level of OH also had a poorer perception of their OHRQoL as measured by the OHIP-14.[26] These results coincide consistently with those of other authors such as Montero and Bravo in a number of papers addressing this phenomenon.[26,32-33]

The largest impact on the performance of daily activities was related to decayed and missing teeth and a higher DMFT. Participants with a higher number of intact teeth presented less impact of oral health related problems on their daily activities. The study being cross sectional in nature cannot establish the temporal association between the variables. The results of the study are not generalizable to the entire Nepalese population and only to patients visiting the facility. High percentage of people with perceived need for treatment may be because of bias as it was a hospital based study and people visit hospital mostly due to need of treatment.

An evaluation of the results of the study would recommend a patient-based assessment of Oral Health status in addition to normative assessment for the overall measurement of oral health status.

ACKNOWLEDGEMENT

We are grateful to RESC-NMC for the research grant and ethical approval.

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