

# Association between Subjective Happiness and Periodontal Disease in Patients Visiting at a Tertiary Care Centre of Central Nepal

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## ABSTRACT

**Introduction:** Happiness has been considered as a colloquial term for subjective well-being. There is a causal relationships and factors contributing to happiness achievement and satisfaction. One of the major factors is oral health in which periodontitis plays a major role.

**Objective:** To explore the association between subjective happiness and periodontal disease.

**Methods:** A descriptive cross-sectional study was conducted in the Department of Periodontology and Oral Implantology from August 2018 to June 2019 after obtaining ethical clearance from the institutional review committee (IRC). Where 103 patients with chronic periodontitis according to the 1999 classification system were recruited by convenient sampling methods and were asked to fill out the questionnaire of subjective happiness scale given by Lyubomirsky. This scale was compared on the basis of periodontitis severity. Data were collected and entered into Microsoft Excel and statistical analysis was done using SPSS v.20. Data were represented as mean and standard deviations and the association between happiness and periodontitis was determined using Chi-square test.

**Results:** Out of 103 patients the mean subjective happiness score was found to be  $18.78 \pm 1.692$ . Similarly, there was no significant association between happiness scale and periodontitis in the present study ( $P$  value = 0.821).

**Conclusions:** There is evidence of the relationship between subjective happiness and periodontitis. The findings of this study revealed a new perspective on periodontitis, including the potential for innovative treatments of a specific population with periodontitis.

**Keywords:** Chronic periodontitis; oral health; subjective happiness scale; wellbeing.

## INTRODUCTION

Periodontal disease is known to be the sixth most prevalent disease affecting many individuals and generating considerable healthcare costs.<sup>1</sup> If left untreated, the disease will eventually lead to progressive tooth loss and its multiple sequelae including altered masticatory function, speech, aesthetics, psychological repercussions, and quality of life.<sup>2</sup> That is the reason why periodontal disease affects the happiness of a person.

Happiness is a mental or emotional state of well-being characterised by pleasant emotions ranging

from contentment to intense joy and refers to how people experience the quality of their lives and includes both emotional reactions and cognitive judgments.<sup>3</sup> Also, it is a major indicator of subjective well-being. Lyubomirsky compiled research findings documenting that happiness is associated with multiple positive outcomes including better performance ratings at work, higher salaries, and improved health.<sup>4</sup>

The association between Periodontal diseases and the happiness of a patient has never been studied in the Nepali population. So, this study aimed to assess the subjective happiness of a patient suffering from periodontal disease, so that we can plan our treatment accordingly and thereby improve the patient's quality of life.

## METHODS

A descriptive cross-sectional study was conducted to determine the association of subjective happiness

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with periodontal disease visiting the Department of Periodontology and Oral Implantology in Kathmandu University School of Medical Sciences (KUSMS), Dhulikhel, Kavrepalanchok, Nepal from August 2018 to June 2019. A convenience sampling method was used. Ethical approval was obtained from the Institutional Review Committee of KUSMS (IRC-KUSMS, Ref. 147/18). The written informed consent was obtained from patients before participation.

The sample size was calculated using the following formula:

$$N = \frac{Z^2 \sigma^2}{d^2}$$

$$=100$$

where  $z=1.96$  at 95% confidence interval,  $\sigma$  = standard deviation = 0.26,<sup>5</sup>  $d$  = margin of error = 0.05

Patients with periodontal disease of age between 25 to 60-years-old having at least 20 natural teeth in both jaws were included in the study. Patients with known systemic disease, smokers, and patients receiving periodontal treatment within the preceding six months were excluded from the study.

Proper history-taking and clinical examination were done. Patient education, motivation, and detailed oral hygiene instructions were given. Patients were motivated to perform proper brushing techniques (Modified Bass) before the commencement of the study. Patients falling under the inclusion criteria were chosen conveniently as a sample. Patients having clinical attachment loss (CAL) were recorded as having periodontal disease. They were further described based on severity:

Mild = CAL 1-2 mm

Moderate = CAL 3-4 mm

Severe = CAL 5 mm or more

Instruments used were the University of North Carolina - 15 mm probe, and a mouth mirror.

Happiness was assessed by the subjective happiness scale standard set of questionnaires given by Lyubomirsky and was scored accordingly.<sup>4</sup>

The SHS is a 4-item survey that uses statements to

ask participants to estimate their happiness or to compare it to that of others.<sup>4</sup> It is scored on a Likert-type scale from one to seven.<sup>4</sup>

The four-item subjective happiness scale questionnaire includes:

1. In general, I consider myself
2. Compared with most of my peers, I consider myself
3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?
4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

Data were entered in Microsoft Excel sheet 2016 and transported to IBM SPSS Statistics for Windows, version 20.0 (IBM Corp., Armonk, N.Y., USA) for further analysis. The association between the Subjective happiness scale and periodontitis was calculated using Chi-square test. The statistical level was set at  $P < 0.05$  for significance at 95% confidence interval.

## RESULTS

A total of 103 participants diagnosed with periodontitis were assessed to fill out the subjective happiness questionnaire. The mean age of the study participants was  $43.52 \pm 9.439$  with a minimum of 29 years and a maximum of 60 years. In this study, there were majority of males with a total of 69 (67%) patients while 34 (33%) of them were female.

Based on the diagnosis of patients classified under mild, moderate, and severe maximum of them were diagnosed under severe with a frequency of 55 (53.4%) followed by moderate then mild with the frequency of 46 (44.7%) and 2 (1.9%) respectively. On average Lyubomirsky interpreted the score into average, not happy, and happy where in the present study maximum were averagely happy with a frequency of 85 (82.5%) followed by not happy 13 (12.6%) and happy 5 (4.9%) (Table 1).

The total of questions for the subjects was four in number where the mean value for question number

one was found to be  $5.48 \pm 0.68$ , score seven being the highest. Likewise, in question number two, three, and four mean values were found to be  $5.41 \pm 0.83$ ,  $5.26 \pm 0.84$ , and  $2.65 \pm 0.72$  respectively. According to the scoring criteria given by Lyubomirsky, participants were happier than the average person in question number one, two, and three. Contrary to this, question number four shows less happy than the average person (Table 2).

On comparison of gender and happiness interpretation showed maximum participants were

averagely happy in both males (84.1%) and females (79.4%) whereas males were found to be happier than females which was found to be statistically significant ( $P < 0.005$ , Table 3).

Similarly, while comparing the mild, moderate, and severe periodontitis with the scores obtained from subjective happiness score on average was found to be  $18.50 \pm 0.7$ ,  $18.67 \pm 1.46$ , and  $18.81 \pm 1.89$  respectively which results to be averagely happy. However, this was shown to be statistically insignificant (Table 4)

**Table 1: Prevalence of all parameters (n%).**

| Parameters                                 | Frequency (n%) |
|--|----------------|
| <b>Gender</b>                              |                |
| Male                                       | 69 (67)        |
| Female                                     | 34 (33)        |
| <b>Periodontitis severity</b>              |                |
| Mild                                       | 2 (1.9)        |
| Moderate                                   | 46 (44.7)      |
| Severe                                     | 55 (53.4)      |
| <b>Subjective happiness interpretation</b> |                |
| Not happy                                  | 13 (12.6)      |
| Average                                    | 85 (82.5)      |
| Happy                                      | 5 (4.9)        |

**Table 2: Mean differences of each questions of subjective happiness scale.**

| Subjective happiness scoring questionnaires  | Mean $\pm$ SD    |
|--|------------------|
| 1. In general, I consider myself   | 1.48 $\pm$ 0.684 |
| 2. Compared with most of my peers, I consider myself   | 1.41 $\pm$ 0.834 |
| 3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you? | 1.26 $\pm$ 0.84  |
| 4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?     | 2.65 $\pm$ 0.724 |

**Table 3: Comparison of gender with subjective happiness interpretation.**

| Gender | Subjective happiness interpretation (%) |         |       | P value |
|--------|---|---------|-------|---------|
|        | Not happy                               | Average | Happy |         |
| Male   | 15.9                                    | 84.1    | -     | 0.004   |
| Female | 5.9                                     | 79.4    | 14.7  |         |

**Table 4: Association of severity of periodontitis with subjective happiness score.**

| Severity of Periodontitis | Subjective happiness score (mean±standard deviation) | P value |
|---------------------------|--|---------|
| Mild                      | 18.50 ± 0.70   | 0.821   |
| Moderate                  | 18.67 ± 1.461  |         |
| Severe                    | 18.87 ± 1.896  |         |

## DISCUSSION

The paradigm of change in concepts of health has been evolving. Likewise in case of oral health also relates with subjective measures like well-being and social aspects from the daily life and context of individuals.<sup>6</sup> Nowadays better understanding of oral health includes individuals' subjective dimensions, which are relevant to their perceptions as well as well-being, called patient-reported outcomes.<sup>7,8</sup>

Thereby, happiness is known to be a subjective concept that can be a synonym of well-being.<sup>9</sup> Positive well-being and happiness have been directly or indirectly been related to outcomes such as healthy behaviors, better mental health, higher educational levels, longevity, and better social adaptation.<sup>10,11</sup> There has been seen an association between various health hazards and subjective happiness scale.<sup>12,13</sup> Likewise concerning oral health there have been few studies. In happy children, it has been proved that they have a higher frequency of brushing.<sup>14</sup> Additionally, university students receiving routine dental services seemed to be more happier<sup>11</sup>, plus association between malocclusion and dental caries was seen with happiness and emotional well-being in adolescents.<sup>15,16</sup>

This cross-sectional study was done to identify periodontitis and its relation to the happiness of a person. This study solely depends on Lyubomirsky's happiness scale rates a person with respect to the patient suffering from periodontitis.<sup>4</sup> In this study patients seem to be more unhappy than the average number of people due to periodontitis. This is supported by a recent article that correlates the oral health and happiness of young adolescents. The subjective general and oral health measurements were shown to be significantly associated with happiness.<sup>10</sup>

In the contrary, the association between the presence of malocclusion irrespective of severity and subjective happiness scale scores in the cross-sectional analysis was not supported by longitudinal analysis.<sup>16</sup> This explains even in the presence of normal occlusion deviations, individuals may have high self-esteem; this indicates that individuals' perception of their condition seems to be more important than the objective criterion.<sup>18,19</sup>

The findings of the present study should be interpreted with caution since limitations also exist. Despite of explanatory variable to the analysis model, some variables that might change the status of the result like socioeconomic status or dental care utilization rate have not been taken into consideration. Furthermore, the study was based on questionnaire responses, which depends on subjects understanding or memory and honesty.

However, this study has some strengths. To date, there have been few publications relating periodontitis and happiness, but in the context of Nepal, there has been no publications regarding this content.

## CONCLUSIONS

This study demonstrated that periodontitis influences the happiness scale of a person. Decrease in scale of subjective happiness was seen in patients suffering from periodontitis which shows relationship between periodontitis and subjective happiness scale.

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**Conflict of interest:** None

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