

# Oral Health Quality-of-Life among Undergraduate Malaysian Dental Students

P Harsh\*, C Arunima\*\*, K Manoj\*\*\*

Manipal College of Dental Sciences, Mangalore, Manipal University, Public Health Dentistry, Light House Hill Road, Mangalore, Karnataka 575001, India, \*\*Department of Oral Pathology, Melaka Manipal Medical College, Manipal campus, Manipal University, Manipal, \*\*\*Department of Microbiology, Indira Gandhi Institute of Medical Sciences, Sheikhpura, Patna, PinCode-800014, Bihar

## SUMMARY

**Aim:** To assess the oral health quality of life among Malaysian dental students using the Oral Impacts on Daily Performance (OIDP) scale.

**Material and Method:** Malaysian dental students of Melaka Manipal Medical College, Manipal campus, Manipal University, Manipal answered a structured questionnaire recording the demographic characteristics, behavioral characteristics and eight items of OIDP.

**Results:** The mean OIDP ADD and OIDP SC scores were respectively, 4.10 (sd = 5.16, range 8 - 40) and 2.3 (sd = 2.3, range 0 - 8). A total of 50%, 32.9% and 28.6% of the dental students confirmed difficulties with eating, cleaning teeth and sleeping and relaxing, respectively. Statistically significant relationships were observed between OIDP (ultimate oral impact) and a count of non-clinical oral health indicators representing the second (intermediate) levels of oral impact. Logistic regression analysis revealed that dental students who were dissatisfied with their oral health had greater oral impact than their counterparts. The odds ratios for satisfaction with oral health, dental visits and frequency of brushing teeth were respectively 1.74 (0.58 - 5.32), 0.59 (0.11 - 3.24) and 1.33 (0.41 - 4.30).

**Conclusion:** The study reports the Oral Impact on Daily Performance among Malaysian dental students and provides evidence of importance of social and behavioral characteristics in shaping dental students response.

## KEY WORDS:

*Dental students; OIDP; Oral Impact on Daily Performance; Oral quality of life; socio - demographic factors; oral health*

## INTRODUCTION

Quality-of-life has become a paramount measurement tool in health care. The extension of people's life span and the enhancement of their quality of life were the two central goals of Healthy People 2000 initiative. The emphasis on quality-of-life is consistent with the concept that health is a resource and not simply the absence of disease. Increasingly, quality-of-life assessment is being regarded as an essential component for assessing outcomes of health care, including outcomes for public health programs. Until a decade ago, there was a virtual absence of indices to measure quality-of-

life. However, there is now an impressive range of instruments that assess the impact of general and oral conditions on well being and quality-of-life<sup>1</sup>.

The Oral Impacts on Daily Performance (OIDP) scale<sup>2</sup> assesses impacts that affect individuals' daily life. Considering respondent burden, this instrument is advantageous for use in population surveys, not only in terms of being easier whilst measuring behaviors rather than feeling states, but also in being short. It is based on an explicit conceptual framework, the World Health Organization's International Classification of Impairments, Disabilities and Handicaps, ICIDH<sup>3</sup>, which has been amended for dentistry by Locker<sup>4</sup>. The ICIDH provides a basis for the empirical exploration of the links between different dimensions or levels of consequence variables and consists of the following key concepts; impairments, functional limitations, pain and discomfort and disability and handicap. Impairments refer to the immediate biophysical outcomes of disease, commonly assessed by clinical indicators<sup>5</sup>. Functional limitations are concerned with functioning of body parts whereas pain and discomfort refer to the experiential aspects of oral conditions in terms of symptoms. In addition to dissatisfaction with dental appearance, they comprise the intermediate impacts, caused by oral health status. Finally, the ultimate outcomes of disability and handicap refer to any difficulties in performing activities of daily living and to broader social disadvantages. The OIDP concentrates only on the third level of measurement and is calculated by multiplying frequency and severity scores of daily performances. As compared to using only the OIDP frequency or severity scores, applications of weighted scores revealed no significant improvement<sup>6</sup>. Other socio-dental indicators have also been reported to be satisfactory in terms of unweighted instead of weighted scores<sup>7</sup>. For those reasons, the un-weighted or abbreviated version of the OIDP frequency scale was applied in this study.

The reason for application of this quality of life measurement tool (OIDP) on dental students was to comprehend the impact of their oral conditions on their quality of life. It is well known that dentistry has been widely acknowledged as being associated with high levels of stress<sup>8</sup>. These stressors include time and scheduling pressures, managing uncooperative patients, commercial issues, and the highly technical and intensive nature of work<sup>8</sup>. Also, the origins of this stress may lie in the process of dental education<sup>8</sup>. In recent years, the injurious effects of stress experienced by

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Corresponding Author: Harsh Priya, Department of Public Health Dentistry, Manipal College of Dental Sciences, Mangalore, Manipal University, Light House Hill Road, Mangalore, Karnataka 575001, India Email: drharshpriya@gmail.com

dental students have received much attention. It is manifested as fatigue, tension, dizziness, sleeplessness, tachycardia, gastrointestinal symptoms, irritability, anxiety, and cynicism. In addition to this, a negative association has been reported with academic performance of dental students. However, the perception of stress is frequently influenced by sociocultural factors; the results of studies in one region cannot necessarily be generalized to the others<sup>8</sup>.

With all this background, the aim of this study was to assess the Oral Impact on Daily Performance among Malaysian dental students.

## MATERIALS AND METHODS

### *Study area and study population*

The study population consisted of students from Malaysian dental students of Melaka Manipal Medical College, Manipal campus, Manipal University, Manipal, Karnataka, India. There was a total enrollment of 70 students. All the subjects (female=61.4%, male=38.6%, Mean age=20.91 & SD= 2.52) completed a self administered questionnaire in English.

### *Survey instrument and measures*

A structured questionnaire was used prepared to record the demographic characteristics such as age, gender, religion; oral health related behavior including tooth brushing frequency, dietary, alcohol and smoking habits; global oral health indicator; received dental treatment and eight items of OIDP. The responses for received dental treatment, global oral health indicator and alcohol intake were dichotomized as 1=yes and 2=no. Frequency of cleaning teeth yielding the categories of 1=twice and 2=more than twice were obtained and smoking habit was assessed under smoker and non smoker categories. Oral impact of daily performance was obtained by adding scores for eight frequency items. "During the past 6 months how often have problems with your mouth and teeth caused you any difficulties with, 1) eating, 2) speaking and pronouncing clearly, 3) cleaning teeth, 4) sleeping and relaxing, 5) smiling without embarrassment, 6) maintaining emotional state, 7) enjoying contact with other people and 8) carrying out major school work. The scale used was in the range: {0} "never affected", {1} "less than once a month", {2} "once or twice a month", {3} "once or twice a week" {4} "3-4 times a week", {5} "every or nearly every day". For analysis, dummy variables were constructed yielding the categories 0 = "never affected" (including the original category 0) and 1 = "affected less than once a month or more often" (including the original categories 1-5). Simple count scores (SC) were created by adding the 8 dummy variables. Additive scores (ADD) were created by adding the 8 OIDP items as assessed originally. Finally the OIDP SC frequency scores were dichotomized, yielding the categories [0] "no daily performance affected" and [1] "at least one daily performance affected". Previous work<sup>5</sup> has shown the items to have acceptable reliability and validity. Statistical analysis

Data were analysed using SPSS (version 11.5). Non-parametric statistics were the primary choice because the OIDP frequency scores were not normally distributed. Chi-square test was used for categorical data analysis. The inter-item correlation coefficients among the 8 OIDP items were calculated.  $P \leq 0.05$

was considered statistically significant. Cronbach's alpha was used to test for internal consistency reliability. Logistic regression analysis was done to find the extent of association of OIDP with the demographic variables.

### *Ethical approval*

Ethical approval was obtained from Institutional Ethics Committee, Manipal University. Informed consent was obtained from each student before the questionnaire was distributed. Only those students willing to participate were asked to complete the questionnaire.

## RESULTS

Table I shows the frequency distribution of the students according to the independent variables. Among the various oral health behaviors recorded for Malaysian dental students it was observed that almost one third (74.3 percent) reported no habit of alcohol consumption. Also only two students agreed of smoking cigarette. Although, 85.7 percent of the students reported of having undergone dental treatment only 58.6 percent of the participants were satisfied with their oral health.

The mean OIDP ADD and OIDP SC scores were respectively, 4.10 (sd = 5.16, range 8 - 40) and 2.3 (sd = 2.3, range 0 - 8) (Table II). A total of 50%, 32.9% and 28.6% of the dental students confirmed difficulties with eating, cleaning teeth and sleeping and relaxing, respectively. The other prevalent impact was difficulty in smiling without embarrassment (27.1%), and difficulty in maintaining emotional state (27.1%).

The inter-item correlation coefficients among the OIDP items ranged from 0.096 (between eating and maintaining emotional state) to 0.679 (between college work and social contact). No correlation was negative indicating homogeneity among the items and no correlation was very high for any item to be considered redundant. Although degree of association was negligible between item eating and maintaining emotional state, work and social contact ( $r = 0.096; 0.104; 0.1$  respectively). The corrected item - total correlation ranged from 0.58 to 0.72 being above the minimum recommended level of 0.20 for inclusion of items in a scale and meeting the stringent criterion of convergent validity of greater than 0.40. The Cronbach's alpha of the scale was 0.79 with alpha values if any item being deleted lower than the original value. The present alpha value falls within the recommended minimum of 0.70. (Table III)

Statistically significant relationships were observed between OIDP (ultimate oral impact) and a count of non-clinical oral health indicators representing the second (intermediate) levels of oral impact (Table IV). Higher scores of OIDP ADD and OIDP SC suggested that the study subjects experiences more impact. Therefore, it was observed that students dissatisfied with their oral health and those who had not undergone any dental treatment scored significantly higher on the OIDP scale than their peers in the opposite groups. However, brushing frequency did not bring any significant oral impact on daily performance.

**Table I: Frequency distribution of the students according to the independent variable**

Independent Variable	Classification	N (%)
Gender	Female	43 (61.4)
	Male	27 (38.6)
Diet	Mixed	70 (100)
	Vegetarian	-
Religion	Hindu	14 (20.0)
	Christian	16 (22.9)
	Muslim	21 (30.0)
	Buddhist	19 (27.1)
Alcohol Intake	Yes	18 (25.7)
	No	52(74.3)
Smoking Status	Smoker	2 (2.9)
	Non smoker	68 (97.1)
Satisfaction with oral health	Yes	41 (58.6)
	No	29 (41.4)
Dental treatment	Yes	60 (85.7)
	No	10 (14.3)
Frequency of cleaning	Twice	50 (71.4)
	More than twice	20 (28.6)

**Table II: Percentage distribution (percentage of students affected less than once a month or more) and mean frequency scores (SD) for eight OIDP ADD and OIDP SC scores**

	% Affected	Mean Score(SD)
1. Eating	50	0.50 (0.50)
2. Speaking and pronouncing clearly	24.3	0.24 (0.43)
3. Cleaning teeth	32.9	0.33 (0.47)
4. Sleeping and relaxing	28.6	0.29 (0.45)
5. Smiling without embarrassment	27.1	0.27 (0.44)
6. Maintaining emotional state	27.1	0.27 (0.44)
7. Enjoying contact with other people	21.4	0.21 (0.41)
8. Carrying out major college work	24.3	0.24 (0.43)
Total OIDP SC Scores	-	2.3 (2.3)
Total OIDP ADD Scores	-	4.10 (5.16)

**Table III: Correlation matrix for OIDP frequency scores**

	1.Eating	2.Speaking	3.Cleaning Teeth	4.Sleeping/Relaxing	5.Smiling	6.Emotional	7.Work	8.Social Contact
1	1.000							
2	.167	1.000						
3	.274(*)	.313(**)	1.000					
4	.506(**)	.232	.365(**)	1.000				
5	.225	.403(**)	.462(**)	.183	1.000			
6	.096	.254(*)	.257(*)	.325(**)	.350(**)	1.000		
7	.104	.191	.376(**)	.286(*)	.386(**)	.542(**)	1.000	
8	.100	.378(**)	.313(**)	.232	.553(**)	.628(**)	.679(**)	1.000

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Table IV: Mean values and standard deviation (SD) for OIDP SC and OIDP ADD scores by subjective oral health indicators (n = 70) (Adjusted for age, gender, diet, religion)**

Subjective oral health indicator		OIDP ADD scores Mean (SD)	OIDP SC scores
Satisfaction with oral health	Yes (41)	3.12 (3.69)	1.78 (1.52)
	No (29)	5.55 (6.47) *	3.17 (2.92)*
Dental Treatment	Yes (60)	3.8 (4.99)	2.13 (2.14)
	No (10)	6.1 (5.78)	3.70 (2.86)*
Frequency of cleaning	Twice (50)	4.34 (5.39)	2.40 (2.39)
	More than twice (20)	3.60 (4.50)	2.25 (2.09)

\*p <0.05

**Table V: Odds ratio (Exp (B)) and 95% confidence interval (CI) for students' OIDP SC scores (0= no impact, OIDP>0=1) by subjective oral health indicators**

	Odds ratio {Exp(B)}	95% CI for Exp (B)
Satisfaction with oral health		
Yes	1.748	0.575 – 5.319
No	1	
Dental Visit		
Yes	0.588	0.107 – 3.243
No	1	
Frequency of brushing teeth		
Twice	1.333	0.414 – 4.295
More than twice	1	

Logistic regression analysis revealed that Malaysian dental students who were dissatisfied with their oral health had greater oral impact than their counterparts. As shown in Table V, the odds ratios for satisfaction with oral health, dental visits and frequency of brushing teeth were respectively 1.74 (0.58 – 5.32), 0.59 (0.11 – 3.24) and 1.33 (0.41 – 4.30). No statistically significant interaction effect between OIDP simple count scores and social and behavioral variables was identified.

**DISCUSSION**

To ensure interpretability and cultural equivalence, the OIDP was pre – tested among the students and supervised by a group of competent teaching faculty. The process concluded with a minor rephrasing of the question about major work and social role, which was modified into “carrying out major college work”. Cross – cultural adaptation of socio – dental indicators requires rigorous translation to make the adopted instrument culturally relevant for a particular population. The participants of the present study were familiar with English as a second language.

A total of 54.3 percent of the participants reported experiencing an oral impact that affected their daily life in the past six months. The eight impact prevalence rates ranged from 21.4 percent to 50 percent. This was relatively similar as compared to another study done on a cross- sectional study population of 1146 adolescents in Uganda <sup>5</sup>, where the eight impact prevalence rates ranged from 30 percent to 40 percent and floor effect of 32 percent was calculated. This may be predominantly attributed to the fact our study population is that of dental students and also chances of desirability bias cannot be ruled out. This result was consistent with results reported in previous OIDP surveys, difficulty with eating and enjoying food and with cleaning teeth were the impacts most frequently reported. The total impact prevalence rate was comparable with the 51 percent, observed in the Tanzanian study <sup>9</sup>, using similar methodology and an English version questionnaire. It was also below 70 percent observed in western population with high dental disease levels and in a low - oral disease Thai population <sup>2</sup>.

The OIDP frequency scores were applicable across age and gender, showed satisfactory reliability and were subject to low levels of non response. The OIDP frequency score showed item to scale correlations that are similar to those obtained in previous application <sup>10, 11</sup> and the internal consistency reliability in terms of a Cronbach’s alpha of 0.79 indicates

good enough psychometric properties if the recommended level of 0.70 is used <sup>12</sup>. Previous applications of the OIDP scale to various populations have yielded internal consistency values ranging from 0.67 to 0.85 <sup>2,9,11</sup>.

The study was limited owing to the self report method employed. The possibility that socially desired and undesired acts have been, respectively, over – and under estimated cannot be overlooked.

The present study suggests that an abbreviated OIDP inventory is applicable for use among dental students. The item level characteristics and the reliability add to our confidence that the scale measure a construct comparable to the original. Moreover, the present study indicates that social and behavioral contexts are important in shaping dental students response. This study constitutes the first step to highlight the limits of focusing on normative needs and suggests the incorporation of oral quality of life measures into the oral health care services for the budding dentists in Malaysia.

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