

# Oral health related quality of life in adult population attending the outpatient department of a hospital in Chennai, India

Navin Anand Ingle\* Preetha.E.Chaly\*\* Charania  
Kayamali Zohara\*\*\*

\*M.D.S, Professor and Head, \*\*Professor, \*\*\*Post Graduate Student, Department of Public Health Dentistry, Meenakshi Ammal Dental College, Maduravoyal, Chennai, India.  
Contact: zohara.charania@gmail.com

## Abstract

Currently there is a growing interest in oral health outcomes in how oral health affects quality of life.

*Objectives:* To describe oral health related quality of life in adult population attending the outpatient department of Meenakshi Ammal Dental College and Hospital and to assess the relationship between clinical measures of oral health status and oral health related quality of life.

*Materials and method:* A cross sectional study was carried out for a period of 2 months on 307 randomly selected individuals reporting to the OPD of Meenakshi Ammal Dental College and Hospital, Chennai. An investigation was done by using a combination of questionnaire and clinical examination. Questionnaire was on oral health impact profile- 14 (OHIP-14) and the subjects were clinically examined for dental caries using DMFT index and oral hygiene status by using oral hygiene index- simplified.

*Results:* The mean total OHIP -14 score was 15.5(SD 9.6).The mean decayed, missing and filled teeth (DMFT) index score was 5.2 (SD 2.9) and the mean oral hygiene index- simplified (OHI-S) was 2.55 (SD 1.3). Caries status and the number of missing teeth were found to be significantly correlated with most of the sub domains of the OHIP-14.

P- ISSN  
0976 – 7428

E- ISSN  
0976 – 1799

*Journal of  
International  
Oral Health*

Public Health Dentistry

Original Research

*Received: Aug, 2010*

*Accepted: Oct, 2010*

## Bibliographic listing:

EBSCO Publishing  
Database, Index  
Copernicus, Genamics  
Journalseek Database

*Conclusion:* OHIP-14 scores were significantly associated with clinical oral health status indicators and have an important effect on oral health related quality of life.

**Keywords:** oral health related quality of life, oral health impact profile-14, questionnaire, hospital based study, Chennai.

## **Introduction:**

Measures of oral health related quality of life are increasingly used in descriptive population based research as a mean of capturing non clinical aspects of oral health that patients' seem most relevant to their overall health and wellbeing (1). Oral diseases are not usually fatal, but can affect the 'ability to eat, speak and socialize without active disease or embarrassment and contribute to ones' general wellbeing. In essence, oral disorders can affect interpersonal relationships and daily activities, and therefore the 'goodness' or 'quality of life'(2).

The impact of oral diseases on the quality of life is very obvious. Any disease that could interfere with the activities of daily life may have an adverse effect on the general quality of life. Therefore, the notion of oral health-related quality of life (OHRQOL) is the product of many observations and research about the impact of oral diseases on different aspects of life (3).

When oral health related quality of life measures are used alongside traditional clinical methods of measuring oral health status, a more comprehensive assessment of the impact of oral diseases on the several dimensions of subjective wellbeing becomes possible. These dimensions include functional limitation, physical pain, psychological discomfort, social disability and handicap (1). Little is known about this impact of oral diseases on individuals(2). Research on the social outcome related to dental diseases is limited. Therefore a survey was planned to describe the oral health related quality of life, to assess the effect of sex on oral health related quality of life, to assess

the effect of variables of oral health status and oral health related quality of life, to investigate the correlation between variables of oral health status and oral health related quality of life in adult population attending the outpatient department of Meenakshi Ammal Dental College and Hospital, Chennai

## **Materials and methods:**

It was a survey which included questionnaire and clinical examination on general dental patient attending the OPD of public health dentistry at Meenakshi Ammal Dental College and Hospital. Ethical clearance was obtained from Institution review board (IRB) of Meenakshi University. Before conducting a survey the investigator was trained and calibrated at department of Public Health Dentistry Meenakshi Ammal Dental College and Hospital with regard to clinical examination in order to limit examiner variability.

A convenient sample size of minimum 300 patients was decided. Among the patients who attended the OPD of the Public Health Dentistry department in 2 months (1<sup>st</sup> October 09 - 30<sup>th</sup> November 09) those who meet inclusion criteria given below and agreed to participate formed the study population. ( $\geq 300$ )

### **Inclusion criteria**

1. 18 years and above
2. Not edentulous.

### **COLLECTION OF DATA**

#### *Questionnaire:*

The questionnaire was translated by a professional translator to local language (Tamil) and a personal interview was conducted. Questionnaire was on oral health impact profile-14 (OHIP-14) (1) that asked about problem patients might have encountered with their

teeth, mouth or dentures. The responses was coded as never (0), hardly (1), occasionally (2), fairly often (3), very often (4). General information about the age and sex of the patient was also recorded.

### *Clinical examination*

The clinical examination of all patients involved in the study was done by a single examiner, the investigator. The subjects were clinically examined for dental caries using DMFT index given by Klein and Palmer (1938) and oral hygiene status by using Oral Hygiene Index- Simplified given by John. C. Greene and Jack .R Vermillion (1964).

### Statistical analysis:

A five – point Likert scale was used to measuring the responses to the OHIP-14 items with the possible score ranging from 0-56. Mann – Whitney and analysis of variance (ANOVA) tests was used to compare the mean scores of OHIP-14 and Oral health status variables between the subjects .Spearman's correlation coefficient was used to correlate OHIP-14 with oral health status variables. All statistical analyses were carried out using the statistical package for the social sciences, version 15 software package.

## **Results:**

### *Characteristics of The Study Population*

The characteristic of study population are given in Table 1. Of the 410 patients who visited the OPD of Meenakshi Ammal Dental College 307 agreed, indicating a participate rate of 74.9%.The mean age of study population was 37.6 (SD 14.93). The mean decayed teeth, missing teeth, filled teeth and DMFT index 2.8(1.3), 0.98(1.3), 1.5(2.2), 5.2 (2.9) respectively.

### *Distribution of responses for OHIP-14*

The assessment was done using OHIP-14 questionnaire which had 7 subscales. The distribution of responses to the OHIP-14 item is presented in Graph 1. Majority of the patient reported no problems in the previous year on most items. This was evident from the high percentage of respondent scoring never (0) for most of the OHIP-14 questions. Mean score ranged between 0.9 for functional limitation to 3.7 for physical pain.

### *Effects of Sex And Oral Health Variables on OHIP-14*

The mean score for all the subscales and Total OHIP-14 were higher among females when compared with males and were found to be statistically significant. Graph 2

A comparison of the mean scores of the OHIP-14 and individual subscales between the subjects showed that the mean score for all the subscale and Total OHIP-14 were found to be higher among those with caries than those without and was found to be statistically significant.Graph3

The mean score for subscale functional limitation and psychological discomfort was higher and very highly significant among those with missing teeth compared to those without missing teeth. Graph 4

The mean score for subscale functional limitation, physical pain and psychological discomfort was greater and very highly significant among those without filled teeth compared to those with filled teeth. Graph 5

### *Correlation Between Variables Of Oral Health Status And OHIP-14*

The correlation between variables of oral health status and OHIP-14 is presented in Table II.

Functional limitation and physical pain was found to be significantly very highly ( $p<0.001$ ) positively correlated with MT score. Physical disability was found to be significantly ( $p<0.05$ ) positively correlated with DMFT score. It was also found to be significantly very highly ( $p<0.001$ ) negatively correlated with FT

score. Psychological disability was found to be significantly ( $p < 0.05$ ) positively correlated with MT score.

Social Handicap was found to be significantly very highly ( $p < 0.001$ ) positively correlated with MT score, it was found to be significantly highly ( $p < 0.01$ ) positively correlated with DT score.

Handicap was found to be significantly very highly ( $p < 0.001$ ) positively correlated with MT score, it was found to be significantly highly ( $p < 0.01$ ) positively correlated with DMFT score. It was also found to be significantly very highly ( $p < 0.001$ ) negatively correlated with FT score.

Total OHIP-14 score was found to be significantly highly ( $p < 0.01$ ) positively correlated with MT score and it was found to be significantly ( $p < 0.05$ ) negatively correlated with FT score.

#### **Discussion:**

This study was performed to describe the OHRQoL and its associated oral health variables in adult population attending the outpatient Department of Meenakshi Ammal Dental College and Hospital.

Of 307 study subjects 47.9% were males and 52.1 % were females. This distribution is consistent with the fact that more female normally attend general dental practice and sex based difference are quite apparent when the utilization of dental care, services and treatment outcomes and this has been well described in literature in a study conducted by Hernia P (2008),(1) and Shashidhar A (2008), (2).

It was seen that the majority of the respondents reported no problems in the previous year on most of the item of the OHIP-14. This may be explained by the fact that the mean age of study population was 37.6 and people of younger group are known to cite a lower impact of oral health on the quality of life. These difference between younger and older

adults may be because of the increase in the prevalence of oral conditions with age as discussed by (Hernia P 2008),(1). He said that one of the strongest predictors for impaired oral health related quality of life is tooth loss which is associated with aging. Another reason for majority of the respondents having reported no problems in the previous year on most of the item of the OHIP-14 can be described by OHIP-14 being more complex and severe to understand due to linguistic translation and literacy impairments which could have affected the participants when answering some questions in the questionnaire format and also the nature and magnitude of impact may vary according to the cultural background of the population measured, (4)

Nevertheless, in general population samples, it is expected that relatively few people are handicapped or frequently experience the more severe dimensions of disability. The OHIP data from a national survey in Germany also revealed a prevalence of frequent impairment (response categories fairly often or very often) of less than or equal 6%, (1)

In this study, what are the findings are consistent with study by Hernia P (2008), (1) Shashidhar A (2008), (2) approximately 25% of dentate adults experienced pain associated with their teeth, mouth as fairly often / very often in previous 1 year, 10% said they has an unsatisfactory diet and had to interrupt meals (physical disability) and 9% reported as psychological effect of their oral state in the sense that they felt conscious or tense about their teeth. Coincidentally, physical pain and physical disability were the dimensions of the OHIP that contributed most to variations in the sex category distribution of subjective impact between adults in U.K and Australia.(1)

Females appear to experience more severe impacts of oral disorders on everyday life which is represented by higher OHIP-14 mean score

## TABLES

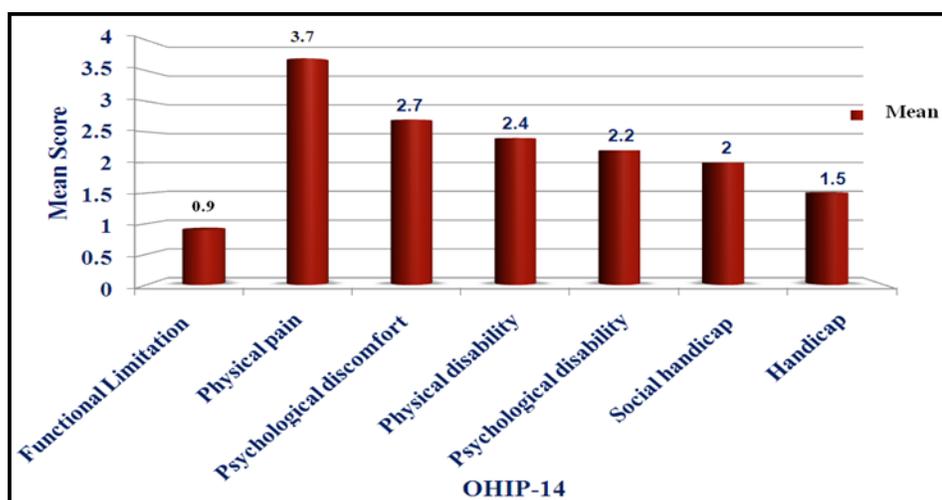
**TABLE 1: Characteristics of the study population.**

	<b>Distribution</b>	<b>Number</b>	<b>Percentage</b>	<b>Mean (SD)</b>
<b>Sex</b>	Male	147	47.9	
	Female	160	52.1	
<b>Decayed teeth</b>	Present	270	87.9	2.8(1.3)
	Absent	12	12.1	
<b>Missing teeth</b>	Present	165	53.7	0.98(1.3)
	Absent	118	46.3	
<b>Filled teeth</b>	Present	154	50.2	1.5(2.2)
	Absent	129	49.8	
<b>DMFT index</b>				5.2(2.9)

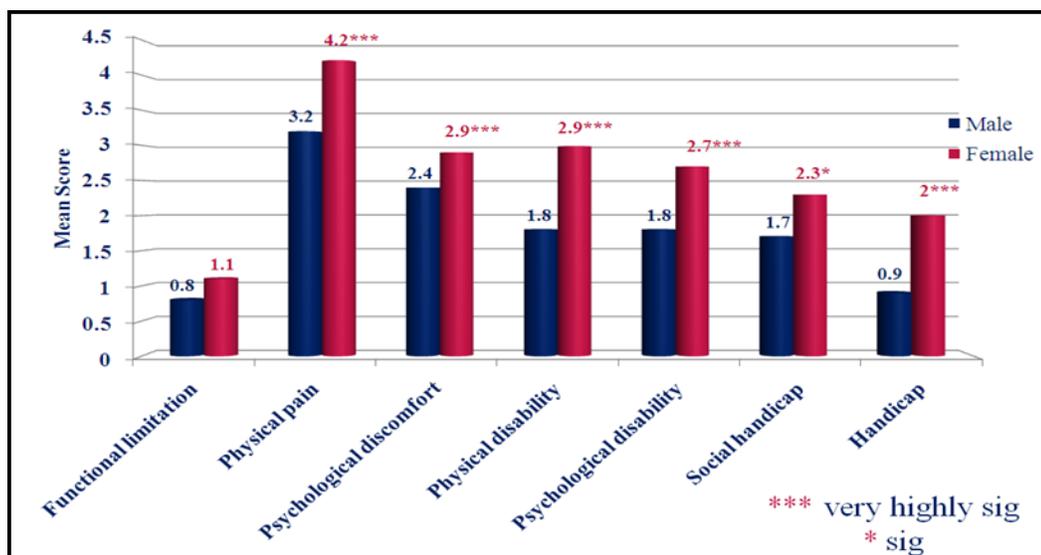
**TABLE II: Correlation between the variables of oral health status and OHIP-14**

Subgroups	Mean score(SD)	$\alpha$ DT	$\alpha$ MT	$\alpha$ FT	$\alpha$ DMFT
Functional Limitation	0.9(1.5)	0.7	0.3 ***	-0.10	0.05
Physical pain	3.7(1.7)	0.1	0.3 ***	-0.08	0.08
Psychological discomfort	2.7(1.4)	0.1	0.06	-0.05	0.02
Physical disability	2.4(2.2)	0.08	0.05	-0.2 ***	0.13 *
Psychological disability	2.2(1.95)	0.07	0.12 *	-0.11	0.004
Social handicap	2.0(2.2)	0.17 **	0.23 ***	-0.05	0.05
Handicap	1.5(1.5)	0.8	0.23 ***	-0.27 ***	0.17 **
Total OHIP score	15.5(9.6)	0.01	0.2 **	-0.15 *	0.05

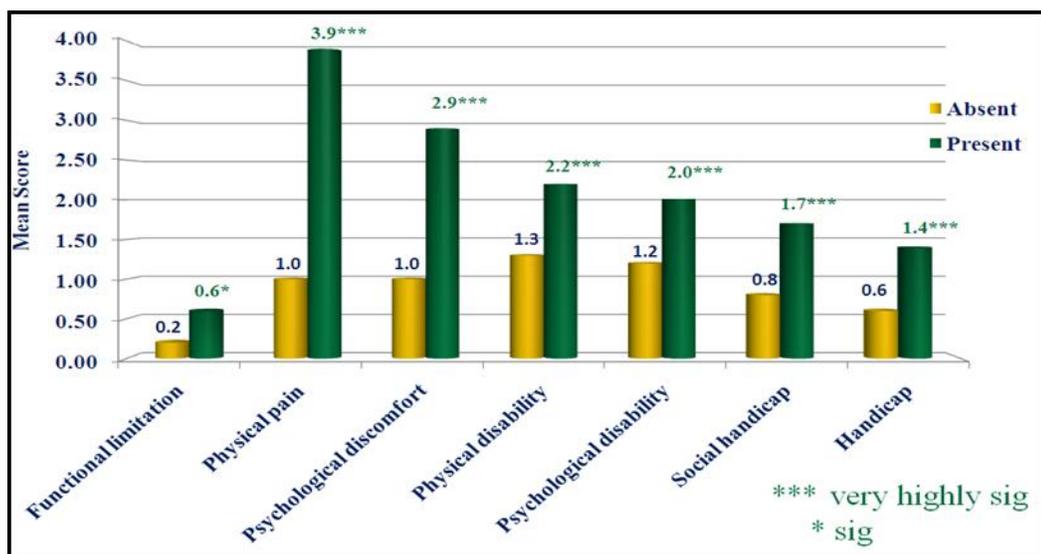
DT: decayed teeth, MT: missing teeth, FT: filled teeth, DMFT: decayed missing filled teeth, \*: significant, \*\*: highly significant, \*\*\*: very highly significant.

**GRAPHS****GRAPH 1: Distribution of responses for the OHIP-14**

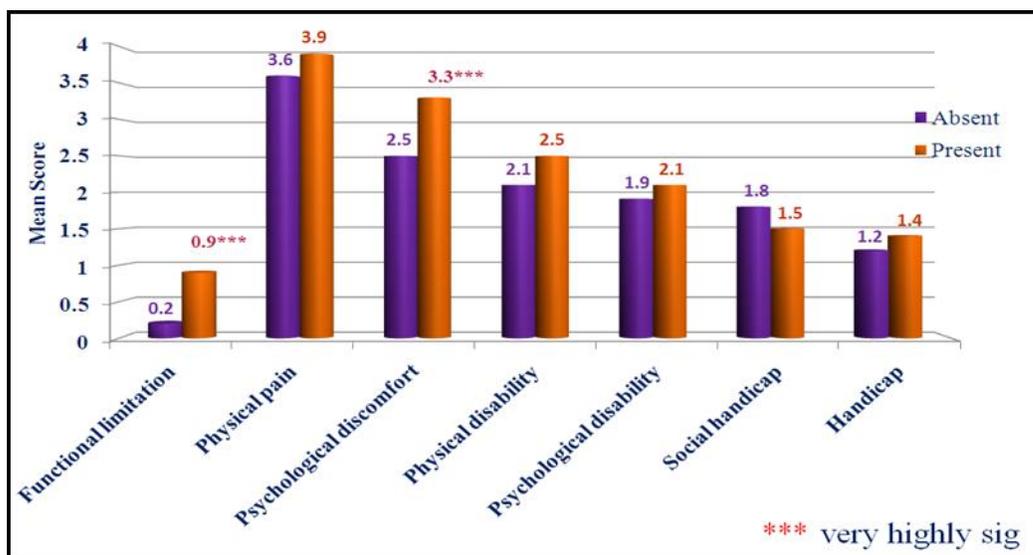
GRAPH 2: Effect of sex on OHIP-14



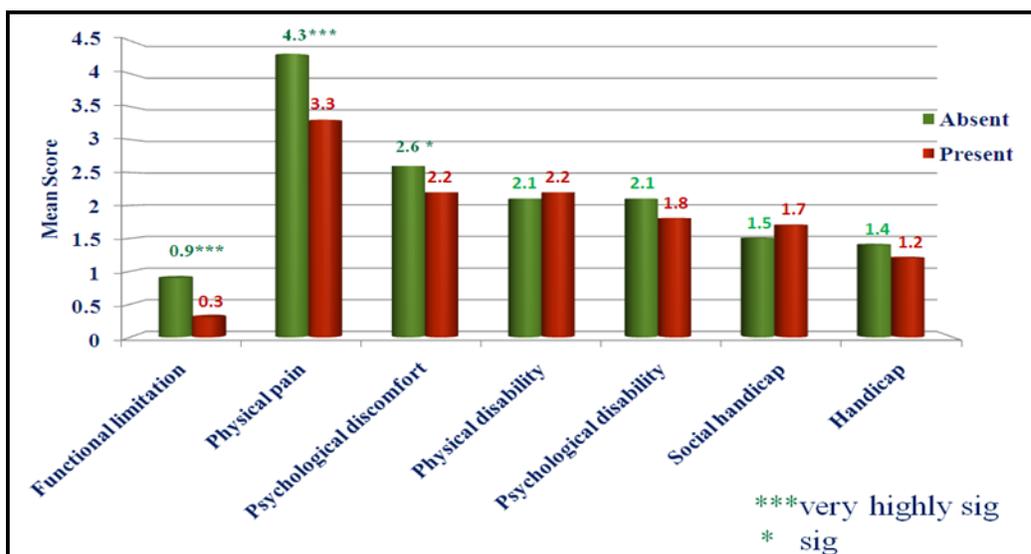
GRAPH 3: Effect of decayed teeth on OHIP-14



**GRAPH 4: Effect of missing teeth on OHIP-14**



**GRAPH 5: Effect of filled teeth on OHIP-14**



than that of males and findings are similar to study conducted by Slade (2005),(5). Females perceived a higher sense of social handicap and handicap due to their oral health status compared to males. Sex difference in OHRQoL cannot be solely explained by poor oral health status, to further understand differences in OHRQoL between men and women, the different life course influences for each sex must be considered.

The OHIP-14 places greater emphasis on psychological and behavioral outcomes, which are more severe and therefore less common (6). In addition since OHIP-14 is a short form of a 49 –item measure, other subsets of item should be tested to determine which has the best measurement properties when used with specific patient population.

Personal interview was preferred compared to original self-reported form because it is well described in the literature, (7) that the use of the OHIP-14 in the questionnaire format may result in lower completion rates and loss of data which could be linked to the educational level of the participants. Literacy impairments could affect the participants when answering some questions in the questionnaire format. However, the administration of interviews requires more time and resources than the use of questionnaires.

It was observed that although statistically significant associations were found between various aspects of QoL and clinical oral health variables in the study, they were not very strong. However according to authors such as Leao and Sheiham (1996),(8) and Locker (1996),(9) at the present time, predictive validity of the various available measures tried were found to be weak. Whereas statistically significant associations between clinical indicators and subjective measures were found in these studies, the association were at best, moderate to weak. Similar findings were reported by Atchison and Dolan (1990),(10) and Locker and Slade (1994),(11) who reported weak correlation scores between clinical indices (eg. caries). Locker and Jokovic (1996),(9) suggest that such

findings should not be unexpected as health status measures were not derived specifically as predictive indices. They recommend that health status measures should be used to comment objective needs assessment and may help identify patients who are likely to benefit most from dental treatment. Locker (1996),(9) suggest that further research is required to help the use of health status measures for this purpose.

The perception of the OHRQoL has been shown in previous studies by investigators such as Locker and Miller (1994),(12) Locker and Slade (1994),(11) McGrath et al (2003),(13) and John et al (2004),(14) to be related to oral health status, especially the caries status. This association is especially true for the decayed and missing aspect of caries. A statistically significant positive correlation was observed between OHIP-14 scores and DMFT scores in this study. The missing component of the DMFT was found to be associated with most of the OHIP-14 subscales. Physical pain has been cited as the most important factors affecting the QoL by majority of the respondents in this study. This may be explained by the fact that majority of Indians still visit a clinician only for relief of pain as and when occurs.

The present study has several strengths. Foremost among these is that the study used both clinical indicators of oral health status and a multi – item OHRQoL scale and were found to be significantly related in such as effect of sex and oral health status variables on OHRQoL.

To the best of our knowledge, this study is the first attempt at providing some insight into how adults in Chennai, perceive the effect of oral health on their QoL. Some possible limitations of this study were convenience sample of patients attending a outpatient department of Meenakshi Ammal Dental College, that may influence its interpretation and generality. So results cannot be assumed to apply to the general population. The low sample size could have impacted the results in respect to the effect

of sex and oral health status variables on OHRQoL. However the apparent effect on OHRQoL is in accordance with previous studies(1,2). It was possible that dental patients perceive a greater impact of their oral health on their QoL compared with a non dental patient. More studies considering these issues are needed; especially in different social and cultural environment as these factors play an important role in both oral hygiene status and its impact on quality of life.

### Conclusion:

This study demonstrated a high prevalence of oral diseases in the study population, which in turn, had an impact on their QoL. Females, presence of decayed teeth, missing teeth and absence of filled teeth appear to experience more severe impact of oral disorder on QoL. Decayed teeth, missing teeth and DMFT scores were positively correlated with OHIP-14 mean score. Filled teeth was negatively correlated with OHIP-14 mean score. From dental public health services perspective there is merit in using OHRQoL instruments in combination with traditional measures specially when health care resources are scarce, findings from such patient-based outcome measures can be used to ensure that funding are directed to conditions most likely to have a negative effect on OHRQoL of specific populations.

### References:

1. Herenia P.Lawrence, Jonathan M. Broadbent et al.Oral health-related quality of life in a birth cohort of 32-year olds.*Community Dent Oral Epidemiol.* 2008 August; 36(4): 305–316.
2. Shashidharacharya. Oral health related quality of life and its associated factors in an Indian adult population. *Oral health preventive dent* 2008;6:175-184
3. M. Al Shamrany. Oral health-related quality of life: a broader perspective. *Eastern Mediterranean Health Journal*; 2006;12 (6): 894 – 901.
4. David S Brennan and A John Spencer. Dimensions of oral health related quality of life measured by EQ-5D+ and OHIP-14. *Health and Quality of Life Outcomes* 2004; 2 (35): 1 – 9.
5. Nancy R.Kressin, Jones et al, A New Brief Measure of Oral Quality of Life. *Prev Chronic Dis* 2008;5(2).
6. David Locker, David Matear, Marlene Stephens et al. Comparison of the GOHAI and OHIP-14 as measures of the oral health-related quality of life of the elderly. *Community Dent Oral Epidemiol* 2001; 29: 373–81.
7. David S Brennan and A John Spencer. Mapping oral health related quality of life to generic health state Values. *BMC Health Services Research* 2006, 6:96.
8. Leao A, Sheiham A. The development of a socio-dental measure of dental impacts on daily living. *Community Dent Health* 1996;13:22-26.
9. Locker D, Jokovic A. Using subjective oral health status indicators to screen for dental care in older adults. *Community Dent Oral Epidemiol* 1996; 24: 398-402.
10. Atchison KA. Development of the Geriatric Oral Health Assessment Index. *J Dent Educ* 1990; 54: 680-687.
11. Locker D, Slade G. Association between clinical and subjective indicators of oral health status in an older population. *Gerodontology* 1994;11:108-114.
12. Locker D, Miller Y. Subjectively reported oral health status in an adult population.

Community Dent Oral Epidemiol  
1994;22:425-430.

13. McGrath C, Bedi R. An evaluation of a new measure of oral health related quality of life - OHQoL – UK (W). Community Dent Health 2001; 18:144-149.
14. John MT, Patrick DL, Slade GD. The German version of the oral health impact profile - translation and psychometric properties. Eur J Oral Sci 2002;110:425-433.

Source of Support: Nil

Conflict of Interest: Not Declared

