ABSTRACT

Introduction: Over the past decade, there has been an explosion of interest in conceptualizing, developing and assessing the impact of oral health on life quality. Hence, the study aimed to assess the impact of oral health on quality of life in Rural (Ranga Reddy) and Urban (Hyderabad) subjects utilizing the oral health related quality of life (OHRQoL) instrument Oral Health Impact Profile (OHIP-14).

Methodology: Stratified random sampling procedure was employed, using OHIP-14 questionnaire and clinical examination, in Ranga Reddy randomly four mandals were selected from these revenue divisions and from each mandal two villages were selected randomly and Hyderabad four strata North, South, East, and West.

Results: The study was conducted on 800 subjects. The mean age was 38.4 ± 14.3. The OHIP-14 mean score was 24.6 ± 10.23, which showed a relatively good score where the higher response was given to the physical pain, physical disability, psychological disability. There was a significant correlation between the OHRQoL and lifestyle factors (P < 0.05) where this indicates that the behavioral factors influence the quality of life, the tooth loss, and impairment. From a clinical perceptive, the presence of decayed teeth needing extraction or endodontic treatment were found to be the main factors affecting OHRQoL, since they are usually pain-related condition.

Conclusion: Perceived dental needs and socio-economic status were found be possible predictors of OHRQoL.

Key words: Dental, Health, Lifestyle, Oral health, Socio-economic status

INTRODUCTION

Health is no longer seen as the absence of disease but rather regarding to obtaining or maintaining optimal functioning and social and psychological well-being (Locker, 1997). Oral diseases are important public health problems because of their prevalence rate and their impact on individuals and society, and the expenses occurred for the treatment. Although oral diseases are may not be life threatening, their outcomes may influence the overall well-being of individuals and populations. Oral health-related quality of life characterizes a person’s perception of how oral health influences an individual’s life quality and overall well-being. The assessment of Oral Health Related Quality of Life (OHRQoL) has an important role to play in clinical practice. Such is the interest in this area of research that a number of instruments have been developed to assess the psychological, functional and social outcomes of oral disorders. The importance of assessing both patients’ perceptions of health and presence or absence of disease lies in the need to have accurate data to promote health, disease prevention programs, and proper allocation of resources.

In dentistry, parallel OHRQoL measures also known as socio-dental indicators, oral health measures and oral health outcome measures have evolved particularly from the debate...
about measuring dental treatment “need” (Sheiham et al.; 1982; Sheiham and Spencer, 1997). A range of other factors have also been related to oral health-related quality of life, including oral health status, dental visit pattern, socio-demographics and socio-economic status (SES). Socio-demographic and socio-economic factors related to the oral health-related quality of life include age and cultural background, as well as gradients in oral conditions in relation to social status.5

From a social perceptive, such studies should also be undertaken in adult populations of working age. Some studies have reported substantial population-level (Reisine and Miller, 1985; Reisine, 1985). Young and middle-aged adults have been shown to miss more hours of work on account of dental visits and oral problems than older adults (Gift et al., 1992). Consequently, studies which are limited to individuals no longer in the labor force are likely to underestimate the social burden of oral disorders.6

Numerous studies have demonstrated that the health of individuals belonging to the lower socio-economic background is markedly worse than that of individuals from the upper socio-economic background. This relationship exists across a broad range of health indicators, including dental health. While some of the explanation of the link between social status and health have been suggested, by many studies.7

SES is considered to be an important determinant of the standard of living and its impact on health status. It influences social security in terms of the accessibility, affordability, acceptability, and appropriate utilization of various health facilities. The position of an individual on a socio-economic scale that measures such factors as education, income, type of occupation, place of residence, and in some populations, ethnicity and religion. The need and significance of quantifiability and measurability of the concept and variables in social science have led to the formulation of devices/methods for their measurement.8

Interest in the outcome of oral health problems has been the subject of significant research activity over the past ten or so years. Oral healthcare researchers and policymakers have recognized that assessment of oral health outcomes is vital to planning oral healthcare programs. Although several studies related to OHRQoL, but very few studies related this to the SES (rural and urban) and lifestyle behaviors of the people. Hence, this study was undertaken with the aim to assess the impact of oral health on quality of life in rural and urban (Ranga Reddy District) subjects utilizing the OHRQoL instrument OHIP-14.

METHODOLOGY

The study comprised 800 subjects of which, 400 subjects were from rural areas of Ranga Reddy District and 400 subjects were from urban areas of Hyderabad. The present study was a cross-sectional observational study carried out using OHIP-14 Questionnaire, and clinical examination was carried out using WHO oral assessment proforma 1997.

The statistical test Cronbach’s-α was used to test the validity of the questionnaire and it was found to be consistent value of 0.92.

The translated OHIP-14 was then pilot tested on a sample of 20 subjects attending the Department of Preventive and Community Dentistry, Sri Sai College of Dental Surgery, Vikarabad.

The questionnaire was given to the subjects, and if they were illiterate or could not understand and then the individuals were interviewed. The questionnaire included questions on socio-demographic factors including SES (using Kuppuswami Scale), lifestyle factors like oral hygiene practices and personal habits, their perceived oral health status and perceived treatment needs apart from OHIP-14. The subjects then underwent a clinical examination by the investigator who were trained for examining using WHO oral health assessment proforma 1997.

The intra-examiner variability was found to be good with a Kappa value of 0.8.

Sample Size Estimation

Based on the previous studies conducted, the mean score of OHIP-14 was 11.8 ± 8.440. The sample size was derived using the sample size calculating correlation formula:

$$N = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2}{Z_0^2} + 3$$

where, $Z_0$= correlation executed = 0.15.

$$Z_{1-\alpha/2} = 95\% \text{ confidence interval} = 1.96.$$  

$$Z_{1-\beta} = 80\% \text{ power} = 0.84.$$  

$$N = 351.$$

Thus, the minimum sample size was calculated to be 351 which were rounded off to 400 in Urban and 400 in rural population.

Sampling Procedure

The stratified random sampling procedure was employed. Ranga Reddy District is divided into three revenue divisions: East Division (urban and rural), Chevella Division and Vikarabad Division. Randomly four mandals were selected from these revenue divisions and from each mandal two villages were selected randomly. From each village, 50 subjects were selected. In each village the houses were the first numbered. Then every fifth house was selected and only two persons from each house who satisfied the selection criteria were included. For the subjects from urban areas, Hyderabad was divided into four zones North, South, East, and West. From each zone, 100 subjects were selected. In all areas in each zone were listed then four areas were selected randomly. From each of these areas, 25 subjects were selected by taking into consideration every fifth house in a particular lane. Only one subject who satisfied the inclusion criteria was included in the study, from each house.

Inclusion Criteria

Subjects that were 20 years and above were selected. Those people who agree to give informed consent were included.

Exclusion Criteria

People with complete dentures, those with functional disability. Mentally and physically disabled. Those who had difficulty in mouth opening.

Scheduling

The study was conducted over a period of 6-month from March to August 2010. Distribution and interviewing of the subjects along with the clinical examination was conducted in this period.

Randomly four mandals were selected from these revenue divisions and from each mandal two villages were selected randomly. From each village, 50 subjects were selected. In each village, the houses were the first numbered. Then, every fifth house
was selected, and only two persons from each house who satisfied the selection criteria were included. For the subjects from urban areas, Hyderabad was divided into four zones North, South, East, and West. From each zone, 100 subjects were selected. In all areas in each zone were listed and then four areas were selected randomly. From each of these areas, 25 subjects were selected by taking into consideration every fifth house in a particular lane. The Ethical Clearance was taken from the institutional review board of Sri Sai College of Dental Surgery, Vikarabad.

Statistical Analysis
The data collected were entered into standard Microsoft Excel 2007, and statistical analysis was done using Statistical Package for the Social Sciences (SPSS) 15.0 version (IBM). Spearman’s rank correlation coefficient between the variables, Chi-square test, and t-test were used.

RESULTS
A cross-sectional study was carried out on 800 subjects of both urban and rural areas of Ranga Reddy and Hyderabad District of which 327 (40.5%) females and 473 (59.5%) were males, with a mean age of 38.4 ± 14.3 participated in the study.

Table 1 depicts the correlation between the seven dimensions of the OHIP-14 and the total OHIP-14 score. Physical pain showed the highest mean 2.14 ± 1.09, this was then followed by physical disability with a mean of 1.94 ± 1.06, which is followed by psychological disability with a mean of 1.78 ± 0.91, psychological discomfort with a mean of 1.75 ± 0.90; this is followed by functional limitation, social handicap, and handicap. The correlation between various individuals’ subscales of OHIP-14 was statistically significantly related. Table 1 and Graph 1 depicts the correlation between the SES and the total OHIP-14 score where they are a significant correlation between the SES and oral health-related quality of life instrument (P < 0.05).

Table 2 shows the correlation between the SES and the perceived dental needs wherein for the question “Yes - for routine checkup”, 52 (6.5%) of them were from upper lower SES. For the question “Yes - for a dental problem” 102 (12.8%) of them were from lower SES, 157 (19.6%) of them were from upper lower SES. For the question “No - because your mouth is in good shape now, pooled with No - do not ever need to see a dentist”, for a dental problem” 65 (8.1%) of them were from lower SES. For the question “No - because, although you have a dental problem it can wait”, 73(9.1%) of them were from upper lower SES.

Graph 1, shows the correlation between total OHIP-14 score and lifestyle factors where they was a significant correlation between total OHIP-14 and type of tooth cleaning r = 0.136 (P < 0.05), method of brushing with a correlation value of 0.105 (P < 0.05), aid used for cleaning and frequency of changing the brush r = 0.192 (P < 0.05). Whereas non-significant in relation to the type of tooth brush r = 0.050 (P < 0.05) and personal habits r = 0.041 (P > 0.05).

Graphs 2 and 3 depicts that there was a significant correlation found between perceived dental needs and N,N-dimethylformamide (DMF) where the correlation value is 1.86, extractions and pulpal treatments where r = 0.185 and 0.204 respectively (P < 0.05), whereas there was a negative correlation

### Table 1: The correlation between the seven dimensions of the OHIP-14 and the total OHIP-14 score

<table>
<thead>
<tr>
<th>OHIP-14</th>
<th>Mean</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional limitation</td>
<td>1.69±0.86</td>
<td>1.000</td>
</tr>
<tr>
<td>Physical pain</td>
<td>2.14±1.09</td>
<td>0.493</td>
</tr>
<tr>
<td>Psychological discomfort</td>
<td>1.75±0.90</td>
<td>0.484</td>
</tr>
<tr>
<td>Physical disability</td>
<td>1.94±1.06</td>
<td>0.373</td>
</tr>
<tr>
<td>Psychological disability</td>
<td>1.78±0.91</td>
<td>0.389</td>
</tr>
<tr>
<td>Social handicap</td>
<td>1.56±0.82</td>
<td>0.449</td>
</tr>
<tr>
<td>Handicap</td>
<td>1.45±0.78</td>
<td>0.450</td>
</tr>
<tr>
<td>Total OHIP-14 score</td>
<td>24.6±10.23</td>
<td>0.632</td>
</tr>
</tbody>
</table>

**OHIP-14:** Oral health impact profile
between perceived dental needs and fillings needed where the $r = -0.048$ ($P > 0.05$).

**DISCUSSION**

The OHIP measures people’s perceptions of the social impact of oral disorders on their well-being. The OHIP-49 contains 49 questions that capture seven conceptually formulated dimensions based on Locker’s theoretical model of oral health adapted from the WHO framework used to classify impairment, disabilities, and handicaps, and OHIP-14 was developed as a shorter version of the OHIP for settings where the full battery of 49 questions is inappropriate.

The aim of the study was to assess the impact of oral health on quality of life in rural (Ranga Reddy district) and urban (Hyderabad) subjects utilizing the OHRQoL instrument OHRQoL.

Sufficient indications about the reliability and validity of OHIP-14 were obtained in this study. Cronbach’s alpha values of 0.5-0.7 are generally considered to indicate reliability for an instrument or scale to be used to make group comparisons; instruments or scales with 0.85 are considered reliable enough for individual patient comparisons according to McDowell and Newell (1996). The results of this study showed that the OHIP-14 was very reliable with an alpha value of 0.92. These results are very similar to the study done by Acharya. The OHIP-14 scores were also found to be associated with the oral health status indicating its construct validity. In the present study, 800 subjects participated, of which 327 (40.5%) were females and 473 (59.5%) were males with a mean age of 38.4 ± 14.3. The altered quality of life may be an effect of changes in oral conditions, but may also be dependent on other events. These are similar to the study done by John et al., and in contrast with the study done by Einarson et al., where there was a non-significant association with age, and within the dimension physical disability, 20 years olds showed a higher score than older people.

The majority of subjects who participated in the study were from the lower upper status 334 (41.8%) Results of the study done by Grath et al., documented that people from lower socio-economic backgrounds experience a greater burden of poor oral health than those from higher socioeconomic groups. Findings of their study demonstrated that those who reported that their oral health status only reduced their quality of life (no positive effects) were more likely to be from lower social classes. It was also observed that people from higher socioeconomic groups perceived oral health as improving their life, as compared to lower socio-economic groups. This is similar to the results of the present study. This may be a result of their oral health behavior, including regular dental attendance or, indeed, the use of private dental care.

In the present study, subjects who used tooth brush and paste were 555 (68.7%) and 505 (62.5%), respectively. 530 subjects had no related personal habits, whereas 133 (16.5%) of them had a smoking habit, 50 (6.2%) of them had a habit of taking smokeless tobacco and 31 (3.8%) of them had the habit of taking both together. In a study done by Sanders and Spencer, apart from the socio-economic position, variables like birth weight adjusted for gestational age, housing conditions at birth, infant feeding and pacifier use was seen. Against these factors, the relative impact of adult risk behaviors (smoking, alcohol use, total daily dietary sugars, and hormone replacement therapy use) was examined. The mean value for the OHIP-14 for the entire population in this study was 24.6 ± 10.23, which is much higher when compared with studies which were done by Einarson et al., and Archarya.

In the present study, the OHIP-14 responses show that the total/subscales were significantly associated with self-rated oral health. The scores of functional limitation, physical pain, and psychological discomfort were higher than those of other subscales. These results are similar to the study done by Ide et al., Einarson et al., Grath et al., Locker and Allen, Allen et al., Acharya and the study done by Montero-Martin et al., and Sanders, Slade et al. These findings are contrary to the study done by John et al. The assessment for perceived need for care with the 4-point response scale rather than the dichotomous “yes” or “no” measure, provides a clearer signal of the presence of a dental problem only; “yes” also signifies the need for a dental check-up among those who are regular attenders. Similarly, a “no” response signifies either no dental problem or the presence of a dental problem that does not require immediate attention. Thus, the 4-point measure provides potential insights in predicting the likelihood of related health care-seeking behavior.

In the present study, 36.9% of them have stated, “Yes, for a routine checkup” this is in contrast to the study done by Heft et al., where they reported a higher percentage, 43.3% of them have stated, “Yes, for a dental problem” which were similar to the study done by Heft et al.

The findings from this study showed that clinical findings that are apparent to patients, such as remaining roots, loose teeth, and dental pain, are most likely associated with reports of treatment needs. Those clinically determined findings, whose occurrences have negative correlation such as restorations, are non-significantly associated with perceived treatment needs.
Among those reporting a current treatment need, the presence of a toothache or abscess, cavities, loose teeth or teeth that are stained or look bad were mostly associated with self-assessments. These are similar to the study done by Heft et al.\(^2\)

In general, it is considered that SES, including education, income and social class, are key domains to interpret OHRQoL. In this study, there was a significant correlation between the OHRQoL and the DMF score (Acharya\(^2\)) and the treatment needed, but there was a negative correlation between the OHIP-14 score and the restoration needed. The perception of the OHRQoL has been shown in previous studies by investigators such as Locker and Miller (1994), Locker and Slade (1994), McGrath et al. (2003), John et al. (2004) and Steele et al. (2004) to be related to oral health status, especially the caries status. This association is especially true for the decayed and missing aspect of caries. From the clinical perspective, the presence of decayed teeth needing extraction or endodontic treatment was found to be main factors affecting OHRQoL since they are usually pain-related conditions.

There were also socio-economic differences, with the impact of dental caries and self-rated oral health (and change in oral health) on OHRQoL differing between the high/medium SES and low-SES groups. The reasons why socioeconomic circumstances are associated with oral health and OHRQoL are poorly understood and may go beyond the simple explanation of material deprivation. It has been suggested that psychosocial factors are important in understanding pathways between socio-economic position, oral health status and OHRQoL.\(^2\)

The limitations of the study are that the scale for SES for both urban and rural subjects was Kuppuswami scale for socio-economic that which has been proved to be valid only for the urban population. Subjective indicators measuring OHRQoL can be of benefit in evaluating oral health for political, theoretical, or practical purposes. Although associations in cross-sectional studies do not automatically imply causation, this study’s confirmation of the importance of oral health is the major way to prevent impaired OHRQoL. This is an important in a variety of physical, social and psychological ways, most frequently through physical aspects.\(^2\)

This study also identified some potential health care-seeking issues that might be important when considering how to promote oral health awareness and oral health care seeking behavior. The study could also be used by policymakers as a framework to develop appropriate oral health strategies to improve and maintain health care of adults.

CONCLUSION

The total OHIP-14 mean score of the individual subscale response showed the high response in relation to physical pain, physical disability, and psychological disability. Perceived dental needs and SES were found be possible predictors of OHRQoL.

From a clinical perceptive, the presence of decayed teeth needing extraction or endodontic treatment was found to be the main factors affecting OHRQoL. Furthermore, the localization of decayed teeth in the visible area (fillings) demonstrated a negative correlation.

REFERENCES


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