



# How Important Is Oral Health in Determining Quality of Life: A Narrative Review

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## Abstract

There have been changes in the perceptions of health and healthcare. The key elements steering this change are the identification of social ramifications of disease and the agreement that healthcare strategies are directed at increasing the length and standard of life. There is a lack of consensus on defining the expression “quality of Life” (QoL). Some believe that QoL is synonymous with health, while others suggest that it is a comprehensive domain inclusive of larger domains relating to human experience. Oral health related quality of life (OHRQoL) is a comparatively recent phenomenon which has emerged over the last couple of decades. A potential reason for the recent emergence of OHRQoL could be the rather limited realization of the ramifications of deteriorated oral health on QoL. This paper attempts to identify various oral conditions and sociodemographics that affect the QoL of people. Since OHRQoL is a subjective measure, it is not exclusively dictated by oral health status. The concept of hierarchy of needs was highlighted to explain the poor utilization of oral health services, and it was concluded that the promotion of health and the creation of a complimentary socioeconomic environment are the only ways to improve people’s QoL.

**Keywords:** Oral Disease Burden, Quality of Life, Socioeconomic Inequalities, Hierarchy of Needs

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## Introduction

Health is a worldwide social goal. The operational definition given by the World Health Organization (WHO) is that health is a condition exhibited by a human organism demonstrating optimum functioning in given genetic or environmental conditions.<sup>1</sup> Having referred to adequate functioning, the role oral health plays in the general health of an individual cannot be overstated. The phrase “Oral health is an important and inclusive component of general health” is in vogue these days, with an abundance of literature emphasizing the same. The theme for World Oral Health Day 2016 highlighted the integral and influencing nature of oral health on the overall health of an individual.<sup>2</sup>

## Quality of Life

There have been changes in the perceptions of health and healthcare. The key elements steering this change are the identification of social ramifications of disease and the agreement that healthcare strategies are directed at increasing the length and standard of life. The principle purpose of any healthcare intervention is to improve people’s standard of life and wellbeing. The immediate question that arises is “What

is quality of life (QoL)?” To define or measure QoL in itself is an elusive enterprise. There is a lack of consensus on the definition of the expression “QoL.” Some believe that QoL is synonymous with health, while others suggest that it is a comprehensive domain inclusive of larger domains relating to human experience.<sup>3</sup>

## Assessment of Quality of Life

An important concern in assessing QoL is that people are frequently asked to complete questionnaires that do not reflect their concerns.<sup>3</sup> Qualitative interviews for obvious reasons, therefore, should form the first step in the development of questionnaires. Researchers must then find a way to identify the set of questions which, on average, best suits the study population. This demands statistical insights together with emphasis on clinical relevance.

## Oral Health-Related Quality of Life

Oral health-related quality of life (OHRQoL) is a comparatively recent phenomenon which has emerged over the last couple of decades. A potential reason for its recent emergence could be the rather limited realization of the ramifications of

deteriorated oral health on QoL.<sup>4</sup> Nevertheless, the scenario has been changing with increasing emphasis being placed on identifying the consequences of poor oral health.<sup>5</sup> OHRQoL is an interplay of oral health conditions, societal and contextual factors<sup>6</sup> with the rest of the body.<sup>7</sup>

Beyond doubt, a clinical examination of one's oral health status does not capture the perceptions of a human being and therefore cannot elicit the social and psychological wellbeing of that individual. This understanding led to the creation of subjective measures of health that do not relying simply on the clinical indicators of disease, which are purely objective in nature.<sup>8</sup> Table 1 shows a list of various OHRQoL measures modified from Baiju et al.<sup>9</sup>

### Oral Disease Burden and Impact on OHRQoL

Oral health problems impose a substantial burden not only on a country's population, but also on the healthcare system. In 2007, private spending on healthcare in India constituted nearly 74% of the total spending on health. Nearly 90% of this private expenditure in India was in the form of out-of-pocket expenditures on health by households, increasing the financial burden on poorer sections of the population and thus affecting their QoL.<sup>21</sup> Although these figures do not equate to the out-of-pocket expenditures on oral healthcare, they do throw light on the healthcare delivery systems in India, especially in view of the lack of consolidated data on spending on oral healthcare. From an individual perspective, dental diseases have a profound impact on QoL.<sup>22</sup> Oral diseases were recognized as one of the conditions deserving prime concern in a study by National Council on Macroeconomics and Health.<sup>23</sup>

Though the effects of oral conditions on the QoL of an individual are not comprehensively documented in India, the following description aims at providing an overall picture of the oral disease burden and the probable impact it makes on the QoL.

### Dental Caries and Quality of Life

Dental caries is a very prevalent oral condition in India, with 50%-85% of the population affected by it.<sup>24</sup> It was projected that 600 million citizens of India were affected by dental caries by 2015.<sup>23</sup> It was suggested that dental caries experience has a

serious bearing on the QoL, with an increased likelihood of experiencing pain, having intricacies in chewing, and missing school/work owing to the consequences of dental caries.<sup>25,26</sup>

Caries status is significantly correlated with most of the subdomains of the Oral Health Impact Profile -14 as is evident from studies conducted in different parts of India.<sup>27,28</sup> In a study conducted in Shimla, it was observed that subjects with dental caries were 1.19 times more likely to have reported often/fairly often for OHIP questions compared to those without dental caries.<sup>29</sup> Though none of the above-mentioned studies can be considered as true reflections of the existing perceptions in the whole of India, the fact that these studies were conducted in geographically diverse regions of India allows the findings to be generalized to some extent.

### Periodontal Diseases and Quality of Life

The prevalence of periodontal disease is high universally, and it is a substantial public health problem in some countries. Periodontal disease contributes to the global burden of chronic disease and is a problem of profound importance that has to be addressed.<sup>30</sup> In the first ever national level epidemiological survey on oral health conducted by the Dental Council of India (DCI), it was determined that the prevalence of periodontal disease was 89.6% in the 35-44 years age group.<sup>24</sup> It navigates the perception of poor OHRQoL, as periodontal conditions are often characterized with recognizable signs and symptoms such as difficulty in chewing as a result of mobility of teeth and disparaging gingival changes leading to poor aesthetics.

Periodontal status has a significant impact on the domains of functional limitation, physical pain, psychological discomfort, physical and psychological disabilities in OHIP-14.<sup>31</sup> Studies conducted among an Indian population also revealed the negative influence that periodontal diseases have on QoL.<sup>27,29</sup>

### Edentulism and Quality of Life

The debilitating nature of oral problems left a considerable segment of Indian adults edentulous. Edentulism imposes functional limitations on individuals besides interfering with their social participation, affecting their psychological wellbeing, and causing aesthetic degradation.<sup>32,33</sup> Periodontitis

**Table 1.** Various Commonly Used OHRQoL Measures

Name of the Measure	Authors
Social Impacts of Dental Disease	Cushing et al, <sup>10</sup> 1986
General (Geriatric) Oral Health Assessment Index (GOHAI)	Atchison and Dolan, <sup>11</sup> 1990
Oral Health Impact Profile (OHIP)	Slade and Spencer, <sup>12</sup> 1994
Oral Impacts on Daily Performances (OIDP)	Adulyanon and Sheiham, <sup>13</sup> 1997
Oral Health-Related QoL Measure	Kressin, <sup>14</sup> 1997
Dental Impact on Daily Living (DIDLS)	Leao and Sheiham, <sup>15</sup> 1997
Oral Health QoL Inventory	Cornell et al, <sup>16</sup> 1997
OHIP	Locker and Allen, <sup>17</sup> 2002
Child Oral Health QoL Questionnaire (COHQoL)	Jokovic et al, <sup>18</sup> 2002
Child OIDP	Gherunpong et al, <sup>19</sup> 2004
Child OHIP	Broder, <sup>20</sup> 2007

and dental caries remain the prime causes for the extraction of teeth.<sup>34</sup> Thus, edentulism is most often an extension of poor OHRQoL with different frequency and severity rates.

#### Malocclusion and Quality of Life

The relationship between malocclusion and OHRQoL can be discerned from different perspectives. People with disregarded malocclusion for prolonged periods of time could develop temporomandibular joint disorders and also find themselves at increased risk for experiencing facial trauma.<sup>35</sup> Malocclusion can affect individuals' QoL by imposing restrictions on function, speech, masticatory abilities, and, consequently, on their choice of food.<sup>36</sup>

More than one-third of the pediatric population in India suffers from improper alignment of teeth and jaws, crippling the operating abilities of the dentofacial mechanism. Malocclusion was found to have a profound negative influence on OHRQoL with children having malocclusion demonstrating poorer QoL compared to their counterparts.<sup>37</sup>

#### Dental Fluorosis and Quality of Life

Fluoride in increased quantities renders teeth vulnerable for derogatory changes in enamel like discoloration, high porosity, and pitting resulting in decreased wear resistance and fracture-prone nature. Confluent areas of pitting lead to larger enamel defects in severe conditions. The association between fluorosis and OHRQoL could be comprehended better from an aesthetic viewpoint.<sup>38</sup> More than half of the Indian states were observed to be endemic zones for fluorosis with five of them being considered under category III, which implies that more than 50% of the districts in those states are affected. Lower OHRQoL was found among 12-year-old children with dental fluorosis in a study conducted by Prabhu et al in Tamilnadu, India.<sup>39</sup>

#### Oral Cancer and Quality of Life

Oral cancer is one of the most common cancers in India, contributing 30% towards the cancer prevalence in the nation.<sup>40</sup> Even in cases where care was sought, conventional interventions for cancers have subsequent bearing on the OHRQoL, and these individuals would require oral healthcare provision throughout life.<sup>25</sup>

#### Socioeconomic Status and Gender Influences on OHRQoL

Lower socio-economic status was found to have a significant association with poor OHRQoL.<sup>41</sup> Irrespective of the severity of the oral health problems experienced, Indian females have poor OHRQoL compared to their counterparts.<sup>28,29</sup> Finding answers for gender differences in OHRQoL demands the deciphering of different life course influences for each gender together with oral health status.

#### Oral Diseases and Global Disability Adjusted Life Years

Global disability adjusted life year (DALY) for the year 2010 for dental caries was 4.98 million years, 5.41 million years for periodontal diseases, and 4.62 million years for edentulism.<sup>42</sup> While separate data for the Indian population is not available,

the high prevalence rates of the above-mentioned oral conditions suggest more DALYs.

#### Oral Diseases on Systemic Health

Unattended dental problems not only impose functional limitations on individuals and restrict their choice of food leading to nutritional deficiencies, but also influence the systemic health. The scope of spread of oral infections to other parts of the body is especially high with periodontal diseases and dental caries. Pulpal infections have the potential to spread to underlying reinforcing tissues and facial apparatus. Severe periodontal infections serve as a basis for infection of various body parts.<sup>43</sup>

Thus, there are a multitude of oral health problems prevalent in the Indian population which significantly affect their QoL. This scenario would not be very different in other low- and middle-income countries. The immediate question that arises is, with a disease burden this big making a significant negative impact on people's QoL, what is the rate of utilization of dental services? Unfortunately, only a few people utilize oral healthcare services in India, despite the universal distribution of oral diseases.<sup>44-55</sup>

Reaching out to communities and setting up reasonably priced rural oral health centers, to some extent, negotiate the accessibility and financial barriers of utilization, but it does not ensure utilization, since it cannot be assumed that dental care will be a priority for people who suffer from chronic hunger. Seeking dental care, however reasonable the prices may be, costs them too much not only in terms of money, but also in the number of work hours lost, which could affect their QoL. Thus, the provision of more basic needs must be seen as a prerequisite for the oral health-related QoL of the population to improve. Table 2 shows international experiences relating to OHRQoL.

#### Recommendations for the Future

- OHRQoL can be used in advocacy with policymakers, since it is a better tool to communicate with them than the objective clinical indicators. Administrators may more readily comprehend the significance of high DMFT scores from the perspective of impaired QoL measures than traditional mean scores with standard deviations.
- OHRQoL can form a better basis for needs assessment compared to the estimation of normative needs, particularly in view of current economic conditions and curtailing healthcare expenditures.
- OHRQoL can be used as an evaluation tool in performing cost effectiveness analyses which may give directions for planning future oral health programs.
- OHRQoL for all the aforementioned reasons must be incorporated in National Oral Health Surveys.
- There is a dire need to gain a conceptual understanding of oral health effects on peoples' QoL in countries where OHRQoL research is in its nascent stage. The basis for estimating OHRQoL in many countries has been instruments developed in developed countries which are usually socially and economically advanced. This could

**Table 2.** International Experiences Relating to OHRQoL

Country	Authors	Study Population	Study Outcome
Brazil	Ulinski et al <sup>56</sup>	Brazilian elderly	Lower class females with at least one untreated caries and poor self-rated oral health status were found to have significantly poor OHRQoL.
Canada	Kotzer et al <sup>57</sup>	Aging Canadian population	Physical pain and psychological discomfort were the most common domains affecting OHRQoL.
China	Zhang et al <sup>58</sup>	Chinese population aged >40 years	A strong association was found between OHRQoL and the presence of more than or equal to 10 teeth in each of the jaws.
Iran	Mozafari et al <sup>59</sup>	Iranian geriatric population	Ill-fitting dentures, mobile teeth, and oral ulcers were major conditions affecting OHRQoL.
Japan	Yamane-Takeuchi et al <sup>60</sup>	Japanese university students	Self-rated oral health status, caries experience, malocclusion, and orofacial pain were associated with OHRQoL.
Tanzania	Mbawalla et al <sup>61</sup>	Northern Tanzanian secondary school children	Unaffordability of dental care, smoking experience, and lack of dental visits were found to have independent associations with OHRQoL.

lead to the inaccurate estimation of OHRQoL and may also lead to inconsistencies in understanding utilization patterns and manpower estimations.<sup>4</sup>

### Conclusion

Human needs follow a hierarchy. It is only when the basic needs are met that the next level of needs in the hierarchical order comes into play. Though oral diseases affect the QoL of an individual as discussed above, what is the position of oral health in the hierarchical order of needs for an average person in India? Being ardent supporters of the “oral health as an inclusive part of overall health” campaign, we must also be firm believers that this campaign holds value and goes into the public only when the people are provided with more basic needs like food, security, shelter, and access to basic healthcare. The target should not only be to make people aware of the importance of oral health and how it affects their QoL, but also to provide a social and economic environment that supports their realization of this. Thus, it becomes the responsibility of every citizen to rationally work towards the aim of “QoL of people equitably to improve.”

### Authors' Contributions

All authors contributed equally to this research.

### Conflict of Interest Disclosures

The authors declare they have no conflicts of interest.

### Ethical Approval

Ethical approval was obtained from the Institutional Ethical Committee of Sibar Institute of Dental Sciences, Andhra Pradesh, India.

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