# ORAL HEALTH STATUS AMONG PARTIALLY DENTATE PATIENTS — A STUDY

[1]AKBAR KHALIL, BDS, MCPS
[2]UMAR HUSSAIN, BDS
[3]WAQAR MUHAMMAD, BDS
[4]NAFEES IQBAL, BDS

## ABSTRACT

*The objective of this study was to determine the oral health status of partially dentate patients reporting to the Department of Prosthodontics, Khyber College of Dentistry, Peshawar. One hundred and fifty patients were included in the study. The data were collected on special designed proforma. Mouth mirror, dental explorer, periodontal probe, radiograph was used for oral health status assessment. Eighty-six were males (57.33%) and 64 were females (42.67%). Their ages ranged from 14 to 70 years. Caries, gingivitis, periodontitis and number of missing teeth were more prevalent in illiterate and primary level partially dentate patients. Oral health was worse in medically compromised patients. All diabetic patients had some degree of periodontitis.*

*Caries, periodontal diseases and tooth loss were more prevalent in medically compromised and illiterate partially dentate patients.*

**Key Words:** *Oral health, caries, periodontitis, diabetics.*

## INTRODUCTION

It is increasingly recognized that the impact on quality of life (QoL) of disease and treatment of disease and its consequences should be taken into account when assessing health status and evaluating treatment outcomes.[1,2] Adaptive capacity and personal characteristics appear to influence patient's response to chronic disease. This can result in reports which seem counterintuitive, for example, the finding in a large German survey that having fewer than 9 teeth had more impact on health-related QoL (quality of life) than having cancer, hypertension, or allergy.[3] Therefore, clinical indicators only are not sufficient to describe health status. This is also true for oral diseases and its consequences for oral health-related quality of life (OHRQoL).[4] The two most prevalent oral diseases, caries and periodontal disease often do not cause symptoms in early stages. They seriously impair the quality of life in large number of individuals and can affect various aspects of life, including oral functions, appearance and interpersonal relationship.[5]

Growing recognition of importance of QoL in the field of dentistry has since led to the development of a number of oral-health related QoL instruments.[6] The need to consider oral health as integral part of health, and the contribution of oral health to overall health related QoL, has been stressed.[7] The Oral Health Impact Profile (OHIP-14) is a 14-items questionnaire designed to measure self-reported functional limitation, discomfort and disability attributed to oral conditions.[8] It is derived from an original extended version of 49-items based on a theoretical model developed by the World Health Organization (WHO)[9] and adapted for oral health by Locker.[10] In this model the consequences of oral disease are hierarchically linked from a biological level (impairment) to a behavioral level (functional limitation, discomfort and disability) and lastly to the social level (handicap). The OHIP-14, in spite of being a short-questionnaire, has been shown to be reliable;[8] sensitive to changes;[11,12] and to have adequate cross-cultural consistency.[13]

[1] **Correspondence:** Assistant Professor Prosthodontics KCD, Peshawar Address: 18BB/5B Park Road, University Town Peshawar. E-mail address: akbarkhalil7@hotmail.com
[2] House Surgeon
[3] House Surgeon
[4] House Surgeon

**Received for Publication:** October 2, 2013
**Accepted:** October 20, 2013

Traditionally, dentists have been trained to recognize and treat disease such as caries, periodontal disease and tumors. Consequently, various indices have been used to describe the prevalence of these diseases in the population. In dentistry, these indices include Helkimo's index of mandibular dysfunction[14] and the Community Periodontal Index of Treatment Needs (CPITN).[15] However, important as these objective measures are, they only reflect the end-point of the disease processes. They give no indication of the impact of the disease process on function or psychosocial well-being. Furthermore, trends in disease processes are often not related to objective indicators per se. For instance, the prevalence of total tooth loss (edentulousness) varies widely between various communities, from 36% in one study in New Zealand, to 1% in a Japanese population.[16] This strongly suggests that cultural and economic factors influence oral health care outcomes, as originally suggested by Davis.[17]

The objective of this study was to determine the oral health status of partially dentate patients seen in the Department of Prosthodontics, Khyber College of Dentistry, Peshawar.

## METHODOLOGY

This descriptive (cross-sectional) study was undertaken in the department of Prosthodontics, Khyber College of Dentistry, Peshawar from 14th February 2010 to 7th December 2012. Convenience sampling technique was utilized for sample collection of 150 patients. The inclusion criteria consisted of patients from both genders, above the age of 15 years, having partially edentulous areas in either or both jaws, patients with medical conditions. Completely edentulous patients, having mixed dentition and primary dentition stage, uncooperative and unwilling patients were excluded from the study.

After approval from institutional ethical review committee, the data for this study were compiled from the patients fulfilling the inclusion criteria visiting the Department of Prosthodontics at Khyber College of Dentistry, Peshawar. Informed consent was taken from all patients on a specifically designed proforma. History was taken, which was followed by detailed clinical examination for oral status. Patient name, age, gender, address, education level, socioeconomic status and occupation were recorded. Clinical assessment was for systemic problems e.g. diabetes, arthritis, acromegaly, Down's syndrome, hepatitis etc. The medically compromised patients were already diagnosed by their physicians.

Caries were recorded using mouth mirror, dental probe, orthopantograms, periapical radiographs. Gingivitis was recorded by noting the clinical features i.e., pain, swelling, erythema and plaque on gingiva. Periodontitis were recorded, detecting attachment loss using periodontal probe, noting gingival recession and root exposure. The collected data were analyzed by SPSS version 17.0. Frequencies and percentages of the variables were tabulated.

## RESULTS

A total of 150 partially dentate patients were included in this study. Eighty-six were males (57.33%) and 64 were females (42.67%). The male to female ratio was 1.3:1. Their ages ranged from 14 to 70 years with a mean of 36.65±15.6 years. The most common age group was third decade (26.67%). The details of age distribution are given in table 1.

TABLE 1: AGE DISTRIBUTION

| Age (years) | n | % |
|---|---|---|
| 11-20 | 26 | 17.33 |
| 21-30 | 40 | 26.67 |
| 31-40 | 31 | 20.67 |
| 41-50 | 18 | 12.0 |
| 51-60 | 21 | 14.0 |
| 61-70 | 14 | 9.33 |
| Total | 150 | 100 |

TABLE 2: OCCUPATION OF PARTIALLY DENTATE PATIENTS

| Male Patients (n=86) | | |
|---|---|---|
| **Occupation** | **No. of patients** | **%** |
| Businessman | 9 | 10.46 |
| Doctor | 2 | 2.32 |
| Class IV | 23 | 26.33 |
| Teacher | 5 | 5.81 |
| Officer | 13 | 15.11 |
| Farmer | 3 | 3.48 |
| Laborer | 11 | 12.8 |
| Student | 20 | 23.25 |
| **Female Patients (n=64)** | | |
| House-wive | 54 | 84.37 |
| Student | 10 | 15.51 |

TABLE 3: ORAL HEALTH STATUS IN PATIENTS BY EDUCATIONAL LEVELS

| Educational level | Missing Teeth | | Gingivitis | Periodontitis | Plaque& Calculus | Caries in post. teeth | Caries in ant. teeth |
|---|---|---|---|---|---|---|---|
| | No. Teeth | No. patients | | | | | |
| Illiterate (n=58) | 1-5 | 17 | 40(68%) | 18(31%) | Heavy = 34 (58%) Medium = 24 (41%) | Upper=50 Lower=49 | Upper=25 Lower=23 |
| | 6-8 | 15 | | | | | |
| | 9-10 | 12 | | | | | |
| | 11-14 | 7 | | | | | |
| | 15-18 | 7 | | | | | |
| Primary (n=37) | 1-5 | 23 | 25(67%) | 5(3%) | Heavy = 9 (24%) Medium = 21(56%) | Upper=34 Lower=35 | Upper=6 Lower=3 |
| | 6-8 | 9 | | | | | |
| | 9-12 | 3 | | | | | |
| | 13-18 | 3 | | | | | |
| Secondary (32) | 1-5 | 22 | 21(65%) | 6(18%) | Heavy = 12 (37%) Medium = 16(50%) | Upper=30 Lower=28 | Upper=6 Lower=2 |
| | 6-8 | 5 | | | | | |
| | 9-18 | 5 | | | | | |
| University (n=23) | 1-4 | 3 | 18(78%) | 2(8%) | Heavy = 0 (0%) Medium = 17(73%) | Upper=21 Lower=20 | Upper=2 Lower=0 |
| | 6-7 | 2 | | | | | |

TABLE 4: ORAL HEALTH STATUS IN MEDICALLY COMPROMISED PATIENTS (N=33)

| Disease | No patients | Gingivitis | Periodontitis | Calculus | Caries in post. teeth | Caries in ant. Teeth |
|---|---|---|---|---|---|---|
| Asthma | 4(12%) | 2(6%) | 2(6%) | 4(12%) | Upper(U)=4 Lower(L)=4 | U=00 L=0 |
| COPD | 8(24%) | 8(24%) | 8(24%) | 8(24%) | U=6 L=7 | U=1 L= |
| Diabetes | 12(36%) | 12(36%) | 11(33%) | 11(33%) | U=12 L=12 | U=2 L=3 |
| IHD | 3(9%) | 1(3%) | 0(0%) | 3(9%) | U=2 L=3 | U=0 L=3 |
| Epilepsy | 2(6%) | 2(6%) | 0(0%) | 3(9%) | U=2 U=2 | U=2 L=1 |
| Hypertension | 2(6%) | 1(3%) | 0(0%) | 2(6%) | U=2 L2 | U=0 L=0 |

Fig 1 shows the educational levels of partially dentate patients. Illiterate patients carry the highest score. Table 2 provides the occupations of patients in both genders. In females the house-wives (n=54, 84%) were most numerous while in class IV were the males (n=23, 26%). Table 3 presents oral health status in partially dentate patients by educational levels. Oral health is much better in university level educated patients. Table 4 shows oral health status in partially dentate patients with different systemic diseases. Diabetes has major impact on periodontal health. Fig 2 provides details about the cleaning habits of partially patients. Tooth brushing was very common method.

## DISCUSSION

Education has an important role in maintenance of oral health.[18] Plaunder[19] used randomized samples of 35, 50, 65 and 75year-olds, classified according to the educational level: elementary school or higher, were

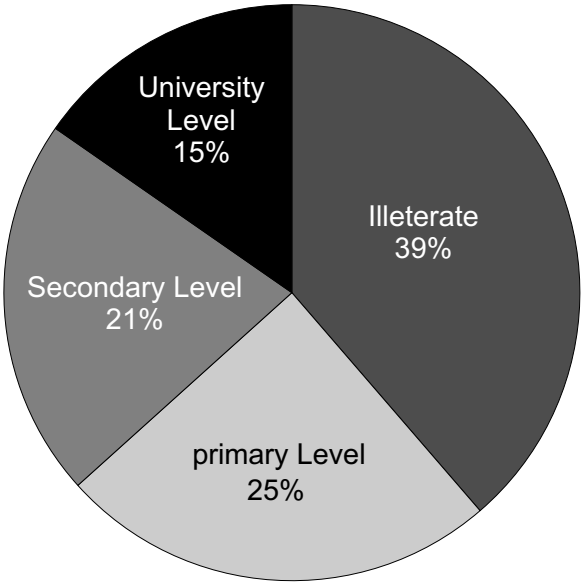


Fig 1: Educational level of patients

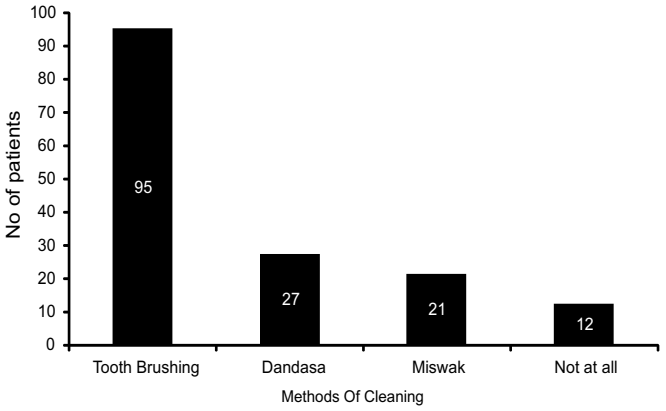


Fig 2: Methods of cleaning teeth in patients (n=150)

identified. In 1091 subjects, a number of characteristics such as (i) number of teeth, (ii) periodontal attachment levels (PAL), (iii) caries and (iv) occlusal function were recorded. The number of remaining teeth was similar for low educational and higher educational level in the 35year olds (25.8 versus 26.6), but in the older age groups low educational level had significantly a larger number of missing teeth. The low educational groups (except in 65year olds) exhibited significantly more PAL loss. Low education had significantly fewer healthy gingival units in all but the 75year age group. In all age groups, low educational level had fewer intact tooth surfaces and a significantly poorer occlusal function. The frequency of tooth cleaning measures did not differ between low educational level and high educational level. This study report similar result to the present study in which illiterate (31% periodontitis) have more periodontal diseases than university level (8% periodontitis) individuals. In current study number of missing teeth and caries in illiterate outweigh that of high educational level individuals.

Lawrence[20] studied the relationship between diabetes mellitus and oral health status in Indians from the Gilat River Indian Community in Arizona. This tribe of native Americans has the world's highest reported incidence and prevalence of non-insulin dependent (type 2) diabetes mellitus. The probing attachment level, alveolar bone loss, age, sex, calculus, plaque and gingivitis as well as the diabetic status was assessed in 1,342 Indians who were at least partially dentate. The prevalence and severity of destructive periodontal disease was determined by measuring probing attachment loss and radiographically apparent interproximal crestal alveolar bone loss, two independent but correlated indicators of periodontal destruction. Diabetic status was significantly and strongly related to both the prevalence and severity of disease. Similar to Lawrence's study to current study showed high prevalence of gingivitis (100%) and periodontitis (98%).

Wang[21] conducted a case-control study of 306 COPD patients and 328 controls with normal pulmonary function on periodontal health, oral health behaviors, and chronic obstructive pulmonary disease (COPD) in China. Their periodontal status and respiratory function were clinically examined and information on oral health behaviors was obtained using a validated questionnaire. Patients with COPD had fewer teeth and a higher plaque index than the controls. Although our study was not a comparative like Wang's study but partially dentate patients with COPD have high prevalence of caries and periodontal diseases.

Shigli[22] carried out a study on 365 patients, 58.9% of the patients were completely edentulous, 41% were partially dentate, of which 20.8% had lost their teeth from caries, 11% from periodontal disease and 9.3% from a combination of reasons. Mandibular first molars were the teeth most frequently lost due to dental caries. The maxillary left central incisor was most frequently lost due to periodontal disease, followed by the maxillary right central incisor. Present study reports similarity as well as differences to Shigli's study. No edentulous patient was included in present study and missing anterior teeth was mainly due to trauma; periodontitis was the second common cause. The caries in posterior teeth especially mandibular first molar was commonly affected similar to Shigli's study.

Abed Al-Hadi[23] evaluated the risk indicators of tooth loss in Jordanian adults using 509 patients.

The subjects were interviewed regarding demographics, social economic status, smoking habits, and oral hygiene practices and then clinically examined by a single examiner. The overall educational level of the subjects was low. More than 40% reported not brushing their teeth regularly and 56% had had no professional teeth cleaning during the last year. The mean number of remaining teeth decreased significantly with age. Men also had significantly fewer remaining teeth. Education and income were also significantly associated with the number of remaining teeth. This study results are similar to the present study. There were greater tooth loss due to caries, periodontitis and trauma in individuals having low educational level.

## REFFERENCES


1 Decker SD, Schultz R, Wood D. Determinants of well-being in primar caregivers of spinal cord injured persons. J Rehabil Nurs 1989; 14:6-8.

2 Sprangers MA, Aaronson NK. The role of health care providers and significant others in evaluating the quality of life of patients with chronic disease: a review. J Clin Epidemiol 1992; 45: 743-60.

3 Mack F, Schwahn C, Feine JS, Mundt T, Bernhardt O, John U, Kocher PT, Biffar R. The impact of tooth loss on general health related to quality of life among elderly Pomeranians: results from the study of health in Pomerania (SHIP-O). Int J Prosthodont 2005; 18: 414-9.

4 Marino R, Schofield M, Wright C, Calache H, Minichiello V. Self-reported and clinically determined oral health status predictors for quality of life in dentate older migrant adults. J Community Dent Oral Epidem. 2008; 36: 85-94.

5 Locker D. Measuring oral health: A conceptual framework. J commumity Dent Health. 1988; 5: 3-8.

6 Corson MA,Boyed T,Kind P, Allen PF. Measuring oral health: Does your treatment really make a diiference.BDJ. 1999; 187: 481-84.

7 Gift HC,Atchison KA. Oral health and health related QoL. J Med Care.1995; 11: 57-77.

8 Slade GD. Derivation and validation of a short-form oral health impact profile. Community Dent Oral Epidemiol. 1997 Aug; 25(4): 284-90.

9 World Health Organization. International classification of impairments, disabilities and handicaps. Geneva: WHO; 1980.

10 Locker D. Applications of self-reported assessments of oral health outcomes. J Dent Educ. 1996 Jun; 60(6): 494-500.

11 Locker D, Jokovic A, Clarke M. Assessing the responsiveness of measures of oral health-related quality of life.J Community Dent Oral Epidemiol. 2004 Feb; 32(1): 10-8.

12 Allen PF, McMillan AS, Locker D. An assessment of sensitivity to change of the Oral Health Impact Profile in a clinical trial. J Community Dent Oral Epidemiol. 2001 Jun; 29(3): 175-82.

13 Allison P, Locker D, Jokovic A, Slade G. A cross-cultural study of oral health values. J Dent Res. 1999 Feb; 78(2): 643-9.

14 Helkimo M. Studies of function and dysfunction in the masticatory system. II. Index for ananmnestic and clinical dysfunction and occlusal state. Swed Dent Journal. 1974; 67: 101-19.

15 Ainamo J, Barmes D, Beagrie G, Cutress T, Martin J, Sarco-Infirri J. Development of the World Health Organisation (WHO) community periodontal index of treatment needs (CPITN). Int Dent J 1982; 32: 281-91.

16 Cohen LK. The emerging field of oral health-related quality of life outcomes research. In Measuring oral health and quality of life. Edited by Slade GD. University of North Carolina. Dental Ecology; 1997.

17 Davis P. Culture, inequality and pattern of dental care in New Zealand. J Social Science and Medicine. 1981; 15: 801-5.

18 Kırtıloglu, Tugrul, Umit SY. "An assessment of oral self-care in the student population of a Turkish university." J Public Health. 2006; 10: 953-7.

19 Paulander J, Axelsson P, Lindhe J. 35-, 50-, 65- and 75-year-olds Association between level of education and oral health status. J Clin Periodontol. 2003 Aug; 30(8): 697-704.

20 Lawrence JE, Shlossman M, Robert J. Periodontal Disease in Non-Insulin-Dependent Diabetes Mellitus. Journal of Periodontology. February 1991; 62(2): 123-31.

21 Wang Z et al. Periodontal health, oral health behaviours, and chronic obstructive pulmonary disease. J Clin Periodontol. 2009 Sep; 36(9): 750-5.

22 Shigli K, Hebbal M, Angadi GS. Relative contribution of caries and periodontal disease in adult tooth loss among patients reporting to the Institute of Dental Sciences, Belgaum, India. J Gerodontology (prosthod). 2009 Sep; 26(3): 214-8.

23 Hamasha AA, Sasa I, Al Qudah M. Risk indicators associated with tooth loss in Jordanian adults. J Com Dent and Oral Epidem. 2002; 28(1): 67-72.