ORIGINAL ARTICLE

ORAL HEALTH-RELATED QUALITY OF LIFE (OHRQoL) AMONG UNIVERSITY STUDENTS OF KARACHI

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ABSTRACT

Background: In the field of health services research, the concept of Oral Health-Related Quality of Life (OHRQoL) plays a crucial role in examining oral health trends and assessing the needs of the population. It helps gauge the impact of oral diseases on people's daily lives. This study aimed to assess OHRQoL among university students in Karachi.

Methods: A cross-sectional, questionnaire-based study was done among 300 individuals belonging to a university in Karachi. The age of the participants ranged from 20 to 24 years, and most of them were females (79.7%). Data collection was carried out using a self-administered short-form of oral health impact profile (OHIP-14) questionnaire, comprising 14 questions organized into 7 subscales. Data quality was analyzed descriptively, and the reliability of the data was evaluated using Cronbach's alpha coefficient.

Results: The study found that 25.9% of the participants reported an impact on their OHRQoL. The mean OHIP-14 score was 12.26 ± 10.9. Notably, the subscales of psychological discomfort and physical pain had the highest impact, affecting 43.9% and 34.2% of participants, respectively. In contrast, the social handicap subscale had the least impact, affecting only 13.2% of participants.

Conclusion: The mean OHIP-14 score indicates that oral health had limited overall impact on students' OHRQoL, although psychological discomfort and physical pain were the most affected domains. The OHIP-14 showed acceptable reliability, supporting its usefulness as an assessment tool in this population. Strengthening school-based oral health education, implementing routine dental screening, and improving access to preventive dental services are recommended to reduce discomfort and enhance students' oral health–related quality of life.

Keywords: Oral health; quality of life; students.

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INTRODUCTION

According to the World Health Organization (WHO), health is not simply the absence of disease and ailment but rather a state of complete physical, mental, and social well-being]. Oral health serves as a vital indicator of individuals' overall health and is closely intertwined with their general health and health-related quality of life (HRQoL)]. HRQoL offers a suitable metric for evaluating people's overall well-being and the impact of health conditions on their quality of life.

Oral health-related quality of life (OHRQoL) encompasses various dimensions, including physical, social, and psychological aspects]. Research on OHRQoL involves assessing different facets of individuals' self-reported oral health, which aids in enhancing dental care delivery and can also be used to determine factors affecting oral health and evaluate the effectiveness of dental treatments. Poor oral hygiene leads to periodontal diseases, periodontitis is independently associated with Alzheimer's diseases, cardiovascular diseases, diabetes, chronic obstructive pulmonary disease, obstructive sleep apnea and COVID-19 complications [4-6].

It's essential to stop compartmentalizing oral health from the rest of the body because poor oral health can significantly impact overall health, causing pain, suffering, altering eating habits, and affecting one's quality of life and well-being. Poor oral hygiene has multiple adverse consequences and places an increased burden on the healthcare system. Several tools are available for measuring OHRQoL, with the Oral Impact on Daily Performance (OIDP) being one such example. Unlike clinical examination tools that primarily assess the presence and severity of diseases, OIDP evaluates how oral health conditions impact a person's quality of life (QoL).

OHRQoL is evaluated using questionnaires that generate data on oral health and its effects on an individual's QoL. The most commonly used questionnaire for this purpose is the oral health impact profile (OHIP-14), which assesses various aspects of oral health, including functional limitations, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and social handicap [7,8]. Understanding university students' self-perceptions of oral health, including OHRQoL, has significant value in adapting effective teaching methods. This perspective can also contribute to enhancing curricula and refining health education policies for students. The primary aim of this study was to assess OHRQoL among students at Medical Universities in Karachi.

METHODSOLOGY

Sample population and response:

This cross-sectional study was conducted among the university students of Karachi with (n = 320) sample size between July to September, 2023. Out of 320 students, fifteen refused to participate and five students (1.6 %) were excluded due to incomplete questionnaires, so the final sample encompassed 300 students (98.4 % response rate). The sample size (n = 320) was calculated using the WHO sample size formula for a single proportion, assuming a 50% expected prevalence, 95% confidence interval, and 5% margin of error.

Inclusion and exclusion criteria:

Participants of both genders who were generally healthy, without any oral diseases or lesions were included in the study. Those undergoing orthodontic treatment or who had any major oral surgical procedures were excluded from the study. The participants were explained the objectives of the study and everyone was asked to complete the questionnaire after taking their verbal consent, anonymity and confidentiality was maintained. The study was approved by the Ethical Review Board of Baqai Medical University (Reference number BDC/ERB/2023/035).

Assessment of Oral Health-Related Quality of Life:

The researchers in this study utilized the shorter version of the Oral Health Impact Profile (OHIP-14) to evaluate OHRQoL]. The reference period for this assessment was the preceding 24 months, and the students independently completed the questionnaire. The OHIP-14 is a widely employed

generic OHRQoL measure with a history of proven reliability and validity in numerous prior studies]. Due to its robust conceptual and empirical foundation, the OHIP-14 is frequently used in the field of dentistry. To calculate the OHIP-14 score, the responses to all 14 items are summed, resulting in a total score that ranges from 0 to 56. A higher score indicates a poorer OHRQoL].

Statistical Analysis:

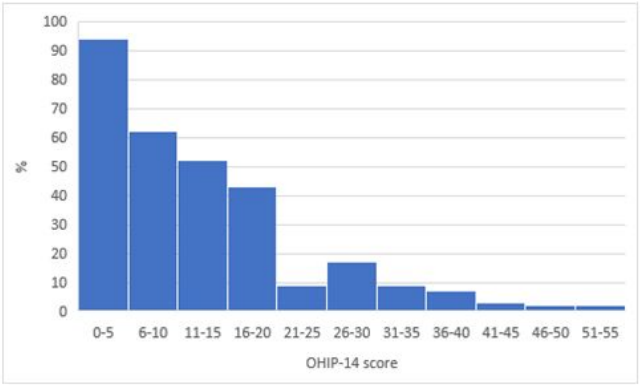
The research data collected was processed using the SPSS software version 21. Data quality was assessed through descriptive analysis, which included calculating the mean value, standard deviation, minimum, and maximum values. Additionally, the internal consistency reliability of the data was evaluated using Cronbach's alpha coefficient. In the analysis, the variable OHRQoL was categorized into two groups: "absence of impact" (comprising responses of "never" and "hardly ever") and "presence of impact" (encompassing responses of "occasionally," "fairly often," and "very often"). To determine the prevalence of impact on OHRQoL, the study calculated the percentage of respondents indicating the presence of impact concerning the total number of participants, both for the overall OHIP-14 scale and for its individual questions. The OHIP-14 questionnaire uses a five-point Likert scale (never, hardly ever, occasionally, fairly often, very often). For analytical clarity and to estimate the prevalence of oral health impacts on quality of life, the responses were dichotomized into two categories: "absence of impact" (never, hardly ever) and "presence of impact" (occasionally, fairly often, very often). This dichotomization method has been widely applied in OHRQoL research to facilitate categorical analysis and allow calculation of impact prevalence [13].

The prevalence of impact was determined by dividing the number of participants reporting a "presence of impact" by the total number of respondents, expressed as a percentage for both the overall OHIP-14 scale and individual items.

RESULTS

Mean age of the participants was 22.1 ± 1.8 years (79.7 % were females). The prevalence of impact on OHRQoL was 25.9 % and the mean OHIP-14 score was 12.26 ± 10.9 (range: 0 to 52) (Figure 1). The mean scores for the subscales ranged from 0.53 (SD = 0.9) for social handicap to 1.47 (SD = 1.4) for psychological discomfort, indicating that psychological discomfort was the most frequently reported impact on oral health-related quality of life (OHRQoL). In contrast, social handicap had the lowest reported impact. The prevalence of impacts i.e. psychological discomfort (43.9%) and physical pain (34.2%) were the most commonly affected domains. Other subscales such as psychological disability (25.8%), physical disability (24.5%), and functional limitation (21.5%) showed moderate levels of impact, whereas social disability (16.3%) and social handicap (13.2%) were less frequently reported. The total OHIP-14 score had a mean of 12.26 (SD = 10.9), with a range from 0 to 52. Overall, 25.9% of students experienced an impact on OHRQoL, while 74.1% reported no significant impact (Table 1). These findings suggest that while the majority of students reported minimal or no effect of oral health on their daily lives, a considerable proportion still experienced negative impacts, particularly in the domains of psychological discomfort and physical pain.

Figure 1: Histogram of the OHIP-14 score in the overall study sample.



OHIP-14: Oral Health Impact Profile

Table 1: Descriptive statistics of OHIP-14 subscale scores and total score among the students.

OHIP-14 Subscales	Score			Impact on OHRQoL	
	Mean (SD)	Minimum	Maximum	No Impact (%)	Impact (%)
Functional limitation	0.73 (1.1)	0	8	78.5	21.5
Physical pain	1.11 (1.2)	0	8	65.8	34.2
Psychological discomfort	1.47 (1.4)	0	8	56.1	43.9
Physical disability	0.79 (1.1)	0	8	75.5	24.5
Psychological disability	0.89 (1.2)	0	8	74.2	25.8
Social disability	0.6 (0.9)	0	8	83.7	16.3
Social handicap	0.53 (0.9)	0	8	86.8	13.2
OHIP-14 Total	12.26 (10.9)	0	52	74.1	25.9

OHIP-14: Oral Health Impact Profile; SD: standard deviation; OHRQoL: oral health-related quality of life; *statistically significant correlation on $p < 0.05$.

Table 2 indicates that the majority of students reported no impact ("never") for most OHIP-14 items. For functional limitation, 65% had no difficulty pronouncing words and 56.7% reported no change in sense of taste. Physical pain was more noticeable, with 40% reporting no mouth pain, while 22.3% experienced occasional pain. Similarly, 40.7% had no eating discomfort, whereas 21.3% experienced it occasionally. Psychological discomfort showed higher impact: only 32.7% were never self-conscious, while 16–20% reported feeling self-conscious or embarrassed fairly often or very often. For tension, 43.4% reported no impact, but around 19% experienced it occasionally. Physical and social disabilities were generally low, with 54–55% reporting no meal interruption or dietary dissatisfaction, and 61.7% reporting no irritability with others. Social handicap had the lowest impact overall, with 72.7% never feeling unable to function due to oral health problems. Overall, occasional discomfort particularly psychological and physical was present, but frequent or severe impact remained low across all OHIP-14 domains.

Table 2: Frequency of impact of each item of the OHIP-14 on OHRQoL among university students of Karachi.

List of Questions on OHIP -14 Questioner	Responses				
	0-Never	1-Hardly ever	2-Occasionally	3-Fairly often	4-Very often
	n (%)	n (%)	n (%)	n (%)	n (%)
Functional limitation					
"Have you had trouble pronouncing any words because of problems with your teeth, mouth or dentures?"	195 (65)	50 (16.7)	35 (11.6)	13 (4.3)	7 (2.4)
"Have you felt that your sense of taste has worsened because of problems with your teeth, mouth or dentures?"	170 (56.7)	59 (19.6)	47 (15.9)	13 (4.3)	11 (3.5)
Physical pain					
"Have you had painful aching in your mouth?"	120 (40)	77 (25.7)	67 (22.3)	18 (6)	18 (6)
"Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth or dentures?"	122 (40.7)	80 (26.7)	64 (21.3)	18 (6)	16 (5.3)
Psychological discomfort					
"Have you been self -conscious because of your teeth, mouth or dentures?"	98 (32.7)	45 (15)	60 (20)	49 (16.3)	48 (16)
"Have you felt tense because of problems with your teeth, mouth or dentures?"	130 (43.4)	62 (20.7)	52 (17.3)	27 (9)	29 (9.6)
Physical disability					
"Has been your diet been unsatisfactory because of problems with your teeth, mouth or dentures?"	167 (55.7)	61 (20.3)	51 (17)	13 (4.3)	8 (2.7)
"Have you had to interrupt meals because of problems with your teeth or mouth?"	162 (54)	60 (20)	51 (17)	19 (6.3)	8 (2.7)
Psychological disability					
"Have you found it difficult to relax because of problems with your teeth or mouth?"	159 (53)	61 (20.3)	42 (14.1)	29 (9.6)	9 (3)
"Have you been a bit embarrassed because of problems with your teeth or mouth?"	165 (55)	62 (20.7)	39 (13)	19 (6.3)	15 (5)
Social disability					
"Have you been a bit irritable with other people because of problems with your teeth or mouth?"	185 (61.7)	61 (20.3)	36 (12)	7 (2.3)	11 (3.7)
"Have you had difficulty doing your usual jobs because of problems with your teeth or mouth?"	203 (67.7)	55 (18.3)	31 (10.3)	5 (1.7)	6 (2)
Social handicap					
"Have you felt that life in general was less satisfying because of problems with your teeth or mouth?"	183 (61)	71 (23.7)	30 (10)	4 (1.3)	12 (4)
"Have you been totally unable to function because of problems with your teeth or mouth?"	218 (72.7)	47 (15.6)	19 (6.3)	8 (2.7)	8 (2.7)

OHIP-14: Oral Health Impact Profile; OHRQoL: oral health-related quality of life; n: number of participants.

DISCUSSION

This study presented the OHRQOL status of professional students at universities in Karachi. The primary objective of this research was to raise awareness about the significance of oral health in positively impacting overall health, well-being, and the quality of life. It underscores the importance of evaluating OHRQOL in young adults for preventive measures aimed at enhancing their general health, as they represent the future of a nation.

44 % of Pakistani population is aged between 15 to 29 years of age bracket]. Understanding health trends and estimating the burden of disease at the national and subnational levels helps policy makers track progress and identify disparities in overall health performance. Pakistan is a developing country that has insufficient healthcare for its rapidly growing population, and studies like these help to identify the treatment needs of the population and subsequently reducing the burden on the government for providing healthcare].

Oral health is an integral component of overall health and significantly contributes to the quality of life. Quality of life concerns are at the forefront of public health initiatives. Assessing OHRQOL shifts the focus from traditional medical criteria to an approach that considers the social and emotional aspects of a person's well-being, in addition to their physical health. This approach informs the establishment of appropriate goals and the evaluation of outcomes resulting from treatment interventions.

The study found that the mean OHIP-14 score for the students in the research was 12.26 ± 10.9, which was a bit higher than a similar study done among 895 Crotian students in which the mean OHIP-14 score was 11.66 ± 8.72]. Since a mean OHIP-14 score less than 14 suggests no substantial impact on students' oral health, it can be inferred that the effect of oral health on the daily activities of students was relatively low. Similar findings have been observed in prior research]. Factors associated with a lower OHIP-14 score include the uncommonness and mild severity of oral diseases, as well as students' limited ability to identify such problems. Oral conditions that typically affect OHRQOL in this age group, such as periodontal disease or dental caries, were infrequent and not severe, which could explain the low OHIP-14 scores. Furthermore, oral health care practices among the surveyed students may also contribute to the low frequency and severity of oral problems, considering that the participants are generally well-educated and young.

The study identified that the subscales of psychological discomfort, physical pain, and psychological disability had the highest mean scores and the most significant impact on students' quality of life. Psychological discomfort may be linked to students' concerns about the appearance of their teeth and mouth, as they are encouraged to pay attention to and value their oral health, especially aesthetics through social media rather than a health education curriculum. The subscale of social handicap had the least impact on students' quality of life, followed by the subscales of social disability and functional limitations. The low impact observed for the social handicap subscale suggests that, based on their oral health status, students did not "feel that life in general was less satisfying" and were not "completely unable to function [16,17]."

It's important to note that this study exclusively utilized the OHIP-14 questionnaire and did not include visual or tactile clinical dental examinations. Despite employing a rigorous standard methodology, certain limitations should be acknowledged when interpreting the study's findings. Firstly, this study relies on self-reported questionnaire data, which may introduce recall bias, exaggerated responses, and selection bias. Secondly, selection bias could be implemented as data was collected only from the students from medical universities.

CONCLUSION

The mean OHIP-14 score indicates that oral health had limited overall impact on students' OHRQoL, although psychological discomfort and physical pain were the most affected domains. The OHIP-14 showed acceptable reliability, supporting its

usefulness as an assessment tool in this population. Strengthening school-based oral health education, implementing routine dental screening, and improving access to preventive dental services are recommended to reduce discomfort and enhance students' oral health–related quality of life.

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SF: Concept & design, statistical analysis and editing of manuscript.
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Authorship

All persons designated as authors should qualify for authorship. Each author should have participated

sufficiently in the work to take public responsibility for the content. Authorship credit should be based

only on substantial contributions to (a) either conception and design or else analysis and interpretation of data and to (b) drafting the article or revising it critically for important intellectual content and on (c) final approval of the version to be published. All three conditions must be met.

Participation solely in the acquisition of funding or the collection of data does not justify authorship.

General supervision of the research group is also not sufficient for authorship. Any part of an article

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