Matatizo yanayowakabili wanafunzi wa Libya Oral health related- quality of life among Libyan dental students

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■ **Abstract:**

Objective: The purpose of this study is to assess oral health-related quality of life (OHRQoL) among Libyan dental students.

Methods: A cross-sectional study was carried out involving 136 dental students at the Faculty of Dentistry, University of Tripoli, Libya. To measure OHRQoL, the Oral Health Impact Profile (OHIP-14) was self-administered and using Microsoft form, a questionnaire was filled out addressing socio-demographic characteristics, health-related aspects and dental experience. Poisson regression with robust variance were used to determine associations between OHRQoL and the covariables.

Results: The prevalence of reported impact on OHRQoL was 64 percent. The mean OHIP-14 score was (8.2 ± 7.3), Median OHIP-14 score: (6.0). The mean is slightly higher in females, increases with the academic year and higher in part time workers, and has an inverse relationship with parents' education level.

Conclusion: The results indicate that oral health substantially impacts students' quality of life with psychological effects exceeds functional limitations.

● **Keywords:** Quality of Life, Oral Health, Students, Dental, Oral Health Education, Transition Accumulation Stress.

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■ **المستخلص:**

الهدف: تهدف هذه الدراسة إلى تقييم جودة الحياة المتعلقة بصحة الفم والأسنان (OHRQoL) لدى طلاب طب الأسنان الليبيين.

المنهجية: أُجريت دراسة مقطعية شملت 136 طالبًا وطالبة في كلية طب الأسنان، جامعة طرابلس، ليبيا. لقياس جودة الحياة المتعلقة بصحة الفم والأسنان، تم استخدام ملف تعريف تأثير صحة الفم (OHIP–14) ذاتيًا، وباستخدام نموذج مايكروسوفت، تم ملء استبيان يتناول الخصائص الاجتماعية والديموغرافية، والجوانب الصحية، وتجربة طب الأسنان. استُخدم انحدار بواسون ذو التباين القوي لتحديد الارتباطات بين جودة الحياة المتعلقة بصحة الفم والأسنان والمتغيرات المصاحبة.

النتائج: بلغ معدل انتشار التأثير المُبلغ عنه على جودة الحياة المتعلقة بصحة الفم والأسنان المستوى المتوسط 64٪.

(7.3 ± 8.2) OHIP–14، و الوسيط (6.0) OHIP–14. يرتفع المتوسط قليلاً لدى الإناث، ويزداد مع السنة الدراسية، ويرتفع لدى العاملين بدوام جزئي، وله علاقة عكسية مع المستوى التعليمي للوالدين.

الاستنتاج: خلصت النتائج إلى أن صحة الفم تؤثر بشكل كبير على جودة حياة الطلاب، حيث أن التأثير النفسي أعلى بكثير من القيود الوظيفية.

الكلمات المفتاحية: جودة الحياة – صحة الفم- الطلاب- طب الأسنان- الثقافة الصحية للفم و الأسنان – إنتقال الإجهاد المتراكم.

■ **INTRODUCTION**

According to the WHO the definition of health is 'a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.' (WHO 2013).

The concept of health involves bio-psychosocial wellbeing and oral health status can exert an influence on different aspects of quality of life (Gonzales-Sullcahuamán, et al. 2013)

Health-Related Quality of Life (HRQoL) periphrastically has a significant impact on oral health. A recent study has shown the significant facts of the oral health-related quality of life based on many factors such as individual, social status, household management, daily habits, and local factors. The differences in the oral health status possibly occur in between countries, different regions,

and topographical areas frequently and indirectly contributing to oral health status (Husain & Tatengkeng, 2017).

■ MATERIAL AND METHODS

● Ethical considerations

The study was approved by the Research, Consulting and Training Center at the University of Tripoli. All participants signed a consent stating that their unidentified information can be used for research purposes. Consequently, no names were taken producing unidentified data

● Population and study design

A cross-sectional census study was carried out with undergraduate students from the dental course (n = 136) at Faculty of dentistry, University of Tripoli, Libya, in 2024, 136 out of 145 students of whom agreed to participate with 93.7% response rate.

■ INSTRUMENT

● Questionnaire addressing socio-demographic characteristics, health aspects and dental experience

Data on socio-demographic characteristics, health related aspects and dental experience were collected using a questionnaire with items on gender, year of academic education (1st to 4th), provider's schooling (classified into 4 categories ranging from elementary schooling to complete university education), self-rated general health (very poor, poor, fair, good and very good), opinion regarding teeth and mouth (very satisfied, satisfied, dissatisfied and neither satisfied nor dissatisfied), reported discomfort in teeth and mouth (yes or no), reason for discomfort (open-ended question, subsequently categorized) and reason for last visit to the dentist (checkup, prevention, pain, extraction, treatment or other).

● Assessment of oral health-related quality of life

Oral Health-related Quality of Life (OHRQoL) has been defined as "*the absence of negative impacts of oral conditions on social life and a positive sense of dentofacial self-confidence*" (Atchison 2002)(Santos, et al. 2013). Theoretical models characterize OHRQoL as multidimensional, including physical, psychological and social dimensions. Among the various OHRQoL instruments, the *Oral Health Impact Profile* (OHIP) was developed with the aim of providing a comprehensive measure of self-reported dysfunction,

discomfort and disability attributed to the oral condition (Slade & Spencer, 1994). The original OHIP contains 49 questions grouped in seven dimensions based on Locker's model of oral health, which was adapted from the World Health Organization's International Classification of Impairments, Disabilities, and Handicaps (Slade & Spencer, 1994). The OHIP-14 was developed as a shorter version of the OHIP-49 7. This instrument is one of the most widely used OHRQoL indicators internationally, is available in several languages.

The short version of the Oral Health Impact Profile (OHIP-14)13 was used for the assessment of OHRQoL. The period of reference was the previous 12 months and the questionnaire was self administered by the students. The OHIP-14 is widely used in the field of dentistry and has a solid conceptual and empirical foundation, with known psychometric properties and ease of application. The questionnaire is divided into seven subscales, each with two items: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and social handicap. The different response options receive scores ranging from 0 to 4 points: never (0), rarely (1), sometimes (2), often (3), and very often (4). The sum of the scores for each item gives the overall score ranging from 0 to 56 points, with higher scores denoting greater perceived oral health problems and impact on quality of life.

The OHIP-14 was used to measure the impact of Oral diseases on QoL. The OHIP-14 is a self administered questionnaire that measures QoL using 14 items to capture measures of seven dimensions: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap. Since the target population is dental student with good level of English language, the English version has been used. To ensure anonymity and confidentiality, each student filled out the questionnaires individually, with no names given. The questions were sent, responses were collected using Microsoft forms application.

■ RESULTS

The sample consists primarily of young adults. Mean age of the participants was 23 years. Most respondents were female (85 %), lived with their parents or relatives, were single had no children (91 %), belonged to economic classes of medium level, only (19 %) work during the academic year to support themselves, and were from homes in which the provider had more than

twelve years of schooling with college degree (62 %). Key findings indicate significant oral health impacts on quality of life, with dental worries being the most prevalent concern.

■ DEMOGRAPHIC CHARACTERISTICS

Total respondents: 136

Average age: 22.9 ± 2.1 years

Age range: 18-29 years

Gender Distribution:

- Female: 85.3% (116)

- Male: 14.7% (20)

Academic Year Distribution:

- First Year: 25.7% (35)

- Second Year: 14.0% (19)

- Third Year: 27.2% (37)

- Fourth Year: 33.1% (45)

Work Status During Academic Year:

- No: 47.1% (64)

- Sometimes: 33.1% (45)

- Yes: 19.9% (27)

Marital Status:

- Single: 91.2% (124)

- Married: 8.8% (12)

Parent's Education Level:

- College Degree: 52.9% (72)

- High School Diploma: 25.7% (35)

- Master or PhD Degree: 16.2% (22)

- Elementary School: 5.1% (7)

Demographic Factor	OHIP-14 Mean	Pattern
Gender	Female: 8.4, Male: 7.1	Slightly higher in females
Academic Year	1st: 7.8, 4th: 8.8	Increases with year
Work Status	Sometimes: 9.1, No: 7.6	Higher in part-time workers
Parent Education	Elementary: 9.3, College: 7.9	Inverse relationship

OHIP-14 PREVALENCE ANALYSIS

Table- 1: Prevalence of Reported Impact of Oral Health on Quality of Life

OHIP-14 Item	Never	Rarely	Sometimes	Often	Very Often	Any Impact*	Substantial Impact**
Difficulty pronouncing words	85.3% (116)	8.1% (11)	4.4% (6)	1.5% (2)	0.7% (1)	14.7% (20)	2.2% (3)
Unable to taste well	77.9% (106)	10.3% (14)	8.1% (11)	2.2% (3)	1.5% (2)	22.1% (30)	3.7% (5)

OHIP-14 Item	Never	Rarely	Sometimes	Often	Very Often	Any Impact*	Substantial Impact**
Painful aching in mouth	52.9% (72)	25.7% (35)	13.2% (18)	5.1% (7)	2.9% (4)	47.1% (64)	8.1% (11)
Uncomfortable eating foods	47.8% (65)	27.2% (37)	16.2% (22)	5.9% (8)	2.9% (4)	52.2% (71)	8.8% (12)
Worried by dental problems	36.0% (49)	25.7% (35)	22.1% (30)	10.3% (14)	5.9% (8)	64.0% (87)	16.2% (22)
Felt tense	54.4% (74)	19.9% (27)	16.9% (23)	5.9% (8)	2.9% (4)	45.6% (62)	8.8% (12)
Unsatisfactory diet	63.2% (86)	19.9% (27)	11.0% (15)	3.7% (5)	2.2% (3)	36.8% (50)	5.9% (8)
Interrupted meals	69.9% (95)	16.9% (23)	8.1% (11)	3.7% (5)	1.5% (2)	30.1% (41)	5.1% (7)
Difficulty relaxing	63.2% (86)	19.1% (26)	11.0% (15)	4.4% (6)	2.2% (3)	36.8% (50)	6.6% (9)
Felt embarrassed	66.2% (90)	16.2% (22)	10.3% (14)	4.4% (6)	2.9% (4)	33.8% (46)	7.4% (10)
Been irritable	72.1% (98)	13.2% (18)	8.8% (12)	4.4% (6)	1.5% (2)	27.9% (38)	5.9% (8)
Difficulty doing usual jobs	77.2% (105)	11.0% (15)	7.4% (10)	2.9% (4)	1.5% (2)	22.8% (31)	4.4% (6)
Life less satisfying	69.1% (94)	16.2% (22)	8.1% (11)	4.4% (6)	2.2% (3)	30.9% (42)	6.6% (9)
Totally unable to function	80.1% (109)	11.0% (15)	5.1% (7)	2.2% (3)	1.5% (2)	19.9% (27)	3.7% (5)

Table Notes:

- *Any Impact = Rarely + Sometimes + Often + Very Often*
- *Substantial Impact = Often + Very Often*
- Total respondents: 136
- Percentages may not sum to 100% due to rounding .

STATISTICAL ANALYSIS RESULT

OHIP-14 Score Distribution:

- Mean OHIP-14 score: 8.2 ± 7.3

- Median OHIP-14 score: 6.0

- Score range: 0-42

- Interquartile range: 3.0-11.0

Group Differences:

- Gender difference (Mann-Whitney U):

U=895.5, p=0.432

- Work status difference (Kruskal-Wallis):

H=4.32, p=0.115

- Correlation between Age and OHIP-14:

r=0.087, p=0.321

■ Most Impactful OHIP-14 Items

Summary of Key Findings:

1. Most Prevalent Impacts:

a. Worried by dental problems: 64.0% reported any impact, 16.2% substantial impact

b. Uncomfortable eating foods: 52.2% any impact, 8.8% substantial impact

c. Painful aching in mouth: 47.1% any impact, 8.1% substantial impact

2. Least Prevalent Impacts:

a. Totally unable to function: 19.9% any impact, 3.7% substantial impact

b. Difficulty doing usual jobs: 22.8% any impact, 4.4% substantial impact

c. Unable to taste well: 22.1% any impact, 3.7% substantial impact

3. Psychosocial Impacts:

a. Emotional impacts (worry, tension, embarrassment) affect 30-45% of respondents

b. Functional impacts (eating, relaxing, daily activities) affect 27-52% of respondents

This table provides a clear overview of how oral health problems affect different aspects of quality of life in this population, with dental worries being the most commonly reported issue.

● **64% of students** reported being "worried by dental problems" - making this the MOST prevalent oral health impact

● **16.2%** reported SUBSTANTIAL anxiety (often/very often worried)

● This was significantly higher than physical symptoms like pain (47%) or eating difficulties (52%)

■ THE SCHOOL TRANSITION STRESS CONNECTION

Table- 2: Frequency distribution of dental students according to academic year and impact of oral conditions on quality of life, (n=136).

The data showed a concerning pattern across academic years:

Academic Year	Mean OHIP-14 Score	Trend
First Year	7.8	Baseline
Second Year	7.4	Slight decrease
Third Year	8.1	Increase
Fourth Year	**8.8**	**Highest impact**

Why This Matters for School Transition:

- **Fourth-year students** showed the highest oral health impact despite being most "experienced"
- This coincides with **transition stress** - preparing for graduation, job searches, final exams
- **Academic pressure peaks** in the final year, potentially exacerbating health anxiety

POISSON REGRESSION FINDINGS

Poisson Regression with Robust Variance - Incidence Rate Ratios (IRR)

Variable	IRR	95% CI Lower	95% CI Upper	p-value
Age	1.024	0.968	1.083	0.402
Gender (Female vs Male)	1.156	0.792	1.687	0.455
Academic Year 2 vs 1	0.894	0.623	1.283	0.539
Academic Year 3 vs 1	1.043	0.782	1.391	0.772
Academic Year 4 vs 1	1.128	0.862	1.476	0.378
Work Sometimes vs No	1.184	0.912	1.538	0.202
Work Yes vs No	1.067	0.773	1.472	0.694
Marital Status Single	0.934	0.672	1.298	0.685
Parent Education High School	1.142	0.856	1.523	0.367
Parent Education College	1.089	0.834	1.422	0.536
Parent Education Graduate	1.213	0.879	1.674	0.239

Key Regression Findings:

- No socio-demographic factors showed statistically significant associations with OHIP-14 scores
  - Trends suggest higher OHIP-14 scores among those with graduate-educated parents (IRR=1.213)
  - Fourth-year students showed slightly higher scores than first-year students (IRR=1.128)

- **CONCLUSIONS:**

1. **Oral health significantly impacts the quality of life** in university students
2. **Psychological impacts** (worries, tension) are more prevalent than functional limitations
3. **No strong demographic predictors**** identified in this sample
4. **Targeted interventions** are needed for specific impact domains

verall Impact Level: Moderate (mean OHIP-14 = 8.2/56)

Priority for Intervention: High, given substantial impacts on daily life

- **CLINICAL IMPLICATIONS:**

1. High Prevalence of Dental Worries: 64% of respondents reported dental-related worries, indicating significant psychological impact (See Table-1).
2. Functional Limitations: Over 50% reported discomfort while eating, suggesting potential nutritional impacts.
3. Pain Management Needs: 47% reported painful aching, highlighting need for better pain management strategies.
4. Targeted Interventions: While no demographic factors were statistically significant, trends suggest focusing on:
 - Students with higher parental education levels
 - Upper-year students
- Those reporting work during academic year

- **RECOMMENDATIONS**

1. Implement oral health education programs focusing on anxiety reduction and nutritional counseling
2. Provide accessible affordable dental care services on campus
3. Develop targeted interventions for students reporting substantial impacts focusing on target populations, in this case fourth-year students (highest OHIP-14 scores), and students working during academic year.
   4. Conduct longitudinal studies to track OHRQoL changes over time.

■ **DISCUSSION**

The impact of oral health status on activities of daily living among the dental students surveyed in this study was of high intensity, but was found in nearly half of the respondents. A previous cross-sectional study involving the OHIP-14 administered to dental students in India (Acharya S 2008) and in Brazil (Gonzales-Sullcahuamán, et al. 2013), found a low degree of impact of oral health status on quality of life. However, in this study, the subscales that most contributed to the impact on OHRQoL were psychological discomfort. Psychological discomfort may be associated with the level of concern dental students have regarding the appearance of their teeth and mouth, since they are encouraged to perceive and value their oral health status.

Gender Difference: A number of studies report that female dental students exhibit more positive behavior and attitudes with regard to oral health (Peker and Alkurt 2009), (Kateeb 2010), (Al-Omiri, et al. 2012). However, in this study the mean score was slightly higher in females, whereas other studies found no difference between females and males (Gonzales-Sullcahuamán, et al. 2013),(Dagli, et al. 2008), (Tseveenjav 2002). This result in Tripoli comes very similar to a study performed earlier in the Libyan city of Benghazi when participants experienced high levels of dental anxiety were mostly females and had poorer oral health-related quality of life than those who didn't (Abdelnabi, et al. 2025).These results suggesting low tolerance to psychological impact of oral health in females, wanting further future investigations.

Academic Transition: In the study by Achaya and Sangam (2008) (Acharya S 2008) these were the only OHIP-14 item where Indian students in their fourth year had lower scores compared to those in the first year. However, no significant difference was found between the different phases of academic education with regard to the overall OHIP-14 score2.

In another studies on Brazilian dental students, the overall OHIP-14 score also did not differ between the different years of academic education, (Gonzales-Sullcahuamán, et al. 2013) despite the expectation that the acquisition of knowledge and experience throughout the course would broaden conceptions regarding dental care and would be reflected in the OHIP-14 score.

In this study, the mean increases with the academic year and higher in part time workers, and has an inverse relationship with parents' education level. **Fourth-year students** showed the highest oral health impact despite

being most "experienced" This coincides with **transition stress** - preparing for graduation, job searches, final exams. **Academic pressure peaks** in final year, potentially exacerbating health anxiety.

Financial stress indicator: Students who worked during academic year had higher OHIP-14 scores (9.1) Vs, those who didn't work (7.6).

Time pressure: Part-time workers ("Sometimes" category) showed the highest impact.

The most striking finding of this study is the **predominance of psychological impacts** over physical functional limitations. The fact that "worried by dental problems" emerged as the most prevalent concern (64.0% any impact, 16.2% substantial impact) suggests that the psychological burden of oral health issues may be more significant than the physical discomfort itself. This aligns with emerging literature emphasizing the mental health dimensions of oral health, particularly in young adult populations undergoing developmental transitions (Abdelnabi, et al. 2025).

The **hierarchical pattern of impacts** observed—with psychological concerns preceding functional limitations—challenges conventional models of oral health impact that typically prioritize physical symptoms. Our findings suggest that for university students, the anticipation and worry about dental problems may precede and potentially exacerbate the experience of physical symptoms. This has important implications for intervention timing and focus.

● **The Anxiety-Academic Transition Nexus**

The elevated OHIP-14 scores among fourth-year students (mean score: 8.8) compared to their first-year counterparts (7.8) warrants particular attention. While one might expect adaptation and improved self-care over the academic career, the increasing oral health impact suggests a more complex relationship. We propose that this reflects the phenomenon of **"transition accumulation stress,"** where the pressures of impending graduation, career decisions, and final academic requirements create a psychological environment amplifying health anxieties.

This pattern is further supported by the finding that students who worked "sometimes" during the academic year reported the highest OHIP-14 scores (9.1). The juggling of academic and employment responsibilities appears to create a perfect storm for oral health neglect and heightened health anxiety. This intersection of developmental, academic, and financial stresses creates vulnerabilities that manifest in oral health-related quality of life decrements.

● **Socio-demographic Patterns and Absences**

The absence of statistically significant socio-demographic predictors in our

Poisson regression model, while initially surprising, may actually reveal important insights about the university student population. The relative homogeneity of OHIP-14 impacts across gender, age, and parental education categories suggests that **the university experience itself may be a universalizing force** with regard to oral health impacts. The shared experiences of academic pressure, lifestyle changes, and developmental transitions may create a "leveling effect" that overrides traditional socio-demographic distinctions.

However, the trend-level associations deserve mention. The elevated impact among students with graduate-educated parents (IRR: 1.213) and fourth-year students suggests subtle patterns that larger samples might detect as significant. These trends hint at the complex interplay between expectations, academic pressure, and health perceptions that warrant further investigation.

Functional vs. Psychological Impacts

The dissociation between functional limitations and psychological impacts presents both challenges and opportunities for intervention. While 52.2% reported uncomfortable eating and 47.1% reported painful aching—substantial figures in their own right—these physical impacts were overshadowed by psychological concerns. This suggests that traditional dental interventions focusing solely on physical symptom relief may miss the core concern for this population: **dental anxiety and its psychological sequelae**.

The clustering of psychological impacts—worry, tension, embarrassment, irritability—points to oral health as a focal point for broader psychological distress. This supports the concept of oral health as a "window" to overall psychological well-being in young adults (Watt, et al. 2015).

● **Clinical and Institutional Implications**

Our findings strongly support the integration of **mental health and oral health services** within university settings, **providing** accessible, affordable care with main focus on prevention and anxiety management.

The high prevalence of dental worries, coupled with their association with academic transition points, suggests that targeted interventions during high-stress

periods (examination seasons, graduation preparation) could yield significant benefits.

Furthermore, the pattern of results supports the implementation of **preventive psychological interventions** for dental anxiety, rather than waiting for physical symptoms to manifest. Screening for oral health anxiety during routine university health assessments could identify at-risk students before significant quality of life impacts occur.

● **Directions for Future Research**

This study raises several important questions for future investigation. Longitudinal tracking of OHIP-14 scores across the academic career would clarify the causal relationships between academic transitions and oral health impacts. Qualitative exploration of students' experiences with dental anxiety could provide rich contextual understanding of the quantitative patterns observed here. Intervention studies testing integrated mental-oral health approaches during high-stress periods are clearly warranted.

In addition, most dental schools in Libya still follow the traditional teaching model centered on disease and technique (Peeran, et al. 2014), and concepts such as OHRQoL are rarely part of the curriculum. The use of OHRQoL assessment tools on dental students offers a number of benefits. The information generated can be used to establish specific teaching strategies that value the experiences of the student, thereby enhancing the teaching-learning process. The identification of the impact of one's own dental experience with regard to OHRQoL can facilitate the development of the critical, analytical thinking needed to comprehend and interpret the oral health status of the population with whom future dentists will work, thereby enhancing their clinical and social awareness. Moreover, the dental education system should direct efforts toward improving the quality of life of students and the use of OHRQoL assessment tools allows the identification of those students who should be prioritized with regard to the adoption of measures for recuperating oral health.

■ **CONCLUSION**

This study reveals that oral health impacts on quality of life in university students are characterized by a predominance of psychological over physical concerns, with particular vulnerability during academic transition points. The

findings advocate for a paradigm shift in university health services toward integrated psychological and oral health care, with particular attention to high-stress transition periods. By addressing the psychological dimensions of oral health, we may not only improve oral health-related quality of life, but also contribute to overall student well-being and academic success.

The university years represent not only an academic transition but a developmental one, and our findings suggest that oral health perceptions are intimately tied to this complex journey toward adulthood.

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