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SOCIOECONOMIC, BEHAVIORAL, AND PSYCHOLOGICAL FACTORS RELATED TO ORAL HEALTH IN PESHAWAR

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Abstract

Oral health is an essential component of overall health and quality of life. Growing evidence suggests that socioeconomic status, health-related behaviors, and psychological factors play an important role in shaping oral health outcomes. However, limited data are available from Pakistan that examine these factors collectively. This study aimed to assess the association between socioeconomic, behavioral, and psychological factors and oral health–related quality of life (OHRQoL) among adults living in Peshawar. A cross-sectional study was conducted among 150 adults aged 18 years and above residing in Peshawar. Data were collected using a structured self-administered questionnaire that included socio-demographic characteristics, oral health behaviors, psychosocial variables, the Depression Anxiety Stress Scale (DASS-21), and the Oral Health Impact Profile-14 (OHIP-14). Descriptive statistics were used to summarize participant characteristics. Associations between independent variables and OHRQoL were examined using univariable and multivariable linear regression analyses. The majority of participants

reported good OHRQoL (96%). High levels of psychological distress were observed, with 62.7% reporting depression and 66.0% reporting anxiety. Participants with higher levels of depression and anxiety had significantly higher OHIP-14 scores, indicating poorer OHRQoL. Socioeconomic factors such as education and income, as well as behavioral factors including tooth brushing frequency, smoking, and alcohol use, were not significantly associated with OHRQoL. After adjustment for confounders, psychological factors showed no independent association in multivariable analysis.

Psychological distress, particularly depression and anxiety, was associated with poorer oral health–related quality of life among adults in Peshawar. These findings highlight the importance of integrating mental health considerations into oral health promotion and dental care strategies.

INTRODUCTION

The oral cavity is often measured the doorway to the body (1). According to Seymour, declarations such as you cannot have good overall health without good oral health and the mouth is portion of the body are now broadly recognized facts (2). Good oral health plays an energetic part in allowing persons to connect successfully to enjoy a diversity of foods, and adds significantly to general quality of life, self-esteem, and social confidence (3). The effect of the joint hazard features on both oral and general health supports the incorporation of oral health into broader health system (4). Public factors effect oral health through both midway and fundamental feature such as psychosocial, ecological, behavioral, and socioeconomic disorder (5). As people age, they become more prone to new and ongoing cases of oral disease. The accumulated history of disease can affect their standard of life and may lead to further oral diseases, such as tooth loss, that seriously

affect day-to-day activities (6). There is significant suggestion of socioeconomic discrepancies in oral health. These inequalities have been recurrently established through varies indicators of oral health, pointers of socioeconomic position, and in multiple manufacturing countries (7). Health is inclined by a grouping of influence, some of which can be bought directly such a tooth brush, toothpaste, and oral health care while other may take the form of public good, such as water fluoridations. Individual may have imperfect control over experience to these causes due to restrictions such an income and wealth (8). The dual connection between activities related to health and socioeconomic status, as well as among these actions and oral health, indicates that behavioral patterns are crucial in preserving oral health. Protective behavior, such as regular dental visits, can be constrained by cost and access (7). A lower education level is linked to high rates of smoking consumption of sugary diets, and infrequent dental appointment. Education improved health literacy enabling individual to navigate healthcare system and adopt preventive oral hygiene practice (9). Higher education levels are connected with healthier oral hygiene behavior (e.g. brushing fluoridated toothpaste) and a condensed threat of dental caries. In countries with low incomes, poor oral health outcomes are made worse by a lack of knowledge (10). Depression is a widespread mental health problem that impairs everyday activities and well-being. Minor depression has been shown to reduce quality of life, increased health-care spending, and raise the chance of having an episode of major depression (11). A previous study conducted in Peshawar reported a depression prevalence of 85.85 percent among the adults highlighting a significant high mental health burden in the population (12). Further than its overall effects, depression is strongly related with poor oral health consequences. Individual with depression often explosion lower self-rated oral health- related quality of life (OHRQoL), which contain relief while

eating, sleeping and attractive in public communication, as well as their self-esteem and fulfilment with oral health (13). Depression is considerably connected with lesser OHRQoL in both females and males (14). Additionally, Depression and poor oral health portion mutual social factors such as low income or restricted education (13). Research additionally links psychological distress to decreased tooth brushing frequency, increased rates of decaying, missing, and filled teeth, periodontal disorders, tooth loss, and a poorer sense of oral health (4). Anxiety syndromes are between the most prevalent psychiatric circumstances (15). Anxiety is commonly associated with poor oral health outcomes. Individuals with anxiety may avoid dental visits due to fear and phobia leading to neglected oral hygiene and delayed treatment (16). Many medications used to treat psychiatric condition, including anxiety can cause side effect such dry mouth, reduced saliva flow, or altered saliva arrangement. Patient suffering from reduced salivary gland function often experience a higher risk of dental caries (17). Oral health is increasingly recognized as a key component of overall health and quality of life, with strong links to socioeconomic, behavioral, and psychological factors. Evidence from global literature consistently demonstrates that disparities in oral health outcomes are shaped by education, income, access to care, and mental health status. A 2024 study published in BMC Oral Health analyzed data from over 5,000 U.S. adults and identified significant racial and socioeconomic disparities in oral health outcomes. After adjusting for confounders, Black adults were significantly less likely than White adults to have visited a dentist in the past year (OR = 0.72; 95% CI: 0.57–0.92) and were more likely to report embarrassment related to oral health and experience tooth loss. Higher income and education were associated with improved oral health ratings and greater dental service utilization, while intermediate social determinants such as food insecurity, housing instability, and

transportation barriers were linked to poorer outcomes (18). A 2024 systematic review in Special Care in Dentistry further highlighted the association between oral health and mental health. Across 31 studies, tooth loss, oral pain, and impaired oral function were consistently associated with increased depressive symptoms, supporting a bidirectional relationship between oral health and depression (19).

In Europe, a cross-sectional study from Germany involving 1,622 older adults receiving home-based care found that nearly 40% experienced frequent oral health problems affecting quality of life. Poor self-perceived oral health, cognitive impairment, and reliance on assistance for oral hygiene were associated with lower oral health–related quality of life (OHRQoL) (20). Another European study reported better quality of life among individuals with natural dentition or complete dental replacement, with positive associations observed for younger age, higher education and income, non-smoking status, and fewer depressive symptoms (21). Additionally, dental anxiety was shown to negatively affect oral hygiene behaviors and OHRQoL in German adults, emphasizing the psychosocial dimension of oral health (22).

In Africa, a study from Sudan assessed OHRQoL among older adults and found that pain, difficulty chewing, and perceived oral health directly influenced quality of life, while education had a significant indirect effect (23). Among adolescents in Lesotho, toothache and sensitivity were the strongest predictors of poor quality of life, despite generally good self-reported health (24). Similarly, a study from Ethiopia reported that nearly half of schoolchildren had inadequate oral hygiene, with maternal education, sugar intake, and disability type significantly influencing OHRQoL (25).

Asian studies further reinforce the role of socioeconomic and psychological factors. Research from Myanmar found that income, depression, and anxiety were significantly

associated with periodontal status, DMFT scores, and OHRQoL, whereas behavioral factors showed weaker associations (4). Studies among schoolchildren in India and China demonstrated that higher DMFT scores and sugar intake were linked to poorer OHRQoL, while self-perceived oral health emerged as a consistent determinant (26,27). In Pakistan, a study conducted in Peshawar among geriatric patients reported poor OHRQoL, with higher DMFT scores correlating with worse quality of life. The type of dental prosthesis also influenced outcomes, with fixed prostheses associated with better OHRQoL than complete dentures (28). Overall, existing literature demonstrates that socioeconomic, behavioral, and psychological factors jointly influence oral health and quality of life at global and regional levels. While international and regional studies highlight these multidimensional relationships, local research from Peshawar remains limited in integrating all three domains within a single analytical framework. This gap underscores the need for the present study to comprehensively examine these associations in the local population.

3. Materials and Methods

The study included 150 adult residents aged 18 years and above who provided informed consent, achieving a 100% response rate. Exclusion criteria comprised temporary residents, individuals under 18, those with physical disabilities limiting participation, and individuals with cognitive or psychological impairments. Ethical approval was obtained from the Ethics Committee of City University of Science and Information Technology, Peshawar. Data were collected using a structured, self-administered questionnaire in English, which included socio-demographic characteristics, behavioral factors, psychosocial questions, the Urdu version of the Depression Anxiety Stress Scale (DASS-

21) (30), and the Oral Health Impact Profile-14 (OHIP-14) (31). Socioeconomic variables included education (middle school or lower vs. high school or higher) and per capita daily income (≤2.15 USD/day vs. >2.15 USD/day). Behavioral factors assessed included frequency of tooth brushing, smoking, and alcohol use, while psychosocial factors included recent difficulty sleeping, anxiety, and feeling upset or frightened.

Data analysis was performed using IBM SPSS version 24. Descriptive statistics summarized demographic, behavioral, and psychosocial variables. DASS-21 scores for depression, anxiety, and stress were calculated and dichotomized based on recommended cut-offs, while OHIP-14 scores were summed and categorized as good (0–27) or poor (28–56) OHRQoL. Associations between OHIP-14 scores and independent variables, including socio-demographic and psychosocial factors, were examined using univariable and multivariable linear regression. A p-value <0.05 was considered statistically significant, ensuring rigorous assessment of factors influencing oral health–related quality of life.

Table 1: Descriptive characteristic of the study participant (n=150)

Variable	Category	Frequency(n)	Percentage (%)
Age	18-59 years	150	100.0
Educational level	High school and above	132	88.0
	Middle school and below	17	11.3
Daily individual income	> 604 pkr /day	68	45.3
	≤ 604 pkr /day	82	54.7

Tooth brushing frequency	Twice a day or more	68	45.3
	Once a day or less	82	54.7
Smoking status	Yes	20	13.3
	No	130	86.7
Alcohol Consumption	Yes	3	2.0
	No	147	98.0
Sleep Difficulty	Yes	59	39.3
	No	91	60.7
Feeling nervous/Anxious	Yes	57	38.0
	No	93	62.0
Feeling upset/Frightened	Yes	66	44.0
	No	84	56.0
Depression (DASS-21)	No depression (0-9)	56	37.3
	Depression (≥10)	94	62.7
Anxiety (DASS-21)	No anxiety (0-7)	51	34.0
	Anxiety (≥8)	99	66.0
Stress (DASS-21)	No stress (0-14)	126	84.0
	Stress (≥15)	24	16.0
OHIP-14	Good OHRQoL (0-27)	144	96.0

	Poor OHRQoL (28-56)	6	4.0

Table 2: Descriptive statistic and association with oral health impact profile

Variables	Number (%)	OHIP-14
Socioeconomic		
Sex		
Male	127 (84.7)	9.1 ± 8.7
Female	23 (15.3)	12.8 ± 10.5
Age (year)		
Adult (18-59)	150 (100)	
Older Adult (≥60)		
Educational level		
High school and above	132 (88.6)	9.7 ± 9.2
Middle school and above	17 (11.4)	10.2 ± 8.2
Daily individual income		
>2.15 USD	68 (45.3)	10.1 ± 8.7
≤2.15 USD	82 (54.7)	9.3 ± 9.4
Behavioral factors		
Frequency of tooth brushing		
Twice a day or more	68 (45.3)	10.1 ± 9.5
Once a day or less	82 (54.7)	9.3 ± 8.8
Smoking Habit		
Yes	20 (13.3)	12.5 ± 9.0

No	130 (86.7)	9.3 ± 9.1
Drinking Habit		
Yes	3 (2.0)	16.6 ± 11.5
No	147 (98.0)	9.5 ± 9.0
Psychosocial factors		
Feel difficulty to fall asleep		
Yes	59 (39.3)	11.6 ± 10.1
No	91 (60.7)	8.4 ± 8.2
Feel nerves and anxious		
Yes	57 (38.0)	12.6 ± 9.7 **
No	93 (62.0)	7.9 ± 8.3
Feel upset and frighten		
Yes	66 (44.0)	11.6 ± 9.3*
No	84 (56.0)	8.2 ± 8.7
Depression Scale (DASS-21)		
Score (0-9)	56 (37.3)	6.9 ± 7.3 **
Score (≥ 10)	94(62.7)	11.3±9.7
Anxiety Scale (DASS- 21)		
Score (0–7)	51 (34.0)	6.1 ± 6.7 ***
Score (≥8)	99(66.0)	11.6 ± 9.6
Stress Scale (DASS-21)		
Score 0–14	126 (84.0)	9.1 ± 8.7
Score ≥ 15	24 (16.0)	12.6 ± 10.8

4. Result

A total of participants took part in the study. The participants were adults aged 18 to 59 years. The vast majority of participants (88.0%) had completed high school or higher. More than half of participants reported a daily income of ≤ 604 pkr (54.7). In terms of oral health activities, 54.7% brushed their teeth once a day or fewer, 13.3% smoked, and only 2.0% assumed alcohol use. In terms of psychological characteristics, 39.3% had difficulties going asleep, 38.0% felt apprehensive or anxious, and 44.0% were upset or scared. According to the DASS-21 scale, 62.7% of participants were depressed, 66.0% were anxious, and 16% were stressed. The majority of participants reported good oral health-related quality of life, with 96% rated as having good OHRQoL according to OHIP-14.

Association between participant characteristic and OHIP-14

The table 2 present the association between socio demographic, behavior, psychosocial factors, and OHIP-14 score. The mean OHIP-14 score varied across different participant characteristics. Among the socio demographic and behavior variable, sex, educational level, income, tooth brushing, smoking and drinking habits were not significantly associated with OHIP-14 score, although higher mean OHIP-14 values were observed females, smoker and alcohol consumers. Regarding psychosocial factors, participant who felt nervous and anxiety had significantly higher OHIP-14 score compared who did not (12.6 ± 9.7 vs 7.9 ± 8.3, $p < 0.05$) those who experienced difficulty falling asleep also showed high OHIP-14 score, although the different was not statistically associated. All three DASS-21 subscale demonstrated significantly associated with OHIP-14. Participant with depression (≥ 10) had significantly higher OHIP-14 score compared to those without depression (11.3 ± 9.7 vs 6.9 ± 7.3, $p < 0.01$) Likewise, participant with anxiety (Score ≥8)

showed markedly higher OHIP-14 (11.6 ± 9.6 vs 6.1 ± 6.7, p < 0.001). Although, participant with stress had higher OHIP-14 scores, the association was not statistically significant.

In univariable linear regression, no statistically significant association is found out between OHIP score and gender, educational level, income levels, brushing frequency, cigarette or alcohol consumption. While, a significant relation is found out between OHIP score with depression (p< 0.005) and anxiety (p< 0.000). After adjustments for cofounders in multivariable regression analysis, no significant association is reported between OHIP score and any of the psychosomatic factor.

5. Discussion

Previous study has revealed that psychological factors have an impact on dental health and its related quality of life (32, 33, 34). There is little indication from Pakistan. The present study assessed the association between OHRQoL between adults in Peshawar and behavioral, psychological, and socioeconomic features. The study initiates a high frequency of psychological distress, containing depression and anxiety. Participants who scored higher on depression and anxiety reported considerably lower OHRQoL, as shown by higher OHIP-14 ratings. In difference, socio-demographic and behavioral variables had no significant connection with OHRQoL. These results highlight the consequence of psychological well-being in assessed oral health status. The impact of socioeconomic variation on oral health is broadly recognized. Low socioeconomic status was related with poorer clinical oral health, frustrated self-rated oral health, and unfavorable OHRQoL (35, 36). Educational level and income were observed as the greatest usually used measures of socioeconomic status subsequently, we employed those processes to investigate socioeconomic status and its association with oral health consequences. In this study,

educational level had no impact on oral health outcomes. Even if applicants have a better level of education, they may be uninformed of the significance of oral health. Furthermore, less than 30% of individuals were beyond the World Bank's poverty threshold, and there was a strong correspondence between individual income and either OHIP-14 or periodontal pocket. Access to decent housing, social prospects, and healthcare decisions is thought to be intensely influenced by income (37). Those in poverty may drop stabilizing properties, causing in anxiety, food and shelter improbability, and growing the risk for men sickness (38). Although the effects of numerous behavioral influences on oral health has been well defined (39). We expected that they would be important features of oral health. Conversely, the present study creates that teeth brushing, smoking, and tobacco use had no effect on oral health outcomes, therefore we cannot accomplish that applicants who practice good habits had healthier oral health. This could be because only common requests about these influences were asked, and defendants may have providing improper or false answers to the survey questions. To reach certain data, several areas of behavioral variables and oral health literacy must be methodically deliberated (40). In this study, a variety of psychological distresses were established to be expressively related with the number of present teeth, understanding with dental caries, periodontal infections, and OHRQoL in both univariable and multivariable regression representations. Those with depression, anxiety, and stress had worse oral health and a poorer OHRQoL than well people. Our results strengthen the consequences of previous studies that have exposed similar relations, emphasizing that observed psychosocial stressors are hazard signs for poor dental health (39, 41, 42). Oral health-related quality of life has been observed to be impacted within local populations, according to previous findings in Pakistan. For example, a study in Peshawar demonstrated poor OHIP-14 scores among aged persons, showing

an important oral health impact on daily life and psychological and social health. (43) Additionally, assistant the use of OHIP-14 in Pakistan. According to multicenter validation study the instrument accurately measures psychological distress associated with dental issues (44). Moreover, research from Pakistan has recognized widespread psychological distress and sleep conflicts between adults emphasizing the resident problem of mental health issues that may cooperate with oral health observation (45).

This study has significant limitations, which should be noted when interpreting the findings. First, the study was carried out using a small, convenient sample of adults from Peshawar, which could limit the applicability of the findings to the bigger population in Pakistan. Second, people who were not residents of Peshawar along with those with known psychological or cognitive impairments were omitted, which may have influenced the sample's representational value. Third, the data was collected by self-administered questionnaires, so data and recall bias cannot be ruled out. Mental health specialists measured psychological distress using the DASS-21 scale, without providing an official diagnosis. Finally, the cross-sectional study design renders it difficult to show a causal relationship between psychological traits and oral health-related quality of life. Further longitudinal studies with bigger and more comparable populations is necessary to further investigate these connections.

6. Conclusion

This study found a substantial link between psychological distress and oral health-related quality of life across residents of Peshawar. Individuals with higher levels of anxiety and depression experienced lower OHRQoL, indicating the detrimental effect of psychological variables on reported oral health. On the other hand, socio-demographic and behavioral

characteristics did not show an important relationship with OHRQoL. These results highlight the significance of incorporating mental health factors into dental wellness campaigns and care plans. More ongoing studies with bigger and more representative data sets are needed in order to better comprehend the direction and long-term effects of psychological distress on dental health outcomes.

REFERENCE

Iyer, P. (2023). Oral cavity is the gateway to the body: role of oral health professionals: a narrative review. Journal of the California Dental Association, 51(1), 2193372.

Seymour, G. J. (2007). Good oral health is essential for good general health: the oral–systemic connection. *Clinical Microbiology and Infection*, *13*, 1-2.

Watt, R. G. (2005). Strategies and approaches in oral disease prevention and health promotion. *Bulletin of the World Health Organization*, *83*, 711-718.

Thwin, K. M., Lin, W. T., Takehara, S., & Ogawa, H. (2023). Socioeconomic, behavioral, and psychological factors related to oral health in Myanmar: A cross-sectional study. *Journal of Public Health Dentistry*, *83*(4), 340-346.

Watt RG, Sheiham A. Integrating the common risk factor approach into a social determinants framework. Community Dent Oral Epidemiol. 2012;40(4):289–96.

Steele, J. G., Sanders, A. E., Slade, G. D., Allen, P. F., Lahti, S., Nuttall, N., & Spencer, A. J. (2004). How do age and tooth loss affect oral health impacts and quality of life? A study comparing two national samples. *Community dentistry and oral epidemiology*, *32*(2), 107-114.

Sabbah, W., Tsakos, G., Sheiham, A., & Watt, R. G. (2009). The role of health-related behaviors in the socioeconomic disparities in oral health. *Social science & medicine*, *68*(2), 298-303.'

Birch, S., & Listl, S. (2015). The economics of oral health and health care. *Max Planck Institute for Social Law and Social Policy Discussion Paper*, (07-2015)

Sabbah, W., Tsakos, G., Chandola, T., Sheiham, A., & Watt, R. G. (2007). Social gradients in oral and general health. *Journal of dental research*, *86*(10), 992-996.

Petersen, P. E. (2009). Global policy for improvement of oral health in the 21st century–implications to oral health research of World Health Assembly 2007, World Health Organization. *Community dentistry and oral epidemiology*, *37*(1), 1-8..

Cuijpers, P., de Graaf, R., & van Dorsselaer, S. (2004). Minor depression: risk profiles, functional disability, health care use and risk of developing major depression. *Journal of affective disorders*, *79*(1-3), 71-79.

Ishtiaq, M., Afridi, M. I., & Khan, S. A. (2018). Depression: prevalence & risk factors of depression among adult population of district peshawar. *The Professional Medical Journal*, *25*(08), 1229-1234.

Heaton, L. J., Santoro, M., Tiwari, T., Preston, R., Schroeder, K., Randall, C. L., ... & Tranby, E. P. (2024). Mental Health, Socioeconomic Position, and Oral Health: A Path Analysis. *Preventing Chronic Disease*, *21*, E76.

Hajek, A., & König, H. H. (2022). Oral health-related quality of life, probable depression and probable anxiety: evidence from a representative survey in Germany. *BMC Oral Health*, *22*(1), 9.

Thibaut, F. (2017). Anxiety disorders: a review of current literature. *Dialogues in clinical neuroscience*, *19*(2), 87-88.

Cormac, I., & Jenkins, P. (1999). Understanding the importance of oral health in psychiatric patients. *Advances in psychiatric treatment*, *5*(1), 53-60.

Bardow, A., Nyvad, B., & Nauntofte, B. (2001). Relationships between medication intake, complaints of dry mouth, salivary flow rate and composition, and the rate of tooth demineralization in situ. *Archives of oral biology*, *46*(5), 413-423.

Obeidat, R., Heaton, L. J., Tranby, E. P., O'Malley, J., & Timothé, P. (2024). Social determinants of health linked with oral health in a representative sample of US adults. *BMC Oral Health*, *24*(1), 1518.

Karimi, P., Zojaji, S., Fard, A. A., Nateghi, M. N., Mansouri, Z., & Zojaji, R. (2025). The impact of oral health on depression: A systematic review. *Special Care in Dentistry*, *45*(1), e13079.

Koenig, A., Porzelt, S., Behrens-Potratz, A., Stratmeyer, P., Schellhammer, S., Schmage, P., ... & Zimmermann, T. (2024). Assessing oral health-related quality of life among older people in home-based care-survey results of the InSEMaP study in Germany. *BMC oral health*, *24*(1), 734.

Block, C., König, H. H., & Hajek, A. (2022). Oral health and quality of life: findings from the Survey of Health, Ageing and Retirement in Europe. *BMC Oral Health*, *22*(1), 606.

Winkler, C. H., Bjelopavlovic, M., Lehmann, K. M., Petrowski, K., Irmscher, L., & Berth, H. (2023). Impact of dental anxiety on dental care routine and oral-health-related quality of life in a German adult population—a cross-sectional study. *Journal of Clinical Medicine*, *12*(16), 5291.

Salih, M. A., Ali, R. W., & Nasir, E. F. (2023). Linking the demographic, socio-economic and oral health status to oral health-related quality of life of the sudanese older adults: a cross sectional study. *BMC Oral Health*, *23*(1), 371.

Jessani, A., Choi, J., El-Rabbany, A., Lefoka, P., Quadri, M. F. A., & Laronde, D. M. (2021). Oral health and psychosocial predictors of quality of life and general well-being among adolescents in Lesotho, Southern Africa. *Children*, *8*(7), 582.

Tefera, A. T., Girma, B., Adane, A., Muche, A., Ayele, T. A., Getahun, K. A., ... & Handebo, S. (2023). Oral health-related quality of life and oral hygiene status among special need school students in amhara region, Ethiopia. *Health and Quality of Life Outcomes*, *21*(1), 26.

Singh, S., & Talmale, P. (2023). Impact of dental caries and nutritional status on oral health related quality of life in young Indian adolescents. *Journal of oral biology and craniofacial research*, *13*(4), 506-510.

Hu, X., Wang, C., Gao, J., Tian, J., Li, L., Li, Z., ... & Huang, R. (2024). Association between oral health-related behaviors and quality of life of adolescents among three provinces in Northwest China. *Frontiers in Public Health*, *12*, 1407623

Makhdoom, S., Malik, L. A., & Khan, M. A. (2021). ORAL HEALTH RELATED QUALITY OF LIFE OF GERIATRICS PATIENTS IN PESHAWAR. *Pakistan Oral & Dental Journal*, *41*(2), 87-92.

Pakistan Bureau of Statistics, Govt of Pakistan. The Population of Peshawar Valley (Peshawar, Charsadda, Mardan, Nowshehra, Swabi) Reaches 13.28 Million as the Digital Census Concludes. Available online: https://www.pbs.gov.pk/sites/default/files/population/2023/KP.pdf (accessed on 24 September 2023)

Lovibond, S.H.; Lovibond, P.F. (1995). Manual for the Depression Anxiety Stress Scales (2nd ed.). Sydney: Psychology Foundation (Available from The Psychology Foundation, Room 1005 Mathews Building, University of New South Wales, NSW 2052, Australia

Navabi, N., Nakhaee, N., & Mirzadeh, A. (2010). Validation of a Persian version of the oral health impact profile (OHIP-14). *Iranian journal of public health*, *39*(4), 135.

Tiwari, T., Kelly, A., Randall, C. L., Tranby, E., & Franstve-Hawley, J. (2022). Association between mental health and oral health status and care utilization. *Frontiers in Oral Health*, *2*, 732882.

Hajek, A., & König, H. H. (2022). Oral health-related quality of life, probable depression and probable anxiety: evidence from a representative survey in Germany. *BMC Oral Health*, *22*(1), 9.

Ciardo, A., Simon, M. M., Sonnenschein, S. K., Büsch, C., & Kim, T. S. (2022). Impact of the COVID-19 pandemic on oral health and psychosocial factors. *Scientific Reports*, *12*(1), 4477.

Sabbah, W., Tsakos, G., Chandola, T., Sheiham, A., & Watt, R. G. (2007). Social gradients in oral and general health. *Journal of dental research*, *86*(10), 992-996.

Htun, K. C. S. S., & Peltzer, K. (2019). Oral health-related quality of life among community dwelling middle-aged and older adults in an urban area in Magway region, Myanmar. *Nagoya journal of medical science*, *81*(1), 103.

Galobardes, B., Lynch, J., & Smith, G. D. (2007). Measuring socioeconomic position in health research. *British medical bulletin*, *81*(1), 21.

Knorst, J. K., Sfreddo, C. S., de F. Meira, G., Zanatta, F. B., Vettore, M. V., & Ardenghi, T. M. (2021). Socioeconomic status and oral health-related quality of life: A systematic review and meta-analysis. *Community dentistry and oral epidemiology*, *49*(2), 95-102.

Finlayson, T. L., Williams, D. R., Siefert, K., Jackson, J. S., & Nowjack-Raymer, R. (2010). Oral health disparities and psychosocial correlates of self-rated oral health in the National Survey of American Life. *American journal of public health*, *100*(S1), S246-S255.

Martino, S. (2011). Oral health behavioral and social intervention research concepts and methods. *Journal of public health dentistry*, *71*(0 1), S2.

Vered, Y., Soskolne, V., Zini, A., Livny, A., & Sgan-Cohen, H. D. (2011). Psychological distress and social support are determinants of changing oral health status among an immigrant population from Ethiopia. *Community dentistry and oral epidemiology*, *39*(2), 145-153.

Amarasena, N., Kapellas, K., Brown, A., Skilton, M. R., Maple-Brown, L. J., Bartold, M. P., ... & Jamieson, L. (2015). Psychological distress and self-rated oral health among a convenience sample of I ndigenous A ustralians. *Journal of public health dentistry*, *75*(2), 126-133.

Makhdoom, S., Khan, A., Khan, I., & Khattak, F. (2021). ORAL HEALTH-RELATED QUALITY OF LIFE AND ITS ASSOCIATED FACTORS IN ELDERLY POPULATION. *Journal of Medical Sciences*, *29*(03).

Oral health-related quality of life in patients with upper gastrointestinal and hepatic disorders in Pakistan: validation of the Oral Health Impact Profile-14 in the Urdu language. *BDJ open*, *4*(1), 17036

Ahmad, A., Moez, A., Zareef, A., Ayub, A., Khan, A., Khan, A., & Jamil, A. (2023). Assessing the Mental Health Status and Sleep Quality among House Officers in Peshawar. *Journal of Gandhara Medical and Dental Science*, *10*(2), 83-87.