Oral Health Needs and Barriers to Access in Rural Population: A Cross-sectional Study

Rabail Ramzan[1], Muhammad Ilyas Siddiqui [2], Sikander Munir Memon [3], Rai Chand [4,*], Rafaina Shah [5]

ABSTRACT:

Objectives: To identify the socio-economic and cultural barriers impacting oral healthcare access and to analyze factors influencing oral health utilization patterns among rural populations in Umerkot, Sindh.

Methodology: This cross-sectional study, focused on 350 adults from Umerkot, Sindh, over the course of six months, who were chosen through a non-probability convenience sampling method. A structured questionnaire, converted into local languages for better accessibility, was used to gather data. SPSS v23 is used to analyze gathered data.

Results: The study revealed marked disparities in oral health access. Overall, 64.9% of participants presented with dental cavities, while 36.9% exhibited gum disease. Females (63.7%) were more likely than males to seek dental care; however, financial barriers remained a major hindrance, with 62.6% delaying treatment due to cost. Furthermore, 73.4% reported the absence of nearby dental facilities, and 45.1% encountered transportation difficulties, underscoring significant infrastructural shortcomings in rural areas.

Conclusion: Toothbrushes and neem sticks emerged as the most commonly used oral hygiene methods among participants. The majority had never visited a dental clinic previously and expressed a preference for public healthcare facilities. Financial constraints were identified as the most critical barrier, with 63% postponing dental appointments due to cost. Accessibility challenges were further compounded by transportation difficulties, geographic limitations, and the absence of nearby dental facilities, underscoring systemic gaps in rural oral healthcare infrastructure."

Keywords: Oral health needs, Cultural barriers, Socio-economic factors, Dental care access.

Cite as: Ramzan R, Siddiqui MI, Memon SM, Chand R. Shah R. Oral Health Needs and Barriers to Access in Rural Population: A Cross-sectional Study. J Muhammad Med Coll. 17(1) April-Oct 2026

Introduction:

Worldwide, oral health problems continue to be a major public health challenge, even though they are mostly preventable. These conditions are particularly concerning due to their widespread occurrence, with economically and socially disadvantaged communities being the most affected.[1,2] A primary problem in social welfare is the equitable allocation of health care across the population. Access to healthcare is not only a fundamental human right but also a societal responsibility, and governments are obligated to improve and ensure its delivery. The goal of access is to eliminate barriers to using health services that include social, cultural, systemic, economic, and behavioral.[3]

1. Postgraduate student of public health, Liaquat University of Medical and Health Sciences Jamshoro, Sindh, Pakistan.
2. Professor. Department of Community Medicine, Liaquat University of Medical and Health Sciences Jamshoro, Sindh, Pakistan.
3. Assistant Professor. Department of Community Dentistry, Liaquat University of Medical and Health Sciences Jamshoro, Sindh, Pakistan.
4. Lecturer. Department of Community Medicine, Liaquat Institute of Medical and Health Sciences LUMHS Thatta, Sindh, Pakistan
5. Assistant Professor of Community Medicine, Liaquat Institute of Medical and Health Sciences LUMHS Thatta, Sindh.

*=corresponding *author :*

Email: rai.chand@thatta.lumhs.edu.pk

Received: June 2026, Revised: September 2026

Accepted: October 2026

Oral health is defined as: "a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing." Oral health is a crucial determinant of an individual's quality of life, overall health, and wellbeing. Dental caries in permanent teeth affects almost 3.58 billion people globally, making it the most common medical condition.[4,5] Consistent access to dental care is essential for the prompt identification and management of oral illnesses. Challenges while obtaining care include the cost of dental services, transportation difficulties, emotional factors such as anxiety or depression, and the availability of dental professionals.[6,7] Diverse groups of people face unequal access to care due to the current oral health care system's primarily private funding via employer-provided dental plans and personal expenses. This private dental practice and fee-for-service payment model fail to appropriately serve the low-income population.[8] The disparity in access to dental care may be caused by a number of factors, including but not limited to the rising expenses of dental treatment, income levels, and policies that are associated with particular age groups. People aged 25-29 have the highest rate of dental visit postponement, while young and middle aged adults have a slightly higher rate, and children and elderly persons have a lower rate.[9] There are multiple barriers to accessing dental services, which include: a) personal factors such as perceived lack of need, anxiety, financial limitations, and accessibility challenges; b) professional issues like poor workforce distribution, misalignment of training with current needs, and insufficient understanding of patient needs and attitudes; and c) societal challenges, including limited public support for health-promoting behaviors, inadequate resources for oral health, poor workforce planning, and insufficient research backing.[10]

In countries like Pakistan, the primary focus of rural healthcare is on trauma, polio, tuberculosis, and maternal and child health. In certain areas, dental care services receive minimal or no attention.[11] In Pakistan, people often delay dental visits until they encounter a serious dental issue. Despite significant efforts to boost the number of dental professionals, there remains an urgent need for a well-structured dental health system to facilitate convenient dental treatments for people.[12] Although Pakistan has a dentist to population ratio of 1:1305811, there aren't many public dental healthcare facilities that can meet demand for oral health treatment.[13,14]

Understanding the barriers to accessing dental healthcare such as limited availability of dental professionals and resources, coupled with lower socio-economic status is essential for improving service delivery in rural Pakistan. Addressing these challenges could facilitate more equitable access to dental treatments. By systematically investigating these obstacles, this research highlights the need for raising oral health awareness and implementing evidence-based policies, ultimately contributing to better oral health outcomes for rural populations.

Objective: To identify the socio-economic and cultural barriers impacting oral healthcare access and to analyze factors influencing oral health utilization patterns among rural populations in Umerkot, Sindh.

Methodology:

This cross-sectional study was employed among 350 participants over six months from April 2023 to September 2023 through non-probability convenience sampling technique, who were attending the dental outpatient department (OPD) of the "District Head Quarter (DHQ) Hospital, Umerkot, Sindh. The study was conducted after approval from the Research Ethics Committee (REC) of Liaquat University of Medical and Health Sciences Jamshoro with letter NO. LUMHS/REC/-144. The sample size of 350 was calculated via Cochran's formula by taking 64.75% prevalence of oral health,13 95% of confidence interval and 5% of margin of error. Both male and female aged 18 years or above residing in district Umerkot Sindh and willing to give consent for participation were included, while individuals with severe cognitive impairment or mental illness that could affect their ability to take part in the study, were excluded. A structured questionnaire was administered to collect data on demographic factors, oral health behaviors, and patterns of health care utilization, as well as barriers to accessing dental health-care facilities. The questionnaire was converted into local languages to ensure accessibility for participants who do not speak English.

The data was accurately coded in Microsoft Excel to facilitate further analysis with the Statistical Package for Social Sciences for Windows (SPSS) version 23. Frequency and percentage were calculated for categorical variable. For continuous variables, mean and standard deviation were utilized for analysis. Chi-square tests were applied to see associations between different variables.

Results:

Among all participants (n=350) female (n= 223, 63.7%) outnumbered male as shown in table 1. The mean age of participants was 39.6 ±13.3 years. The most respondents had no formal education (n=188, 53.7%), followed by primary education (n=60,17.1%) mostly from lower socioeconomic stratum (n=239,68.3%). More than 50% of the respondents (n=227,64.7%) had dental cavities, gum diseases were found in 126 (36.0%) respondents. Among the variables analyzed, none showed a statistically significant association with gender, except for educational status.

Table No1: Sociodemographic characteristics of study variables.

Demographic variables	Male (n=127)	Female (n=223)	Total (N=350)	p-Value
Age	42.2 ±13.4	38.1 ±13	39.6 ±13.3	0.005[1]
Educational Status				
No formal education	43 (12.3%)	145 (41.4%)	188 (53.7%)	0.0002
Primary	24 (6.8%)	36 (10.3%)	60 (17.1%)	
Matriculation	23 (6.6%)	32 (9.1%)	55 (15.7%)	
Intermediate	29 (8.3%)	10 (2.9%)	39 (11.2%)	
Graduate	1 (0.3%)	0	1 (0.3%)	
Postgraduate	7 (2.0%)	0	7 (2.0%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Socioeconomic Status				
Low	82 (23.4%)	157 (44.9%)	239 (68.3%)	0.5992
Lower middle	29 (8.3%)	47 (13.4%)	76 (21.7%)	
Upper middle	9 (2.6%)	11 (3.1%)	20 (5.7%)	
High	7 (2.0%)	8 (2.3%)	15 (4.3%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Dental cavity				
Yes	82 (23.4%)	145 (41.5%)	227 (64.9%)	0.9322
No	45 (12.9%)	78 (22.2%)	123 (35.1%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Gums disease				
Yes	47 (13.4%)	79 (22.6%)	126 (36.0%)	
No	80 (22.9%)	144 (41.1%)	224 (64.0%)	0.7672
Total	127 (36.3%)	223 (63.7%)	350 (100%)	

[1]Independent t-test, 2Chi-square test

Regarding oral hygiene practices, the majority of participants (n = 220, 62.9%) reported using a toothbrush, followed by neem twigs (n = 113, 32.2%). The most common brushing frequency was once daily, reported by 122 individuals (34.9%). The majority of respondents (n = 334, 95.4%) had never visited a dental clinic. When asked about their preferred dental setting, most favored public facilities (n=313, 89.4%). Furthermore, 334 respondents (95.5%) expressed no specific preference regarding the gender of the dentist. In terms of satisfaction with the quality of care,

275 participants (78.6%) reported being satisfied. Notably, variables such as toothbrush frequency, choice of dental care setting, and preference for dentist gender were significantly associated with gender.

Table No 2: Behavior related to oral health of study participants.

Oral health behavior	Male (n=127)	Female (n=223)	Total (N=350)	p-value
Teeth cleaning method				
Neem sticks	41 (11.7%)	72 (20.5%)	113 (32.2%)	0.901
Miswak	0	1 (0.3%)	1 (0.3%)	
Finger rubbing	6 (1.7%)	10 (2.9%)	16 (4.6%)	
Toothbrush	80 (22.9%)	140 (40.0%)	220 (62.9%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Teeth cleansing frequency				
Once a day	41 (11.7%)	81 (23.2%)	122 (34.9%)	0.038
Twice a day	5 (1.4%)	20 (5.7%)	25 (7.1%)	
Not on daily basis	35 (10.0%)	70 (20.0%)	105 (30.0%)	
Only when I remember	46 (13.2%)	52 (14.8%)	98 (28.0%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Visit to dentist				
Never	119 (34.0%)	215 (61.4%)	334 (95.4%)	
When needed	8 (2.3%)	8 (2.3%)	16 (4.6%)	0.243
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Choice of dental care				
Private	19 (5.4%)	15 (4.3%)	34 (9.7%)	0.020
Public	108 (30.9%)	205 (58.5%)	313 (89.4%)	
Any	0	3 (0.9%)	3 (0.9%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Preference for male/female dentist				
Male	4 (1.1%)	1 (0.3%)	5 (1.4%)	0.022
Female	1 (0.3%)	10 (2.8%)	11 (3.1%)	
Does not matter	122 (34.9%)	212 (60.6%)	334 (95.5%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Satisfied with quality of care				
Yes	103 (29.5%)	172 (49.1%)	275 (78.6%)	0.666
No	12 (3.4%)	24 (6.9%)	36 (10.3%)	
Somewhat	12 (3.4%)	27 (7.7%)	39 (11.1%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	

Table 3 shows that nearly all participants (n = 349, 99.7%) reported no cultural barriers. The primary reasons cited for delays in seeking dental care included cost (n = 219, 62.6%), transportation difficulties (n = 158, 45.1%), difficulty in finding a dental care provider (n = 53, 15.2%), and travel time exceeding 30 minutes (n = 188, 53.7%). None of these variables demonstrated a statistically significant association with gender

Table No: Barriers to access dental care.

Barriers	Male (n=127)	Female (n=223)	Total (N=350)	p-value
Cultural barrier				
Yes	1 (0.3%)	0	1 (0.3%)	0.185
No	126 (36.0%)	223 (63.7%)	349 (99.7%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Delay in seeking dental care is due to cost				
Yes	76 (21.7%)	143 (40.9%)	219 (62.6%)	0.426
No	51 (14.6%)	80 (22.8%)	131 (37.4%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Delay in seeking dental care is due to transportation				
Yes	56 (16.0%)	102 (29.1%)	158 (45.1%)	0.766
No	71 (20.3%)	121 (34.6%)	192 (54.9%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Delays in seeking dental care often due to difficulties in locating an available dental care provider.				
Yes	17 (4.9%)	36 (10.3%)	53 (15.2%)	0.489
No	110 (31.4%)	187 (53.4%)	297 (84.8%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	
Delays in seeking dental care often due to travel time > 30 minutes				
Yes	72 (20.6%)	116 (33.1%)	188 (53.7%)	0.399
No	55 (15.7%)	107 (30.6%)	162 (46.3%)	
Total	127 (36.3%)	223 (63.7%)	350 (100%)	

Discussion:

Oral diseases are a serious public health concern that have a considerable impact on quality of life, affecting both daily performance and overall life satisfaction. Pakistan's urban and rural inhabitants have significantly different health statuses, especially oral health. In general, participants perceived a higher need for oral healthcare than the normative oral health need, but they were unable to communicate their needs due to experienced barriers. This study found that the majority of patients attending the dental OPD were females (n = 223, 63.7%), who demonstrated greater concern for their teeth and oral health compared to males (n = 127, 36.7%). The mean age of participants was 39.6 ± 13.3 years. Most respondents had no formal education (n = 188, 53.7%), followed by primary education (n = 60, 17.1%) and matriculation (n = 55, 15.7%). A large proportion belonged to low-income families (n = 239, 68.3%), with dental caries

(n = 227, 64.9%) and gum disease (n = 126, 36.0%) being prevalent. A published study from Karachi, Sindh, reported that a higher percentage of women (62.4%) attended dental clinics regularly compared to men, with 49.8% having no formal education, 23% being literate, and 26% presenting with dental decay.[15] Another study in Peshawar, Pakistan, showed a greater proportion of male participants (66.8%), with 42% having matriculation and 44% graduation, alongside 6.5% gum disease.[16] In Sindh, 58.5% of participants were found to have dental caries.[17] The majority of those who did not receive necessary dental treatment were from relatively low-income households.[18]

Regarding the behavior to oral health, this research manifested that 220 (62.9%) of the participants used toothbrush, followed by neem sticks 220 (62.9%) and had a frequency once a day 122 (34.9%), followed by not on daily basis 105 (30.0%). The most of the respondents never visited dentist 334 (95.4%) and the majority preferred public set up 313 (89.4%) with no preference for male or female dentist 334 (95.5%). The 275 (78.6%) of the individuals were satisfied with quality of care. A study revealed that the most common method used by individuals were toothbrush (87%), followed by finger (7%) and chewing stick (4%). The frequency of brushing was 44% one time in a day and 43% two times a day. the 59% of the individuals had never visited dental clinic and 42% had issue of no the presence of lady doctor, although 40% were satisfied with care.[16] Results of another study showed that 38.6% of individuals had habit of brushing teeth one time a day, 23.8% two times a day and 30.8% never brushed their teeth.[15] This is in contrast to a different survey of South Kerala, India where 51.4% of respondents with a history of dental visits received treatment in private hospitals, whereas only 17.7% sought care in government hospitals.[19]

Looking at the barriers to access dental care, present work suggested that 349 (99.7%) had no cultural barriers. The respondents reported delayed in seeking dental care due to cost 219 (62.6%), transportation 158 (45.1%), difficulty in finding dental care provider 53 (15.2%) and travel more than 30 minutes 188 (53.7%).The study of Peshawar showed barriers in access dental care are financial issues (56%), anxiety about discomfort (33%), lack of level of competency (17%), having extremely occupied (16%), and transportation (34%). The respondents of same study reported 30-60 minutes in 20% and more than 60 minutes in 14% of time to reach facility.[16] Numerous individuals have trouble getting to the oral health institution (16.4%) or have to go a long distance for care (13%).[15] Individuals residing in rural areas face significant distances when traveling to urban centers for oral healthcare, resulting in a decreased frequency of visits to dental professionals compared to their urban counterparts.[13] In the low income people, 6.3% of participants delayed visiting the dentist due to costs, whereas this was true for just 1.6% of the highest income group.[20] The remarkably elevated poverty rates in Pakistan lead to many people being unable to afford dental care. Both direct expenses and indirect costs, like travel, are recognized as obstacles hindering access to dental health care services.[21] Even though the availability of dental treatment in public institutions in Pakistan is limited, it is still regarded as an expensive service.[22] Another study in which geographic accessibility was not a barrier, with only 1.3% reporting living more than 5 kilometers away from services.[23] Health centers must be equipped with comprehensive oral health facilities to ensure that rural populations can access necessary services within their villages, thereby eliminating the need for long-distance travel for oral health care.[24]

This study has certain limitations, as data were collected at a single point in time due to its cross-sectional design. This restricts the ability to establish causal relationships between the identified barriers and access to dental care. Addressing these limitations, future longitudinal and multicenter studies may provide deeper insights into oral health barriers and contribute to the development of more effective, evidence-based interventions.

Conclusion:

Significant challenges to accessing oral healthcare were identified among rural residents in Umerkot, Sindh, primarily driven by socioeconomic factors. While cultural barriers were largely absent, financial constraints emerged as the most critical obstacle, leading many participants to postpone dental appointments. Additional barriers—including transportation difficulties, geographic limitations, and the absence of nearby dental facilities—further compounded accessibility issues.

Conflict of interest: No conflict of interest

Funding: No funding

References:

1. FDI Annual Report 2019, FDI. Fdiworlddental.org. 2019 . Available from: https://www.fdiworlddental.org/fdi-annual-report-2019.
2. Malhi, R., Basavaraj, P., Singla, A., Jankiram, C., Pandita, V., & Vashishtha, V. Perceived barriers in accessing dental care among patients attending dental institute using decision-making trial and evaluation laboratory method. Journal of Indian Association of Public Health Dentistry.2015; 13(2), 152-157. doi:10.4103/2319-5932.159052
3. Bahadori M, Ravangard R, Asghari B. Perceived Barriers Affecting Access to Preventive Dental Services: Application of DEMATEL Method. Iran Red Crescent Med J. 2013 Aug;15(8):655-62. doi: 10.5812/ircmj.11810. Epub 2013 Aug 5. PMID: 24578831; PMCID: PMC3918188.
4. Tefera AT, Girma B, Adane A, Muche A, Ayele TA, et al. Oral health-related quality of life and oral hygiene status among special need school students in amhara region, Ethiopia. Health Qual Life Outcomes. 2023 Mar 20;21(1):26. doi: 10.1186/s12955-023-02110-4. PMID: 36941712; PMCID: PMC10026826.
5. Smith H. REFUGEE ORAL HEALTH: AN OVERVIEW FOR U.S. PRIMARY CARE PROVIDERS. Available from: https://med.virginia.edu/family-medicine/wp-content/uploads/sites/285/2020/03/Smith-Oral-Health-Paper.pdf.
6. Avramova, N. T.Dental Fear, Anxiety, and Phobia–Behavioral Management and Implications for Dentists. Journal of Mind and Medical Sciences.2023; 10(1), 42-50. doi:10.22543/2392-7674.1349
7. De Rubeis V, Jiang Y, de Groh M, Dufour L, Bronsard A, et al. Barriers to oral care: a cross-sectional analysis of the Canadian longitudinal study on aging (CLSA). BMC Oral Health. 2023 May 15;23(1):294. doi: 10.1186/s12903-023-02967-3. PMID: 37189101; PMCID: PMC10184348.
8. Horst K. Barriers to Accessing Oral Health Care. A report for the Waterloo Region Oral Health Coalition.

2017 https://kdchc.org/wp-content/uploads/2018/03/Barriers-to-Accessing-Oral-Health-Care-in-Waterloo-Region.pdf.
9. Aarabi G, Valdez R, Spinler K, Walther C, Seedorf U, et al. Determinants of Postponed Dental Visits Due to Costs: Evidence from the Survey of Health, Ageing, and Retirement in Germany. Int J Environ Res Public Health. 2019 Sep 10;16(18):3344. doi: 10.3390/ijerph16183344. PMID: 31510102; PMCID: PMC6765821.
10. Krishnan L, Aarthy CS, Kumar PD. Barriers to access dental care services among adult population: A systematic review. J Global Oral Health 2020;3(1):54-62. doi: 10.25259/JGOH_1_2020
11. Chachar ZH, Abbas Zaid SA, Jagirani SA, Talpur N, Suresh S, Harjani P. The State of Oral Health and Dental Condition in Sindh's Rural Areas. Pakistan J Med Heal Sci 2021;15(9):2347-9. doi: doi:10.53350/pjmhs211592347
12. Hemani A, Rauf F, Noori MY, Faisal A. Barriers to the Access of Oral Health Care in Individuals from Lower Socioeconomic Communities in Karachi. J Liaquat Uni Med Health Sci. 2017;16(04):218-21. doi: 10.22442/jlumhs.171640537
13. J. Akram S, Yasmin R, Atif S, Rathore A, Anjum O, Arshad MB, et al. Barriers to the access of oral health care facilities among adults: an exploratory study from Lahore. Journal of Fatima Jinnah Medical University.2020; 14(03), 105-109. doi:10.37018/iyvh7026
14. Anthoney D, Syed FALI, Khan M, Rathore A, Zahid E, Shah AA, et al. Impact of sociodemographic factors on the access to oral healthcare facilities among adults. Pakistan J Med Heal Sci 2021;15(2):438-42. Available from: https://pjmhsonline.com/2021/feb/438.pdf
15. Aliuddin, A. M., Ali, J. Z., Sheikh, A., & Rashid, S. Obstacles to utilization of dental services in Karachi, Pakistan. Pakistan Armed Forces Medical Journal.2021; 71 (2), 454-59. https://www.pafmj.org/PAFMJ/article/view/6657
16. Javed S, Akhtar N, Ahmad U, Saeed R, Sayed KUD, Hayat R. Factors affecting utilization of dental services among local population, a cross sectional study in Peshawar, Pakistan. Pakistan Journal of Medical & Cardiological Review 2026;(5) 1:673-693. doi:10.66021/r8ws8n27
17. Siddiqui AA, Alshammary F, Mulla M, Al-Zubaidi SM, Afroze E, et al. Prevalence of dental caries in Pakistan: a systematic review and meta-analysis. BMC Oral Health. 2021 Sep 16;21(1):450. doi: 10.1186/s12903-021-01802-x. PMID: 34530810; PMCID: PMC8447584.
18. Vaishampayan P, Beniwal JS, Wilk P, McLean S, Jessani A. Unmet oral health needs and barriers to dental services among socially marginalized youth: a scoping review. Front Oral Health. 2025 Mar 12;6:1521753. doi: 10.3389/froh.2025.1521753. PMID: 40144220; PMCID: PMC11937129.
19. Salim R., Ramankutty V Ramankutty. Barriers in utilisation of dental services among older people in South Kerala. International Journal of Oral Health Dentistry.2021; 7(1), 20-28. doi:10.18231/j.ijohd.2021.005
20. Piotrowska DE, Pędziński B, Jankowska D, Huzarska D, Charkiewicz AE, et al. Socio-economic inequalities in the use of dental care in urban and rural areas in Poland. Ann Agric Environ Med. 2018 Sep 25;25 (3):512-516. doi: 10.26444/aaem/89917. Epub 2018 May 17. PMID: 30260181.
21. Ahmad W, Farhat Bukhari S, Aslam M, Irfan F, Fatima R, et al. Barriers in Access and Utilization of Dental Care: Assessment and Recommendations Using Delphi Technique. J Pakistan Dent Assoc 2019;28(1):13-7. doi:10.25301/JPDA.281.13
22. Khurram Jah Zafar, Saba Ansar, Nosheen Sarwar, Maleeha Khurram, Rida Ahmed, & Sadia Manzoor.Oral Hygiene Practices and Reasons for Delaying Dental Treatment Among Patients Attending A Public-Sector Tertiary-Care Dental Hospital. Pakistan Journal of Medical Research.2020; 59(2), 70-74. Avialable from https://pjmr.org.pk/index.php/pjmr/article/view/114
23. Molete MP, Yengopal V, Moorman J. Oral health needs and barriers to accessing care among the elderly in Johannesburg. SADJ. 2014 Sep;69(8):352, 354-7. PMID: 26548224.
24. Nagarjuna, P., Reddy, V. C., Sudhir, K., Kumar, R. V. S., & Gomasani, S. Utilization of dental health-care services and its barriers among the patients visiting community health centers in Nellore District, Andhra Pradesh: A cross-sectional, questionnaire study. Journal of Indian Association of Public Health Dentistry.2016; 14(4), 451-455. doi:10.4103/2319-5932.195844

Authors' contributions	
Rabail Ramzan	Conception, Study design, data collection and analysis
Muhammad Ilyas Siddiqui	Data analysis, manuscript revision
Sikander Munir Memon	Data entry and tabulation
Rai Chand	Data collection, Analysis
Rafaina Shah	Data analysis, manuscript writing