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ORIGINAL ARTICLE

Correlation of socioeconomic status with orodental diseases among inhabitants of Landi Kotal

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Author`s Contribution

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A B S T R A C T

Introduction: Oral health issues like tooth decay, gum disease, and tooth loss can develop because of neglected oral health. The prevalence of these diseases and socioeconomic level are highly correlated. The current study research investigates the relationship between socioeconomic status and the prevalence of oral and dental diseases among people in Landi Kotal, Khyber Agency, Pakistan.

Methodology: The data was collected from Landi Kotal Khyber Agency from August 2019 to April 2020 in different areas. All the individuals visiting the dental care unit of the district headquarters hospital, Landi Kotal were examined by the concerned authority. The collected data was analyzed using Microsoft Excel 2016, and the frequency distribution of each group data was determined.

Results: In terms of gender distribution, there were 43.8 % female patients and 56.2 % male patients. Children between the ages of 1 and 10 had the highest prevalence of dental illnesses among male patients, followed by those between the ages of 11 and 20. The highest occurrence was seen in females between the ages of 21 and 30, followed by those between 41 and 50. According to the study, dental problems are more common in these age groups because of a lack of education, low socioeconomic conditions, and a lack of awareness of dental hygiene. With 73 % of patients reporting sensitivity, the study indicated that tooth sensitivity was common among the population.

Conclusion: Overall, the research points to several factors that may be responsible for the high incidence of oral and dental disorders among residents of Landi Kotal, Khyber Agency, Pakistan, including low socioeconomic position, illiteracy, poor oral hygiene practices, and restricted access to dental care.

Keywords: *Oral Health; Dental Diseases; Prevention Strategies; Gum disease; Tooth sensitivity; Low socio-economic status*

Introduction

Millions of people around the world have been affected by oral disorders, which have a substantial negative influence on their health and can lead to death. The risk factors for oral disorders are quite similar to those for other, non-communicable diseases. About 3.5 billion people worldwide are affected by oral disorders, according to the 2017 Global Burden of Disease survey, and untreated dental caries (tooth decay of permanent teeth) is the most common health problem.[1] In over 530 million children, dental caries in the first teeth (milk teeth) is quite common. Around 10% of the world's population suffers from serious periodontal illnesses, or gum disorders, which can lead to tooth decay. One of the three is oral cancer (lip or mouth cancer). The inadequate supply of oral health and the high degree of unsatisfactory oral health treatment are well known in Pakistan. The reported dental caries incidence is 50-70 %, and oral cancer is one of the largest worldwide.[2] The world's most widespread chronic condition is tooth

decay. In Pakistan, relatively little up-to-date research on the incidence of tooth decay (which is mostly preventable) and other oral health issues is available.

However, in two major cosmopolitan areas of Pakistan, Karachi and Lahore, a prevalence of 50%-70% tooth decay has been reported in the sample population.[1-3] People have reported incidences of oral/dental disease from different parts of Pakistan and most of them share some common risk factor/s and socioeconomic status.[4] According to the report, 71.4% of residents have fluorosis compared to 24 diseases in district Khyber tehsil Landi Kotal, using the questionnaire came with some good finding which indicates that this area needs high attention in regards to oral health awareness and education to control this high incidence of dental diseases.[5-7]

Methodology

The data was collected from Landi Kotal Khyber Agency from August 2019 to April 2020 with the approval of Review Board (KMU/IPDM/IEC/25-12). To get a complete epidemiological picture of dental diseases of district Khyber all the individuals visiting the dental care unit of the mentioned hospital were examined by the dentists. Each patient with his/her consent was included in the study and a particular questionnaire was used to obtain data needed for getting a clear picture of dental disease and the socioeconomic status of the patients. The collected data was analyzed using Microsoft Excel 2016, and the frequency distribution of each group data was determined. The summary of the collected data is represented in tabulated form, bar graphs, and pie graphs.

Results

Patient selection criteria were planned in such a way as to get data from all possible tribes and villages of the study area, which can give us the confidence to generalize our findings to the whole population of the area. We tried our best to maintain balance in this regard but due to multiple factors like study time, population difference of each village, and very few visits or no visits from some areas, we saw variation in the frequency of every village patient number. It was noted that the highest number of patients were from Khoga Khel 22%, the possible explanation might be due to their closeness to the district headquarters hospital (DHQ), the second possible reason might be their sound economic status relative to other villages and tribes of the area. This indicates that the economic status of people suffering from dental disease also plays a role in preventing them from carrying out dental procedures/treatment to cure the disease and get rid of the pain they are suffering from. This was followed by Sultan khel 7%, Pased khel 6%, Bazar and Mirdad khel 5% (8 in each), Shalman and shekhmal khel 5% (7 in each), Khyber and Soda khel 4% (6 in each), Nadar khan kali and wali khel 3% (5 in each), Ali Masjid, Ashraf khel, Fatmi khel, Gagra, Pero khel, and shaheed khel 3% (4 in each), Kando khel 2% (3 in each) Alam khano, Torkham, and Nail khel 1% (2 in each), Shekhan, Mardan Landi Kotal, Chorra, Hamza baba kali, DHQ hospital LKL, Karamna and Tera 1% (1 in each).[8-10]

In this study, a total of 153 patients visiting the DHQ Landi Kotal were examined, amongst them 56.2 % (86) were male and 43.8 % (67) were female. Similar age groups for both genders were analyzed to find out the most affected age groups for dental diseases. Our data reveals that male children from 1-10 years of age were more affected, which was approximately 17% (15) of the total reported male cases. It might be a reason for increasing teeth problems in young female, as our data indicated that females of 21-30 years of age group were most suffering patients with 36% (24) incidence, followed by 41 to 50 21% (14), 31-40 age group 18% (12), 11-20 age group 13% (9), 1-10 age group 7% (5), the possible justification of low ratio in this age is the number of female children included in this study were lower relative to male children. 51 -60 age group 3% (2) and 61-70 age group 1% (1).

Studies have shown that teeth care habits help in decreasing the risk of dental diseases.[5] Keeping this approach in mind we investigated the type of teeth care habits of patients based on data obtained 71% (121) indicated the use of a brush, 11% (15) used of miswak 10% (17) responded to have no teeth care habits (Figure 1). A high number of patients use toothbrushes. We further investigated to find the potential reason behind that, and we found that most of them occasionally use toothpaste, which might not help them in having healthy teeth. The answers to how frequently they use toothbrushes or miswak were devastating, which showed that only 11% (17) individuals use it once a day, 15% (23) patients with twice a day habit, thrice in a day were only 2% (3) and 72% (110) occasionally clean the teeth. This high number of

occasional users were mostly drivers and housewives, which was also linked to their socioeconomic and literacy rates. We were interested to find out the different types of dental diseases among the population of the study area and we noted the ratio of teeth sensitivity in individuals included in this study.

Our data showed that teeth sensitivity dominates in these individuals with 73% (112) out of 153 patients and 27% responded to having no teeth sensitivity. This high ratio of sensitivity might be due to the use of low-quality toothbrushes (hard toothbrushes) or hard use of brushes or miswak which expose their dentin another reason was plugs and broken teeth which were seen in patients.

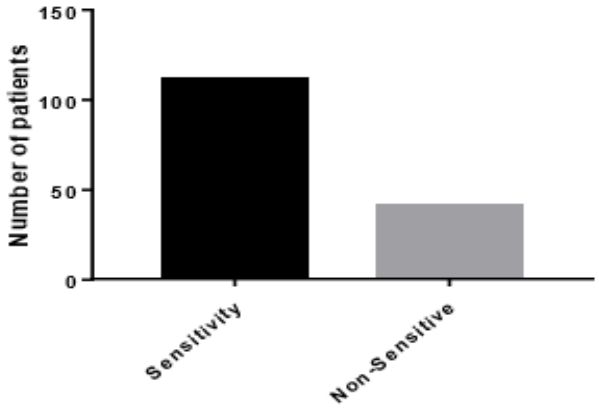

Figure 1: Represents teeth sensitivity ratio among patients

Our data showed different types of dental caries in both genders which indicated that 19 patients were in class zero (male: female, 11: 8) followed by 66 in class 1 (34: 32), 25 in class 2 (11: 14), 3 in class 3 (2: 1), 31 in collectively class 1 and 2 (23: 8), similarly 6 in class 1, 2 and 3 (4: 2), and only 2 in class 2 and 3 (0: 2) (Table 1). The status of periodontal diseases in patients was higher in class zero 60% (92), followed by 18% in class two (27), 8% in class three (12), and 3% in class one (4) alone, while we note combination of these statuses as there were 2% patients have both class one and class two status. In addition, 8% of patients have both class two and class three status, and only 1 % of patients were noted with all classes observed in them.

The inhabitants of the study area mostly use spring water or store water supplied by spring in the water tank, we were keen to know whether the water has some effect on their teeth in the form of excessive fluorides or the toothpaste misuse is present here or not, so we screen for fluorosis as well. Interestingly as expected we observed fluorosis only in 4% (6) patients and the remaining 96% (147) were negative. This indicates that the people of the area have good quality water (further testing suggested) and as they have very little toothpaste use those who are using are adults mostly and not children who usually swallow for tests and results to fluorosis. The feature of malalignment of teeth is thought to result from premature tooth loss in children, which disturbs their alignment and aesthetic sense.[6] Our data showed that 67 % of the patients were with class 1 malocclusion followed by 24% (37) in class 0, 13% (11) in class 2, and 1% (2) in class 3 (Figure 2).

Table 1: Data showed different types of dental caries in both genders

Types of Dental Caries	Total	Male n (%)	Female n (%)
Zero	19	11 (58)	8 (42)
Class i	66	34 (52)	32 (48)
Class ii	25	11 (44)	14 (56)
Class iii	3	2 (67)	1 (33)
Class i and ii	31	23 (74)	8 (26)
Class i, ii and iii	6	4 (67)	2 (33)
Class ii and iii	2	0	2 (100)
Class i and iv	1	0	1 (100)

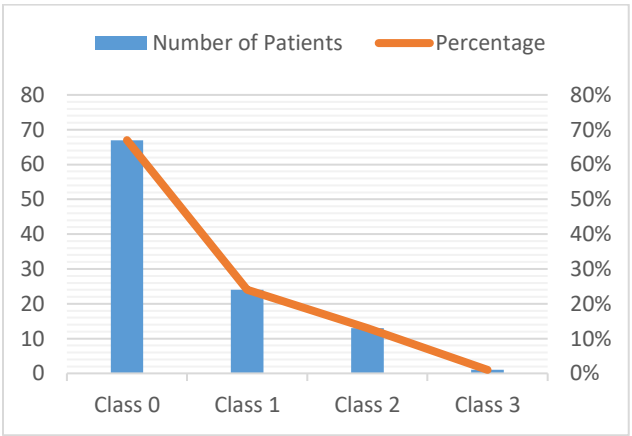

Figure 2: Malocclusion distribution among participants

As we have collected different disease data, our next aim was to determine which sort of dental procedures were carried out which can give us more information about dental care facilities in the area and socioeconomic barriers to proper treatment and dental hygiene of people of this area. We noted that most of the people have carried out extraction 69% (109), which indicates that most of the time people's economic status did not allow them to proceed to filling or RCT instead they prefer tooth loss in the form of extraction rather than keeping it and taking care of it using some money, which is a curse.

Other dental procedures like filling 53% (73), scaling 45% (59), and RCT 31% (39) were carried out (Figure 3). The ratio of different dental procedures in both genders (Table 2). Our data regarding the patient's socio-status included eight different parameters (Table 3).

Table 2: Processing of Dental Patients

Dental Procedures	Male		Females	
	Yes n (%)	No n (%)	Yes n (%)	No n (%)
Filling	46 (53%)	40 (47%)	27 (40%)	40 (60%)
Scaling	39 (45%)	47 (55%)	20 (30%)	47 (70%)
Extraction	59 (69%)	27 (31%)	50 (75%)	17 (25%)
RCT	27 (31%)	59 (69%)	12 (18%)	55 (82%)

Table 3: Represents the Socio-Status of the Patients

Gender	Driver	Electrician	Housewife	Jobless	Shop keeper	Students	Table man	Teacher
Male	32	1	N/A	7	3	32	1	10
Femalee	N/A	N/A	61	N/A	N/A	6	N/A	N/A

The highest ratio was of drivers and students which were 32 (20.9%) each, which indicated that people visiting the dental care clinics were drivers, who had severe complications that compelled them to visit clinics, financial status, and no specific attention to oral hygiene made them suffer from dental disease. The highest ratio of female patients was housewife 61 (39.8%) which again indicated that women hardly have the education and finance to support their oral hygiene and are suffering the most.

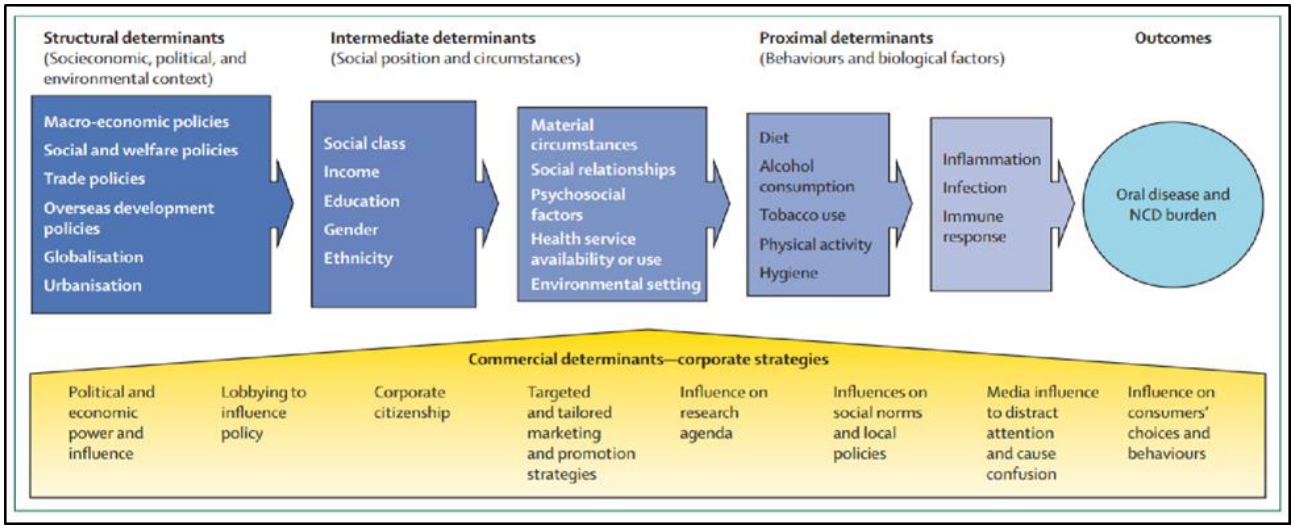

Figure 3: Socioeconomic and commercial determinants/factors linked to oral health

Discussion

Oral health is an essential component of general health. Good oral health is considered to play a role in chewing, aesthetics, and phonetics as well as in personality development.[7] According to the American Dietetic Association 1986, good oral health means chewing properly and food is converted into the required size which can be absorbed and directly goes to the cells to produce the energy required. So contributing to the general health, the prevalence of early childhood caries is as high as 70% in developing nations and up to 12% in the developed nations as well.[8] If these lesions are left unchecked, they can cause difficulty in chewing and pain as well as discomfort. In this study, 153 patients visiting the DHQ Landi Kotal were examined, amongst them 56.2 % (86) were male and 43.8 % (67) were female. The reason for the high number was the social norms and if we look at similar studies conducted in similar cultural areas, we found similar trends for males relative to females.

As a developing country due to a lack of education, awareness, and financial support the people have poor tooth care habits and a similar trend was noted in our study. The higher prevalence of dental caries indicates and supports our result where we showed improper use of toothbrushes/miswak. In addition, lack of literacy, eating habits at night without a toothbrush before sleeping, and deficiency of fluorides might be other reasons contributing to the high ratio of dental caries in this area.[9] The data we obtained showed that 71% (121) patients used brush, 11% (15) used miswak and 10% (17) responded to having no teeth care habits. Looking at 71 % one might think it's a high ratio of tooth care habits but most of them were occasional user which will not help them to prevent dental pathogens and other food accumulation and spoiling in their mouth, and raising the risk. Other studies conducted in various parts of the country have both similar and contrary reports. Those areas of Sindh, Balochistan, and Punjab which lack education and have weak financial status showed the same data.[10] While a study conducted in the developed part of the country has a different trend in such character.[11]

A cross-sectional study was carried out from September 2015 to March 2016 in areas with low socioeconomic status parts of Sindh including Radho Jokhio goth, Goth Haji Sain Rakhio, and Haji Qadir goth. A total of 300 healthy subjects (110 males and 190 females) aged 18-64 years were included in the study. Most of them lack knowledge regarding tooth care and oral hygiene. One hundred and thirty (68.4%) of the females and 96 (87.2%) of the males reported that they brushed their teeth with wooden sticks. Sixty-nine (36.3%) of the females and 37 (33.6%) of the males reported that they brushed their teeth with a toothbrush. The lack of awareness and behavioral response toward teeth care is putting people of low socioeconomic status at high risk of dental diseases.[9]

A study conducted in a dental hospital in Multan evaluated various risk factors of dental diseases in the people of Multan where they indicated that there is a significant (p-value=0.02) association between bleeding gums, caries, and periodontal diseases with the family history. They also reported that there are 75.62% of patients have diseases duration of fewer than 500 days and tried to link dental disease with a duration of its beginning. Participants of the study who have attended and who are currently studying in colleges have 37.30 % of bleeding gums, caries, and periodontal disease. They also showed the correlation between dental diseases like bleeding gums, caries, and periodontal problems.[12] Syed et al., conducted a study on one thousand nine hundred and eighteen patients in Rawalpindi in 2016, they revealed that 63.5% of the study participants had non-periodontitis and 34.5% had periodontitis. They further added that age, gender, occupation, smoking, kidney disease, diabetes, cardiovascular disease, arthritis, and oral hygiene habits (toothbrush/tooth powder) were significantly (P≤0.037) associated with periodontal status. Regression analysis showed a significant association of age, occupation, and smoking with periodontitis.[13]

When gingivitis, calculus, and dental caries were measured in schoolchildren in Sargodha, it was discovered that the rates of each condition were, respectively, 14.5 %, 14.3%, and 45.9%. A worrisome discovery in a comparable study suggested ignorance and poverty and said that none of the children had ever attended a dentist for treatment.[8] They also found a strong link between gingivitis and calculus with increasing age of the children. Quetta suffers a unique problem with dental problems because of the prevalence of fluorosis there. One thousand people who visited the Dental Center Quetta, both residents and non-residents of Quetta, were subjected to a comparative analysis to determine the prevalence of fluorosis.[14]

The WHO social determinants of the oral health system have undergone numerous conceptual revisions. Furthermore, there is a growing understanding of the necessity of shifting from the traditional therapeutic approach to policy interventions resolving socioeconomic disparities in oral health, based on social determinants of health and the risk factors associated with oral diseases and other NCDs, such as the free intake of sugar, cigarette use, alcohol consumption, and their broader driving factors.[15] The demand for sucrose, the sweetener that has been most commonly available since the 1980s and is derived from sugar beet and sugar cane, has increased gradually overall. As a result of the reported significant changes in sugar consumption, especially sugar drinks, in various LMICs, dental caries incidence increases.[16,17]

Our data showed different types of dental caries in both genders which indicated that 19 patients were in class zero (male: female, 11: 8) followed by 66 in class 1 (34: 32), 25 in class 2 (11: 14), 3 in class 3 (2: 1), 31 in collectively class 1 and 2 (23: 8), similarly 6 in class 1, 2 and 3 (4: 2), and only 2 in class 2 and 3 (0: 2). Our data finding has similar to most of the previously reported data from Lahore and another part of the world which indicates a high incidence of dental caries.[18,19]

Conclusion

The current study reported a high prevalence of dental caries, gingivitis, and malocclusion in district Khyber, Landi Kotal, whereas it has a very low ratio of fluorosis. All the above-mentioned dental diseases were strongly linked with poor dental care habits of the inhabitants and poor socioeconomic status, which need to be improved in terms of education and awareness about oral health.

References

1. Ali s, dastgir bhatti mu, syed a, chaudhry auh, iqbal z. prevalence of dental caries among 5-14 years old poor locality school children of lahore. pakistan oral & dental journal. 2012;32(2).
2. Basharat s, shaikh b. primary oral health care: a missing link in public health in pakistan. emhj-eastern mediterranean health journal. 2016;22(9):703-6.
3. Ali leghari m, tanwir f, ali h. dental caries prevalence and risk factors among school children age 12-15 years in malir, karachi. pakistan oral & dental journal. 2012;32(3).
4. Khalid t, mahdi ss, khawaja m, allana r, amenta f. relationship between socioeconomic inequalities and oral hygiene indicators in private and public schools in karachi: an observational study. international journal of environmental research and public health. 2020;17(23):8893.
5. Mathur vp, dhillon jk. dental caries: a disease which needs attention. the indian journal of pediatrics. 2018;85:202-6.
6. Shaw w, addy m, ray c. dental and social effects of malocclusion and effectiveness of orthodontic treatment: a review. community dentistry and oral epidemiology. 1980;8(1):36-45.
7. Singh m, bhattacharjee t. prevalence and knowledge regarding dental problems among school children, hoshiarpur, punjab, india. international journal of nursing research. 2017:130-4.
8. Biesbrock ar, walters pa, bartizek rd. initial impact of a national dental education program on the oral health and dental knowledge of children. j contemp dent pract. 2003;4(2):1-10.

9. Ahmed zu, shafiq k, wali a, siddiqui tm, usman a. knowledge, attitude and practices of oral health amongst low socioeconomic strata of sindh. pakistan oral & dental journal. 2016;36(4).
10. Oruc n. occurrence and problems of high fluoride waters in turkey: an overview. environmental geochemistry and health. 2008;30(4):315-23.
11. Ahmed w, manzoor f, khayyam u. dental caries status among public and private school children in hyderabad district-sindh. pakistan oral & dental journal. 2017;37(2).
12. Amin m, amanullah m, tarar am. dental caries, periodontal disease and their associated factors among patients visiting dental teaching hospital in multan. pakistan j pak dent assoc. 2016;25:99.
13. Bokhari sah, suhail am, malik ar, imran mf. periodontal disease status and associated risk factors in patients attending a dental teaching hospital in rawalpindi, pakistan. journal of indian society of periodontology. 2015;19(6):678.
14. Rana na, abdullah j, khan hm. comparison of dental fluorosis between residents and non residents of quetta. pakistan armed forces medical journal. 2020(2):617.
15. Nash d, ruotoistenmäki j, argentieri a, barna s, behbehani j, berthold p, et al. profile of the oral healthcare team in countries with emerging economies. european journal of dental education. 2008;12:111-9.
16. Gil-montoya ja, ferreira de mello al, barrios r, gonzalez-moles ma, bravo m. oral health in the elderly patient and its impact on general well-being: a nonsystematic review. clinical interventions in aging. 2015:461-7.
17. Al-meedani la, al-dlaigan yh. prevalence of dental caries and associated social risk factors among preschool children in riyadh, saudi arabia. pakistan journal of medical sciences. 2016;32(2):452.
18. Khan aa. prevalence of dental caries in school children of lahore, pakistan. community dentistry and oral epidemiology. 1992;20(3):155.