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KNOWLEDGE ATTITUDE AND PRACTICES STUDY ON ORAL HEALTH AT BACHA KHAN MEDICAL COMPLEX SWABI

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Abstract

Background: Oral diseases are among the most significant public health issues worldwide, especially in developing and third world countries. Clinical results and preventative behaviors are significantly influenced by oral health knowledge, attitudes, and practices (KAP). Behavioral variables and their correlation with clinical indicators in Pakistan, however, are not well documented at the district level. Objective: To assess knowledge, attitudes, and practices about oral health and to assess their association with decay, missing, and filled teeth (DMFT index) among patients coming to dental department of Bacha Khan Medical Complex, Swabi. Methods: A descriptive cross-sectional study was conducted among 121 patients coming to the dental outpatient department of Bacha Khan Medical Complex, Swabi. Participants were selected through non-probability consecutive sampling technique. Data regarding knowledge, attitude, and practices were collected through a validated questionnaire. Using World Health Organization guidelines, a clinical examination was conducted to record Decayed, Missing, and Filled Teeth (DMFT). SPSS version 24 was used to analyze the data. Using the proper statistical tests, relationships between sociodemographic factors, KAP components, and DMFT scores were assessed; a p-value of less than 0.05 was deemed statistically significant. Results: There were 121 participants in total, with a slight male preponderance. Despite the fact that most people showed knowledge of the common causes of dental caries, still preventive measures were suboptimal. Less than half of the individuals reported using supplementary cleaning products and brushing twice a day. The majority of patients sought care mainly for symptoms, and preventive dental visits were rare. Knowledge of oral health and preventive measures were significantly associated with educational attainment. Participants with lesser educational attainment had higher DMFT score, and these values rose with age. Higher DMFT scores were shown to be significantly associated with poor oral hygiene habits. Conclusion: The results show that although there is a general understanding of oral health, there are still gaps in the application of this understanding to appropriate preventive measures. High caries index was linked to lower educational attainment and suboptimal oral hygiene practices. To lower the disease burden in this population, targeted oral health education interventions emphasizing preventative care and behavioral modification are required.

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Introduction

Oral health is an important aspect of general health and quality of life. Due to their negative impact on well-being and high prevalence The World Health Organization affirms oral diseases as significant public health issues (1). Dental caries and periodontal disorders continue to rank among the most prevalent chronic illnesses in the world (2).

The interplay of host factors, cariogenic bacteria, fermentable carbohydrates, and time results in dental caries, a complex illness (3).? Important modifiable risk factors include frequent sugar consumption, poor plaque control, and insufficient fluoride exposure (4). Plaque buildup and inadequate oral hygiene habits are very closely linked to periodontal disease (5).

Behavioral variables are important in both preventing and advancing oral disorders, even though the molecular mechanisms behind these conditions are well understood. Oral health outcomes are strongly influenced by daily hygiene behaviors, attitudes toward preventative treatment, and knowledge of oral hygiene (6). In public health research, the Knowledge–Attitude–Practice (KAP) paradigm is frequently employed to assess health behaviors (7). Though social, economic, and cultural factors affect the relationship, it is anticipated that enough understanding will encourage good attitudes and appropriate practices (8).

The Knowledge–Attitude–Practice (KAP) model, which has its roots in conventional health education, makes the assumption that changing one's behavior is a rational personal choice based on information. Considering personal biological and behavioral variables as the primary causes of disease, it implies that educating people about the health benefits will result in more positive attitudes and healthier behaviors. The approach is constrained, though, as it ignores social, cultural, and environmental factors that also have an impact on health-related behaviors (9). The critical approach to health education places blames on society rather than individuals, viewing social, economic, and cultural issues as the primary causes of illness. It highlights the need for health services to be customized to the unique community context and take into account people's socioeconomic and environmental circumstances (1). Oral diseases are a serious global public health issue, especially in low- and middle-income nations where knowledge and preventive interventions are scarce. Untreated dental caries in permanent teeth is the most common ailment worldwide, affecting almost 3.5 billion individuals, according to the World Health Organization (10). One of the main causes of adult tooth loss is severe periodontal disease, which also lowers quality of life and impairs function (11). Oral health disparities still exist despite advancements in preventative dentistry, and they are mostly associated with socioeconomic status, education, income, and access to care (12). Due to low awareness, limited access to fluoride, inadequate services, and cultural misconceptions, people in underprivileged groups are more likely to have untreated dental diseases and to seek care only when symptoms are severe. With high rates of dental caries and periodontal disease observed across all age groups, oral health is commonly ignored in Pakistan (13). Inadequate awareness campaigns and inadequate service delivery exacerbate the prevalence of poor oral hygiene, excessive sugar consumption, and sporadic dental appointments. Understanding the causes and prevention of oral diseases has a significant impact on preventative habits like frequent brushing, cutting back on sugar, and scheduling regular dental checkups (14). Since attitudes like perceived importance, dread of dental procedures, and perceived susceptibility have a significant impact on oral health behaviors, knowledge alone may not result in healthy behavior (15). KAP studies aid in the identification of behavioral risk factors, misunderstandings, and obstacles to preventive care in oral health research (16).

Literature Review

There are gaps between oral health knowledge and practice, according to several research conducted in Pakistan. The majority of Peshawar's healthcare workers used toothbrushes and toothpaste, but only a small percentage brushed twice a day, and over half had never gone to a routine dental checkup. This suggests a gap between preventative behavior and knowledge (17). Similar results were

noted in school-aged children, who were aware of the importance of plaque control and gingival health, but who mostly sought dental care in response to pain because of fear and poor preventative practices (18).

Community-based studies indicate that oral health knowledge is often low, routine dental visits are uncommon, and dental pain is the primary reason for seeking care, highlighting the impact of inadequate awareness and dental anxiety (19). Variations in knowledge and attitudes have also been observed among different populations, such as private school children in Karachi, where awareness did not consistently translate into proper practices (20). Interventional research highlights the importance of focused instruction. Compared to peer-led alternatives, structured professional-led programs enhanced oral hygiene practices and knowledge, particularly among females of reproductive age (21). Despite these initiatives, there are still issues, such as insufficient brushing frequency and excessive sugar consumption, which raise the risk of dental caries and periodontal disease. High expense, fear, cultural misunderstandings, and socioeconomic variables contribute to the persistent knowledge-practice gap, which is generally improved by higher education but not necessarily by routine dental visits (22). Research on oral health practices among patients visiting tertiary care facilities, such as medical complexes, is still scarce, despite the fact that there are many KAP studies conducted in urban and peri-urban Pakistan. This emphasizes the necessity of doing local research, as the one being conducted at Bacha Khan Medical Complex in Swabi, to inform tailored oral health initiatives.

Methodology

A cross-sectional study was conducted in Bacha Khan Medical Complex Swabi, Khyber Pakhtunkhwa, Pakistan; between July, 2025 and December 2025 in the dental department of Bacha Khan Medical Complex, Swabi. BKMC is the biggest hospital of district Swabi, with the approximate population of 1346714. The Bacha Khan Medical Complex Swabi is the major health facility in the area providing the health services, which includes, out patients, in patients, major and minor surgeries, Immunization, and MCH services. The study group comprised of 121 (Male; 63; Female;58) who were in the age group of 11 and Above up to 80 years visiting to the dental department of Bacha Khan Medical Complex Swabi. Data on oral health KAP were collected by means of a self-administered questionnaire. The study adopted a non-probability consecutive sampling method whereby eligible patients who had oral examination were included in the study, provided a verbal informed consent was obtained. Inform consent was explained to the participant in their native language, and explaining the purpose of the study as well. All patients stood equal chances of being selected in the study.

The sample size was estimated using standard formula for sample size estimation.

$$n = \frac{z^2 p(1-p)}{d^2}$$

Where:

- **n** = required sample size
- **Z** = Z value at 95% confidence level (1.96)
- **p** = expected prevalence (assumed 50% due to lack of prior local data)
- **d** = margin of error (5% or 0.05)

Taking Z = 1.96, p = 0.5, and d = 0.05, the estimated sample size was 384. But due to problems with resources and limited time frame 121 participants were included. Therefore the study may be deemed as exploratory or pilot in nature.

The study included dentulous patients aged 11 years and above coming to the dental department of Bacha Khan Medical Complex Swabi. Health personnel, mentally handicapped, and edentulous patients were excluded.

Data were collected through a validated and structured questionnaire, assessing oral health knowledge, attitudes, and practices. The WHO index decay, missing, and filled teeth (DMFT) was recorded through clinical examination.

The questionnaire data were analyzed through the statistical package for social sciences (SPSS) version 24. Descriptive statistics were used. Associations between various sociodemographic variables, knowledge, attitude, practices, variables, and DMFT scores were assessed through chi-square test, with $p < 0.05$ considered statistically significant.

Results

The study recruited 121 participants in all. There were a slight greater number of male participants as compare to female. The participants were divided into three age groups: <25 years, 26–40 years, and >40 years. Most of participants had some level of formal education. (Table1).

Table1: *Sociodemographic Characteristics of Participants (n = 121)*

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	63	52.1
	Female	58	47.9
Age Group	<25 years	36	29.8
	26–40 years	49	40.5
	>40 years	36	29.8
Education	Educated	69	57.0
	Uneducated	52	43.0

2. Knowledge Regarding Oral Health

A majority of participants (55.4%) believed that tooth loss is inevitable, whereas 44.6% demonstrated correct knowledge regarding the possibility of lifelong tooth retention. (Table2).

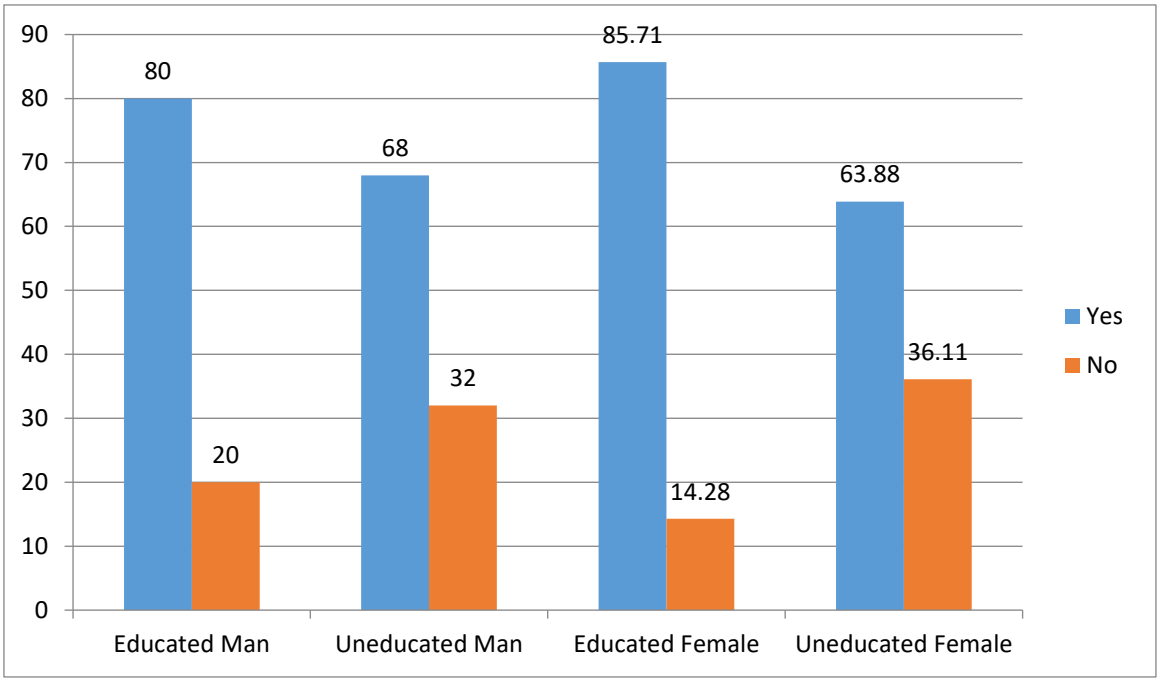
Table2: *Knowledge about Lifetime Retention of Natural Teeth (n = 121)*

Response	Frequency (n)	Percentage (%)
Yes	54	44.6
No	67	55.4

A major proportion of the participants (72%) correctly identified sugar consumption as a major etiological factor for dental caries, whereas 27.3% were unaware of the association. Higher knowledge levels were observed among younger and educated participants. (Table3).

Table 3: *Knowledge That Sugar Causes Dental Caries (n = 121)*

Response	Frequency (n)	Percentage (%)
Yes	88	72.7
No	33	27.3



3. Self-Reported Periodontal Conditions

38.0% of patients reported having gingival bleeding (Table 4). 14.0% of subjects had gingival recession (Table 5). In older age groups, periodontal problems were more prevalent. Gingival bleeding was shown to be significantly correlated with age ($p < 0.05$), with older participants reporting higher prevalence.

Table 4: Self-Reported Gingival Bleeding (n = 121)

Response	Frequency (n)	Percentage (%)
Yes	46	38.0
No	75	62.0

Table 5: *Self-Reported Gingival Recession (n = 121)*

Response	Frequency (n)	Percentage (%)
Yes	17	14.0
No	104	86.0

Gingival bleeding and recession were more common in participants above 40 years.

4. Oral Hygiene Practices

Participants' tooth brushing habits differed (Table 6). Just 38.8% of respondents said they brushed twice a day, 27.3% said they brushed once a day, and 33.9% said they brushed irregularly. 55.4% of responders reported using miswak (Table 7). However, only 28.9% of respondents said they regularly used dental floss (Table 8).

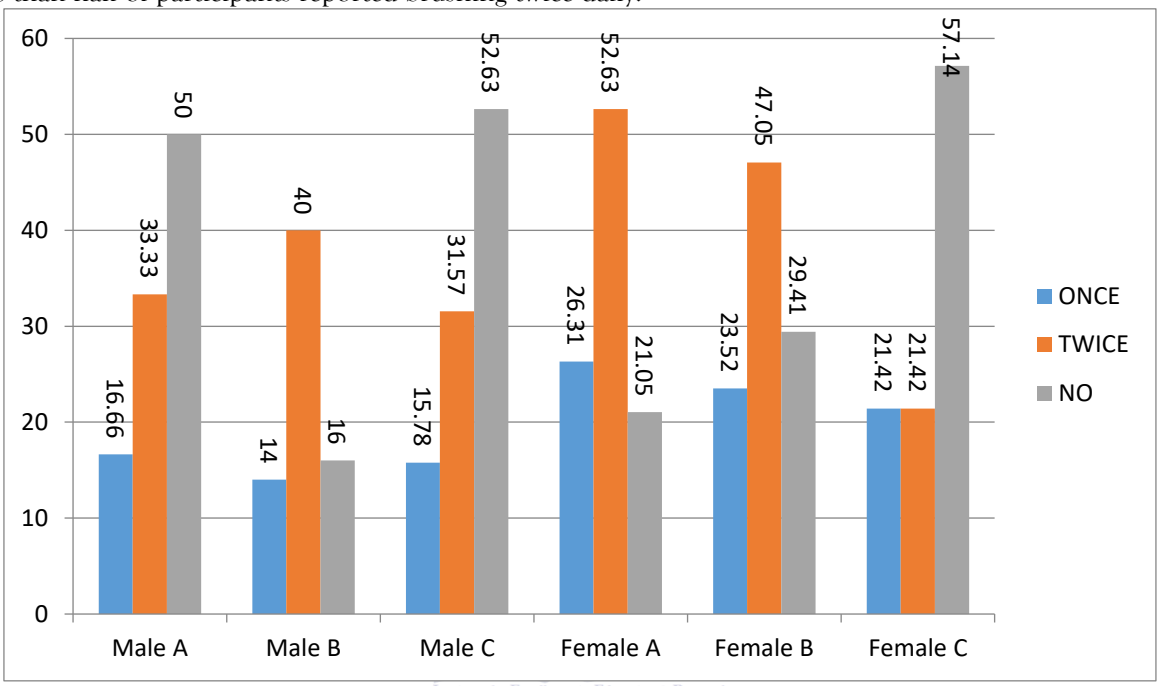
There was little professional scaling history (Table 9). Just 5.0% had experienced scaling twice, 24.0% had experienced scaling once, and the bulk (71.1%) had never experienced scaling.

The use of floss ($p < 0.05$) and the history of professional scaling ($p < 0.05$) were statistically significantly correlated with educational status. Those with higher levels of education were more likely than those with lower levels of education to practice preventive oral hygiene.

Table 6: *Tooth Brushing Frequency (n = 121)*

Frequency	Frequency (n)	Percentage (%)
Once daily	33	27.3
Twice daily	47	38.8
Irregular	41	33.9

Less than half of participants reported brushing twice daily.



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Table 7: *Use of Miswak (n = 121)*

Frequency	Frequency (n)	Percentage (%)
Regular (1–2 times/day)	67	55.4
Irregular / None	54	44.6

Table 8: *Use of Dental Floss (n = 121)*

Response	Frequency (n)	Percentage (%)
Yes	35	28.9
No	86	71.1

Table 9: *History of Professional Scaling (n = 121)*

Response	Frequency (n)	Percentage (%)
Never	86	71.1
Once	29	24.0
Twice	6	5.0

Professional preventive care utilization was low.

5. Attitude toward Oral Health

The majority of individuals showed a favorable attitude toward keeping their original teeth (Table 10). In total, 66.1% thought it was "very important," 22.3% thought it was "important," and 11.6% thought it was "not very important." People

with higher levels of education were more likely to have positive attitudes.

Table10: *Importance of Maintaining Natural Teeth (n = 121)*

Response	Frequency (n)	Percentage (%)
Very Important	80	66.1
Important	27	22.3
Not Very Important	14	11.6

Overall, 88.4% demonstrated a positive attitude.

6. Dental Caries Experience (DMFT Index)

As people aged, their mean DMFT scores gradually rose (Table 11). Participants over 40 had the highest mean DMFT values, followed by those between the ages of 26 and 40, while those under 25 had the lowest scores. Age group and DMFT score were found to be statistically significantly correlated ($p < 0.05$) by one-way ANOVA, suggesting that caries experience increases with age.

Additionally, there was a strong correlation between caries experience and educational status (Table 12). The mean DMFT scores of participants with formal education were considerably lower than those of participants without formal education ($p < 0.05$).

Additionally, there was a significant correlation ($p < 0.05$) between brushing frequency and DMFT; individuals who brushed twice a day had lower mean caries scores than those who brushed irregularly.

Table11: *Mean DMFT Score by Age Group (n = 121)*

Age Group	Mean DMFT
<25 years	2.0
26–40 years	4.2
>40 years	6.4

A progressive increase in DMFT with age was observed.

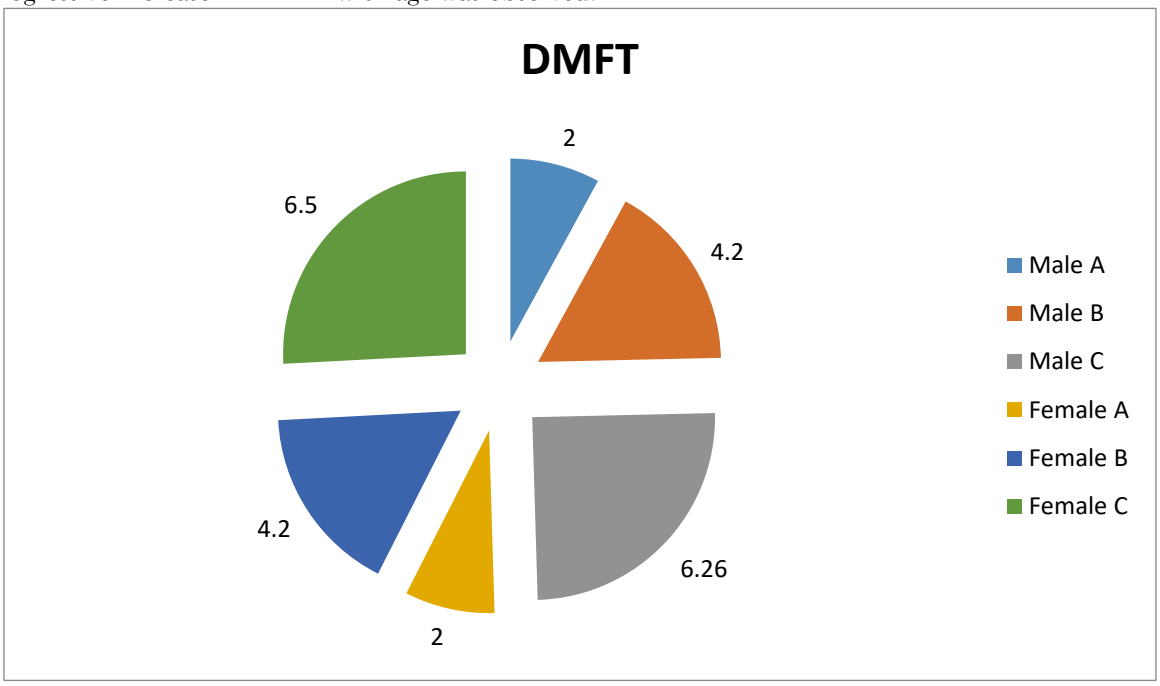
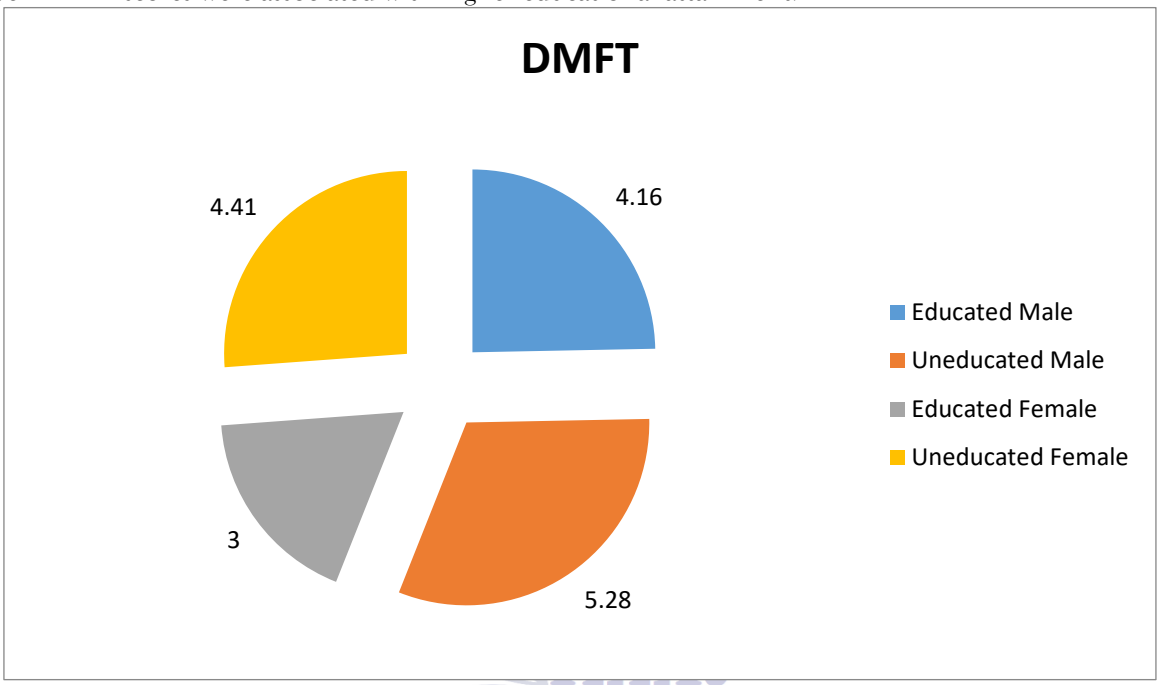


Table 12: *Mean DMFT by Educational Status (n = 121)*

Education Level	Mean DMFT
Educated	3.6
Uneducated	4.9

Lower DMFT scores were associated with higher educational attainment.



Discussion

Oral health extends beyond healthy teeth, impacting overall well-being and quality of life. Caries and periodontal disease are influenced by lifestyle, and existing preventive knowledge, if applied, could reduce their prevalence or slow progression.

The study aimed to assess oral hygiene practices, knowledge, and dental attendance patterns. As a result, evaluating oral health-related knowledge, attitudes, and practices can aid in identifying knowledge gaps and direct the creation of successful preventative measures.

Previous research has repeatedly shown that better oral health outcomes and a lower global disease burden are linked to increased oral health awareness and preventive actions (23-25).

The majority of individuals used a toothbrush as their main oral hygiene equipment, according to the data, with females exhibiting somewhat better brushing habits than males. This result is in line with earlier research, showing that women typically practice better dental hygiene and are more conscious of their health than men (26). Additionally, those with higher levels of education showed better oral hygiene habits than those with lower levels of education. Because people with greater levels of education are more likely to appreciate the significance of preventative oral care and adopt healthier lifestyles, education is widely acknowledged as a significant driver of oral health behavior (27).

Miswak use was also prevalent in the research group, especially among those with lower levels of education. Because of cultural and religious customs, miswak is still widely used in many Muslim communities. Similar results have been found in earlier studies carried out in Pakistan and other Middle Eastern nations, where miswak use is commonly done either by itself or in conjunction with toothbrush use (28).

Participants used dental floss relatively seldom, despite the availability of a variety of oral hygiene tools. The advantages of dental floss were

unknown to almost 71% of the participants. On the other hand, people with higher levels of education were more likely than those with lower levels of education to floss. This result emphasizes how important education is in encouraging preventive dental hygiene habits. Studies carried out in other developing nations have revealed similar findings, where interdental cleaning methods are still restricted because of a lack of knowledge and insufficient oral health education (29).

The study also looked at participant dental attendance trends. Rather than seeking regular preventative care, a significant percentage of individuals stated that they only went to the dentist when they had oral discomfort or other issues. Seventy-four percent of individuals said they only went to the dentist when necessary, mostly for toothaches. This pattern of symptom-driven dental visits has been extensively documented in developing nations, and it is frequently linked to a lack of access to preventative dental care, low awareness, and budgetary limitations (30).

Preventive dental care utilization remained low despite the availability of dental treatments through private clinics and community health centers. Regular dental visits may be further discouraged by the fact that many participants reported that treatment at public facilities was primarily confined to medication or tooth extraction. These results highlight the need for community-based oral health education initiatives and better preventative dental treatments.

Among the subjects, periodontal issues such gingivitis and periodontitis were quite common. While periodontitis did not significantly differ between males and females, gingivitis seemed to be more prevalent in females. However, individuals 26–40 years of age and older were more likely to experience both disorders. Previous epidemiological studies have demonstrated that the prevalence of periodontal disease rises with age due to cumulative exposure to risk factors and poor oral hygiene, which is consistent with the increase in periodontal problems with age found in this study (5).

Uneducated male participants were more likely to smoke, whereas none of the female participants reported doing so. Numerous regional studies have shown that smoking is more common among men and is a known risk factor for periodontal disease and poor oral health outcomes (31).

The Decayed, Missing, and Filled Teeth (DMFT) index was also used in the study to evaluate dental caries experience. The results showed that participants with lower levels of education had significantly higher DMFT scores than those with greater levels of education. For instance, uneducated males had a higher mean DMFT score than educated males, and females showed a similar pattern. This implies that education influences knowledge, behavior, and access to preventative care, all of which are protective factors for oral health.

Additionally, DMFT scores rose with age, indicating that dental caries index rises over time. Similar patterns have been documented in other research carried out in underdeveloped nations, where a lack of preventative measures and long dental appointments lead to a higher incidence of caries in adults (32).

Overall, the results of this study show that the study population's oral health awareness and preventive actions are still inadequate. The need for thorough oral health education programs is highlighted by poor dental floss use, symptom-based dental check ups, and a lack of knowledge about preventive oral hygiene practices. Improving public awareness, attitudes, and preventative practices should be the main goals of effective oral health promotion initiatives. Educational interventions should be linked into larger public health programs and delivered at the community and school levels. Since children oral health behaviors frequently carry over into adulthood, early instruction is very crucial. To guarantee the regular and long-lasting distribution of preventative messages, oral health education should also be included in the curricula of medical professionals, educators, and community health workers (33).

Conclusion

The survey revealed that most participants lacked knowledge of regular dental care, with conflicting beliefs affecting oral health practices. Majority

believed teeth cannot last a lifetime, and more than half reported post-extraction complications. Educated participants had better brushing habits (males 80%, females 93%) than uneducated ones (males 52%, females 58%). These findings highlight the need for preventive and curative oral health education, especially in rural areas where resources are limited and oral health is often excluded from primary health care.

To improve access, mobile dental teams, school- and community-based education, and integration of oral health into PHC are recommended. Essential dental materials and drugs should be included in rural health centers, vacant dental posts filled, and dedicated budgets allocated for equipment and maintenance. Demonstration projects in selected districts might help implement these strategies effectively.

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