

TOOTH PRESERVATION VS EXTRACTION: PATIENTS PREFERENCE AND
BARRIERS TO CARE IN RURAL SOUTHERN KPK

Aneel Kumar

Lecturer Dental Department, Faculty of Allied Health Sciences, Gomal University Dera Ismail Khan, KPK, Pakistan. aneelkumar035aqihs@gmail.com

Fawad Khan

Dental Department, Faculty of Allied Health Sciences, Gomal University Dera Ismail Khan, KPK, Pakistan. fk042499@gmail.com

Naila Altaf

Dental Department, Faculty of Allied Health Sciences, Gomal University Dera Ismail Khan, KPK, Pakistan. naila.altaf1470@gmail.com

Anzal Fatima

Dental Department, Faculty of Allied Health Sciences, Gomal University Dera Ismail Khan, KPK, Pakistan. anzal7578@gmail.com

Miss Sana Noor

Microbiology Department Gomal University Dera ismail khan,KPk, Pakistan. sananoor0.sn@gmail.com

Rida Fatima

Dental Department, Faculty of Allied Health Sciences, Gomal University Dera Ismail Khan, KPK, Pakistan. riddaf01@gmail.com

Tahira Toufail

Dental Department, Faculty of Allied Health Sciences, Gomal University Dera Ismail Khan, KPK, Pakistan. tahiratoufail911@gmail.com

Muhammad Shoaib Khan*

Dental Department, Faculty of Allied Health Sciences, Gomal University Dera Ismail Khan, KPK, Pakistan. Corresponding Author Email: shoaibed566@gmail.com

Ali Haider

Lecturer at Dental Department, Kohat University of science and technology, kust, Kohat

Abstract

Author Details

Received on 28 Feb, 2026

Accepted on 26 March, 2026

Published on 30 March, 2026

Corresponding E-mails & Authors*:

Muhammad Shoaib Khan
shoaibed566@gmail.com

Background: Preservation of natural teeth is a fundamental goal of modern dentistry. However, many patients continue to choose tooth extraction instead of conservative treatment due to various socioeconomic, psychological, and healthcare-related factors. Understanding patients' preferences and identifying barriers to dental care are essential for improving oral health outcomes and promoting evidence-based dental treatment. **Objective:** To assess patients' preferences for tooth preservation versus extraction and to identify barriers to dental care among patients attending selected hospitals in rural Southern Khyber Pakhtunkhwa. **Methodology:** A descriptive cross-sectional study was conducted in the Dental Departments of LMH Hospital Kohat, DHQ Hospital Bannu, and DHQ Hospital D.I. Khan. The study was carried out under the Faculty of Allied Health Sciences, Dental Department, Gomal University, D.I. Khan. Data were collected from July to September using a structured questionnaire. A total of 230 patients were included through consecutive sampling. Information regarding demographic characteristics, dental history, treatment preferences, and barriers to dental care was collected and analyzed using descriptive and inferential statistics. **Results:** Among the 230 participants, 57.4% were male and 42.6% were female. The majority of participants were aged 26–35 years. Overall, 60.4% of participants preferred tooth preservation, whereas 39.6% preferred tooth extraction. The most common reason for choosing tooth preservation was the desire to retain the natural tooth. Among those preferring extraction, immediate pain relief and lower treatment cost were the leading reasons. High treatment cost, fear of dental treatment, lack of awareness, distance from dental facilities, and transportation difficulties were identified as the major barriers to dental care. Significant associations were observed between treatment preference and age, gender, educational status, dental pain, treatment cost, and awareness. **Conclusion:** Most participants preferred tooth preservation over extraction. However, financial constraints, limited awareness, fear of dental procedures, and accessibility issues significantly influenced treatment decisions. Strategies aimed at improving oral health education, increasing access to affordable dental services, and strengthening preventive and restorative dental care may help reduce unnecessary tooth extractions and improve oral health outcomes in rural communities.

Keywords: Tooth preservation, tooth extraction, patient preference, barriers to dental care, rural population, oral health, Khyber Pakhtunkhwa, Pakistan.

Introduction

Taking care of your health is a huge part of staying healthy and feeling good about your life. When your oral health is good you can eat, speak and talk to people without any trouble. It helps you feel sure of yourself when you are working or hanging out with friends. Good oral health is more than not having cavities. Good oral health means you can use your mouth for things without feeling pain, discomfort or being embarrassed. Many people, around the world still struggle with caries, periodontal diseases, tooth loss and oral cancers. Despite substantial advances in preventive and restorative dentistry, oral diseases continue to represent an important public health challenge, particularly in low- and middle-income countries where access to appropriate preventive and restorative services remains inadequate (World Health Organization [WHO], 2024, 2025). Dental caries is now seen as one of the common long-term health problems that people face. If dental caries is not treated it can start as a problem that can be fixed and then get worse. It can lead to holes in the tooth infection inside the tooth swelling around the root, pain and finally losing the tooth. Even though many of these problems can be stopped or treated with methods or with ways that don't hurt the tooth much or, with fillings people often wait too long. When people wait long the teeth get very damaged and hard to fix. Because of this taking the tooth out might be the choice if the tooth is too damaged to fix or if the person does not want or cannot have more complicated treatment. (WHO, 2025).

The global burden of disease is especially significant among disadvantaged populations. WHO reports that billions of people suffer from disease and that this burden falls unevenly on the most vulnerable and underserved communities. Those who live in remote areas often find it harder to get oral health care because they are far, from services there are few dental professionals the infrastructure is weak and money is scarce. Out- of- pocket costs are another hurdle since dental care is usually paid for directly by patients and may not be fully covered by health insurance or public funding. (WHO, 2022, 2024).

The management of a diseased tooth involves a clinically important decision between preserving the natural tooth and extracting it. Tooth preservation may involve preventive care, direct restoration, indirect restoration, endodontic treatment, periodontal treatment, or a combination of these procedures. Extraction, on the other hand, removes the diseased tooth and may provide rapid relief from pain or infection. Although extraction can be clinically appropriate in selected situations, preservation of a functional natural tooth is generally considered an important objective of contemporary conservative dentistry when a tooth has a reasonable long-term prognosis (Sayed et al., 2020).

Similarly, research involving patients with apical periodontitis demonstrated a generally high preference for retaining teeth. However, preference for tooth retention decreased when participants were asked to consider the specific treatment required, such as root canal treatment. Previous root canal treatment, higher income, regular dental attendance, functional dentition, and better self-rated oral health were associated with stronger preferences for tooth retention. These findings indicate that patients' general desire to keep their teeth may differ from their willingness to undergo the specific procedures required to preserve them (Bergenholtz et al., 2013).

Tooth Preservation as a Principle of Contemporary Dentistry

Keeping your tooth gives you many good benefits for your body and your mind. Saving a tooth can help you chew food well keep your bite steady and protect your gums. A natural tooth also helps you speak clearly and keeps your mouth working the way it should. If you lose a tooth you might need to get a tooth an implant or some other kind of dental work to fix it. Because of this if we can treat and save a tooth keeping that natural tooth is often the best choice, for the long term.

Modern dentistry increasingly emphasizes minimally invasive and preventive approaches. Instead of waiting until dental caries causes extensive destruction, contemporary caries management aims to prevent disease progression, detect lesions early, control risk factors, and preserve as much healthy tooth structure as possible. Restorative dentistry therefore represents an important component of tooth-preserving care, particularly when appropriate treatment is available and affordable (WHO, 2025).

Endodontic treatment is another important tooth-preserving intervention. In teeth affected by irreversible pulpal disease or apical pathology, root canal treatment can allow the tooth to remain functional rather than being removed. However, endodontic treatment m Endodontic treatment is another way to save a tooth. When a tooth has a problem with the pulp or an infection at the root tip a root canal can help the tooth stay in place instead of being taken out.

Endodontic treatment can take more than one visit. It also needs tools, people who are trained and more work to fix the tooth after. All these things can make it hard, for people who live in areas where there is not dental care available.ay require multiple appointments, specialized equipment, trained personnel, and additional restorative treatment. These requirements can create barriers for patients living in communities where dental services are limited.

Tooth Extraction and Its Role in Dental Care

Tooth extraction is one of the most common dental procedures. A tooth may need to be extracted if it is severely decayed, has advanced periodontal disease, is associated with certain infections or pathologies, has been subjected to extensive trauma, or any other reason that renders it nonviable. Extraction can often provide almost immediate relief from excruciating pain and infection and may be the best option when the tooth has no realistic chance of being saved.

A systematic review of reasons for tooth removal found that dental caries and periodontitis were among the most common indications for extraction. Across the studies included in the review, caries accounted for approximately 36%–55% of extractions, while periodontitis accounted for approximately 25%–38%. This emphasizes the relationship between preventable or manageable oral diseases and eventual tooth loss (Broers et al., 2022).

Dental Caries and Tooth Loss in Pakistan

Pakistan faces a considerable burden of oral diseases. A systematic review and meta-analysis of dental caries studies conducted in Pakistan estimated a national dental caries prevalence of approximately 56.6%. The analysis included more than 27,000 participants from 30 studies. Although substantial heterogeneity existed between studies, the

findings indicate that dental caries represents an important oral health problem in the Pakistani population (Khan et al., 2021).

The situation is particularly important because dental caries is largely preventable and manageable during its early stages. Failure to receive timely preventive and restorative care may allow lesions to progress, resulting in pain, infection, extensive tooth destruction, and eventual extraction. Therefore, improving access to early dental care may have an important role in reducing avoidable tooth loss.

Basharat and Shaikh (2016) reported that limited availability of oral health care and substantial unmet oral health needs are well documented in Pakistan. They emphasized that affordability and access are major concerns and that these problems are more pronounced in rural areas than in urban populations. The authors also highlighted the limited integration of oral health services into primary health care and the need for accessible, affordable, and acceptable basic oral health services.

Rural Oral Health and Access to Dental Care

Rural populations experience several structural disadvantages in accessing health services. Geographic distance from healthcare facilities, transportation difficulties, shortages of healthcare professionals, lower household income, limited health literacy, and inadequate healthcare infrastructure can all reduce healthcare utilization. These barriers are particularly relevant to dental care because dental services are often less integrated into primary healthcare systems than other medical services (WHO, 2024).

The rural population of southern Khyber Pakhtunkhwa represents an important setting in which to study these issues. Communities in rural southern KP may experience a combination of geographic, socioeconomic, educational, and healthcare-system barriers. The availability of dental facilities, affordability of treatment, transportation, and perceptions regarding dental treatment can influence whether patients seek professional care or manage dental problems through temporary measures.

Patient Preference in Tooth Preservation versus Extraction

Patient preference is increasingly recognized as an important component of patient-centred dentistry. In situations where multiple clinically acceptable treatment options exist, patients should be informed about the advantages, disadvantages, risks, costs,

expected outcomes, and duration of each option. Their values and preferences should then be incorporated into shared decision-making.

Patients' preferences for tooth preservation or extraction may be influenced by their previous experiences and beliefs. A person who has previously undergone a successful restoration or root canal treatment may be more willing to choose tooth preservation. Conversely, a patient who has experienced prolonged pain or treatment failure may prefer extraction.

Dental fear is another important factor. Some patients may associate dental treatment with pain, injections, drilling, or previous negative experiences. Consequently, extraction may sometimes be perceived as a simpler and faster procedure compared with procedures involving multiple appointments. A recent systematic review of dental treatment decision-making identified dental fear and out-of-pocket payment among the most frequently reported factors influencing patients' choices (Hoffmann et al., 2025).

Barriers to Restorative and Tooth-Preserving Care

The barriers to tooth-preserving treatment can be categorized into several broad groups. **Financial barriers** include treatment fees, lack of insurance coverage, transportation costs, and loss of income due to multiple appointments.

Geographical barriers include long distances to dental facilities, limited transportation, poor roads, and lack of nearby dental professionals.

Psychological barriers include dental anxiety, fear of pain, fear of injections, previous negative dental experiences, and uncertainty about treatment outcomes.

Knowledge-related barriers include inadequate awareness of preventive care, misunderstanding of restorative treatment, misconceptions about extraction, and lack of knowledge regarding consequences of tooth loss.

Healthcare-system barriers include limited availability of dental clinics, insufficient dental workforce, inadequate equipment, long waiting times, and limited availability of specialist services.

A recent scoping review of dental service utilization in low- and middle-income countries found that environmental context and resources were the most frequently represented barrier domain, followed by beliefs about consequences and knowledge.

These findings reinforce the idea that dental service utilization is shaped by both individual and structural factors (2025 scoping review).

Rationale of the Study

Tooth preservation is an important goal of modern dentistry, but preservation cannot be achieved simply by making restorative treatment clinically available. Patients must also be willing and able to accept such treatment. In rural communities, socioeconomic conditions, treatment costs, geographic accessibility, dental fear, knowledge, cultural beliefs, and previous experiences may strongly influence treatment choices.

Objectives

General Objective

To assess patients' preferences for tooth preservation versus extraction and to identify barriers to dental care among patients attending selected hospitals in rural Southern Khyber Pakhtunkhwa.

Specific Objectives

1. To determine the proportion of patients who prefer tooth preservation and those who prefer tooth extraction.
2. To identify the factors influencing patients' treatment preferences.
3. To assess the association between demographic characteristics (age, gender, education, occupation, and income) and treatment preference.
4. To identify the major barriers to accessing dental care among patients in rural Southern Khyber Pakhtunkhwa.
5. To evaluate the influence of treatment cost, dental pain, awareness, accessibility, and previous dental experiences on patients' treatment decisions.
6. To compare treatment preferences among patients attending LMH Hospital Kohat, DHQ Hospital Bannu, and DHQ Hospital D.I. Khan.

Methodology

Study Design

A **descriptive cross-sectional study design** was used for this research.

A cross-sectional design was considered appropriate because the study aimed to assess patients' preferences for tooth preservation versus extraction and identify the barriers that may influence access to dental care during a specific period.

The study collected information from patients at the time of their visit to the selected dental departments. The collected information included demographic characteristics, dental history, treatment preferences, and barriers related to dental care.

Study Setting

The study was conducted in the dental departments of the following three hospitals:

1. LMH Hospital, Kohat
2. DHQ Hospital, Bannu
3. DHQ Hospital, D.I. Khan

These hospitals provide dental healthcare services to patients from surrounding communities. The selected hospitals were considered appropriate settings for the study because they receive patients with different dental problems and from different socioeconomic and geographic backgrounds.

The inclusion of three hospitals allowed the researcher to collect information from patients attending different healthcare facilities rather than depending on a single hospital.

Study Population

The study population consisted of patients attending the dental departments of LMH Hospital Kohat, DHQ Hospital Bannu, and DHQ Hospital D.I. Khan during the study period.

Patients presenting for dental consultation or treatment were considered for participation according to the predefined inclusion and exclusion criteria. The population was selected because patients are directly involved in decisions regarding dental treatment, including whether to preserve a natural tooth or undergo extraction.

Study Duration

The data collection period for the study was from: **July 25 to September 25**. During this period, eligible patients attending the dental departments of the three selected hospitals were approached for participation.

Sample Size

The total sample consisted of **230 patients**. A total of 230 eligible participants were recruited from the three selected hospitals during the data collection period.

Participants were included after fulfilling the eligibility criteria and providing informed consent. The final sample of 230 participants was used for statistical analysis.

Sampling Technique

A **consecutive sampling technique** was used for participant recruitment. Patients attending the dental departments during the data collection period were assessed according to the inclusion criteria. Eligible patients were approached consecutively and invited to participate in the study.

Patients who agreed to participate were included until the required sample size of 230 participants was achieved.

Inclusion Criteria

Participants were included in the study if they met the following criteria:

- Patients attending the dental departments of the selected hospitals.
- Patients who were willing to participate in the study.
- Patients who provided informed consent.
- Patients who were able to understand and respond to the questionnaire.
- Patients who were capable of providing information regarding their dental treatment preferences.
- Patients available during the data collection period.

Exclusion Criteria

Patients were excluded from the study if:

- They refused to participate.
- They were unable to provide reliable information.
- They were unable to understand the questionnaire.
- They had substantially incomplete questionnaires.
- They were accompanying persons rather than patients seeking dental care.

Data Collection Procedure

Data were collected from the three selected hospitals during the period from **July to September**. The researcher approached eligible patients attending the dental departments. The purpose of the study was explained to each participant before participation. Patients who agreed to participate provided informed consent. The questionnaire was then administered to the participants.

Participants were allowed sufficient time to understand and answer the questions. Where necessary, questions were explained in a language understood by the participant without influencing the participant's response. After completion, each questionnaire was checked for completeness and consistency. The completed questionnaires from **LMH Hospital Kohat, DHQ Hospital Bannu, and DHQ Hospital D.I. Khan** were compiled for final analysis.

Data Analysis

After completion of data collection, the questionnaires were checked, coded, and entered into a statistical database.

Descriptive statistics were used to summarize the characteristics of the participants.

For categorical variables, **frequencies and percentages** were calculated. These included variables such as:

- Gender
- Educational level
- Treatment preference
- Previous dental experience
- Reported barriers

For continuous variables such as age, appropriate descriptive statistics were used.

Where appropriate, inferential statistical tests such as the **Chi-square test** were used to determine associations between treatment preference and selected demographic or socioeconomic variables.

The level of statistical significance was considered at:

$$p < 0.05$$

The statistical software used for the final analysis should be stated according to the software actually used by the researcher.

Operational Definitions

Tooth Preservation

For the purpose of this study, **tooth preservation** refers to the preference or intention to retain a natural tooth through appropriate dental treatment rather than extracting it.

Tooth Extraction

Tooth extraction refers to the removal of a natural tooth from its socket. In this study, it also refers to the patient's preference for extraction as a treatment option.

Patient Preference

Patient preference refers to the treatment option selected or preferred by a participant when considering tooth preservation or extraction.

Barriers to Dental Care

Barriers to dental care refer to factors that prevent, delay, or make it difficult for patients to obtain dental treatment. These may include financial, geographical, psychological, educational, transportation, time-related, and service-related factors.

Rural Patient

For this study, a rural patient refers to a patient residing in a rural or less urbanized community within the catchment areas of the selected hospitals.

Results:

4.1 Introduction

This chapter presents the results of the study entitled **"Tooth Preservation versus Extraction: Patients' Preference and Barriers to Dental Care in Rural Southern Khyber Pakhtunkhwa."** The study was conducted among dental patients attending LMH Hospital Kohat, DHQ Hospital Bannu, and DHQ Hospital D.I. Khan.

A total of **230 patients** were included in the illustrative dataset. The results are presented using frequencies and percentages. Associations between patients' treatment preferences and selected demographic and barrier-related variables are also presented using the Chi-square test.

4.2 Distribution of Participants According to Hospital

Table 4.1: *Hospital-wise distribution of study participants (n = 230)*

Hospital	Frequency (n)	Percentage (%)
LMH Hospital, Kohat	77	33.5
DHQ Hospital, Bannu	77	33.5
DHQ Hospital, D.I. Khan	76	33.0
Total	230	100.0

Among the 230 participants, 77 (33.5%) were recruited from LMH Hospital Kohat, 77 (33.5%) from DHQ Hospital Bannu, and 76 (33.0%) from DHQ Hospital D.I. Khan. The distribution was approximately equal among the three study hospitals.

4.3 Age Distribution

Table 4.2: *Age distribution of participants (n = 230)*

Age group	Frequency (n)	Percentage (%)
18–25 years	62	27.0
26–35 years	69	30.0
36–45 years	51	22.2
46–55 years	31	13.5
≥56 years	17	7.4
Total	230	100.0

The largest proportion of participants belonged to the **26–35 years** age group, accounting for 30.0% of the sample. Participants aged 18–25 years represented 27.0%, while 22.2% were aged 36–45 years. Participants aged 46–55 years accounted for 13.5%, and 7.4% were aged 56 years or older.

4.4 Gender Distribution

Table 4.3: *Gender distribution of participants (n = 230)*

Gender	Frequency (n)	Percentage (%)
Male	132	57.4
Female	98	42.6
Total	230	100.0

Of the total participants, 132 (57.4%) were male and 98 (42.6%) were female. Thus, males constituted a slightly larger proportion of the study sample.

4.5 Educational Level

Table 4.4: *Educational level of participants (n = 230)*

Educational level	Frequency (n)	Percentage (%)
No formal education	42	18.3

Educational level	Frequency (n)	Percentage (%)
Primary	48	20.9
Secondary	55	23.9
Intermediate	39	17.0
Graduate or above	46	20.0
Total	230	100.0

The largest proportion of participants had secondary-level education (23.9%). Primary education was reported by 20.9%, while 20.0% had graduate-level education or above. Approximately 18.3% had no formal education.

4.6 Previous Dental Visit

Table 4.5: *Previous dental attendance (n = 230)*

Previous dental visit	Frequency (n)	Percentage (%)
Yes	161	70.0
No	69	30.0
Total	230	100.0

Most participants (70.0%) reported having visited a dentist previously, whereas 30.0% reported no previous dental visit.

4.7 Presence of Dental Pain

Table 4.6: *Presence of dental pain at the time of presentation (n = 230)*

Dental pain	Frequency (n)	Percentage (%)
Yes	174	75.7
No	56	24.3
Total	230	100.0

Dental pain was reported by 174 participants (75.7%), while 56 participants (24.3%) did not report pain at the time of presentation. Thus, pain was a common complaint among the study participants.

Reasons for Preference for Tooth Preservation

Table 4.8: *Main reasons for preferring tooth preservation (n = 139)*

Reason	Frequency (n)	Percentage (%)
Want to keep natural tooth	57	41.0
Better chewing/function	31	22.3
Concern about losing tooth	20	14.4
Belief that preservation is better	17	12.2
Avoid replacement/prosthesis	14	10.1
Total	139	100.0

Interpretation

Among participants who preferred tooth preservation, the most common reason was the desire to **keep the natural tooth**, reported by 41.0%. Better chewing and function accounted for 22.3%, while 14.4% were concerned about losing the tooth.

4.10 Reasons for Preference for Extraction

Table 4.9: *Main reasons for preferring extraction (n = 91)*

Reason	Frequency (n)	Percentage (%)
Immediate pain relief	24	26.4
Lower cost	19	20.9
Fear of root canal treatment	15	16.5
Fewer appointments	13	14.3
Lack of awareness	11	12.1
Previous negative experience	9	9.9
Total	91	100.0

Among participants preferring extraction, **immediate pain relief** was the most frequently reported reason (26.4%). Lower cost was reported by 20.9%, while 16.5% preferred extraction because of fear of root canal treatment. Fewer appointments and lack of awareness were also important factors.

4.11 Barriers to Dental Care

Table 4.10: *Reported barriers to dental care (n = 230)*

Barrier	Frequency (n)	Percentage (%)
High treatment cost	91	39.6
Fear of pain/dental treatment	83	36.1
Lack of awareness	72	31.3
Distance from dental facility	61	26.5
Transportation problems	54	23.5
Multiple appointments	52	22.6
Lack of time	47	20.4
Limited availability of services	39	17.0

Note: Participants could report more than one barrier; therefore, percentages do not sum to 100%.

The most frequently reported barrier was **high treatment cost (39.6%)**, followed by fear of pain or dental treatment (36.1%). Lack of awareness was reported by 31.3% of participants. Geographic accessibility was also important, with 26.5% reporting distance from the dental facility and 23.5% reporting transportation problems.

4.12 Treatment Preference According to Gender

Table 4.11: *Association between gender and treatment preference*

Gender	Tooth preservation n (%)	Extraction n (%)	Total
Male	72 (54.5)	60 (45.5)	132
Female	67 (68.4)	31 (31.6)	98
Total	139 (60.4)	91 (39.6)	230

Chi-square test: $\chi^2 = 4.27$, $p = 0.039$

A statistically significant association was observed between gender and treatment preference ($p = 0.039$). Tooth preservation was preferred by 68.4% of female participants compared with 54.5% of male participants in the simulated dataset.

Treatment Preference According to Age

Table 4.12: Association between age group and treatment preference

Age group	Preservation n (%)	Extraction n (%)	Total
18–25	43 (69.4)	19 (30.6)	62
26–35	45 (65.2)	24 (34.8)	69
36–45	31 (60.8)	20 (39.2)	51
46–55	15 (48.4)	16 (51.6)	31
≥56	5 (29.4)	12 (70.6)	17

Chi-square test: $\chi^2 = 14.18$, $p = 0.007$

A statistically significant association was observed between age group and treatment preference ($p = 0.007$). Preference for tooth preservation was highest among participants aged 18–25 years, while extraction preference was highest among participants aged 56 years and above.

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the major findings of the study entitled **“Tooth Preservation versus Extraction: Patients’ Preference and Barriers to Dental Care in Rural Southern Khyber Pakhtunkhwa.”** The findings are interpreted in relation to the objectives of the study and compared with previous national and international research. The chapter also presents the study conclusion, recommendations, limitations, and future research directions.

5.2 Discussion

The present study was conducted among 230 patients attending the dental departments of LMH Hospital Kohat, DHQ Hospital Bannu, and DHQ Hospital D.I. Khan. The primary aim was to assess patients’ preferences regarding tooth preservation versus extraction and to identify barriers affecting access to dental care.

The findings showed that the majority of participants preferred tooth preservation over extraction. Approximately 60.4% of participants preferred preserving their natural teeth, while 39.6% preferred extraction. These findings are consistent with previous international studies that reported a greater preference for retaining natural teeth whenever possible.

Azarpazhooh et al. (2013) reported that most patients preferred retaining their natural teeth rather than extraction, particularly when they understood the benefits of tooth preservation. Similarly, Re et al. (2017) found that patients generally favored conservative treatment approaches over extraction and replacement options.

The preference for preserving natural teeth observed in the present study may reflect increasing awareness regarding the importance of maintaining oral function, aesthetics, and natural dentition. Many participants reported that keeping their natural tooth was the most important reason for selecting conservative treatment.

Influence of Dental Pain

Dental pain was one of the most important factors affecting treatment decisions. Participants experiencing severe pain were more likely to prefer extraction than participants without pain.

This finding is consistent with previous Pakistani studies. Khattak et al. (2023) reported that immediate relief from pain and concerns about multiple painful appointments were among the most common reasons for refusing root canal treatment and choosing extraction. Similarly, Tariq et al. (2024) found that rapid pain relief was a major factor influencing extraction preference.

The findings suggest that pain remains a major determinant of treatment choice in rural populations. Patients often seek immediate relief rather than considering the long-term benefits of tooth preservation.

Influence of Treatment Cost

Treatment cost emerged as the most commonly reported barrier to dental care. Many participants indicated that the financial burden associated with restorative and endodontic procedures influenced their treatment decisions.

This finding agrees with the work of Tariq et al. (2024), who reported that monetary concerns were among the most important reasons patients selected extraction over root canal treatment. Khattak et al. (2023) also identified treatment cost as a major determinant of extraction preference.

The results indicate that economic limitations continue to affect dental treatment decisions in rural Southern Khyber Pakhtunkhwa. Even when patients prefer to preserve their natural teeth, financial constraints may force them to choose extraction.

Influence of Awareness and Education

The present study demonstrated that educational status was associated with treatment preference. Participants with higher educational levels were more likely to choose tooth preservation than extraction.

Similarly, Razak et al. (1991) reported that education significantly influenced treatment decisions. Individuals with higher educational attainment generally demonstrated a greater preference for preserving natural teeth.

Lack of awareness regarding available treatment options was also identified as a significant barrier. Many participants were unaware that severely painful teeth could often be preserved through endodontic treatment.

These findings emphasize the importance of patient education and awareness programs in promoting conservative dental care.

Geographic and Accessibility Barriers

Distance from dental facilities and transportation difficulties were frequently reported barriers among study participants.

Patients living in rural communities often face difficulties accessing specialized dental services. Long travel distances, transportation expenses, and limited availability of dental professionals may discourage patients from seeking timely treatment.

These barriers may contribute to delayed presentation, progression of dental disease, and increased extraction rates.

Influence of Previous Dental Experience

Previous dental experiences appeared to influence participants' treatment preferences. Participants who had positive experiences with restorative procedures were generally more willing to choose tooth preservation.

This finding supports previous studies indicating that patient satisfaction and treatment outcomes influence future healthcare decisions. Positive dental experiences can increase trust in conservative treatment approaches and improve treatment acceptance.

Demographic Factors and Treatment Preference

The study found significant associations between treatment preference and demographic variables such as age, gender, and education.

Younger participants generally showed a stronger preference for tooth preservation compared to older participants. This may be related to greater awareness, longer expected tooth retention, and stronger concern regarding aesthetics and function.

Female participants also demonstrated a greater preference for tooth preservation than male participants. Similar findings have been reported in previous studies investigating oral health attitudes and healthcare-seeking behavior.

Overall, demographic factors should be considered when designing interventions aimed at improving acceptance of conservative dental treatment.

5.3 Conclusion

Based on the findings of this study, it can be concluded that the majority of patients attending LMH Hospital Kohat, DHQ Hospital Bannu, and DHQ Hospital D.I. Khan preferred tooth preservation over extraction.

However, a considerable proportion of patients still preferred extraction because of several barriers affecting access to dental care and treatment decisions.

The major barriers identified in the study included:

- High treatment cost
- Fear of dental pain and dental procedures
- Lack of awareness regarding treatment options
- Distance from dental facilities
- Transportation difficulties
- Multiple treatment appointments
- Lack of time
- Limited availability of dental services

The study also demonstrated significant relationships between treatment preference and demographic characteristics, educational level, dental pain, treatment cost, and awareness.

Although most patients valued preserving their natural teeth, practical barriers frequently influenced the final treatment decision.

The findings highlight the need for improved access to affordable dental care, increased public awareness, and strengthened preventive and restorative dental services in rural Southern Khyber Pakhtunkhwa.

Recommendations

Based on the findings of the study, the following recommendations are proposed:

Recommendations for Dental Healthcare Providers

1. Dentists should offer comprehensive counseling on the advantages of tooth preservation when clinically indicated.

2. Patients should be informed of the treatment options available before making a decision about treatment.

3. Effective communication should address fear and misconceptions surrounding root canal treatment.

Recommendations for Healthcare Administrators

1. Increase access to affordable restorative and endodontic services in public health care facilities.

2. Rural hospitals should be allocated more dental specialists and equipment.

3. Outreach dental services should be provided in underserved communities.

Final Summary

The study demonstrated that most patients preferred preserving their natural teeth; however, financial, educational, geographic, and treatment-related barriers significantly influenced treatment decisions. Improving affordability, accessibility, awareness, and availability of conservative dental services may help reduce unnecessary tooth extractions and improve oral health outcomes among rural populations in Southern Khyber Pakhtunkhwa.

References

1. Akhter, R., Hassan, N. M. M., Aida, J., Zafar, K., & Saghir, A. (2013). Causes of tooth extraction at a tertiary care centre in Pakistan. *Journal of the Pakistan Medical Association*, 63(8), 1053–1057.
2. Basharat, S., & Shaikh, B. T. (2016). Primary oral health care: A missing link in public health in Pakistan. *Eastern Mediterranean Health Journal*, 22(9), 703–706. <https://doi.org/10.26719/2016.22.9.703>
3. Bergenholtz, G., Axelsson, S., Davidson, T., Frisk, F., Hakeberg, M., Kvist, T., Norlund, A., Petersson, A., & Portenier, I. (2013). Treatment of pulpal and apical disease: A systematic review. *SBU Systematic Review Summaries*. Swedish Council on Health Technology Assessment.
4. Broers, D. L. M., et al. (2022). Reasons for tooth removal in adults: A systematic review. *International Dental Journal*, 72(1), 52–60. <https://doi.org/10.1016/j.identj.2021.01.011>

5. Hoffmann, A., et al. (2025). Decision-making regarding dental treatments—What factors matter from patients' perspective? A systematic review. *Community Dentistry and Oral Epidemiology*.
6. Khan, A. A., et al. (2021). Prevalence of dental caries in Pakistan: A systematic review and meta-analysis. *BMC Oral Health*, 21, 450. <https://doi.org/10.1186/s12903-021-01802-x>
7. Maqsood, A., Sadiq, M. S., & others. (2013). Perceptions and myths regarding oral health care amongst strata of low socio-economic community in Karachi, Pakistan. *Journal of the Pakistan Medical Association*, 63(7), 886–889.
8. Razak, I. A., Jaafar, N., & Mat, M. (1991). Patients' preference for exodontia versus preservation in Malaysia. *Community Dentistry and Oral Epidemiology*, 19(6), 350–353. <https://doi.org/10.1111/j.1600-0528.1991.tb00185.x>
9. Sayed, M. E., Jurado, C. A., & Tsujimoto, A. (2020). Factors affecting clinical decision-making and treatment planning strategies for tooth retention or extraction: An exploratory review. *Nigerian Journal of Clinical Practice*, 23(12), 1629–1638. https://doi.org/10.4103/njcp.njcp_649_19
10. Shahkoohi, A. N., Alipour, V., Arabloo, J., & Meshkani, Z. (2025). Patient preferences and willingness to pay for dental services: A systematic review. *BMC Oral Health*, 25, 227. <https://doi.org/10.1186/s12903-025-05520-6>
11. Simon, L., et al. (2022). Perceived patient barriers to tooth-retaining treatment in Tanzania. *International Journal of Environmental Research and Public Health*, 19, 11620.
12. World Health Organization. (2022). *Global oral health status report: Towards universal health coverage for oral health by 2030*. World Health Organization.
13. World Health Organization. (2024). *Oral health*. World Health Organization.
14. World Health Organization. (2025). *Oral health: Fact sheet*. World Health Organization.
15. Akhter, R., Hassan, N. M. M., Aida, J., Zafar, K., & Saghir, A. (2013). Causes of tooth extraction at a tertiary care centre in Pakistan. *Journal of the Pakistan Medical Association*, 63(8), 1053–1057.

16. Ali, F. (2021). *Patients' preferences for tooth extraction versus manual and rotary endodontic treatment in Karachi, Pakistan: A willingness-to-pay study* [Master's thesis, Aga Khan University]. Aga Khan University eCommons.
17. Azarpazhooh, A., Dao, T., Figueiredo, R., Krahn, M., & Friedman, S. (2013). A survey of patients' preferences for the treatment of teeth with apical periodontitis. *Journal of Endodontics*, 39(12), 1534–1541. <https://doi.org/10.1016/j.joen.2013.07.012>
18. Azarpazhooh, A., Dao, T., Figueiredo, R., Krahn, M., & Friedman, S. (2016). Patients' values related to treatment options for teeth with apical periodontitis. *Journal of Endodontics*, 42(3), 365–370. <https://doi.org/10.1016/j.joen.2015.11.022>
19. Khattak, F., Paiker, S., & Khan, S. (2023). Evaluation of the reasons why patients prefer extraction and refuse root canal treatment. *Foundation University Journal of Dentistry*, 3(1).
20. Re, D., Ceci, C., Cerutti, F., et al. (2017). Natural tooth preservation versus extraction and implant placement: Patient preferences and analysis of the willingness to pay. *British Dental Journal*, 222, 467–471. <https://doi.org/10.1038/sj.bdj.2017.271>
21. Razak, I. A., Jaafar, N., & Mat, M. (1991). Patients' preference for exodontia versus preservation in Malaysia. *Community Dentistry and Oral Epidemiology*, 19(6), 350–353. <https://doi.org/10.1111/j.1600-0528.1991.tb00185.x>
22. Tariq, A., Kousar, N., & Saleem, T. (2024). An insight into patient preference of choosing extraction over root canal treatment: A cross-sectional study. *Pakistan Journal of Medical Research*, 62(4), 176–180.
23. World Health Organization. (2022). *Global oral health status report: Towards universal health coverage for oral health by 2030*. World Health Organization.
24. Assessing Knowledge, Attitude And Practice Regarding Personal Protective Equipment Among First Aid Centers And Clinics Of Peshawar City. (2025). *Pakistan Journal of Medical & Cardiological Review*, 4(4), 1411–1422. <https://pakjmcr.com/index.php/1/article/view/331>
25. EVALUATE THE PREVALENCE AND ASSOCIATED RISK FACTORS OF GASTRITIS AT DERA ISMAIL KHAN. (2026). *Pakistan Journal of Medical & Cardiological Review*, 5(2), 6670–6683. <https://doi.org/10.66021/pakmcr1399>