



Barriers to accessing primary healthcare for minor surgical procedures and their impact on tertiary care utilisation: prospective, cross-sectional study

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Abstract

Introduction: Minor surgical procedures are commonly performed in surgical emergency rooms within tertiary care hospitals, yet many of these cases could be managed in primary healthcare settings. Over-reliance on tertiary facilities for minor surgical care contributes to emergency department overcrowding and increased workload for surgical teams. This study aims to assess the barriers preventing patients from accessing minor surgical care at local healthcare centres and to identify the factors leading to their preference for tertiary-level care.

Methods: This prospective, observational, cross-sectional study was conducted in the surgical emergency room of Hayatabad Medical Complex, a tertiary care hospital in Peshawar, Pakistan, from 1 March 2023 to 30 March 2023. A total of 200 patients presenting with minor surgical conditions were recruited using a non-probability consecutive sampling technique. Data were collected through structured questionnaires and analysed using Statistical Package for Social Sciences (SPSS) version 22.0.

Results: Nearly all patients (99.5%) reported having access to a nearby healthcare facility, with Basic Health Units (46.0%) and District Headquarters Hospitals (31.5%) being the most common. However, patients sought care at the tertiary hospital due to the lack of minor operating theatres (20.0%), shortage of qualified doctors (18.0%), and resource limitations (17.5%). Difficulties in accessing tertiary care were reported by 75.0% of patients, with financial constraints (43.3%), domestic responsibilities (30.7%), and transportation issues (24.7%) being the most common barriers.

Conclusion: This study highlights significant gaps in the provision of minor surgical care at the primary healthcare level, leading to increased patient reliance on tertiary hospitals. Strengthening local healthcare infrastructure and improving access to minor surgical services at community levels could reduce the burden on emergency departments and ensure more efficient resource utilisation within tertiary care facilities.

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Introduction

The surgical emergency room is a critical component of a tertiary care hospital, responsible for managing a wide range of trauma cases, acute surgical emergencies, and urgent procedures. In addition to handling life-threatening conditions, emergency surgical teams frequently perform minor operative procedures, including the removal of ingrown toenails, excision of lumps such as lipomas and sebaceous cysts, and wound closure with sutures. As the number of emergency admissions continues to rise, the efficient management of these procedures is essential to ensuring optimal patient care and maintaining workflow efficiency¹.

Despite the routine nature of minor surgical procedures, their impact on emergency department workload is significant. Many of these cases could potentially be managed in primary care or outpatient settings, yet a substantial proportion of patients seek treatment at tertiary hospitals. The reasons for this pattern remain poorly understood but are likely to include limitations in local healthcare infrastructure, lack of access to adequately trained personnel, and patient preferences for tertiary-level care². Previous studies have highlighted the importance of optimising resource allocation within emergency departments to prioritise urgent cases while ensuring that minor procedures are managed effectively³. An unregulated surgical emergency room workflow can compromise the quality of care for critically ill patients, prolong waiting times, and contribute to overcrowding, which remains a persistent challenge in emergency medicine⁴. Equitable access to healthcare services and appropriate allocation of surgical resources are fundamental to improving overall healthcare system efficiency and patient outcomes⁵–⁶.

This study aims to identify the factors contributing to patient reliance on tertiary care hospitals for minor surgical procedures and the barriers they face in accessing primary healthcare services. By examining the reasons for this overflow, the study provides insights into healthcare access challenges and highlights potential areas for intervention to optimise surgical resource utilisation. Understanding these factors is essential for informing healthcare policy, improving the distribution of surgical services, and ensuring that emergency departments can focus on managing high-acuity cases while minor surgical care is effectively integrated into primary and community healthcare settings.

Methods

Study Design and Setting

This was a prospective observational cross-sectional study conducted in the Surgical Emergency Room of Hayatabad Medical Complex, a tertiary care hospital in Peshawar, Pakistan. The study was carried out over a one-month period from 1 March 2023 to 30 March 2023. The hospital provides emergency and specialised surgical care to a diverse patient population from both urban and rural areas.

Study Population

The study included all patients, regardless of age or sex, who presented with a minor surgical condition requiring intervention. Patients who declined to provide informed consent were excluded. Additionally, patients presenting with firearm injuries, acute trauma, or those seeking circumcision were excluded to maintain focus on minor surgical procedures.

Outcome Measures

The primary outcome measure was the proportion of patients who sought minor surgical care at a tertiary care hospital rather than at local healthcare facilities. Secondary outcome measures included factors influencing the choice of a tertiary care hospital, barriers to accessing minor surgical care at local health centres, and associations between patient demographics and difficulties faced in reaching a tertiary care facility.

Sample Size

A non-probability convenience sampling technique was used due to the nature of emergency room presentations. The sample size was calculated using an online sample size calculator, assuming a population size of 1,000,000, a disease prevalence of 20%, a margin of error of 5%, and a confidence level of 95%. The required sample size was determined to be 200 patients.

Data collection

Data were collected using a structured questionnaire developed in collaboration with biostatisticians and senior clinicians to ensure content validity. A pilot study was conducted before full data collection, and necessary modifications were made. Data were obtained through direct patient interviews and medical record reviews. The recorded variables included demographic factors such as age, sex, and residential location, as well as clinical characteristics including presenting complaints, comorbid conditions, diagnosis, investigations performed, type of



anaesthesia used, and procedure performed. Healthcare access variables encompassed the availability of local healthcare facilities, the type of healthcare facility near the patient's residence, reasons for seeking care at a tertiary hospital, and barriers to accessing local healthcare. Outcome variables included the primary and secondary outcome measures as previously defined.

Data Analysis

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 22.0. Descriptive statistics were calculated for all variables, with categorical data presented as frequencies and percentages. Inferential statistical tests were used to assess associations between categorical variables, including Fisher's exact test. A p-value of ≤ 0.05 was considered statistically significant. Graphs were constructed using SPSS and Microsoft Excel.

Ethics

The study was approved by the Institutional Review Board of Hayatabad Medical Complex (Certificate Number: 1141). Written informed consent was obtained from all participants prior to inclusion. Confidentiality and anonymity of patient data were maintained, with access restricted to the research team. All data were securely stored to ensure privacy and integrity. Participation was voluntary, and patients retained the right to withdraw from the study at any stage without consequence.

Operational Definitions

Minor surgical procedures were defined as interventions such as the removal of ingrown toenails, excision or removal of lumps (including lipomas and sebaceous cysts), wound suturing, debridement and dressing of diabetic foot ulcers, and simple wound dressing. Local anaesthesia referred to the administration of a local anaesthetic agent at the site of the procedure, including nerve blocks and peri-lesional anaesthesia. Affordability and accessibility challenges were defined as patient-reported financial, transport, or logistical difficulties in seeking surgical care. Healthcare facility limitations encompassed patient-reported deficiencies in minor surgical services, including the absence of necessary equipment, trained personnel, or minor surgical capabilities at local healthcare centres.

Results

Patient Characteristics

A total of 200 patients were included in the study, with an equal distribution of males and females. The majority of

patients were aged between 21 and 40 years (38.0%), followed by those between 41 and 60 years (29.0%). Most patients resided in Peshawar (39.5%), while others came from Charsadda (15.5%), Khyber Agency (13.0%), and Kohat (12.0%). More than half of the study population (57.0%) had no known comorbidities. Among those with underlying medical conditions, diabetes mellitus was the most prevalent (28.5%), followed by hypertension (9.0%). A small proportion of patients were lactating mothers (3.0%) or pregnant (1.5%), while 1.0% had both hypertension and diabetes mellitus. No patients reported chronic kidney disease or other significant comorbidities (Table 1).

Table 1: Sociodemographic characteristics of patients attending a Tertiary Care Hospital for minor surgical procedures.

| | Number | % | |
|----------------------|----------------------------------|-----|-------|
| Age (Years) | 1 - 20 | 39 | 19.5% |
| | 21 - 40 | 76 | 38.0% |
| | 41 - 60 | 58 | 29.0% |
| | Above 60 | 27 | 13.5% |
| Gender | Male | 100 | 50.0% |
| | Female | 100 | 50.0% |
| Residing City | Peshawar Except Hayatabad | 79 | 39.5% |
| | Charsadda | 31 | 15.5% |
| | Khyber Agency | 26 | 13.0% |
| | Kohat | 24 | 12.0% |
| | Mohmand Agency | 12 | 6.0% |
| | Sawabi | 8 | 4.0% |
| | Nowshera | 8 | 4.0% |
| | Mardan | 5 | 2.5% |
| | Karak | 3 | 1.5% |
| | Bannu | 3 | 1.5% |
| | Other | 1 | 0.5% |
| Comorbidities | None | 114 | 57.0% |
| | Diabetes mellitus | 57 | 28.5% |
| | Hypertension | 18 | 9.0% |
| | Lactating Mother | 6 | 3.0% |
| | Pregnancy | 3 | 1.5% |
| | Hypertension & Diabetes mellitus | 2 | 1.0% |

Presenting Complaints and Diagnoses

The most common presenting complaints were lumps (26.0%) and wounds (23.5%). Virology was the most frequently performed investigation (39.0%), followed by virology combined with ultrasound (34.0%). The most common diagnoses were abscesses (17.0%) and ingrown toenails (13.0%).

Procedures and Anaesthetic Techniques

A variety of minor surgical procedures were performed, with excision and removal of lumps (24.0%) and suture placement for wound closure (20.5%) being the most common. Peri-lesional anaesthesia was the most frequently administered anaesthetic technique (56.0%),

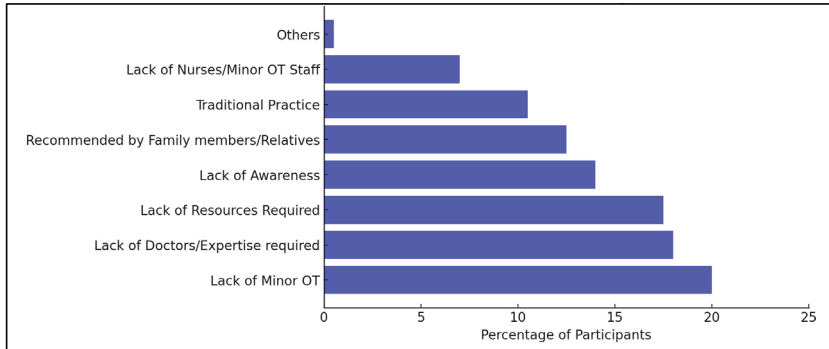


Figure 1: Reason for visiting a tertiary care hospital

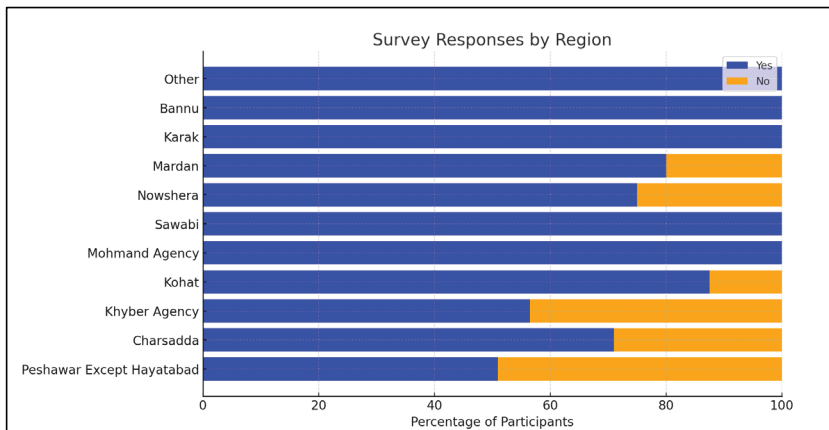


Figure 2: Difficulty faced in access to tertiary care hospital by residents of various regions

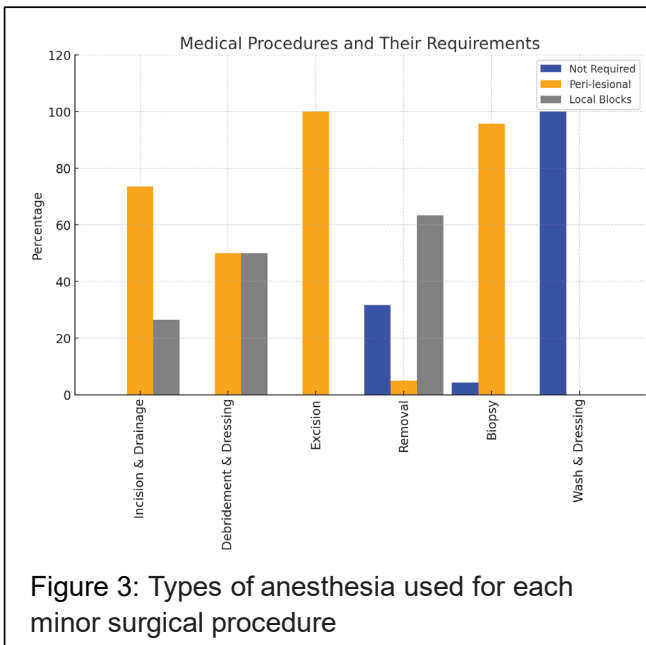


Figure 3: Types of anesthesia used for each minor surgical procedure

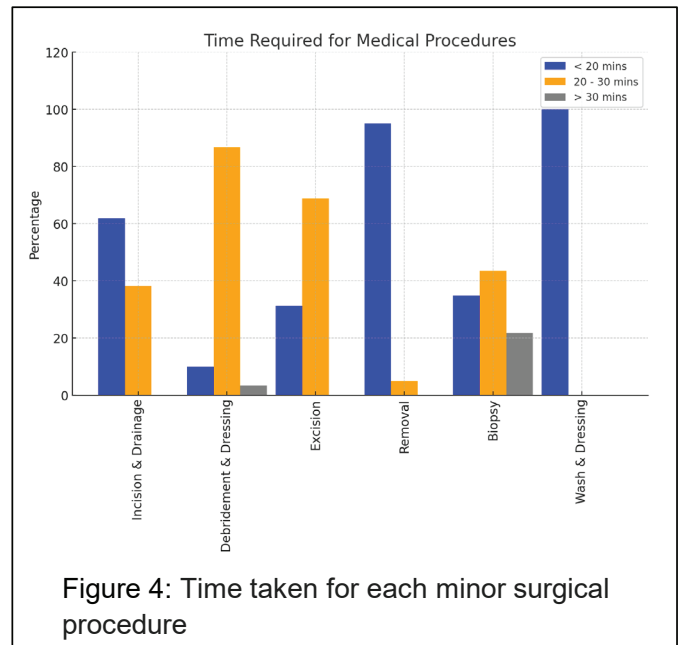


Figure 4: Time taken for each minor surgical procedure



particularly for excisions and wound dressings. In terms of procedural duration, 55.0% of procedures were completed in less than 20 minutes, 42.0% took between 20 and 30 minutes, and 3.0% required more than 30 minutes (Table 2).

Table 2: Presenting complaints, investigations, diagnosis and treatments.

| | N | % | |
|-----------------------|--|-----|-------|
| Presenting Complaints | Lumps | 52 | 26.0% |
| | Wound | 47 | 23.5% |
| | Pain | 34 | 17.0% |
| | Other | 33 | 16.5% |
| | Fever | 24 | 12.0% |
| | Ulcer | 9 | 4.5% |
| | Discharge | 1 | 0.5% |
| Investigations Done | Virology | 78 | 39.0% |
| | Virology & Ultrasound | 68 | 34.0% |
| | Not Required | 40 | 20.0% |
| | Virology & X ray | 13 | 6.5% |
| | CBC & Virology | 1 | 0.5% |
| | | | |
| Diagnosis | Abscess | 34 | 17.0% |
| | IGTN | 26 | 13.0% |
| | Wounds | 24 | 12.0% |
| | Lipoma | 21 | 10.5% |
| | Sebaceous Cyst | 19 | 9.5% |
| | Lymph node Biopsy | 16 | 8.0% |
| | Bed Sores | 15 | 7.5% |
| | Post Elective Surgeries Stitches | 15 | 7.5% |
| | DFU (Diabetic Foot Ulcer) | 15 | 7.5% |
| | Other Lumps | 9 | 4.5% |
| | Warts | 3 | 1.5% |
| | Pyogenic Granuloma | 3 | 1.5% |
| | | | |
| | | | |
| Procedure Done | Excision of lumps | 48 | 24.0% |
| | Removal of Stitches | 41 | 20.5% |
| | Incision & Drainage | 34 | 17.0% |
| | Debridement & Dressing | 30 | 15.0% |
| | Wash & Simple Dressing of minor wounds | 24 | 12.0% |
| | Biopsy | 23 | 11.5% |
| | Peri-lesional | 112 | 56.0% |
| | Local Blocks | 50 | 25.0% |
| | Not Required | 38 | 19.0% |
| | | | |
| Type of Anesthesia | < 20 mins | 110 | 55.0% |
| | 20 - 30 mins | 84 | 42.0% |
| | > 30 mins | 6 | 3.0% |

A significant association was found between the type of anaesthesia used and the procedure performed ($p < 0.001$). Peri-lesional anaesthesia was used in all excision procedures (100.0%) and in 95.7% of wound dressing procedures. Local nerve blocks were more commonly used for removal or excision of lumps (63.4%). Notably, 31.7% of incision and drainage procedures were performed without anaesthesia (Figure 3). The duration of procedures was also significantly associated with procedure type ($p < 0.001$). Most wound dressing procedures (100.0%) and removal procedures (95.1%) were completed in less than 20 minutes. However, debridement and dressing (86.7%) and excision (68.8%)

procedures more commonly took between 20 and 30 minutes (Figure 4, Table 6).

Table 3: Access to health facilities of patients coming to a tertiary care hospital for minorsurgical procedures

| | | N | % |
|---|---|-----|-------|
| Medical Facility Available Near Residence | Yes | 199 | 99.5% |
| | No | 1 | 0.5% |
| Type of Facility available | Local Dispensary | 31 | 15.5% |
| | BHU | 92 | 46.0% |
| | DHQ | 63 | 31.5% |
| | RHC | 14 | 7.0% |
| Reason for Visiting to a Tertiary Care Hospital | Lack of Minor OT | 40 | 20.0% |
| | Lack of Doctors/Expertise required | 36 | 18.0% |
| | Lack of Resources Required | 35 | 17.5% |
| | Lack of Awareness | 28 | 14.0% |
| | Recommended by Family members/Relatives | 25 | 12.5% |
| | Traditional Practice | 21 | 10.5% |
| | Lack of Nurses/Minor OT Staff | 14 | 7.0% |
| | Others | 1 | 0.5% |
| Faced any Difficulty Coming to a Tertiary Care Hospital | Yes | 150 | 75.0% |
| | No | 50 | 25.0% |
| Difficulties Faced by the Patients While Coming to the Tertiary Care Hospital | Affordability issue | 65 | 43.3% |
| | Domestic issue | 46 | 30.7% |
| | Arranging transport | 37 | 24.7% |
| | Others | 2 | 1.3% |

Table 4: Difficulties faced by the patients while coming to the tertiary care hospital

| | | Yes | Row % | No | Row % | P value |
|-----------|---------------------------|-----|--------|----|-------|---------|
| Residence | Peshawar Except Hayatabad | 48 | 60.8% | 31 | 39.2% | |
| | Charsadda | 22 | 71.0% | 9 | 29.0% | |
| | Kohat | 21 | 87.5% | 3 | 12.5% | |
| | Khyber Agency | 22 | 84.6% | 4 | 15.4% | |
| | Nowshetra | 6 | 75.0% | 2 | 25.0% | |
| | Sawabi | 8 | 100.0% | 0 | 0.0% | |
| | Mardan | 4 | 80.0% | 1 | 20.0% | |
| | Mohmand Agency | 12 | 100.0% | 0 | 0.0% | |
| | Bannu | 3 | 100.0% | 0 | 0.0% | |
| | Karak | 3 | 100.0% | 0 | 0.0% | |
| | Other | 1 | 100.0% | 0 | 0.0% | 0.017* |
| Gender | Male | 77 | 77.0% | 23 | 23.0% | 0.624 |
| | Female | 73 | 73.0% | 27 | 27.0% | |
| Age | 1 - 20 | 27 | 69.2% | 12 | 30.8% | |
| | 21 - 40 | 58 | 76.3% | 18 | 23.7% | |
| | 41 - 60 | 43 | 74.1% | 15 | 25.9% | |
| | Above 60 | 22 | 81.5% | 5 | 18.5% | 0.715 |



Table 5: Difficulties Faced by ThePatients While Coming to A Tertiary Care Hospital (N=150)

| | Arranging Transport | | Affordability Issue | | Domestic Issue | | Others | | P value | |
|-------------|---------------------------|-------|---------------------|-------|----------------|-------|--------|-------|---------|-------|
| | N | Row % | N | Row % | N | Row % | N | Row % | | |
| Residence | Peshawar Except Hayatabad | 10 | 20.8% | 20 | 41.7% | 17 | 35.4% | 1 | 2.1% | 0.930 |
| | Charsadda | 5 | 22.7% | 10 | 45.5% | 6 | 27.3% | 1 | 4.5% | |
| | Kohat | 5 | 23.8% | 9 | 42.9% | 7 | 33.3% | 0 | 0.0% | |
| | Khyber Agency | 7 | 31.8% | 8 | 36.4% | 7 | 31.8% | 0 | 0.0% | |
| | Nowshera | 2 | 33.3% | 2 | 33.3% | 2 | 33.3% | 0 | 0.0% | |
| | Swabi | 3 | 37.5% | 4 | 50.0% | 1 | 12.5% | 0 | 0.0% | |
| | Mardan | 2 | 50.0% | 0 | 0.0% | 2 | 50.0% | 0 | 0.0% | |
| | Mohmand Agency | 3 | 25.0% | 5 | 41.7% | 4 | 33.3% | 0 | 0.0% | |
| | Banu | 0 | 0.0% | 3 | 100.0% | 0 | 0.0% | 0 | 0.0% | |
| | Karak | 0 | 0.0% | 3 | 100.0% | 0 | 0.0% | 0 | 0.0% | |
| | Other | 0 | 0.0% | 1 | 100.0% | 0 | 0.0% | 0 | 0.0% | |
| Gender | Male | 19 | 24.7% | 36 | 46.8% | 20 | 26.0% | 2 | 2.6% | 0.360 |
| | Female | 18 | 24.7% | 29 | 39.7% | 26 | 35.6% | 0 | 0.0% | |
| Age (Years) | 1 - 20 | 9 | 33.3% | 9 | 33.3% | 8 | 29.6% | 1 | 3.7% | 0.353 |
| | 21 - 40 | 12 | 20.7% | 24 | 41.4% | 21 | 36.2% | 1 | 1.7% | |
| | 41 - 60 | 8 | 18.6% | 21 | 48.8% | 14 | 32.6% | 0 | 0.0% | |
| | Above 60 | 8 | 36.4% | 11 | 50.0% | 3 | 13.6% | 0 | 0.0% | |

Table 6: Type of Anesthesia Used and Time Taken for Each Procedure

| | Procedure (N/Column %) | Incision & Drainage (n=34) | Debridement & Dressing (n=30) | Excision (n=48) | Removal (n=41) | Biopsy (n=23) | Wash & Dressing (n=24) | P value |
|--------------------|------------------------|----------------------------|-------------------------------|-----------------|----------------|---------------|------------------------|---------|
| Type of Anesthesia | Not Required | 0 (0.0%) | 0 (0.0%) | 0 (0.0%) | 13 (31.7%) | 1 (4.3%) | 24 (100%) | <0.001* |
| | Peri-lesional | 25 (73.5%) | 15 (50.0%) | 48 (100%) | 2 (4.9%) | 22 (95.7%) | 0 (0.0%) | |
| | Local Blocks | 9 (26.5%) | 15 (50.0%) | 0 (0.0%) | 26 (63.4%) | 0 (0.0%) | 0 (0.0%) | |
| Time Taken | < 20 mins | 21 (61.8%) | 3 (10.0%) | 15 (31.3%) | 39 (95.1%) | 8 (34.8%) | 24 (100%) | <0.001* |
| | 20 - 30 mins | 13 (38.2%) | 26 (86.7%) | 33 (68.8%) | 2 (4.9%) | 10 (43.5%) | 0 (0.0%) | |
| | >30mins | 0 (0.0%) | 1 (3.3%) | 0 (0.0%) | 0 (0.0%) | 5 (21.7%) | 0 (0.0%) | |

Access to Local Healthcare Facilities

Almost all patients (99.5%) reported having access to a healthcare facility near their residence. Basic Health Units were the most commonly available (46.0%), followed by District Headquarters Hospitals (31.5%) and local dispensaries (15.5%). Despite the presence of these facilities, patients sought treatment at the tertiary care hospital due to several barriers to minor surgical care. The most frequently cited reasons included the absence of a minor operating theatre (20.0%), a shortage

of qualified doctors or required expertise (18.0%), and a lack of resources necessary for minor surgical procedures (17.5%) (Figure 1). Other reasons included a lack of awareness, recommendations from family members, and the absence of nursing or minor operating theatre staff.

Barriers to Accessing Tertiary Care

Three-quarters of patients (75.0%) reported experiencing difficulties in reaching the tertiary care hospital. The most common challenge was financial constraints (43.3%),



followed by domestic responsibilities (30.7%) and difficulties arranging transportation (24.7%). Patients from Swabi, Mohmand Agency, Bannu, and Karak were significantly more likely to report difficulties in accessing the tertiary care hospital, with all patients from these areas reporting difficulties compared to 60.8% of patients from Peshawar ($p = 0.017$) (Figure 2). There was no significant association between gender and difficulties in access, with 77.0% of males and 73.0% of females reporting challenges ($p = 0.624$). Similarly, age was not significantly associated with difficulties accessing care ($p = 0.715$). Among the types of difficulties reported, there was no significant association between residence and specific barriers such as transportation issues, financial challenges, or domestic responsibilities ($p = 0.930$). Gender ($p = 0.360$) and age ($p = 0.353$) were also not significantly associated with the type of difficulties encountered (Table 5).

Discussion

The study found that the majority of patients seeking minor surgical care at a tertiary hospital had access to local healthcare facilities but faced significant barriers, including the absence of minor operating theatres, shortages of qualified doctors, and lack of necessary resources. Financial constraints, domestic responsibilities, and transportation difficulties were the most commonly reported challenges in accessing care. The findings suggest that, despite the availability of local healthcare services, patients continue to rely on tertiary care facilities for minor surgical procedures. Excision and removal of lumps were the most frequently performed procedures, and peri-lesional anaesthesia was the most commonly used technique. The study also demonstrated that sociodemographic factors such as gender and age were not significantly associated with access difficulties, while patients from more remote areas reported significantly greater challenges in reaching tertiary care. These findings highlight the need to strengthen primary healthcare infrastructure to improve access to minor surgical care and reduce the burden on tertiary hospitals.

These results align with existing literature that emphasises the benefits of providing minor surgical procedures in primary care settings. Previous research has demonstrated that minor surgery performed by general practitioners in structured community-based settings is both safe and effective. Botting et al. found that minor procedures carried out within a managed framework by general practitioners led to positive patient outcomes and reduced waiting times for surgical interventions^{7□}. Similarly, Lowy et al. reported that increasing general practitioner involvement in minor surgery improved

access to care without significantly diverting cases from hospitals, reinforcing the importance of integrating minor surgical services into primary healthcare⁹. O’Cathain et al. further explored the economic and logistical benefits of community-based minor surgery, showing that these services not only reduce hospital workloads but also address previously unmet patient needs, leading to overall improvements in healthcare accessibility¹⁰. The range of minor surgical procedures that can be safely performed in general practice has also been examined in previous studies. Clarke and Maguire reported that general practitioners frequently carried out procedures such as skin lesion excisions, joint aspirations, and cryosurgical ablation, with high rates of clinical and histological concordance and minimal complications¹¹. A study in Ireland identified the removal of ingrown toenails as the most common minor surgical procedure performed in primary care¹². In contrast, our study found that excision and removal of lumps were the most frequently performed procedures in a tertiary hospital setting, suggesting that minor surgical case distribution may vary based on regional healthcare infrastructure and patient preferences.

The findings support the need to enhance the capacity of primary healthcare facilities to manage minor surgical cases. The increased workload on tertiary care hospitals is, in part, due to the lack of minor surgical capabilities in local healthcare centres. Strengthening community-based services could help alleviate this burden and ensure that tertiary care resources are reserved for more complex surgical cases. Expanding training programmes for general practitioners, equipping local healthcare centres with minor operating theatres, and raising public awareness about the availability of minor surgical services in primary care could help improve access and reduce unnecessary referrals to tertiary hospitals. Further research is needed to explore patient perceptions of primary care surgical services and to assess the impact of potential interventions aimed at decentralising minor surgical care.

This study has several limitations. As it was conducted in a single tertiary hospital, the findings may not be generalisable to other regions with different healthcare structures. The study period was relatively short, which may limit its ability to capture seasonal variations in patient presentations. Additionally, patient-reported difficulties in accessing care were subject to recall bias and observer variability, which may have influenced the accuracy of the data. Despite these limitations, the study provides valuable insights into the barriers faced by patients in accessing minor surgical care and highlights the need for targeted healthcare system improvements.



This research contributes to understanding the factors influencing healthcare-seeking behaviour for minor surgical conditions and provides evidence supporting the expansion of community-based surgical services. Addressing the identified barriers could lead to a more equitable and efficient distribution of healthcare resources, ultimately reducing the strain on tertiary care facilities while improving access to timely and appropriate surgical care for patients.

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