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BARRIERS TO SURGICAL CARE ACCESS IN PAKISTAN AND THEIR IMPACT ON PATIENTS

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Abstract

Background: *Restricted access to surgical care is a significant determinant of increased morbidity and mortality in low- and middle-income countries (LMICs). In Pakistan, various factors such as economic constraints, lack of awareness, and inadequate healthcare infrastructure contribute to this issue.*

Objectives: *This study aims to identify and analyze the barriers to accessing surgical care in Pakistan and their impact on patients, with a focus on understanding the delays in seeking and receiving surgical treatment.*

Methodology: *A cross-sectional survey was conducted from February to April 2010 at Indus Hospital in Karachi, Pakistan. The study included 202 patients scheduled for elective surgeries involving general anesthesia. Data were collected using a standard questionnaire in Urdu, covering sociodemographic information, symptom severity, and reasons for delays in seeking surgical care. Statistical analysis was performed using SPSS software.*

Results: *Out of 202 patients, 199 completed the survey. The median age was 34 years for females and 30 years for males, with 72.4% being male. The study found significant delays in seeking surgical care, with financial constraints, lack of awareness, and geographical barriers being the primary reasons. Women experienced longer delays compared to men. The median symptom duration was 7 months for women and 4 months for men.*

Conclusion: *Barriers to accessing surgical care in Pakistan include economic constraints, lack of awareness, and geographical challenges. Addressing these issues through public education and improved healthcare infrastructure is essential to reduce delays and improve surgical outcomes.*

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INTRODUCTION

Over the last few years, restricted access to surgical treatment has been identified as a key determinant of increased rates of illness and mortality, particularly in low- and middle-income nations. As per the Global Burden of Disease study, approximately 11 percent of all diseases can be successfully treated with surgery.[1] This figure will, in the course of time, increase with respect to evolving patterns of health since the rising trend in ailments such as heart diseases, stroke, cancer, and road traffic-related injuries can be observed.[2] Surgeries have always taken a central part in critical regions of public health. For instance, numerous obstetric complications may be dealt with effectively only via immediate surgical

interventions. Indeed, timely and correct surgical care is likely to produce a greater impact in decreasing deaths among mothers compared to routine prenatal check-ups and surveillance.[3] One of the most significant problems is the unequal provision of surgical care, as pointed out by the much lower rate of surgeries performed in low-income nations compared to the wealthier countries.

It is particularly problematic in low- and middle-income nations, which happen to harbor the majority of the world's inhabitants. Most regions in these settings have widely described difficulties with providing surgical care. Some of these include insufficient facilities, sparse resources for medicine, and an abysmal deficiency of skilled human health resources.[5] To close the vast gap between untreated surgical conditions and increasing demands for better surgical care, the World Health Organization developed the Global Initiative for Emergency and Essential Surgical Care (GIEESC). The aim of this initiative is to improve the quality and safety of emergency and essential surgical services in resource-poor health facilities. GIEESC development represents a breakthrough in solving the challenges facing health systems and health care providers with the offer of an international framework that can be adapted in low- and middle-income countries.

Regardless of this, patient-level challenges still have a major influence on whether or not people use the available surgical services. In addition to augmenting systems and training providers, it is also important to understand perceived and actual barriers that discourage people from seeking care. According to the results of the Pakistan Demographic and Health Survey, the main reasons why people shun professional medical treatment are the expense, distance or lack of transport, and a belief that no treatment is necessary. Identification of these factors is important before building or rebuilding a surgical healthcare system.[6]

In rural Pakistan, a population-based survey determined that a variety of factors stop individuals from obtaining surgical care. These are lack of education and awareness levels, cultural beliefs, poverty, and insufficient capacity within the healthcare system.[7] Few studies have been done to estimate unmet need for surgical care in developing nations. A study published in 1987 was one such study, where a population-based survey was conducted in the districts covered by district hospitals across Pakistan.[8] It showed that Pakistan had a surgery rate of just 124 operations for every 100,000 population, and just 1.5 to 9 percent as compared to that of the thenWestern countries. Even the number of available surgeons was also much smaller in number at a mere 0.36 surgeons per 100,000 individuals, while a surgeon for 80 individuals is available in America. A more recent critique of the challenges in providing surgical services in Pakistan highlighted that the acute shortage of medical professionals is just one of multiple reasons for the poor situation for surgical services in Pakistan.[9] Efforts are being attempted to resolve this problem by promoting the immigration of healthcare workers on favorable terms. This is, however, aggravating the already acute shortage of healthcare workers in most developing nations, such as Pakistan.[10] The city has an estimated population of between 13 and 20 million, with the wider metropolitan area accounting for around 25 million inhabitants. This is a multi-ethnic, diverse city that is growing rapidly due to a combination of internal migration from rural districts, refugee inflows, and natural increase.[11]

Litrature Review

Zafar SN, Fatmi Z, Iqbal A, Channa R, Haider AH, *et al.*,conduct the study employed data from the National Health Survey of Pakistan to investigate disparities in access to surgical care in Pakistan. The authors discovered that only 3.2% of the adults interviewed had undergone abdominal surgery, and with robust disparities among different population groups. Urban residents were more likely to have been operated on than rural residents, and age, gender, and economic status also determined access to surgical care. Overall, the study concluded that access to surgical care in Pakistan is inadequate and not equally distributed, most likely resulting in preventable illness and death. [12]

Samad L, Ashraf MN, Mohammad AA, Fatima I, Fowler Z, Albutt K, Latif A, Meara JG, Pigeolet M, *et al.*, conduct this cross-sectional study assessed access and cost burden for patients in need of essential surgical care in Pakistan, surveying 526 patients at 13 public tertiary care facilities. 1. It was found that a

high percentage of patients have long travel times to access surgical care, with 73.8% having a 2-hour access to facilities, and that the majority (53%) were poor at baseline. 2. Besides, 79.5% and 70.3% of the patients experienced catastrophic and impoverishing health spending, respectively, indicating that patients paying for surgical treatment incur a significant economic burden in Pakistan.[13]

Zafar and McQueen, *et al.*, point out that surgical healthcare is increasingly being recognized as a significant public health problem, but one that is faced with inequalities, especially in developing nations such as Pakistan, where the poorest segments of society receive the least amount of surgical care. Pakistan has an estimated 17 million annual deficit of surgeries, with surgical disease resulting in more deaths than infectious diseases, and excessive rates of trauma and maternal mortality. The health infrastructure suffers from corruption and neglect, restraining access to surgery for the indigent and rural populations, and the nation also lacks a healthcare workforce and suffers from an inadequate national policy toward surgical disease and prevention.[14]

Thobani H, Shah MM, Ehsan AN, Khan S, *et al.*, highlight the issue of equitable access to essential surgery for stateless individuals in developing countries like Pakistan, where structural deficiencies such as the lack of population data, absent health coverage policies, and minimal qualitative data on barriers to surgical service delivery hinder their access to necessary care, even when the infrastructure exists. The authors emphasize the need for more research and targeted interventions to address these systemic issues and improve surgical care access for stateless populations, arguing that addressing these barriers through rigorous empirical and qualitative research is essential.

Materials and methods

Study design:

In February to April 2010, a cross-sectional survey was conducted in Indus Hospital in Karachi, Pakistan. Patients scheduled for planned surgery involving general anesthesia in various surgical departments were included in the study. The participants were enrolled sequentially one by one, and informed consent was taken prior to the investigation. A standard questionnaire prepared in Urdu—the national language—was employed to obtain data. The survey did not include patients who were receiving emergency procedures or those with trauma injuries. In children, the parents filled out the questionnaire on their behalf.

Sample Size:

Since there was scant information from Pakistan and neighboring nations regarding delays in surgical conditions for seeking medical care, the sample size was computed using Slovin's formula. This was out of the volume of surgeries undertaken at the hospital during the previous three months before data collection commenced. A 7% error margin and an estimated 10% non-response rate were added to the computation, and this resulted in a required sample of 202 patients.

Data collection:

The study collected information on participants' sociodemographic background, their symptoms and the severity they thought they were. Because literacy levels are low in the population, interviewers read out the questionnaire to the participants and gave explanations where appropriate. Severity of the symptoms was ranked on the basis of the patient's own estimation as mild (no interference in activities), moderate (some impairment), and severe (inability to carry out activities). The patients were also asked about the treatment obtained after onset of the symptoms. The time between onset of symptoms and initial contact with any health professional was termed the "first interval," and that between being listed for surgery and the operation being done as the "second interval." Any time lag in both intervals was estimated as perceived by the patients, and open-ended questions were asked to determine their perception and reasons for delays.

Data analysis and quality control measures:

The research team gave individual codes to open-ended questions and responses which provided additional information. All the information was entered once in Microsoft Excel prior to being moved to SPSS software (version 16; SPSS Inc., Chicago, IL, USA) for analysis. Statistical analysis using the chi-square test and analysis of variance

(ANOVA) was used to uncover potential associations. Odds ratios were likewise computed to determine whether there was any association between gender and several variables of interest.

Results

During the study interval, 202 interviews were finalized, but three were excluded from the analysis as they had incomplete or missing information. The relatives or patients presented a median reported age of 34 years for females and 30 years for males **(Table 1).** About three-quarters of the patients were male (72.4%). The length of patient-reported symptoms also varied widely, between one day and 30 years, with a median of five months. Male patients were admitted most commonly for orthopedic surgery (60%), while female patients were admitted most for fewer specialties, such as orthopedics (38%), urology (19%), pediatric surgery (16.1%), and general surgery (12.6%) (**Table 1**). About 25% of the patients classified their symptoms as either mild or moderate. Moreover, 31% stated that they had severe symptoms at the beginning. Additionally, 13% described an onset of symptoms that were initially mild but developed to the level of moderate, and 5% reported a development of symptoms from moderate to severe. A lesser group, 2%, reported an escalating development from mild to moderate to severe symptoms. Median symptom duration was longer in women at 7 months, compared to 4 months in men **(Table 1).**

Nearly 78% of male patients indicated that a hospital was the site where they first received treatment for their illness, whereas just 58% of the female patients said the same. Nearly 33% of females and nearly 18% of males consulted a general physician (GP) as their first source of advice on treatment. In total, more than 92% of the respondents were first advised to have surgery when they were under treatment in a hospital environment **(Table 2).** Women were more likely to have a time gap between the onset of symptoms and the first visit to a healthcare provider, and 52.7% of women had delays compared with 37.5% of men (odds ratio [OR] 1.9). Two factors were identified to be strongly related with delays in this initial time frame: lack of awareness about existing treatment possibilities (OR 3.8; 95% confidence interval [CI] 1.4–10.3) and poor comprehension of the severity or implications of the condition (OR 2.4; 95% CI 1.2–4.8) **(Table 3).** A delay in the second interval was noted by 123 patients (61.8%). There was no correlation between the severity of symptoms at presentation and the delay in this interval. The reasons for delays in the second interval are explained in detail **(Table 3).**

Financial constraints were the most cited cause of delay in the second period, noted by 29.6% of patients, followed by environmental reasons (10.6%) like access problems, geographical restrictions, and city noise. A higher percentage of women (73%) than men (58%) felt a delay between the initial time they were advised to undergo surgery and the procedure itself. Women were also almost 4.7 times more likely than men to have co-existing medical conditions (95% CI 1.5–15.1). Patients' reasons for delays were noted verbatim as stated, with some being translated into English and given in *Table 4* to demonstrate the complex issues for the patients **(Table 4).**

Table 1: Baseline demographics and presenting complaints of 199 patients admitted for surgery at Indus Hospital.

Baseline Characteristics	All Patients (n = 199)	Male (n = 144, 72.4%)	Female (n = 55, 27.6%)
Age (years)			
Mean ± SD	33.3 ± 22.0	32.0 ± 21.7	36.8 ± 22.5
Median (range)	30 (1–102)	30 (1–102)	34 (0–80)
Surgical Specialty for Admission			
Orthopedics	87 (43.7%)	54 (37.8%)	33 (60.0%)
General Surgery	23 (11.6%)	18 (12.6%)	5 (9.1%)
Urology	31 (15.6%)	27 (18.9%)	4 (7.3%)
Pediatric Surgery	28 (14.1%)	23 (16.1%)	5 (9.1%)
Otolaryngology	4 (2.0%)	3 (2.1%)	1 (1.8%)
Ophthalmology	2 (1.0%)	2 (1.4%)	–
Plastic Surgery	1 (0.5%)	–	1 (1.8%)
Cardiothoracic Surgery	6 (3.0%)	5 (3.5%)	1 (1.8%)
Unspecified	16 (8.0%)	11 (7.7%)	5 (9.1%)
Symptomatic Days (Ever)			
Mild Only	51 (25.6%)	40 (27.8%)	11 (20.0%)
Moderate Only	50 (25.1%)	36 (25.0%)	14 (25.5%)
Severe Only	61 (30.7%)	44 (30.6%)	17 (30.9%)
Mild → Moderate	25 (12.6%)	18 (12.5%)	7 (12.7%)
Moderate → Severe	9 (4.5%)	6 (4.2%)	3 (5.5%)
Mild → Moderate → Severe	3 (1.5%)	–	3 (5.5%)
No. of Days with Last Symptom (Mean ± SD)			
Mild	1,468 ± 2,425	1,368 ± 2,290	1,868 ± 3,012
Moderate	568 ± 1,021	557 ± 1,087	595 ± 854
Severe	421 ± 1,218	231 ± 680	832 ± 1,890
Overall	742 ± 1,609	670 ± 1,497	931 ± 1,874
Duration of Symptoms			
Mean ± SD	2.9 ± 5.6 years	2.5 ± 5.1 years	4.2 ± 6.7 years
Median (Range)	5 months (1 day–30 years)	4 months (1 day–30 years)	7 months (4 days–28 years)

Table 2: Actual and perceived delay in seeking treatment (n = 199)

Parameter	Total (n = 199)	Male	Female
First Delay Interval: Duration between Onset of Symptoms and Seeking Treatment Advice			
Mean ± SD	1.2 ± 3.7 years	1.1 ± 3.4 years	1.6 ± 4.5 years
Median (Range)	0 day (0–25.7 years)	0 day (0–25.7 years)	10 days (0–5.6 years)
Hospital Delay (Mean ± SD in days)			
Indus Hospital	512 ± 1,505	610 ± 1,688	178 ± 437
Other in Karachi	258 ± 656	185 ± 584	519 ± 838
Other Outside Karachi	772 ± 2,028	921 ± 2,304	285 ± 540
Delay by Provider Type (Mean ± SD in days)			
General Physician	632 ± 1,857	316 ± 867	1,089 ± 2,692
Traditional Healers (Other)	108 ± 186	45 ± 77	184 ± 257
First Treatment Advice Point			
Hospital	143 (72.7%)	111 (77.6%)	32 (58.2%)
└ Indus Hospital	53 (37.1%)	41 (36.9%)	12 (37.5%)
└ Other in Karachi	73 (51.0%)	57 (51.4%)	16 (50.0%)
└ Other Outside Karachi	17 (11.9%)	13 (11.7%)	4 (12.5%)
General Physician	44 (22.2%)	26 (18.2%)	18 (32.7%)
Others	11 (5.6%)	6 (4.2%)	5 (9.1%)
First Venue Where Surgery Was Advised			
Hospital	182 (91.5%)	137 (95.1%)	45 (81.8%)
└ Indus Hospital	105 (57.7%)	78 (56.9%)	27 (60.0%)
└ Other in Karachi	61 (33.5%)	45 (32.8%)	16 (35.6%)
└ Other Outside Karachi	16 (8.8%)	14 (10.2%)	2 (4.4%)
General Physician	15 (7.5%)	7 (4.9%)	8 (14.5%)
Others	2 (1.0%)	0	2 (3.6%)
Patient-Perceived Delay During First Interval (Mean ± SD in days)			
Yes	952 ± 1,960	903 ± 1,864	1,042 ± 2,159
No	78 ± 404	80 ± 444	73 ± 225
Patient-Perceived Delay During Second Interval (Mean ± SD in days)			
Yes	414 ± 938	421 ± 944	401 ± 936
No	98 ± 255	114 ± 282	35 ± 52

Table 3: Perceptions and reasons for delay and their association with sex (n = 199)

Perception/Reason	Total (%)	Male (%)	Female (%)	OR (95% CI)
Patient Perception				
Perceived delay during first interval	41.7%	37.5%	52.7%	1.9 (1.0–3.5)
Perceived delay during second interval	61.8%	57.6%	72.7%	2.0 (1.0–3.9)
Reasons for First Interval Delay				
Self-related delay				
Family issues	2.5%	2.1%	3.7%	1.8 (0.3–11.0)
Lack of knowledge about treatment options	9.0%	5.6%	18.5%	3.8 (1.4–10.3)
Lack of knowledge about disease implications	21.6%	17.5%	33.3%	2.4 (1.2–4.8)
Thought it would self-resolve	4.0%	4.2%	3.7%	0.9 (0.2–4.5)
Co-morbid conditions	1.0%	1.4%	0.0%	–
Financial problems	19.1%	19.6%	18.5%	0.9 (0.4–2.1)
Environment-related delay				
Geographic/access issues/city disturbances	5.6%	6.3%	3.7%	0.6 (0.1–2.7)
Reasons for Second Interval Delay				
Self-related delay				
Family issues	2.5%	2.1%	3.8%	1.8 (0.3–11.3)
Lack of knowledge about treatment options	3.5%	3.5%	3.7%	1.1 (0.2–5.6)
Lack of knowledge about disease implications	9.5%	8.4%	13.0%	1.6 (0.6–4.4)
Thought it would self-resolve	1.0%	0.7%	1.9%	2.7 (0.2–43.6)
Co-morbid conditions	6.5%	3.6%	14.8%	4.7 (1.5–15.1)
Religious beliefs	1.0%	1.4%	0.0%	–
Financial	29.6%	27.7%	37.0%	1.5 (0.8–3.0)
Got apprehensive/did not follow advice	1.5%	0.7%	3.7%	5.5 (0.5–1.5)
Environment-related delay				
Geographic/access issues/city disturbances	10.6%	9.1%	14.5%	1.7 (0.7–4.4)
Hospital/Medical-related delay				
Nonavailability of beds/space	7.5%	8.4%	5.6%	0.6 (0.2–2.4)
Other hospital/doctor-related delays	3.0%	1.4%	7.3%	5.5 (1.0–31.1)
Misdiagnosis/incorrect treatment	1.5%	2.1%	0.0%	1.4 (1.3–1.5)

OR: odds ratio (the reference category is "male")

Table 4: Patient-Cited Reasons for Delays in Seeking Treatment

Category	Patient Quote
Lack of Symptoms/Pain	"I was not feeling pain and therefore did not think it would be a serious issue."
Financial Hardship	"My husband is the sole bread earner in the family. We have five kids, and we can either eat or pay our medical bills."
Medical Advice at Home	"My husband is a doctor, and he kept prescribing pain killers, which would make the pain go away for a short while and I would not feel the need to go to a hospital."
Conflict/Geopolitical Instability	"We live in Swat, which is practically in a state of war. We are normally locked in our houses and only step out for emergencies."
Loss of Employment Due to Treatment	"Indus Hospital is paying for the surgery now, but I have lost my job because of the time I spend here."
Fear of Disability	"I am a diabetic patient and have been advised to get my diabetic foot amputated. I am not prepared to live a life of dependency."
Negative Experiences with Other Hospitals	"I was mistreated by XXX Hospital who kept delaying my surgery even after I had paid for it."
Traditional/Alternative Medicine	"I was going to a hakeem who kept giving me medication that I thought would heal my broken arm."
Lack of Trust in Local Services	"I live in Hyderabad, but I was not satisfied with the medical services in the area. I travel all the way to Karachi to come to Indus."
Household Responsibilities/Apprehension from Family	"My husband is apprehensive about me going to surgery because I look after the house."
Cultural Taboos & Shyness	"I have hypospadias, and I was too shy to share this problem with my family because of cultural taboos. Because I was getting married I decided to get appropriate treatment."

Discussion

The findings of this study highlight significant barriers to accessing surgical care in Pakistan, which have profound implications for patient outcomes and overall public health. The delays in seeking and receiving surgical treatment are influenced by a complex interplay of economic, social, and geographical factors, which need to be addressed to improve healthcare delivery in the region.

One of the most prominent barriers identified in this study is the financial burden associated with surgical care. A substantial proportion of patients reported delays due to the inability to afford treatment costs. This is consistent with previous studies that have shown catastrophic health spending and impoverishing effects on patients seeking surgical care in LMICs. [5] The economic constraints not only delay the initial consultation but also prolong the time between being advised to undergo surgery and the actual procedure. This financial barrier is exacerbated by the lack of insurance coverage and inadequate government support for healthcare expenses, necessitating urgent policy interventions to subsidize surgical care and provide financial assistance to low-income families.

The study also underscores the critical role of awareness and education in accessing surgical care. Many patients delayed seeking treatment due to a lack of knowledge about the severity of their condition and available treatment options. This finding aligns with the literature that emphasizes the importance of public education in bridging information gaps. [10] Enhancing health literacy through community outreach programs and educational campaigns can empower individuals to recognize the need for timely medical intervention and reduce delays in seeking care. Additionally, training healthcare providers to effectively communicate the importance of surgical treatment

can mitigate patient apprehension and improve adherence to medical advice.

Geographical challenges, including distance from healthcare facilities and lack of transportation, were significant factors contributing to delays in surgical care. Patients from rural areas and regions with poor infrastructure faced considerable difficulties in accessing hospitals, which is a common issue in LMICs. The study's findings suggest that improving transportation networks and establishing more healthcare facilities in underserved areas can alleviate these barriers. Mobile clinics and telemedicine services can also play a crucial role in extending surgical care to remote populations, ensuring that geographical constraints do not hinder access to essential medical services.

The study revealed notable gender disparities in accessing surgical care, with women experiencing longer delays compared to men. This disparity is influenced by several factors, including cultural beliefs, household responsibilities, and lower socioeconomic status. Women were more likely to delay seeking treatment due to family obligations and apprehension about undergoing surgery. Addressing these gender-specific barriers requires targeted interventions that consider the unique challenges faced by women. Empowering women through education, providing childcare support during hospital visits, and promoting gender-sensitive healthcare policies can help reduce these disparities and ensure equitable access to surgical care.

The inadequacy of healthcare infrastructure, including the shortage of medical professionals and limited hospital capacity, was a significant barrier to timely surgical care. The acute shortage of surgeons and other healthcare workers in Pakistan exacerbates the problem, leading to prolonged waiting times and delays in treatment. Strengthening healthcare infrastructure by increasing the number of trained medical professionals, expanding hospital facilities, and improving resource allocation is essential to address these issues. Collaborative efforts with international organizations and investment in healthcare training programs can enhance the capacity of the healthcare system to meet the growing demand for surgical services.

Limitations:

Convenience sampling was used in the present study, and thus patients interviewed may not necessarily reflect issues encountered by the larger population of the region. The relatively smaller sample size might also have omitted some influencing factors, particularly when performing subgroup analysis. Thus, we recommend that the method and results of this study be extended and implemented in a larger, national survey to more fully appreciate the extent of this significant issue.

Conclusions:

Delays to access surgical care commonly arise due to factors such as unawareness of the disease and treatment, economic constraints, distance from a health facility, lack of transportation, cost of travel, and religious or cultural beliefs. Most patients delay seeking care until their condition is advanced, potentially heightening the risk of surgical or postoperative complications. To tackle these problems, two major strategies are suggested: strengthening public education to bridge information gaps and improving healthcare infrastructure to bring services closer and within reach and affordable near patients' homes.

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