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Delayed Elective Surgery and Factors Associated Among Adult Postoperative in Patients at Centre Hospitaliere Universitaire De Kigali, Rwanda

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Abstract: **Surgical conditions constitute a major global health burden, accounting for nearly 30% of the global disease burden, while more than 5 billion people lack access to safe and affordable surgical care. This study assessed the magnitude and factors associated with delays in accessing elective surgical care among adult postoperative patients at Centre Hospitalier Universitaire de Kigali (CHUK), Rwanda. A quantitative cross-sectional design was employed among 385 postoperative patients selected through stratified proportional random sampling from General Surgery, Urology, Neurosurgery, and Orthopedic wards. Data were analyzed using SPSS version 28. Descriptive statistics summarized patient characteristics and delay patterns, while multiple regression analysis identified factors associated with delays. Statistical significance was determined at a 95% confidence interval and p-value <0.05. Among participants, 58.4% were male, 61.6% were aged 41 years and above, 57.9% belonged to Ubudehe category 2, 40.3% resided in Kigali City, and 90.6% were covered by MUSA insurance. General Surgery represented the largest specialty group (32.9%). Delay 1 (seeking care) was most commonly greater than 120 days, Delay 2 (reaching healthcare facilities) was generally 30 days or less, while Delay 3 (receiving surgical treatment) was predominantly between 31 and 120 days. For Delay 1, older age was significantly associated with longer delays in seeking care, with participants aged ≥41 years experiencing increased delays compared with younger individuals (β=1.41, p<0.001). Unemployment (β=0.66, p=0.033) and lack of marital support (β=0.40, p=0.036) were also associated with prolonged delays. For Delay 2, access-related barriers were the primary determinants. Compared with financial barriers, distance, transport, and other reasons were associated with shorter delays (β=−1.45, p<0.001; β=−0.86, p=0.041; β=−1.41, p<0.001, respectively), while multiple barriers showed a borderline increase (β=0.30, p=0.066). Reporting other reasons for not seeking treatment was associated with longer delays than poor recognition of illness severity (β=0.43, p=0.007), whereas private or ambulance transport reduced delays compared with public transport (β=−0.61, p<0.001). Delay 3 was mainly driven by long waiting lists (34.1%) and limited operating theatre capacity (32.9%). Overall, delays were influenced by socioeconomic vulnerability, access barriers, and health system constraints, underscoring the need for targeted interventions to improve timely surgical care.**

Keywords: **Elective Surgery, Factors, Adult, Postoperative, Patients, CHUK, Rwanda.**

1. INTRODUCTION

Surgical conditions account for approximately 30% of the global burden of disease, making access to timely, safe, and affordable surgical care an essential component of universal health coverage. Despite remarkable advances in surgical technologies and health systems, access to surgical services remains highly inequitable, particularly in low- and middle-income countries (LMICs). The Harvard School of Public Health (2025) estimates that over 5 billion people worldwide still lack access to safe and affordable surgical care. Furthermore, approximately **1**.5 million preventable deaths occur annually in LMICs because of inadequate surgical services, representing 6–7% of all avoidable deaths**,** highlighting surgery as a major global public health priority (OpenAnesthesia, 2025).

Globally, substantial disparities exist in access to surgical care. Although more than one-third of the world's population resides in low-income countries, these countries account for only 6% of the estimated 313 million surgical procedures performed annually. In contrast, fewer than 5% of people living in high-income countries lack access to essential surgical services, whereas more than **95%** of the population in South Asia and sub-Saharan Africa faces inadequate surgical access (Patil et al., 2023). These inequalities contribute to increased morbidity, mortality, disability, and economic hardship, particularly among vulnerable populations.

The concept of the Three Delays Model**,** originally developed by Thaddeus and Maine (1994) for maternal health, has increasingly been applied to surgical care to explain delays in accessing treatment. The model identifies three critical phases: Delay I**,** the delay in deciding to seek care; Delay II**,** the delay in reaching an appropriate health facility; and Delay III**,** the delay in receiving appropriate treatment after arrival at a health facility. Evidence indicates that all three delays substantially contribute to adverse surgical outcomes, prolonged disability, and preventable deaths in LMICs (Aborode et al., 2023).

Across Africa, delayed access to surgical care remains a persistent challenge. An observational study conducted in Tanzania found that trauma-related mortality before hospital admission was twice as high as mortality after hospital admission, illustrating the consequences of delayed access to emergency surgical care and weak pre-hospital systems (Aborode et al., 2023). Similarly, a Ugandan study reported that Delay I accounted for 52% of all delays, while Delay II and Delay III represented 25% and 23%**,** respectively. Although many families recognized abnormal health conditions, they often lacked adequate knowledge regarding disease severity and the urgency of seeking medical attention. Consequently, 51% initially attempted home-based care**,** 42% relied on traditional herbs or remedies, and 6% administered antibiotics or anthelmintics before seeking professional healthcare (Nuwagaba et al., 2022).

Previous studies have identified multiple determinants of elective surgical delays. Patient-related factors such as advanced age, Black race, higher American Society of Anesthesiologists (ASA) classification, renal failure, and polypharmacy significantly increase the likelihood of delayed surgery (Castillo, 2023; Meyers et al., 2020). Clinical factors including poor preoperative functional status, multiple comorbidities, and chronic steroid use have also been associated with delayed procedures, postoperative complications, and prolonged hospital stays (Zoghi et al., 2026). Institutional factors, including limited operating theatre availability, inadequate hospital bed capacity, shortage of surgical personnel, and inefficient scheduling systems, remain major contributors to delayed or cancelled elective operations (Koushan et al., 2021). Moreover, Becker et al. (2021) found that elective procedures among elderly patients, retirees, and nursing home residents were disproportionately delayed or cancelled, raising concerns about inequitable access to surgical services.

Elective surgical delays have important clinical, psychological, and economic consequences. Patients experiencing prolonged waiting periods often report dissatisfaction with healthcare services, emotional distress, financial hardship, and deterioration of their underlying medical conditions (Mekonin et al., 2022). In addition, women undergoing elective non-obstetric and non-gynecological surgery in Africa have been reported to experience twice the risk of severe postoperative complications compared with women in other regions, emphasizing the urgent need to strengthen perioperative care across the continent (Edosa et al., 2022). To improve perioperative outcomes, the African Surgical Outcomes Study (ASOS) developed a validated preoperative surgical risk calculator to identify high-risk patients and guide postoperative surveillance and management in African hospitals (ASOS Surgical Risk Calculator, 2023).

In Rwanda, access to essential surgical services has improved over the past decade but remains below international recommendations. According to the National Surgical, Obstetrics and Anesthesia Plan (NSOAP) 2024**,** district and provincial hospitals performed only 786 surgical procedures per 100,000 population in 2017, substantially below the 5,000 procedures per 100,000 population recommended by the Lancet Commission on Global Surgery (LCoGS)**.** Furthermore, only 10 of the country's 42 district hospitals were capable of providing all three Bellwether procedures, caesarean section, laparotomy, and open fracture management, which serve as indicators of a hospital's capacity to deliver essential surgical care.

The shortage of the surgical, anesthesia, and obstetric (SAO) workforce remains one of Rwanda's greatest barriers to timely surgical care. In 2017, Rwanda had only 119 SAO providers**,** comprising 62 surgeons, 18 anesthesiologists, and 39 obstetrician-gynecologists, equivalent to a workforce density of 1.006 providers per 100,000 population, far below the LCoGS recommendation of at least 20 SAO providers per 100,000 population (National Surgical, Obstetrics and Anesthesia Plan, 2024). These workforce limitations, together with increasing surgical demand, limited operating theatre capacity, and referral system challenges, contribute to delays in accessing elective surgical care. However, evidence on the magnitude and determinants of these delays among adult surgical patients in Rwanda remains limited. Therefore, this study seeks to

assess the magnitude and factors associated with delays in accessing elective surgical care among adult postoperative patients at the Centre Hospitalier Universitaire de Kigali (CHUK), thereby generating evidence to inform policies and interventions aimed at improving timely access to surgical services and enhancing patient outcomes.

2. METHODOLOGY

2.1 Research Design

The study present study is a cross-sectional study design with quantitative approach in which data was collected from the patients operated in selected surgery services at CHUK.

2.2 Research area

The study was conducted at the University Teaching Hospital of Kigali (CHUK) a public academic tertiary referral hospital located in Kigali (KN4Ave), Nyarugenge district, and the capital city of Rwanda.

2.3 Study Population

The target population of this study was the patients operated in the main operating theatre (General surgery, Orthopedic, urology, maxillofacial surgery, and Neurosurgery) at CHUK.

2.4 Sample Design

2.4.1 Sample Size and Sampling Strategy

The sample was computed using the Cochrane formula of unknown proportion, and we calculated the sample size for a 95% confidence level with a margin of error of 5% and an estimated proportion p=0.5

$$n = \boldsymbol{z2(p)(1-p)/e2}$$

Whereby:

n= is the sample size.

Z: is the Z-value (the number of standard deviations from the mean for a desired confidence level, typically 1.96 for 95% confidence).

p: is the estimated proportion of the population that has been operated with a history of surgical delay (if unknown, 0.5 is used for maximum variability).

e: is the desired level of precision (the margin of error)

n= $(1.96)^2 \times 0.25 / (0.05)^2$

n= 3.8416×0.25 : 0.0025

n= 0.9604:0.0025

n=**385**

2.4.2 Sampling techniques

Considering that the study population estimated at 500 patients who are operated in a period of 3 months' time so, we considered a simple random stratified proportional sampling approach to give equal chance to the participants.

2.5 Data Collection Instruments

Data collection instruments which are structured questionnaires was composed of 3 categories of questions (sociodemographic, clinical, and Health facility-related information variables).

3. RESULTS AND DISCUSSION

3.1 Socio-demographic characteristics

Table 1 presents the socio-demographic characteristics of the 385 adult postoperative patients included in the study. The majority of participants belonged to Ubudehe category 2 (57.9%), followed by category 3 (38.7%), with smaller proportions in categories 1 (2.9%) and 4 (0.5%). Most participants were aged 41 years and above (61.6%), while 29.6% were aged 26–

40 years and 8.8% were aged 25 years or below. Overall, 58.4% of participants were male and 41.6% were female. In terms of education, the largest proportion had completed secondary school (23.4%), followed by those with no formal education (19.2%) and those with less than secondary education (18.2%); smaller proportions had completed primary education (17.1%), had less than primary education (13.8%), attended technical school (4.7%), or completed college or university (3.6%). Nearly half of the participants were unemployed (49.9%), while 11.4% were employed full-time, 6.2% part-time, 25.7% reported other forms of employment, 5.2% were students, and 1.6% were retired. Most participants resided in Kigali City (40.3%), followed by the Southern (29.6%), Western (15.0%), Northern (9.6%), and Eastern (5.5%) provinces. The majority were covered by community-based health insurance (MUSA) (90.6%), with smaller proportions enrolled in RAMA (8.6%) or other insurance schemes (0.8%). With respect to marital status, 64.1% were married, 19.1% were single, 13.5% were widowed, and 3.3% were divorced.

Table 1: Socio-demographic characteristics of patients(n=385)

Variable(s)	Frequency (n)	Percentage (%)
Ubudehe category		
CAT1	11	2.9
CAT2	223	57.9
CAT3	149	38.7
CAT4	2	0.5
Age category		
≤25	34	8.8
26–40	114	29.6
41+	237	61.6
Gender		
Female	160	41.6
Male	225	58.4
Education level		
No formal education	74	19.2
Less than primary	53	13.8
Primary completed	66	17.1
Less than secondary	70	18.2
Secondary completed	90	23.4
Technical school	18	4.7
University/College	14	3.6
Employment status		
Employed (full-time)	44	11.4
Employed (part-time)	24	6.2
Other	99	25.7
Retired	6	1.6
Student	20	5.2
Unemployed	192	49.9
Province		
East	21	5.5
Kigali City	155	40.3
Northern	37	9.6
South	114	29.6
Western	58	15
Insurance		
MUSA	349	90.6
RAMA	33	8.6
Other	3	0.8
Religion		
Christian	355	92.2

Muslim	25	6.5
None	5	1.3
Marital status		
Married	238	64.1
Single	71	19.1
Widowed	50	13.5
Divorced	12	3.3
Missing	14	3.8

3.2 Presentation of the Findings

3.2.1 Distribution of study patients per specialty (n=385)

Figure 1 shows that the majority of the participants were from General Surgery (32.9%), followed by Urology (17.7%), and the least was plastic surgery with (3.9%).

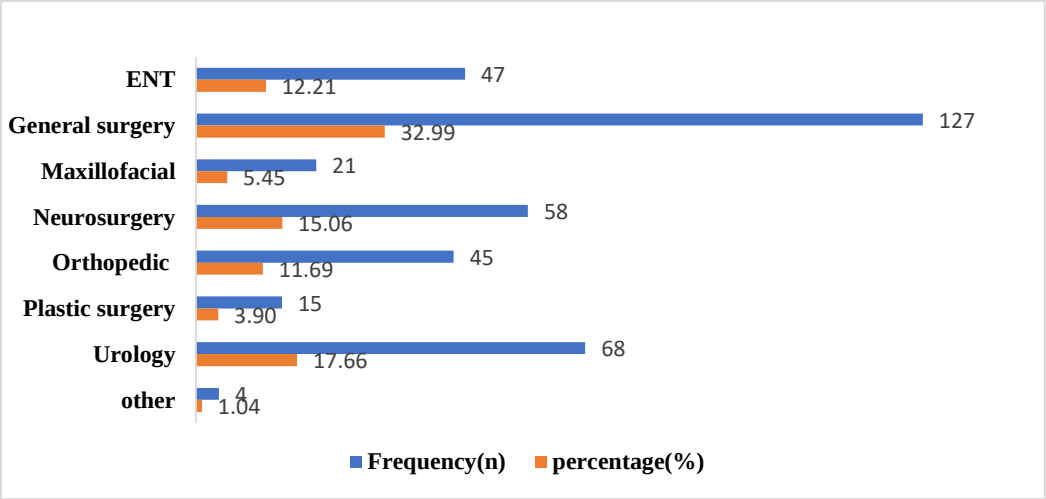


Figure 1: Distribution of study patients per surgical specialty

3.2.2 Magnitude of surgical delays in groups in days

Figure 2 illustrates the magnitude of surgical delays measured in the number of days across three delay categories. In Delay 1, the majority of patients experienced delays of more than 120 days (n=190). In contrast, Delay 2 was predominantly characterized by shorter delays, with most patients waiting less than or equal to 30 days (n=337). For Delay 3, the majority of delays fell within the range of 31 to 120 days (n=209), indicating a moderate delay period for this category. [See figure 2].

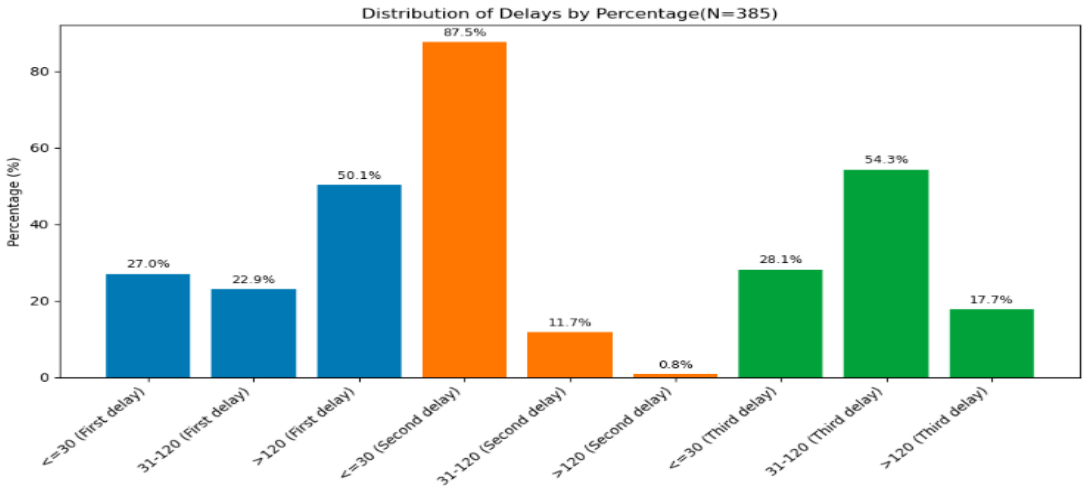


Figure 2: Magnitude of surgical delays

3.2.3 Socio-demographic and other factors associated with delay in seeking health care for elective surgical care (Delay 1)

Table 2 summarizes the socio-demographic and other factors associated with delay in seeking healthcare for elective surgical care (Delay 1). In the adjusted analysis, increasing age was strongly associated with longer delays, with individuals aged 26–40 years and those aged 41 years and above experiencing greater delays compared with younger participants (β=0.85, p=0.024 and β=1.41, p<0.001, respectively). Being not employed was also associated with longer delay (β=0.66, p=0.033). In contrast, residence in the Northern province was associated with shorter delays compared with the Eastern province (β=−1.25, p=0.012). Individuals who were not married experienced modestly longer delays than married individuals (β=0.40, p=0.036). There was no evidence of an association between delay and Ubudehe category, gender, education level, insurance type, or religion after adjustment for other factors (all p>0.05).

Table 2: Socio-demographic and other factors associated with delay in seeking health care for elective surgical care (Delay 1)

Delay 1	Coefficient (B)	P-value	95% CI
Ubudehe category			
CAT1 (Ref)	1		
CAT2	-0.2022	0.696	[-1.2192, 0.8147]
CAT3+4	-0.1044	0.847	[-1.1666, 0.9578]
Age category			
≤25 (Ref)	1		
26–40	0.8517	**0.024**	[0.1126, 1.5907]
41+	1.4123	**<0.001**	[0.7261, 2.0985]
Gender			
Female (Ref)	1		
Male	-0.2001	0.201	[-0.5071, 0.1068]
Education level			
No education (Ref)	1		
Primary	-0.0026	0.991	[-0.4648, 0.4597]
Secondary+	0.1306	0.566	[-0.3165, 0.5778]
Employment status			
Employed (Ref)	1		
Other	0.1559	0.644	[-0.5068, 0.8186]
Not employed	0.6621	**0.033**	[0.0525, 1.2717]
Province			
East (Ref)	1		
Kigali City	-0.1635	0.711	[-1.0319, 0.7050]
Northern	-1.2534	**0.012**	[-2.2315, -0.2753]
South	0.1231	0.778	[-0.7338, 0.9799]
Western	-0.0584	0.898	[-0.9537, 0.8369]
Insurance			
MUSA (Ref)	1		
RAMA	0.4119	0.214	[-0.2392, 1.0629]
Other	-1.4225	0.267	[-3.9400, 1.0949]
Religion			
Christian (Ref)	1		
Other	-0.3998	0.142	[-0.9348, 0.1351]
Marital status			
Married (Ref)	1		
Not married	0.3991	**0.036**	[0.0260, 0.7722]

Note: Bolded indicate the significance at p<0.05

3.2.4 Factors associated with patients identifying and reaching medical facilities for elective surgical care (Delay 2)

Table 3 presents the factors associated with patients' ability to identify and reach medical facilities for elective surgical care (Delay 2). In the adjusted analysis, the reasons for not visiting CHUK were strongly associated with delay. Compared with financial barriers, reporting distance, transport-related barriers, or other reasons was associated with significantly shorter delays ($\beta = -1.45$, $p < 0.001$; $\beta = -0.86$, $p = 0.041$; and $\beta = -1.41$, $p < 0.001$, respectively), while reporting multiple barriers showed a borderline increase in delay ($\beta = 0.30$, $p = 0.066$). Regarding reasons for not seeking treatment, reporting other reasons was associated with significantly longer delay compared with poor recognition of illness severity ($\beta = 0.43$, $p = 0.007$), whereas financial barriers, traditional medicine use, and multiple factors were not significantly associated with delay. In addition, use of private or ambulance transport was associated with significantly shorter delay compared with public transport ($\beta = -0.61$, $p < 0.001$). There was no evidence of an association between delay and source of health facility or advice received ($p > 0.05$).

Table 3: Factors associated with patients identifying and reaching medical facilities for elective surgical care (Delay 2)

Variable	Coefficient	P-value	95% CI
Source of health facility			
District hospital (Ref)	1		
Private HF	-0.17	0.307	[-0.51, 0.16]
Other/HC	-0.08	0.847	[-0.90, 0.74]
Reason for not visiting CHUK			
Financial (Ref)	1		
Distance	-1.45	**<0.001**	[-1.63, -1.27]
Transport	-0.86	**0.041**	[-1.69, -0.04]
Other	-1.41	**<0.001**	[-1.65, -1.16]
Multiple	0.3	0.066	[-0.02, 0.62]
Reason for not seeking treatment			
Poor recognition (Ref)	1		
Financial	0.24	0.226	[-0.15, 0.64]
Traditional	-0.08	0.569	[-0.35, 0.20]
Multiple	-0.02	0.91	[-0.28, 0.25]
Other	0.43	**0.007**	[0.12, 0.75]
Means of transport			
Public (Ref)	1		
Private/Ambulance	-0.61	**<0.001**	[-0.86, -0.36]
Other	-0.29	0.494	[-1.11, 0.54]
Advice not to seek			
Self (Ref)	1		
Others	-0.13	0.419	[-0.45, 0.19]
Family	0.15	0.31	[-0.14, 0.43]

3.2.5 Receiving adequate and appropriate treatment of elective surgical care at specialized hospitals (Delay 3)

Table 4 presents the reported causes of delay in receiving adequate and appropriate treatment for elective surgical care at specialized hospitals. The most commonly cited reason was a long waiting list, reported by 29 respondents (34.12%), followed closely by lack of operating room (OR) slots, mentioned by 28 respondents (32.94%). Other contributing factors included patient financial issues (10.59%), lack of equipment (9.41%), lack of consumables (5.88%), and other unspecified reasons (7.06%). Notably, no respondents reported surgeon unavailability or an insufficient surgical team as reasons for delay.

Table 4: Factors associated with receiving adequate and appropriate treatment of elective surgical care at specialized hospitals

What causes the patient to wait?	Frequency	Percentage responses
Long waiting list	29	34.12
Lack of OR slot	28	32.94
Lack of equipment	8	9.41
Lack of consumables	5	5.88
Surgeon availability	0	0.00
Patient Financial Issues	9	10.59
Insufficient surgical team	0	0.00
Others	6	7.06

Patients consulted and met the need for surgery per week

Figure 3 explains that 1 doctor reported receiving 12 patients meeting the need for surgery, six doctors reported 10 patients per week, and 8 doctors reported receiving 8 patients per week.

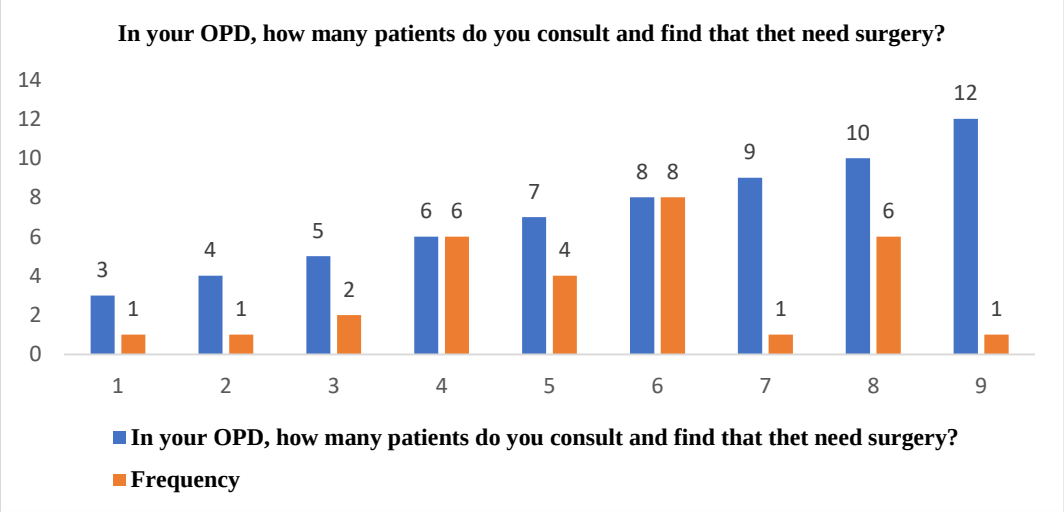


Figure 3: Patients consulted and met the need for surgery per week

Figure 4 shows the findings on the time at which the operation is done after clinical consultation. The majority of the Doctors reported that more than four weeks(n=28).

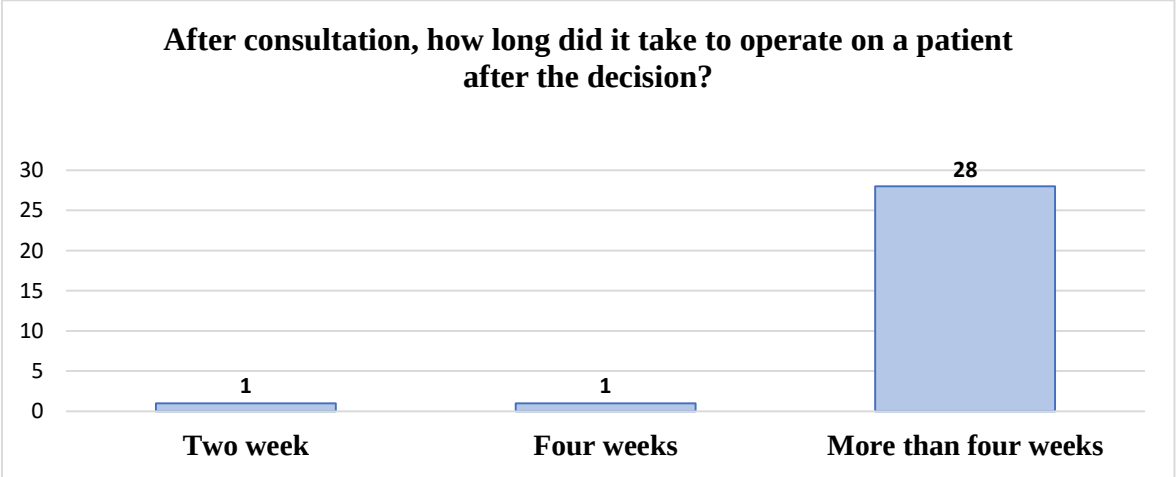


Figure 4: After consultation time taken to operate on a patient after the decision

4. DISCUSSION

Delays in accessing elective surgical care remain a major challenge in low- and middle-income countries (LMICs), where they contribute to disease progression, increased postoperative complications, prolonged disability, and avoidable mortality. These delays are commonly explained using the Three Delays Model**,** which categorizes barriers into three phases: Delay I (deciding to seek care), Delay II (reaching an appropriate health facility), and Delay III (receiving appropriate treatment after arrival) (Bajgain et al., 2026; Chavane et al., 2018). Understanding the determinants of each delay is essential for developing interventions that improve timely access to surgical services and patient outcomes.

In this study, patients aged 41 years and above experienced significantly longer delays in seeking elective surgical care than younger patients **(**$\beta = 1.41$, $p < 0.001$**).** This finding is consistent with Renfree et al. (2019), who reported that advanced age was independently associated with delays in elective surgery because older patients often require extensive preoperative optimization and have a higher burden of comorbidities. Similarly, Becker et al. (2021) identified older age as an important non-medical predictor of surgical postponement. In the present study, these delays may also reflect reduced mobility, greater dependence on caregivers, and delayed health-seeking behaviour among older adults.

Education level was not significantly associated with Delay I after multivariable adjustment. Although studies conducted in Angola and Rwanda have reported that lower educational attainment is associated with delayed healthcare seeking (Segagni Lusignani et al., 2013), the absence of an independent association in this study suggests that other socioeconomic factors, particularly employment status and healthcare accessibility, may mediate the effect of education (Dworkin et al., 2020).

Marital status remained significantly associated with Delay I, with unmarried participants experiencing longer delays than married individuals ($\beta = 0.40$, $p = 0.036$**).** This finding suggests that social support from spouses facilitates earlier healthcare-seeking through emotional encouragement, financial assistance, and shared decision-making. Similar findings were reported by Tesfaye Mekonin et al. (2022), who found that patients living alone or without spousal support were more likely to postpone elective surgery and experienced greater emotional distress during surgical planning.

Employment status was another significant predictor of Delay I. Unemployed participants experienced significantly longer delays in seeking elective surgical care than employed participants ($\beta = 0.66$, $p = 0.033$). Financial insecurity associated with unemployment may limit patients' ability to afford transportation, consultation fees, and other indirect costs of care despite having health insurance. Similar findings have been reported by Dworkin et al. (2020) and Aborode et al. (2023), who identified financial constraints as one of the leading barriers to timely surgical care in LMICs.

For Delay II, the reasons for not visiting CHUK emerged as the strongest determinants. Compared with financial barriers, reporting distance **(**$\beta = -1.45$, $p < 0.001$**),** transport-related barriers **(**$\beta = -0.86$, $p = 0.041$**), or** other reasons **(**$\beta = -1.41$, $p < 0.001$**)** was associated with significantly shorter delays. In contrast, reporting multiple barriers showed a borderline increase in delay **(**$\beta = 0.30$, $p = 0.066$**).** These findings indicate that financial barriers remain the most persistent obstacle because patients often require considerable time to mobilize the resources necessary for surgical care. This observation is consistent with studies from other LMICs, where financial hardship continues to delay access to essential surgical services (Aborode et al., 2023).

The study further found that participants who reported other reasons for not seeking treatment experienced significantly longer delays than those who reported poor recognition of illness severity **(**$\beta = 0.43$, $p = 0.007$**).** Although the specific reasons varied among participants, this finding suggests that contextual factors beyond illness perception may substantially delay care-seeking.

Mode of transportation was also significantly associated with Delay II. Patients who used private vehicles or ambulances reached healthcare facilities more quickly than those using public transportation **(**$\beta = -0.61$, $p < 0.001$**).** Reliable transportation likely reduces travel time, minimizes referral delays, and enables more direct access to specialized surgical services. Similar findings have been reported in previous studies demonstrating that transportation availability is a critical determinant of timely access to healthcare.

Referral source and advice received were not significantly associated with Delay II after adjustment. This finding suggests that once patients had entered the referral pathway, financial and transportation barriers played a more influential role than the source of referral or the advice they received. Likewise, although poor understanding of illness severity has been identified as an important determinant of delayed healthcare utilization (Nuernberger et al., 2025; Nathan et al., 2024), it

was not independently associated with delays in this study after adjustment. This finding indicates that structural and financial barriers may outweigh individual health literacy in determining timely access to elective surgical care, consistent with the observations of Jaroń et al. (2025).

Regarding Delay III, the study identified health system constraints as the predominant contributors to delayed surgical treatment. Long waiting lists (34.1%) were the most frequently reported cause of treatment delays, followed closely by limited operating theatre capacity (32.9%). These findings reflect significant capacity limitations within the hospital and suggest that the increasing demand for elective surgery exceeds available surgical resources. Similar findings have been reported by Sæther et al. (2020), who identified prolonged waiting lists as a principal cause of delayed elective surgery, and by Rathnayake et al. (2025), who highlighted inadequate operating theatre availability, inefficient scheduling systems, prolonged theatre turnover time, and poor operating room allocation as major bottlenecks affecting surgical throughput.

The findings demonstrate that delays in elective surgical care are multifactorial, resulting from the interaction of patient-related socioeconomic vulnerabilities, financial and transportation barriers, and health system capacity constraints. The significant associations observed for older age ($\beta = 1.41$, $p < 0.001$), unemployment ($\beta = 0.66$, $p = 0.033$), marital status ($\beta = 0.40$, $p = 0.036$), distance ($\beta = -1.45$, $p < 0.001$), transport barriers ($\beta = -0.86$, $p = 0.041$), other reasons for not visiting CHUK ($\beta = -1.41$, $p < 0.001$), multiple barriers ($\beta = 0.30$, $p = 0.066$), other reasons for not seeking treatment ($\beta = 0.43$, $p = 0.007$), and private or ambulance transport ($\beta = -0.61$, $p < 0.001$), together with the high proportions reporting long waiting lists (34.1%) and limited operating theatre capacity (32.9%), emphasize that improving timely access to elective surgery requires both patient-centred interventions and health system strengthening.

5. CONCLUSION

This study demonstrated that delays occur across all three stages of accessing elective surgical care, seeking care, reaching an appropriate health facility, and receiving definitive surgical treatment, among adult postoperative patients at the Centre Hospitalier Universitaire de Kigali (CHUK). Delays in seeking care were predominantly associated with older age, unemployment, and limited social support, highlighting the influence of socioeconomic vulnerability and delayed health-seeking behavior. Delays in reaching healthcare facilities were primarily attributed to financial and transportation barriers, underscoring the importance of improving affordability and accessibility of surgical services. Delays in receiving treatment were largely driven by health system constraints, particularly prolonged waiting lists and limited operating theatre capacity, reflecting the growing mismatch between surgical demand and available resources.

The findings indicate that delays in elective surgical care result from the combined effects of patient-related socioeconomic factors, barriers to healthcare access, and institutional capacity limitations.

These delays have important implications for patient outcomes, healthcare efficiency, and the quality of surgical services. Strengthening financial protection mechanisms, improving referral and transportation systems, expanding surgical workforce and operating theatre capacity, and promoting early healthcare-seeking behavior are essential strategies for reducing delays and enhancing timely access to elective surgical care in Rwanda.

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