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Trends and Factors Associated with Compliance to Referrals among Patients Referred from Kyabirwa Surgical Center, Jinja City, Eastern Uganda

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Abstract

Background: While surgical patient referrals can avert up to 18% of all deaths, they can burden surgical care-providing facilities if they exceed 10%, compromising the quality of surgical care and potentially damaging the reputation of the referring facility. For Uganda's first standalone ambulatory surgical care facility, this could spell low acceptability of the novel surgical care model, which promises to increase access to affordable and safe surgery. **Objective:** To assess referral trends and factors associated with compliance with surgical referrals among patients referred from the Kyabirwa Surgical Center (KSC) between 2019 and 2022. **Methods:** A cross-sectional design was used; consecutive sampling was used to sample all patients who sought care between 2019 and 2022, and a section of those who were referred. Structured interviews and medical record abstraction were used to collect data that were analyzed in SPSS 25 using frequency distributions and a binomial logit model. **Results:** Approximately 15.6% of the patients were referred, and 74% of them complied with the referral. Primary-level education and transportation by motorbike to the KSC reduced the odds of compliance. Understanding the reasons for referral, good functional status at the time of referral, perceived short distance to referral facility, being followed up by referral facility, having no fear of referral facility, and education by KSC staff about the referral facility increased the odds of compliance. **Conclusion:** The prevalence of patient referral was high at KSC between 2019 and 2022, but gradually reduced starting in 2020. Almost all patient referrals performed during the time were clinically justified,

because general surgery was the only surgical service present at the time. Of concern, not all patients referred from the KSC complied with the referral; only seven out of every ten of them did, with almost all factors influencing their compliance being intrapersonal.

Keywords

Referral, Compliance with Surgical Referral, Kyabirwa Surgical Center

1. Introduction

Patient referral, that is, the process by which responsibility for some or all components of patient care and treatment is transferred from service providers at one level of service to another [1] [2], is one of the cornerstones of any functional health system [3]. This is because effective patient referral ensures patient safety, access to more cost-effective care, and, hence, timely access to quality healthcare [4]-[6]. Patient referral can reduce mortality risk by up to 50% [7] [8] and healthcare costs [9], making it a crucial component of Universal Health Coverage (UHC) [10] [11]. However, the rate of patient referrals must not exceed 10% [12] [13] because high patient referrals can significantly burden any health system, particularly secondary and tertiary facilities that provide surgery. In some cases, referral to surgery becomes inevitable [3] [14] and can avert mortality from surgical disease; however, if in excess of 10%, it can compromise the quality of care at referral facilities, as surgical patient volumes exceed service and infrastructural capacities [6] [14]. Consequently, mortality risk for not only the referred patient but also those found at the referral facility can increase, especially in low- and middle-income countries [15] [16]. In those countries, staff shortages are more pronounced and health system infrastructural capacities are typically lower, even at referral facilities [17] [18]. In the medium- or long-term, the reputation of health facilities that have high surgical patient referral rates can be dented, as those facilities may come off as having low surgical staff, service, and infrastructural capacity, with the result being low or non-uptake of their services. Such an outcome can be devastating to any healthcare service provider and possibly affect the health system in general; however, its effect can be even worse when it is a standalone ambulatory surgery facility. Currently, ambulatory surgery continues to evolve in Africa [19], and Uganda is one of the countries on the continent with a standalone multispecialty ambulatory surgery center, that is, the Kyabirwa Surgical Center [20]. Uganda has a high unmet need for surgery [21]-[23], caused by the high cost of surgery that deters access to it, and would thus benefit from the proliferation of standalone ASCs, which provide comparatively lower cost and safe surgery [24]. However, such proliferation and longevity can only be achieved with high acceptability and belief in the novel model of surgery that ASCs provide, which can be ensured in part by a low patient referral rate. However, a low patient

referral rate is not an end in itself; all surgery patients who are inevitably referred ought to comply with the referrals. Compliance with referrals by referred patients implies that a referred patient makes contact with the facility and service providers to which they are referred and receives care [25]. Worryingly, compliance with surgical referrals remains a global challenge and has led to an increase in patient referral failures. Patient referral failures are reported to range from 45% to 73% [26]-[28], indicating that patients referred for surgery face a number of barriers in doing so. Such barriers, if not minimized, will only increase delays in access to much-needed surgery, higher costs of care, multi-morbidity [29], poorer treatment outcomes, and a higher risk of preventable mortality [10] [30]. Such occurrences, if they occur among patients referred from ASCs, may be an indication for them (ASCs). Sadly, there was subjective evidence that between 2019 and 2022, the Kyabirwa Surgical Center (KSC) referred several patients who sought surgery from there. It has also been reported that a section of patients referred from KSC did not receive care from the facilities they were referred to, certainly due to several antecedents, none of which had ever been explored in the KSC context; however, trends of referral of patients by the center have also never been studied.

1.1. Study Design and Setting

The study adopted an analytical cross-sectional design in which all required quantitative data were collected from a selected sample of respondents at one point in time each [31]. The choice of the design was premised on the fact that there was a need to compute the prevalence of compliance and to non-causally analyze associations between exposure and outcomes. The study was conducted at Kyabirwa Surgical Center (KSC), a standalone multispecialty ambulatory surgical center located north of Jinja City. The facility is Uganda's first and currently only standalone ambulatory surgical care-providing facility that was set up in 2019, with the aim of providing affordable and safe surgery to the rural poor in Uganda. Between 2019 and 2022, the facility was reported to have referred a significant number of patients who sought ambulatory care, contrary to its reported high capacity to handle a wide range of surgical cases, with some of the referred patients not complying with the referrals. However, this effect has not yet been assessed.

1.2. Study Population and Eligibility

The study had two population categories, the first of which was all patients who sought ambulatory surgical care and treatment from KSC between 2019 and 2022. These were needed in the study of trends in patient referrals. The second population included patients who were referred during that time period and who participated in the assessment of compliance with patient referrals. The study of referral trends was based on retrospective data (from the patients' database), while that of compliance was based on primary data since the facility database does not capture whether a patient complied with their referral. For the first category of patients, those whose records had all the variables of interest in the study were included.

For the second category of patients, the study excluded those who were found not to be in a sound emotional and physical state of health that would enable them to sustain an in-depth interview lasting more than 30 minutes.

1.3. Sample Size Calculation and Sampling

A census of all patients who had sought healthcare services from the KSC between 2019 and 2022 was conducted, implying that no sample size computation was made for them. A census was conducted to obtain a more accurate representation of the patient referral prevalence at the KSC. Thus, the number of patients who were studied in the assessment of patient referral trends was 1,947. However, sample size calculation for the study population included in the assessment of compliance to referrals was performed using the formula by [32], given that the target population size (patients that were referred) did not exceed 10,000 [32]. The formula is given by: $n = X^* N/X + (N - 1)$, where n is the required sample size of patients who were referred from KSC between 2019 and 2021, X = Maximum sample size at a probability of 50%, given by Kish Leslie (1965) as 384, N = Population size = number of patients who were referred from KSC between 2019 and 2022 and were still alive and reachable via telephone, by the time this study was conducted in 2023 = 117. Therefore, $n = 384 \times 117/384 + (117 - 1) = 90$ patients referred between 2019 and 2022.

1.4. Sampling Procedures

To sample patient files that were used in the assessment of trends of referrals, consecutive sampling was done, as it could allow for perusal through each patient file to ascertain eligibility for inclusion, and thereafter, include the patient. The same sampling approach was used to sample patients who were required to participate in the assessment of compliance with patient referrals. Consecutive sampling was still the most suitable in this case because the required sample size was 90, whereas the population size was 117, which implied that the contrast between the same population numbers could not allow for the use of a probabilistic sampling approach. Thus, with consecutive sampling, 90 patient files were retrieved, and each patient or their caretaker was contacted via telephone, briefed about the study, and then located in their respective communities for interviews.

1.5. Data Collection Techniques

This study used two data collection methods: structured interviews and medical record abstraction. Medical Record Abstraction (MRA) was used to collect all quantitative data required for the assessment of referral trends between 2019 and 2022, given that referrals had already occurred and all required characteristics of patients referred had been captured in the KSC database. However, for the assessment of compliance and its associated factors, interviews were the most suitable given that there were no records whatsoever at KSC, indicating whether a referred patient complied or not, and there were data related to the potential factor charac-

teristics at the facility. It was formerly referred to as patients who were engaged in interviews, and the required data were obtained from them. Structured interviews were conducted, given that they solicit closed-ended and quantifiable responses.

1.6. Variable Description

The assessment of trends in patient referrals involved the quantification of the proportion of patients who had been referred from the KSC during 2019 and 2022, plotting of the pattern of referral volumes during that period, and disaggregation of patient referrals by the characteristics of the patients that were referred. Compliance was operationalized as the establishment of physical contact between the referred patient and the facility they were referred, given that it is with physical contact that the patient can then receive treatment. While compliance was self-reported, the self-reports were validated by requesting documentary proof of reception of treatment and/or care referred to receive, and also by contacting the referral facility to verify the claims of the patient.

1.7. Data Analysis Plan

Data were analyzed using SPSS version 25 for Windows, using descriptive statistics, including frequency distributions, measures of central tendency, measures of dispersion, and descriptive cross-tabulations. The trends of patient referrals at KSC were analyzed using frequency distributions and measures of central tendency, while cross-tabulations were used to disaggregate patient referral status by patient characteristics (demographic and clinical). Descriptive statistics (frequency distributions) were used to analyze the data needed to quantify compliance with referrals among patients at the KSC. To analyze the factors associated with compliance with patient referrals, bivariate analysis was first conducted to establish relationships between the independent variables and the dependent variable (compliance). This was done using a binomial logit model, given that the other option (a log-binomial model) [33] [34] showed significant statistical convergence, which did not allow for the obtainment of results. Secondly, the variable-to-event ratio was also found to be 9.6, which also justified the multivariate model. All variables with p-values of less than 0.2, at the bivariable level, were fitted into a binomial logit multivariable model and adjusted for confounders. Statistical significance was established at an alpha of 5%, with p-values less than 0.05 considered significant, and variables bearing them were considered to be the factors associated with compliance to patient referrals.

1.8. Ethical Considerations

Approval to conduct this study was obtained from the TASO Research Ethics Committee (TASO-REC) under number TASO-2023-247, while permission to conduct this at KSC was obtained from the administration at KSC. Administrative consent to access patient data was obtained from the administration at the Kyabirwa Surgical Center, while consent to participate in the quantitative study in-

volving interviews with formerly referred patients was obtained from each patient. Each patient was engaged in a consenting process in which they were briefed about the study and its procedures, following which they were requested to provide written consent at their discretion. All collected data were handled with utmost confidentiality. The data abstraction forms were secured by the principal investigator only, and even after entry, the computer used was protected by a password known to the principal investigator. None of the names of the participants were captured on the study tools, and all of them were told that their participation was voluntary, with the possibility of withdrawing without any consequences. All interviews were conducted with privacy; the interviewers ensured that the interviewer-interviewee pairs were the only ones able to listen to the interview conversations.

2. Findings

2.1. Sociodemographic Characteristics

Table 1 presents the sociodemographic characteristics of participants in both the trend and compliance studies. In the trend study, more than half of the patients were male, 1142 (58.7%), and nearly two-thirds were aged between 26 and 41 years, 641 (32.9%), with a mean age of 41.6 years. Most patients resided in rural areas (1068, 54.4%), more than a third were married or cohabiting (823, 42.3%), and almost a third had primary-level education (610, 31.3%). Over half of the patients, 1063 (54.6%), lived in Jinja City. For the compliance study, more than half of the patients were male, 46 (51.1%), and more than a third were over 57 years old, 31 (34.4%). More than three-quarters of respondents were formally educated, 76 (84.4%), and among those, more than a third had completed secondary (O-level) education, 30 (33.3%). More than half of the patients lived in rural areas, 174 (54.4%), more than a third identified as Anglican (38, 42.2%), and almost two-thirds were residents of Jinja City, 58 (64.4%).

Table 1. Sociodemographic characteristics of participants in the referral trends assessment.

	Trends of the referral study		Compliance with the referral study	
Variable	**[n = 1947]**	**%**	**[n = 90]**	**%**
Sex of patient				
Female	805	41.3	44	48.9
Male	1142	58.7	46	51.1
Age of patient				
<10 years	162	8.3	5	5.6
10 to 25 years	290	14.9	12	13.3
26 to 41 years	641	32.9	17	18.9
42 to 57 years	429	22.0	25	27.8
More than 57 years	425	21.8	31	34.4

Continued

Description of the patient's residence				
Rural	1068	54.9	76	84.4
Urban	879	45.1	14	15.6
Marital status of the patient				
Married/Cohabiting	823	42.3	23	25.6
Single	401	20.6	18	20.0
Widowed	138	7.1	30	33.3
N/A (Child)	163	8.4	19	21.1
Unknown	392	20.1		
Divorced	30	1.5	174	54.4
The education level of the patient			146	45.6
Primary	610	31.3		
Secondary	440	22.6	48	53.3
University	193	9.9	5	5.6
No formal education	348	17.9	11	12.2
Un known	356	18.3	5	5.6
District of residence of the patient				
Jinja	1063	54.6	58	64.4
Bugiri	57	2.9	0	100.0
Iganga	107	5.5	8	8.9
Mayuge	133	6.8	3	3.3
Kaliro	10	0.5	1	1.1
Kamuli	73	3.7	4	4.4
Buyende	27	1.4	2	2.2
Buikwe	231	11.9	7	7.8
Mukono	20	1.0	2	2.2
Kayunga	68	3.5	0	100.0
Luuka	30	1.5	1	1.1
Kampala	25	1.3	0	100.0
Butambala	10	0.5	0	100.0
Namayingo	27	1.4	2	2.2
Namutumba	31	1.6	2	2.2
Buvuma	10	0.5	0	100.0
Wakiso	10	0.5	0	100.0
Soroti	5	0.3	0	100.0
Budaka	5	0.3	0	100.0
Bugweri	5	0.3	0	100.0

2.2. The Trends of Patient Referrals between 2019 and 2022, from Kyabirwa Surgical Center

Figure 1 below shows the prevalence of patient referral from Kyabirwa Surgical Center, between 2019 and 2022, and it can be seen that the prevalence stood at 15.6%.

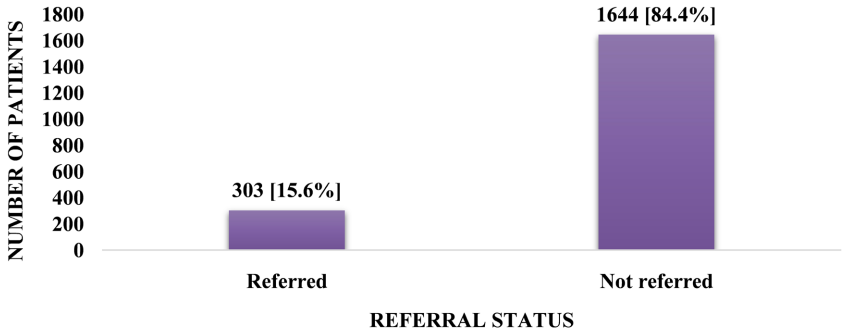

Figure 1. Prevalence of patient referral at KSC, between 2019 and 2022.

2.3. Trends of Referral between 2019 and 2022

An analysis of the pattern of referral of patients from the KSC between 2019 and 2022 revealed that patient referral prevalence was initially 16.7% in 2019, increased to 20.5% in 2020, further increased to 28.1% in 2021, and then considerably decreased to 7.7% by 2022 (Figure 2).

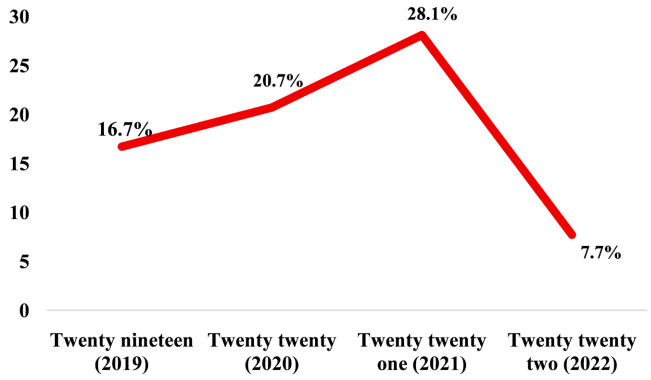

Figure 2. Trends of referral between 2019 and 2022.

When disaggregated by patient and institutional characteristics, 18.9% of the female patients were referred, compared to only 13% of the male patients. Almost a third (29.7%) of the patients aged between 42 and 57 years had been referred, while almost a quarter of the patients who had been referred from another facility were referred from the KSC, compared to those who had not been referred from other facilities. Almost half of the patients (46.2%) who were in a severe state at the time they sought care from the KSC were referred. Most patients had oncological (40.9%), cardiological (83.3%), neurological (50.0%), pediatric (100%), and urological conditions (50.0%). The least referred to were conditions that required

general surgery, which, even at the time (2019-2022), were being fully provided at the KSC.

2.4. The Level of Compliance with Referrals

Almost three-quarters 67 (74%) of the patients who were referred from the KSC between 2019 and 2022 complied with the referral; that is, they physically sought healthcare from the referral facility (Figure 3).

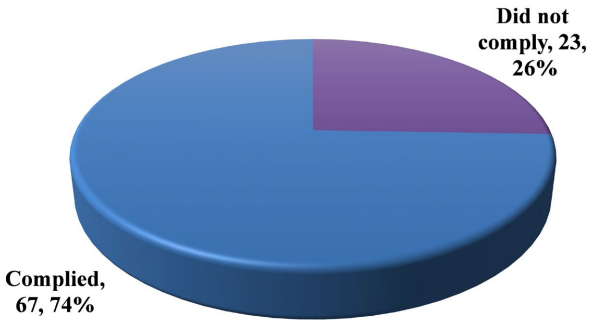

Figure 3. The level of compliance with referrals among patients referred from Kyabirwa Surgical Center to other health units.

2.5. Factors Associated with Compliance with Referrals

A total of eight variables (seven intrapersonal and one institutional) showed a statistically significant association with compliance with referrals among patients at the KSC. Patients who had been educated to lower primary school had 86% lower odds of complying with their referrals (aOR = 0.137 (95% CI = 0.025 - 0.751), P = 0.022) compared to those who had post-secondary education. Patients who reportedly understood why they had been referred from the KSC were four times more likely to comply (aOR = 4.199 [95% CI = 1.185 - 14.880], P = 0.026) compared to those who did not understand why they had been referred from the KSC.

Patients who were in good condition as per electronic medical record at the time of consultation were three times as likely to comply with their referrals (aOR = 3.335 [95% CI = 1.050 - 10.595], P = 0.041), while those who had used a Boda Boda (motorbike) as a means of transport to KSC had 93% less chance of complying (aOR = 0.072 [95% CI 0.011 - 0.460], P = 0.005) compared to those who used a taxi.

Patients who strongly disagreed that the health facility they were referred to was too far, and they could not go there, were 18 times more likely to comply (aOR = 18.575 [95% CI = 1.147 - 30.722], P = 0.040) compared to those who strongly agreed. Patients who disagreed that they had gone to a different facility for their follow-up care that was not the one recommended by the KSC were more likely to comply (aOR = 7.119 (95% CI = 1.407 - 16.011), P = 0.018) than those who agreed.

Patients who disagreed that they were scared to go to follow-up were 15 times as likely (aOR = 15.133 [95% CI = 1.634 - 24.153], P = 0.017) to comply, compared

to those who were reportedly scared. Patients who were educated by the KSC staff about the referral facility and its location had three times the odds of complying with their referrals (aOR = 3.333 [95% CI = 1.004 - 11.069], P = 0.049) compared to those who were not educated about the referral facility and its location by the KSC staff (Table 2).

Table 2. The factors associated with compliance to referrals among patients referred from Kyabirwa Surgical Center to other health units.

Variable	Crude Estimates		Adjusted Estimates	
	cOR (95% CI)	P value	aOR (95% CI)	P value
Level of education				
Primary (lower)	0.128 (0.024 - 0.687)	0.016**	0.137 (0.025 - 0.751)	0.022**
Primary (upper)	2.000 (0.165 - 24.191)	0.586	1.866 (0.152 - 22.944)	0.626
Secondary (O level)	0.275 (0.052 - 1.444)	0.127	0.299 (0.056 - 1.607)	0.159
Post secondary	1.000		1.000	
Understood why referred				
Yes	3.195 (1.149 - 8.887)	0.026**	4.199 (1.185 - 14.880)	0.026**
No	1.000		1.000	
Patient in good condition as per the electronic medical record at the time of consultation				
Yes	2.995 (1.090 - 8.233)	0.033**	3.335 (1.050 - 10.595)	0.041**
No	1.000		1.000	
Transport means to KSC.				
Own Transportation	1.037 (0.086 - 12.455)	0.977	1.104 (0.085 - 14.347)	0.940
Boda	0.109 (0.023 - 0.520)	0.005**	0.072 (0.011 - 0.460)	0.005**
Taxi	1.000		1.000	
The health facility I was referred to is too far, and I couldn't go there.				
Strongly disagreed	21.000 (1.868 - 46.029)	0.014**	18.575 (1.147 - 30.722)	0.040**
Disagreed	5.500 (0.514 - 58.833)	0.159	4.751 (0.341 - 16.144)	0.246
Undecided	3.000 (0.150 - 59.890)	0.472	3.253 (0.132 - 8.277)	0.471
Agree	1.000		1.000	
I was scared to go to the follow-up.				
Strongly disagreed	7.111 (1.116 - 45.292)	0.038**	11.997 (1.402 - 22.664)	0.023**
Disagreed	9.600 (1.363 - 67.596)	0.023**	15.133 (1.634 - 24.153)	0.017**
Undecided	4.000 (0.363 - 44.113)	0.258	6.020 (0.324 - 11.865)	0.229
Agree	3.333 (0.362 - 30.701)	0.288	2.503 (0.219 - 28.598)	0.460
Strongly agree	1.000		1.000	
Staff educated the patient about the referral facility and its location.				
Yes	3.227 (1.016 - 10.242)	0.047	3.333 (1.004 - 11.069)	0.049**
No	1.000		1.000	

2.6. Summary of Findings on Compliance with Referral among Surgical Patients

Understanding the reasons for referral, good functional status at the time of referral, perceived short distance to referral facility, being followed up by referral facility, having no fear of referral facility, and education by KSC staff about the referral facility increased the odds of compliance.

3. Discussion

The prevalence of patient referral from Kyabirwa Surgical Center between 2019 and 2022 was 15.6%, which translates to approximately 2 in every 10 patients who had sought healthcare services from the center during that period. This finding implies that within that period, the patient referral rate exceeded the revered referral rate of less than 10% [12]. For a country's first free ambulatory surgical center, such as the KSC, such a patient referral rate may have certainly had consequences at the patient, institutional, and health system levels. The level of patient referral from KSC from 2019 to 2022 was higher than the referral rate previously reported by [3] (2.2%) and [35] (14%) in Mumbai. The only difference between these findings and the current findings is that none of those studies was conducted at a freestanding ambulatory surgical center that had just opened. Thus, there was a difference in patient volume, servicing, and staffing dynamics between the KSC and hospitals in the studies by [3] and [35]. Some studies have reported higher patient referral rates, including [36] 25%, [37] [38] (15% - 32%), [39] (20.3%), and [40] (31%). However, most of those studies were biased toward obstetric patients only and not patients who were seeking ambulatory care, who usually turn up for elective care only, and are thus less likely to be referred for emergency care. However, it should be noted that the 2 in 10 patients being referred translates to 20 in every 100 patients and/or 200 in every 1000 patients. Therefore, the fact that, on average, up to 2600 patients sought care from the KSC annually, between 2019 and 2022, it can be asserted that about 500 patients were referred from the center, per year, in that period of time. This was an alarming rate of patient referral, premised on evidence that the 500 patients who were referred could have had surgical illnesses. This implies that they may have undergone repetitive diagnostic testing on their own economic account [41] [42], thus predisposing them to catastrophic health expenditures, contrary to the recommendations of the Lancet Global Commission on Global Surgery. Even worse, such a high referral rate can dent the reputation of a hospital [43], since it could be perceived as having a low service capacity. Such a perception of a novel freestanding ambulatory surgical center like KSC can be negatively consequential at many levels, as it can hamper patient volumes and potentially discredit the ambulatory surgery model. However, further analysis of the trends of referral of patients from the KSC between 2019 and 2022 revealed that patient referral incidence was significantly reduced from 16.7% to 7.7% by 2022 (**Figure 1**). This happened because KSC started operations in 2019, a time when its staff, infrastructure, and service capacities were still low, albeit

with an improvement trajectory.

Thus, in 2019, there were higher odds of a patient being referred to another facility since they were likely to find a given specialty missing at the time. This explains why the number of referrals increased between 2019 and 2020. However, following 2020, the KSC recruited more staff, including nurses and medical doctors, and improved its infrastructure. Referrals decreased henceforth; between 2021 and 2022, they had reduced by 10% and have reduced even more now (2024), given a further increase in infrastructural capacity and staff capacity, typified by the establishment of a gynecology department in 2023. In fact, one of the referral trends indicated that 18.9% of the female patients had been referred, compared to only 13% of the male patients, consistent with the findings of [44]. Between 2019 and 2022, gynecological surgery services were not provided at the KSC, implying that women who needed to undergo such surgery were referred. Still, older patients (greater than 50 years) were referred most, consistent with findings by [45], because age is directly proportional to surgery complication risk and because older age is associated with a higher risk for multimorbidity, which, at times, demands more care needs, including longer hospitalization, which ambulatory surgery does not support. The finding that patients who had been referred from another facility were further referred from KSC was also expected because most of them were referred when already in critical condition. Such patients also require longer hospital stays, contrary to ambulatory surgery models, and some of them have been referred to seek surgical care services that were not being provided at the time.

The disaggregation also showed that most of the cases that were referred required oncological, cardiological, neurological, pediatric, or urological surgery, none of which was being provided at the time (2019-2022), at KSC. General surgery was the main surgical service provided during that period, which explains why general surgery cases were the least frequently referred. Therefore, it can be asserted that most patient referrals from KSC were justified. Nevertheless, it was also found that some patients (26%) who were referred from the KSC did not comply with the referrals. This implies that about seven in every 10 patients who were referred did not make physical contact with the healthcare service providers they had been referred to. Some of those patients may have experienced worsening prognosis of the surgical conditions they had sought care for at KSC, and perhaps succumbed to them. While such outcomes cannot be explicitly linked to the KSC, the center certainly played a role in them; however, it was negligible.

Compliance with the referrals was found to be associated with a number of factors, including education; patients who had been educated to lower primary had 86% lower odds of complying with their referrals compared to those who had post-secondary education. This finding was expected, given that it is typically with education that one appreciates certain things, including the justification for referral to another facility. That education comes with higher knowledge and, hence, better health-seeking behaviors, which include compliance with referral. This explains the other finding that patients who reportedly understood why they had

been referred from the KSC were four times more likely to comply. In addition, knowledge comes with a lower likelihood that one will be scared about being referred to another facility since they will instead view the merits of doing so and comply. This also explains why patients who disagreed that they were scared to go to follow-up were 15 times as likely. Such patients had a substantial understanding of what their referral entailed, and they perceived it as beneficial, as opposed to being a threat. In most cases, it is still patients who are well taught by referring staff about the referral facility, where it is located, and the importance of being referred. That knowledge definitely nullifies any fears and ensures compliance, and it is on the same note that patients who were educated by KSC staff about the referral facility and its location had three times the odds of complying with their referrals. As expected, patients who strongly disagreed that the health facility they were referred to was too far, who could not go there, were 18 times more likely to comply compared to those who strongly agreed. The actual or perceived long distance to a facility has been previously found to be a significant barrier to healthcare access, and this was confirmed in this study. The findings of this study are akin to the perceived or actual distance that a given person has to cover to reach the referral facility, and it implies that a mere perception of a facility being at a not-so-long distance is enough to motivate them to travel to the referral facility. As expected, patients who were in good condition according to the electronic medical record at the time of consultation were three times as likely to comply with their referrals. This was simply because being in good health is associated with a higher potential for mobility, including the handling of movement to a distant referral facility. Thus, for a patient in good clinical condition at the time of referral, the odds of compliance are definitely higher. It was also interesting to note that patients who had used a Boda Boda (motorbike) as a means of transport to KSC had a 93% lower chance of complying compared to those who used a taxi. This finding, to an extent, relates to the socioeconomic status of such patients as well as their clinical status at the time they leave the KSC following referral. Compared to people who own a means of transport, those who use Boda Bodas usually have a lower socioeconomic standing and may hence find it more economically feasible to travel to a given facility to which they are referred. Second, during 2019 and 2022, the road leading to KSC was in a poorer state than it is now (2024), to the extent that people travelling by bike felt the impact of its rough surface more. There have been some reports of patients leaving KSC after discharge and getting home while in more pain or feeling sicker because of the road. Therefore, it can suffice to say that patients who used Boda Bodas got more morbid after being referred and perhaps found it harder to comply in time or at all.

4. Conclusion

Approximately 2 in every 10 patients who sought healthcare services at the Kyabirwa Surgical Center between 2019 and 2022 were referred to other facilities. While this was considerably high at the time, there was a gradual reduction in the rate of referral starting in 2020, although female patients, patients previously

treated at KSC, those who were in a severe clinical state, and those who presented with oncological, cardiovascular, pediatric, urological, and neurological conditions. Thus, almost all cases of patient referral performed during 2019 and 2022 at the KSC were clinically justified. Of some concern, not all patients referred from the KSC complied with the referral; only 7 in 10 of them did, with almost all factors influencing their compliance being intrapersonal. The rate of referral of patients from the KSC has certainly decreased further since 2022, going by the trend identified in this study, and the fact that the service capacity of the center has increased since then. However, compliance with referrals could still be a challenge to date, and going by the findings, it can be augmented by providing comprehensive but easy-to-understand education to each referred patient. Education should cover reasons for referral, details of the referral facility, and referral benefits. Particular emphasis on education should be placed on patients with lower primary education. The findings of this study serve as evidence that standalone ambulatory surgical care facilities, even in low- and middle-income countries, can handle most surgical cases of patients who seek care from them, with minimal referrals. Such a trend will most likely be guaranteed with the expansion of the surgical care case catalogue that can be handled at such facilities, as well as the sensitization of the masses about which types of standalone ambulatory surgery providing facilities can handle.

5. Limitations

Two limitations could have affected estimates of compliance with referrals, one of which was the use of consecutive sampling to sample the patients who were assessed for compliance. Therefore, while the choice of consecutive sampling was justified, it may have come with sampling bias that came with not giving each patient an equal chance of participation. That may have led to possible over- or underestimation of the level of compliance with referrals. While self-reporting was used during compliance assessment, it could have led to overestimation of the same, among a few patients who had no records to be used in verifying their claims of reaching out to the referral facility, and yet their supposed referral facilities were not reachable via telephone. Nonetheless, an endeavor was made to deeply probe such patients to verify the compliance claims.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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