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**Factors in the Health System Affecting the Results of
Gynecological Surgeries at Hoima Regional Referral
Hospital, Hoima District, Western Uganda**

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ABSTRACT

According to the World Health Organization (WHO), complications from gynecological procedures affect an estimated 50,000–100,000 women worldwide, primarily in sub-Saharan Africa and Asia. Determining the health care parameters impacting the results of gynecological procedures at Hoima Regional Referral Hospital (HRRH) was the primary goal of this study. The study used a descriptive cross-sectional study design to collect information on health care factors influencing the results of gynecological surgeries at HRRH, which is located in Hoima Municipality, about 200 km west of Kampala and serves the populations of the Greater Bunyoro Region and the Eastern part of the Democratic Republic of the Congo, totaling over 3 million people. 305 (38.1%) of the 384 patient files that were sampled experienced a full recovery with no complications, compared to 79 (20.6%), who mostly experienced issues at the surgery site (29/79). Pre-operative factors included receiving pre-operative resuscitation (91.7% of cases), prophylaxis (89.6%), being clinically stable before to surgery (97.9%), and having elective surgery (71.4% of cases). Regarding intra-operative aspects, the majority (58.1%) used spinal anaesthetic, and (42.7%) the procedure was carried out by senior house officers. Following surgery, the majority of patients were observed receiving pain relief (66.7%), intravenous antibiotics (78.6%), and monitoring every hour (48.7%). Gynecological surgery problems are more common than ever, with surgical site complications being the most common. This requires for coordinated efforts at all levels of the gynecological maternal care system.

Keywords: health care, factors, outcome, gynaecological surgeries

INTRODUCTION

An estimated 2-3 million women globally and majorly in sub-Saharan Africa and Asia, suffer from complications of gynaecological surgeries (like fistulas and others) with an incidence of 50,000-100,000 women [1, 2]. Uganda like other low-income countries is not an exception and has an estimated prevalence of 2% with Western Uganda having the highest prevalence of 4% among females aged 15-49 years, of which Bunyoro (Hoima) is part of Western Uganda (Department of Obstetrics and Gynaecology Makerere University 2015). With the current advancements in healthcare facilities, services and understanding of medical conditions and health issues, together with an increased life expectancy, more people, especially women, are able to access healthcare services. There has been a commensurate increase in the need for gynecological services

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including surgeries and with this an increase in the incidence of post-surgical complications and adverse post-surgical outcomes [3, 4].

In addition to the general risks expected in any surgery such as hemorrhage, infections and post-anesthetic complications, gynecologic surgery comes with the potential for a myriad of other complications unique for this field of medicine. For instance, the close proximity of the female genital organs to other pelvic and abdominal viscera and vasculature poses a risk of trauma to these structures during gynecological surgeries [5].

Should such injuries occur, and get identified intra-operatively, necessary reparative measures will prolong exposure to anesthesia and subsequently patient recovery. If they were to be discovered post-operatively, further surgical interventions may be necessary to correct this [6, 7].

Healthcare-related factors influencing risk of complications include the surgical approach used, the extent of tissue manipulation among others, and these may affect the outcome of gynecologic surgeries [8, 9].

It is obvious that, underlying patient condition, nature and extent of gynecological surgery done together with other healthcare-related factors play a major role in influencing the overall outcome of these gynecological surgeries. Therefore, we chose to conduct a study on the factors influencing outcomes of gynecological surgeries at Hoima Regional Referral Hospital (HRRH).

METHODOLOGY

STUDY DESIGN

A descriptive cross section study design was used [10].

STUDY AREA

The study was carried out at Hoima Regional Referral Hospital

STUDY POPULATION

Patients who underwent gynecology surgeries at the gynecological ward of Hoima Regional Referral Hospital

INCLUSION CRITERIA

All patients who underwent gynecological surgeries from January 2019 to December 2020 and whose files could be accessed were included

EXCLUSION CRITERIA

Patient who attended the gynecological ward during the same period but for non-surgical cases and those who underwent surgery but their files could not be accessed.

SAMPLE SIZE DETERMINATION

The sample size was determined using the Kish Leslie (1965) formula i.e. $n = Z^2 p(1-p) / E^2$:

Where;

n is the estimated desired sample size

Z is the standard normal deviation taken as 1.96 at a confidence interval of 95%.

p is the likelihood of development of complications among post-surgical patients taken as 50%. (no data was forthcoming in a similar study cohort within or around the neighboring region so 50% value was chosen)

(1-p) which is the population without the desired characteristics.

E is 0.05 which is the margin of error

Therefore, $n = 1.96^2 \times 0.5 (1-0.5) / (0.05)^2 = 384.16$

384 respondents were used as a representative sample among the study population.

SAMPLING TECHNIQUE

Purposeful sampling of patient files was used for the study until the required sample size was obtained.

DATA COLLECTION METHOD TOOLS AND PROCEDURES

Data collection was through review of patient files and operation notes. An objective-oriented checklist was used to capture data concerning the indication for surgery, surgical procedure done, length of surgical procedure, type of anaesthesia used and what was done during pre-, intra- and post-operatively.

DATA ANALYSIS

Data obtained was exported to SPSS version 20 and analyses are presented in the form of statements, graphs, tables and charts.

ETHICAL CONSIDERATIONS

Formal Clearance was obtained from Kampala International University-Western Campus faculty of clinical medicine & dentistry through IREC. Hospital Authorities on behalf of the Participants were assured of confidentiality and use of the information obtained only for the purpose of the research [11]. Only patient I.P. numbers were used just to prevent repetitions in data entry.

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RESULTS

From table 1 below, 79.4% (305) of the 384 sampled women had full recovery following their gynecological surgeries while 20.6% (79) recovered with complications. Among those with complications, majority (29) had surgical site complications, followed by those with other complications (23), sustained trauma to surrounding structures (11); developed post-op hemorrhage and CVS complications (10) and who acquired paralytic ileus (6).

Table 1 showing outcomes of gynecological surgeries at HRRH

Gynecological Surgery Outcome	Frequency (%)
Full Recovery	305 (79.4)
With complications	79 (20.6)
Total	384
Complications	
Trauma to surrounding structures	11 (2.9)
Post-op hemorrhage and CVS complications	10 (2.6)
Paralytic ileus	6 (1.6)
Surgical site complications	29 (7.6)
Others	23 (6.0)
Total	79 (20.6)

Figure 1: Bar graph showing the outcomes of gynecological surgeries at HRRH

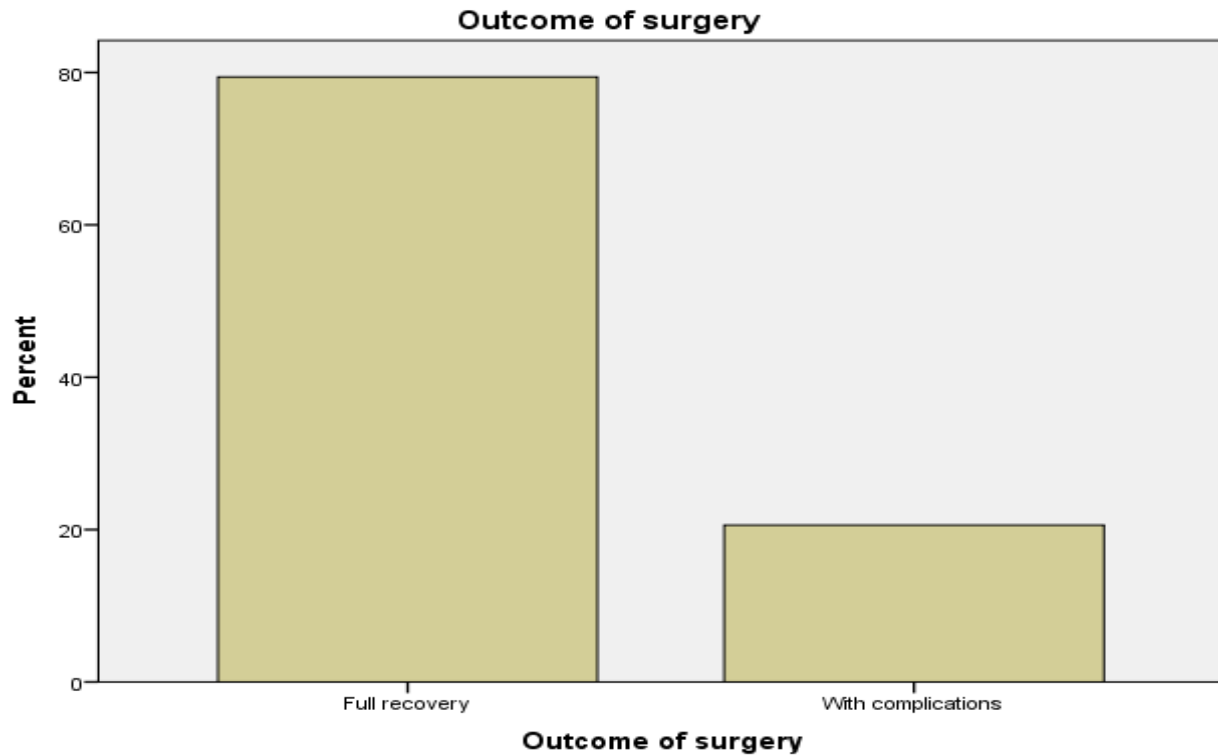
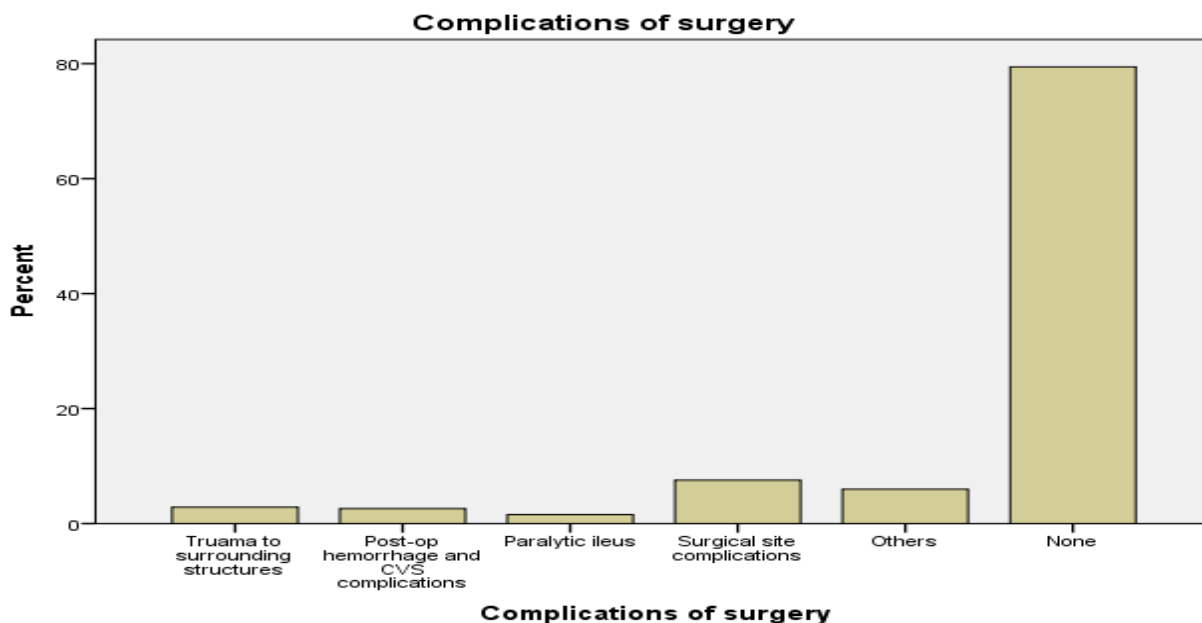


Figure 2: Bar graph showing the most common complications associated with gynecological surgeries at HRRH

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Considering pre-op factors, majorities were found to have received pre-op resuscitation (91.7%), pre-op prophylaxis (89.6%) and were stable (97.9%). Respectively, 8.3 % had not received pre-op resuscitation, 10.4% had not received pre-op prophylaxis and only 2.1% were not stable before operation. The most common type of surgery was elective (71.4%) while only 28.6% were emergent.

Table 2: Showing pre-op factors affecting outcome of gynecological surgeries among women at HRRH

Variable	Frequency (%)
Pre-op Resuscitation	
Was done	352 (91.7)
Was not done	32 (8.3)
Pre-op prophylaxis	
Was done	344 (89.6)
Was not done	40 (10.4)
Pre-op patient status	
Stable	376 (97.9)
Not stable	8 (2.1)
Type of Surgery	
Elective	274 (71.4)
Emergency	110 (28.6)

From table 3 below, 58.1% of the patient received spinal anesthesia, 29.4% received local anesthesia while 12.5% received general anesthesia. Majority (174) of the patients were operated using other incisions than the vertical (126) or horizontal (84) abdominal incisions. Most (42.7%) of the operations were recorded to have lasted for one hour or less followed by those which lasted for 2-3 hours (39.1%) and then those over 3 hours (18.2%). Majority (49.5%) of the operations were conducted by Senior House Officers, followed by Medical Officers (19.3%), Consultants (12.5%), Intern Doctor (11.2%) and sometimes Professors (7.6%).

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Table 3: Showing Intra-op factors affecting outcome of gynecological surgeries at HRRH

Variable	Frequency (%)
Type of Anesthesia	
Local	113 (29.4)
Spinal	223 (58.1)
General	48 (12.5)
Type of Incision	
Vertical Incision	126 (32.8)
Horizontal	84 (21.9)
Other Incision	174 (45.3)
Duration of surgery	
One hour or less	164 (42.7)
2-3 hours	150 (39.1)
>3hours	70 (18.2)
Cadre of the surgeon	
Intern Doctor	43 (11.2)
Medical Officer	74 (19.3)
Senior House Officer	190 (49.5)
Consultant	48 (12.5)
Professor	29 (7.6)

Out of the 384 sampled women, 41.4% were recorded to have been monitored post-operatively every 30 minutes, 48.7% for every hour and then 9.9% for an interval more than an hour. Majority (78.6%) received I.V antibiotics post-operatively and only 21.4% were recorded to have received oral antibiotics. More than half (66.7%) of the sampled group were reported to have received I.V pain management pos-operatively with 33.3% who received oral pain management as shown in table 4 below.

Table 4: Showing post-operative factors contributing the gynecological surgeries outcome

Variable	Frequency (%)
Post-op monitoring	
Done every 30 minutes	159 (41.4)
Done every hour	187 (48.7)
Done more than an hour	38 (9.9)
Post-op antibiotics	
I.V antibiotics	302 (78.6)
Oral antibiotics	82 (21.4)
Post-op pain management	
I.V management	256 (66.7)
Oral management	128 (33.3)

From multi-nominal logistic regression analyses, a significant degree of association was found between pre-operative factors and a few post-operative factors with the outcome of gynecological surgeries. There was a statistically significant association ($P < 0.001$) between pre-op resuscitation and the ultimate outcome of the surgery. Furthermore, women who didn't receive pre-op prophylaxis were less likely [$OR = 0.207(0.105-0.409)$, 95% CI, $P < 0.001$] to have a full recovery as compared to those who received. Similarly, women who were clinically unstable before going for surgery were less likely [$OR = 0.080(0.016-0.406)$, 95% CI, $P = 0.002$] to have a favorable outcome as opposed to those who were stable. Concerning the type of surgery, women who had emergency operations were less likely [$OR = 0.581(0.345-0.978)$, 95% CI, $P = 0.041$] to have a full recovery as compared to those who underwent elective operations [$OR = 1.722(1.023-2.900)$, 95% CI, $P = 0.041$]. There was a strong level

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of association between the ultimate gynecological surgery outcome and form of post-op antibiotics ($P < 0.001$) as well as the form post-op pain management ($P = 0.006$) as illustrated in table 5 below.

Table 5: Showing level of association between health care factors and ultimate outcome of gynecological surgeries

Variable	Gynecological surgery outcome			
	Full Recovery, n (%)	Complicated, n (%)	Odds Ratio, 95%CI	P-value
Pre-op Resuscitation				<0.001*
Was done	282 (80.1)	70 (19.9)	Ref.	
Was not done	23 (71.9)	9 (28.1)	0.634(0.281-1.431)	0.273
Pre-op prophylaxis				
Was done	285 (82.8)	59 (17.2)	Ref.	
Was not done	20 (50.0)	20 (50.0)	0.207(0.105-0.409)	<0.001*
Pre-op patient status				
Stable	303 (80.6)	73 (19.4)	Ref.	
Not stable	2 (25.0)	6 (75.0)	0.080(0.016-0.406)	0.002*
Type of Surgery				
Elective	225 (82.1)	49 (17.9)	1.722(1.023-2.900)	0.041*
Emergency	80 (72.7)	30 (27.3)	0.581(0.345-0.978)	0.041*
Type of Anesthesia				
Local	95 (84.1)	18 (15.9)	Ref.	
Spinal	175 (78.5)	48 (21.5)		
General	35 (72.9)	13 (27.1)		
Type of Incision				
Vertical Incision	107 (84.9)	19 (15.1)	1.418(0.768-2.617)	0.264
Horizontal	59 (70.2)	25 (29.8)	0.594(0.327-1.079)	0.087
Other Incision	139 (79.9)	35 (20.1)	Ref.	
Duration of surgery				
One hour or less	131 (79.9)	33 (20.1)	Ref.	
2-3 hours	121 (80.7)	29 (19.3)	1.051(0.602-1.834)	0.861
>3hours	53 (75.7)	17 (24.3)	0.785(0.403-1.529)	0.477
Cadre of the surgeon				
Intern Doctor	34 (79.1)	9 (20.9)	0.787(0.234-2.644)	0.698
Medical Officer	55 (74.3)	19 (25.7)	0.603(0.202-1.804)	0.366
Senior House Officer	149 (78.4)	41 (21.6)	0.757(0.272-2.107)	0.594
Consultant	43 (89.6)	5 (10.4)	1.792(0.471-6.818)	0.392
Professor	24 (82.8)	5 (17.2)	Ref.	
Post-op monitoring				
Done every 30 minutes	125 (78.6)	43 (21.4)	Ref.	
Done every hour	147 (78.6)	40 (21.4)	1.000(0.597-1.674)	0.999
Done more than an hour	33 (86.8)	5 (13.2)	1.795(0.651-4.949)	0.258
Post-op antibiotics				<0.001*
I.V antibiotics	246 (81.5)	56 (18.5)	Ref.	
Oral antibiotics	59 (72.0)	23 (28.0)	0.584(0.333-1.025)	0.61
Post-op pain management				0.006*
I.V management	204 (79.7)	52 (20.3)	Ref.	
Oral management	101 (78.9)	27 (21.1)	0.954(0.565-1.608)	0.858

*Ref. – Reference parameter; * - Statistically significant variable*

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DISCUSSION

This current study has found the rate of full recovery from gynecological surgeries to be 79.4%. However, the rate of complications is also on the rise almost 7 times higher as compared to other findings by Ereksun and colleagues 2011 showed that the overall prevalence of composite 30 day major postoperative complications to be 3.7% with complications ranging from infections, fistula, bleeding etc. [12]. Furthermore, among those who got complications in this current study, the most prevalent were surgical site complications (29 of 79 women) ranging from infections, hematomas, wound dehiscence or severe sepsis. This was also in line with discoveries about 3years ago which showed that the most frequent complications that arise included complications of urinary reconstruction, wound dehiscence and abdominal abscess requiring intervention with drain or return to the operating table [13] but slightly divergent as compared to a study conducted Caruthers 2014 which showed that 6.96% ended up in deaths, 23.8% developed infections, and 1.8% developed fistulas [14].

This study has found a significant degree of association between pre-operative factors and a few post-operative factors with the outcome of gynecological surgeries; with statistically significant association ($P < 0.001$) between pre-op resuscitation and the ultimate outcome of the surgery. Not receiving pre-op prophylaxis [OR=0.207(0.105-0.409), 95% CI, $P < 0.001$] and not being clinically unstable before going for surgery [OR=0.080(0.016-0.406), 95% CI, $P = 0.002$] have been found to less likely result in favorable surgical outcome. Additionally, women who had emergency operations were less likely [OR=0.581(0.345-0.978), 95% CI, $P = 0.041$] to have a full recovery as compared to those who underwent elective operations [OR=1.722(1.023-2.900), 95% CI, $P = 0.041$] and there was a strong level of association between the ultimate gynecological surgery outcome and form of post-op antibiotics ($P < 0.001$) as well as the form post-op pain management ($P = 0.006$). Apart from the strong association found by [12] between the operative time and the ultimate outcome, these current findings are partly in agreement with earlier discoveries which revealed that women who had emergency procedures (adjusted OR = 1.82(95% CI 1.18,2.79) were 1.8 times more likely to have complicated outcomes [12].

CONCLUSION

Complications in gynecological surgeries are increasing, with surgical site complications being the most common. Negative outcomes include not receiving pre-op resuscitation, clinical instability, and emergency operations.

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