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Research Article

Prevalence, Indications and Surgical Outcomes in Gynaecological Hysterectomy for Benign Disorders at the Rivers State University Teaching Hospital, Port-Harcourt, Nigeria: A Six-Year Review

Peter A Awoyesuku*, Ngozi J Kwosah, Simeon C Amadi and Dickson H John

Department of Obstetrics and Gynaecology, Rivers State University Teaching Hospital, Old G.R.A, Port-Harcourt, Nigeria

***Corresponding Author:** Peter A Awoyesuku, Department of Obstetrics and Gynaecology, Rivers State University Teaching Hospital, Old G.R.A, Port-Harcourt, Nigeria.

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Abstract

Background: Hysterectomy is a major gynaecological operation for removal of the uterus with or without the cervix and adnexal structures for therapeutic purpose. There is paucity of data on gynaecological hysterectomy for benign disorders in our environment.

Objective: This study sought to determine the prevalence and indications for gynaecological hysterectomy for benign conditions, evaluate the surgical outcome and assess the associated factors in women.

Methodology: This was a retrospective review of gynaecological hysterectomies performed between March 2015 and February 2021. Data were obtained from operating theater and gynaecological ward records. Information on maternal age, parity, indication for surgery, length of surgery, estimated blood loss and any blood transfusion, post-operative complication, and mortality, were extracted. Data were analyzed using SPSS version 20. Categorical measurements were given as numbers and percentages, and numerical measurements as mean and standard deviation. The Chi-square test or Fisher exact test and analysis of variance test were used for statistical analysis of non-continuous and continuous variables as appropriate and statistical significance was set at $p < 0.05$.

Results: There were 1240 major gynaecological surgeries, of which 157 were hysterectomies for benign conditions, giving a prevalence of 12.7%, 112 (71.3%) were abdominal hysterectomies and 45 (28.7%) were vaginal hysterectomies, giving a ratio of 2.5:1. The mean age ± SD was 50.71 ± 10.46 years and median parity was 4. There was significant association between age (P = 0.00001) and parity (P = 0.0001) with the type of hysterectomy performed. The commonest indication was uterine fibroid 89 (56.6%), followed by uterovaginal prolapse 45 (28.7%). The commonest complication was anaemia in 29 (18.5%), followed by wound sepsis in 25 (15.9%). Intraoperative injury occurred in 5 (3.2%) and there was one maternal death (0.6%). There was significant association between duration of surgery with anaemia (P = 0.0001) and women < 49 years were 3x likely to have significant blood loss at hysterectomy than those ≥ 49 years.

Conclusion: The prevalence of benign hysterectomy of 12.7% shows it's a common procedure and the complication rates shows it's a relatively safe procedure. Uterine fibroid is the commonest indication for the abdominal route and utero-vaginal prolapse for the vaginal route. Age and parity were determinants for the route, while duration of surgery and blood loss were determinants for complication. Younger and low parity women, who mainly undergo abdominal hysterectomy, were likely to have significant blood loss at surgery.

Keywords: *Benign Gynaecological Conditions, Abdominal Hysterectomy; Vaginal Hysterectomy; Uterine Fibroids; Utero-Vaginal Prolapse*

Introduction

Hysterectomy is a major gynaecological operation for removal of the body of the uterus with or without the cervix and adnexal structures for therapeutic purpose [1]. When performing a gynaecological hysterectomy, the uterus can be accessed through different routes, which include abdominal, vaginal, laparoscopic, and a combination of vaginal and laparoscopic (laparoscopic assisted vaginal hysterectomy [1].

Abdominal hysterectomy is the removal of the uterus through an abdominal incision. It is total when the uterus and cervix are removed and subtotal when the cervix is spared. Surveys of hysterectomies in Nigeria show that about 70-80% are performed by the abdominal route except in uterovaginal prolapse, when the vaginal route is normally used and makes up 20-30% of all cases of hysterectomies [2,3].

Vaginal hysterectomy is the removal of the uterus and cervix through the vagina, a natural orifice and thereby avoiding an abdominal scar and offering the benefits of a minimally invasive surgery [4,5]. It offers less blood loss, less pain, less hospital stay and early return to normal activities. However, it has a challenge where the uterine size is greater than 12 weeks [2,6].

More recently, the laparoscopic procedures were introduced and have gained grounds in the developed world. They offer all the benefits of minimally invasive surgery as enumerated for vaginal hysterectomy and has been combined with the vaginal route in different approaches. Laparoscopic approach is still rare in Nigeria and only very few hysterectomies using this route have been reported [7-9]. It is not available in our center.

The ratio of vaginal to abdominal hysterectomy varies between 1:6 and 1:2 (average of 1:3) depending on the center, the skill of surgeon, absence of guidelines for selecting route, and patients' lack of knowledge about options [10]. Factors influencing choice of route for hysterectomy for benign conditions include uterine size, accessibility to the uterus, extent of extra-uterine disease, surgeons experience, need for concurrent procedures and patient preference [11-14].

The most common benign gynaecological indications for hysterectomy include uterine fibroid, abnormal (dysfunctional) uterine bleeding, pelvic organ prolapse and premalignant lesions of the uterus, cervix, tubes, and ovaries [15]. In many developed countries, the number of hysterectomies performed has fallen because of more conservative measures for management of dysfunctional uterine bleeding [16]. The prevalence in developing countries ab initio, has been lower due to fear of surgery, fear of loss of femininity and sexual rejection, strong cultural belief, or religious attachment to preservation of menstruation and childbearing [17].

Previously, hysterectomies were associated with morbidities and mortalities, mainly from hemorrhage and infections, but improvements in blood supplies, availability and use of better antibiotics, and safe anesthesia have caused a reduction in the morbidities and mortalities associated with the surgery [18-20]. Following hysterectomy, majority of the women have relief of their symptoms, with associated high level of satisfaction with the procedure [21]. Total abdominal hysterectomy rates of 3.3% to 18.2% of major gynaecological surgeries have been reported in some tertiary health institutions in Nigeria [22-25].

There is paucity of data on gynaecological hysterectomy for benign disorders in our environment. To date, there has been no study carried out to evaluate gynaecological hysterectomy at the Rivers State University Teaching Hospital (RSUTH) Port-Harcourt, Nigeria. This study therefore sought to determine the prevalence and indications of gynaecological hysterectomy at the RSUTH and to evaluate the surgical outcome and assess the associated factors for gynaecological hysterectomy. Findings from this study will serve to establish a baseline information for the pattern of gynaecological hysterectomies in our center and compare the findings with those of other centers.

Materials and Methods

This was a descriptive, retrospective review of gynaecological hysterectomies, carried out for benign conditions, at the RSUTH from 1st

March 2015 to 28th February 2021. The RSUTH is a tertiary hospital owned and funded by the Government of Rivers State of Nigeria. The hospital provides gynaecological consultations and surgeries to women referred from other centres, as well as patients registered with the hospital. The hospital is well equipped and has availability of qualified team comprising of Gynaecologist and Anaesthetists. There is availability of laboratory and blood bank services in the hospital. Ethical clearance was sought for and approval obtained from the RSUTH Research and Ethics Committee (RSUTH/REC/2021089).

The study population was all women who had gynaecological hysterectomy for benign indications at the gynaecological ward of the RSUTH. All cases of gynaecological hysterectomy for benign indications performed over a six-year period, from 1st March 2015 to 28th February 2021, with complete records were included. Those with incomplete data were excluded. Data was retrieved from gynaecological ward records, theatre registers and case folders of all the patients who had gynaecological hysterectomy for benign indications within the study period, using a structured proforma. Information on maternal age, parity, indication, surgical route and type, length of surgery, blood loss, blood transfusion, intraoperative and postoperative complication, and mortality, were extracted.

Coded data were entered into Excel spreadsheet and exported to SPSS version 20 for statistical analysis. Categorical measurements were given as numbers and percentages, and numerical measurements as mean and standard deviation. The Chi-square test or Fisher exact test and ANOVA test were used for statistical analysis of non-continuous and continuous variables as appropriate and statistical significance was set at $p < 0.05$.

Results

During the six-year study period, a total of 1240 major gynaecological surgeries were carried out, of which 157 were hysterectomies for benign conditions, giving a prevalence of 12.7%. Of these 157 cases, 112 (71.3%) were abdominal hysterectomies and 45 (28.7%) were vaginal hysterectomies, giving a ratio of 2.5:1, see figure 1. The distribution of type of hysterectomies, as shown in figure 2, revealed 78 (49.7%) were total abdominal hysterectomy alone, 34 (21.6%) were total abdominal hysterectomy with bilateral salpingo-oophorectomy and 45 (28.7%) were vaginal hysterectomy with pelvic floor repair.

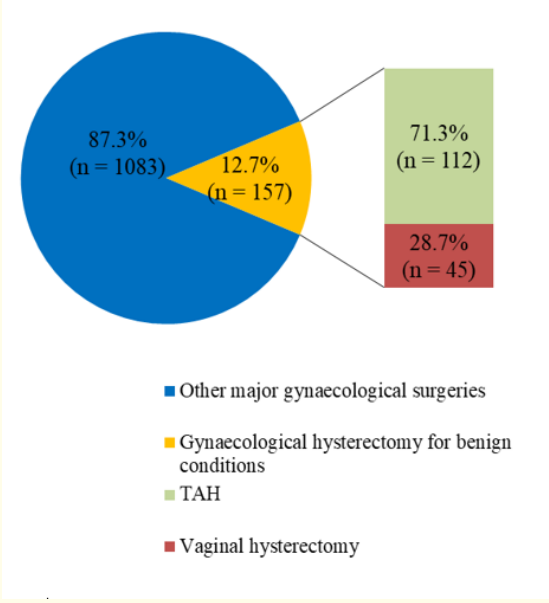

Figure 1: *Prevalence of gynaecological hysterectomy for benign condition among women at the RSUTH.*

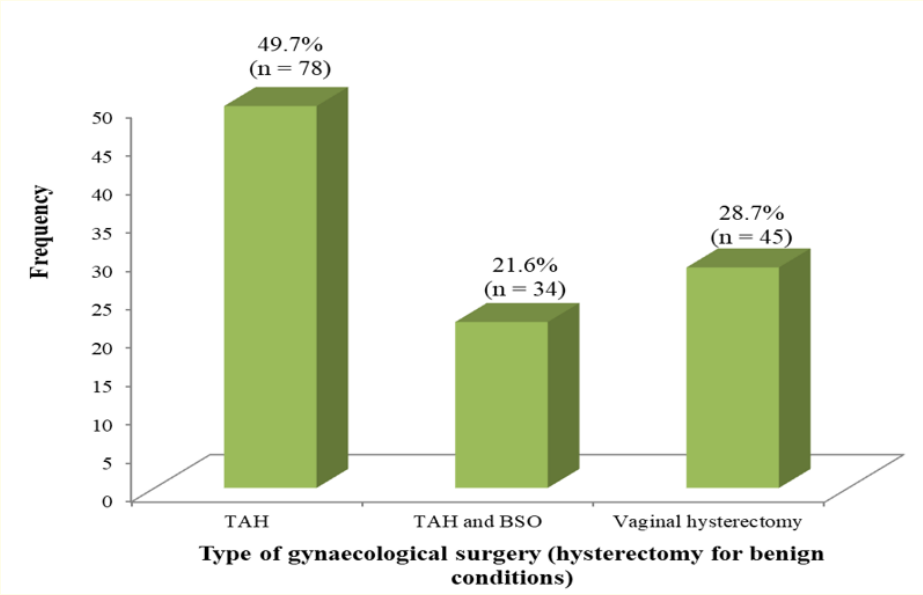

Figure 2: *Distribution of type of gynaecological hysterectomy for benign conditions among women at the RSUTH.*

The mean age of the study population ± SD was 50.71 ± 10.46years, with median of 48years and age range of 30 - 80 years. The median parity was 4, with a range of 0 - 10. Majority of the women, 69 (43.9%) were in the age group of 40 - 49 years, followed by 50 - 59 years 32 (20.4%) and 60 - 69 years 31 (19.7%). Majority of the women 86 (54.8%) were multiparous in the para 2 - 4 group, followed by 54 (34.4%) in the para ≥5 group. The distribution of the maternal characteristics is shown in table 1. The Relationship between age and parity with type of gynaecological hysterectomy among women is shown in table 2. There was a statistically significant association between age (P = 0.00001) and parity (P = 0.0001) with the type of hysterectomy performed, with younger and lower parity women more likely to undergo abdominal hysterectomy while older and higher parity women had vaginal hysterectomy.

Variables	Frequency	Percentage
Age category		
30 - 39 years	17	10.8
40 - 49 years	69	43.9
50 - 59 years	32	20.4
60 - 69 years	31	19.7
≥ 70 years	8	5.1
Parity		
Para 0	10	6.4
Para 1	7	4.5
Para 2 - 4	86	54.8
Para ≥ 5	54	34.4

Table 1: *Characteristics of women who had gynaecological hysterectomy for benign conditions at the RSUTH.*

Variables	Type of gynaecological hysterectomy			
	TAH n (%)	TAH and BSO n (%)	Vaginal hysterectomy n (%)	Total n (%)
Age category				
30 - 39 years	12 (70.6)	5 (29.4)	0 (0.0)	17 (100.0)
40 - 49 years	51 (73.9)	16 (23.2)	2 (2.9)	69 (100.0)
50 - 59years	13 (40.6)	10 (31.2)	9 (28.1)	32 (100.0)
60 - 69 years	2 (6.5)	3 (9.7)	26 (83.9)	31 (100.0)
≥79 years	0 (0.0)	0 (0.0)	8 (100.0)	8 (100.0)
	Chi Square = 99.533; p-value = 0.0001*			
Parity				
Para 0	6 (60.0)	4 (40.0)	0 (0.0)	10 (100.0)
Para 1	5 (71.4)	1 (14.3)	1 (14.3)	7 (100.0)
Para 2 - 4	56 (65.1)	24 (27.9)	6 (7.0)	86 (100.0)
Para ≥5	11 (20.4)	5 (9.3)	38 (70.4)	54 (100.0)
	Fisher's exact test = 70.140; p-value = 0.001*			

Table 2: *Relationship between age and parity with type of gynaecological hysterectomy among women at the RSUTH. Statistically significant (p < 0.05).*

Figure 3 relates to the indications for hysterectomy in the study population. The commonest indication was uterine fibroid 89 (56.6%), followed by utero-vaginal prolapse 45 (28.7%). Others were ovarian tumour 8 (5.1%). Abnormal uterine bleeding 7 (4.5%), endometrial hyperplasia 5 (3.2%) and premalignant cervical neoplasia 3 (1.9%). Table 3 shows the relationship between age and parity with the various indications for gynaecological hysterectomy. There was a statistically significant relationship between age (P = 0.0001) and parity (P = 0.0001) with the indications for hysterectomy. Younger women were more likely to have abdominal hysterectomy for uterine fibroid and older women more likely to have vaginal hysterectomy for utero-vaginal prolapse, while women with parity < 5 are more likely to have hysterectomy for uterine fibroid and those ≥ 5 are more likely to have hysterectomy for utero-vaginal prolapse.

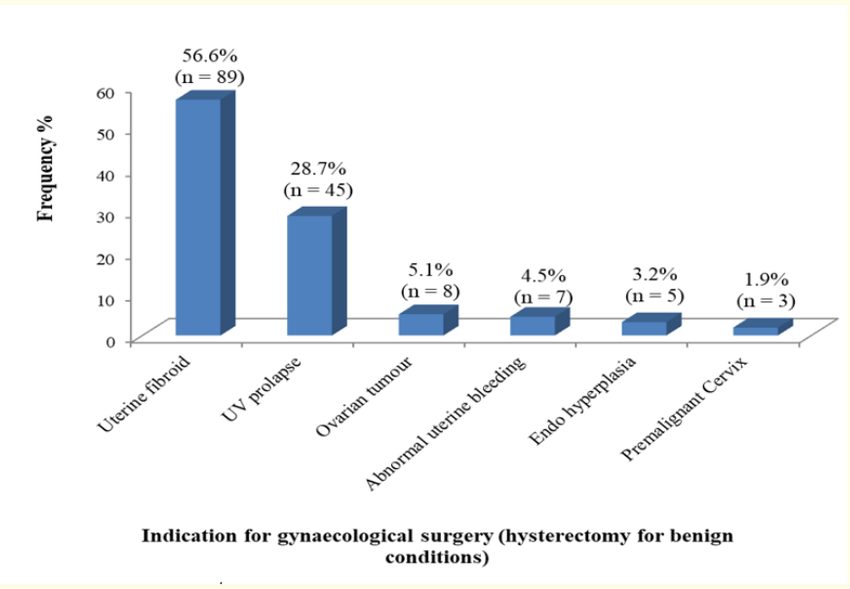

Figure 3: *Indication for gynaecological hysterectomy for benign conditions among women at the RSUTH.*

	Indication for gynaecological hysterectomy for benign conditions						
Variables	**Uterine fibroid n (%)**	**UV prolapse n (%)**	**Ovarian tumour n (%)**	**Abnormal uterine bleeding n (%)**	**Endo hyperplasia n (%)**	**Premalignant cervix n (%)**	**Total n (%)**
Age category							
30 - 39 years	13 (76.5)	0 (0.0)	1 (5.9)	0 (0.0)	2 (11.8)	2 (11.8)	17 (100.0)
40 - 49 years	58 (84.1)	2 (2.9)	3 (4.3)	3 (4.3)	3 (4.3)	0 (0.0)	69 (100.0)
50 - 59years	17 (53.1)	9 (28.1)	3 (9.4)	2 (6.2)	0 (0.0)	1 (3.1)	32 (100.0)
60 - 69 years	1 (3.2)	26 (83.9)	1 (3.2)	1 (3.2)	2 (6.5)	0 (0.0)	31 (100.0)
≥ 79 years	0 (0.0)	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	8 (100.0)
	Chi Square = 115.289; p-value = 0.0001*						
Parity							
Para 0	9 (90.0)	0 (0.0)	1 (10.0)	0 (0.0)	0 (0.0)	0 (0.0)	10 (100.0)
Para 1	5 (71.4)	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (14.3)	7 (100.0)
Para 2 - 4	64 (74.4)	6 (7.0)	4 (4.7)	6 (7.0)	4 (4.7)	2 (2.3)	86 (100.0)
Para ≥ 5	11 (20.4)	38 (70.4)	3 (5.6)	1 (1.9)	1 (1.9)	0 (0.0)	54 (100.0)
	Fisher's exact test = 77.879; p-value = 0.0001*						

Table 3: *Relationship between age and parity with indication of gynaecological hysterectomy among women at the RSUTH. Statistically significant (p < 0.05).*

The intraoperative findings are as shown in table 4. The mean duration of surgery ± SD was 115.10 ± 60.34 minutes, the median was 99 minutes, and the range was 45 - 395 minutes. The mean estimated blood loss ± SD was 589.17 ± 233.86 mL, the median was 500 mL, and the range was 300 - 2500 mL. Majority of the women had a duration of surgery (DOS) of < 120 minutes 108 (68.8%), estimated blood loss (EBL) of ≥ 500 ml 112(71.3%) and received blood transfusion 88 (56.1%). A comparison of mean DOS and mean EBL by age and parity of the women (Table 5) revealed a significant association between DOS with age of the women (P = 0.039) but not with parity (P = 0.268), younger women had a longer DOS than older women. There was association between EBL with age (P = 0.0001) and parity (P = 0.0001), younger and lower parity women were more likely to have more EBL.

Variables	Frequency	Percentage
Duration of surgery		
< 120 minutes	108	68.8
≥ 120 minutes	49	31.2
Estimated blood loss		
< 500 mL	45	28.7
≥ 500 mL	112	71.3
Blood transfusion		
Yes	88	56.1
No	69	43.9

Table 4: *Intraoperative findings at gynaecological hysterectomy among women at the RSUTH.*

Variables	Duration of surgery (minutes) Mean ± SD	Estimated blood loss (mL) Mean ± SD
Age category		
30 - 39 years	154.18 ± 96.88	879.41 ± 479.28
40 - 49 years	115.81 ± 55.00	617.39 ± 142.93
50 - 59 years	107.97 ± 39.62	582.81 ± 155.34
60 - 69 years	98.55 ± 52.03	424.19 ± 44.48
≥70 years	118.63 ± 81.13	393.75 ± 56.30
	ANOVA = 2.587 p-value = 0.039*	ANOVA = 17.005 p-value = 0.0001*
Parity		
Para 0	118.40 ± 53.15	820.00 ± 607.91
Para 1	123.43 ± 71.67	585.71 ± 146.39
Para 2 - 4	122.30 ± 63.65	640.70 ± 176.99
Para ≥5	101.94 ± 53.73	464.81 ± 124.25
	ANOVA = 1.327 p-value = 0.268	ANOVA = 11.739 p-value = 0.0001*

Table 5: *Comparison of mean duration of surgery and estimated blood loss by age and parity among women who had gynaecological hysterectomy at the RSUTH. *Statistically significant (p < 0.05).*

Figure 4 relates to the complications from gynaecological hysterectomy among the study population. The commonest complication was anaemia in 29 (18.5%), followed by wound sepsis in 25 (15.9%). Intraoperative injury occurred in 5 (3.2%) and there was one maternal death (0.6%). Out of the 5 women that had intra-operative injury, 4 (2.5%) had bladder injury and 1 (0.7%) had ureteric injury. The mortality occurred intraoperatively in a 38-year-old nullipara with huge ovarian tumour undergoing TAH+BSO with EBL of 2500 mL.

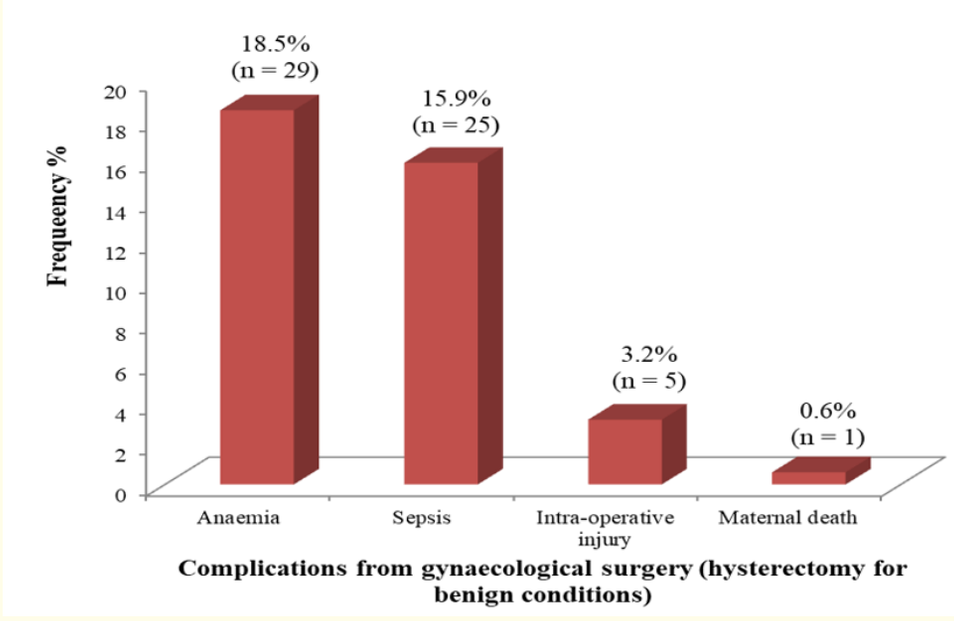

Figure 4: *Complications from gynaecological hysterectomy among women at the RSUTH.*

A comparison of the mean DOS and mean EBL by surgical complications among women is shown in table 6. There was a significant association between DOS with anaemia (P = 0.0001) and sepsis (P = 0.0001), while EBL was significantly associated with anaemia (P = 0.0001), sepsis (P = 0.018) and maternal death (P = 0.0001).

Variables	Duration of surgery (minutes) Mean ± SD	Estimated blood loss (mL) Mean ± SD
Anaemia		
Yes	159.48 ± 79.02	105.05 ± 50.44
No	815.52 ± 157.61	537.89 ± 217.61
	t = 4.670 p-value = 0.0001*	t = 6.488 p-value = 0.0001*
Sepsis		
Yes	154.96 ± 479.94	690.00 ± 223.61
No	107.55 ± 52.96	570.08 ± 231.64
	t = 3.750 p-value = 0.0001*	t = 2.386 p-value = 0.018*
Intra-operative injury		
Yes	140.40 ± 70.97	610.00 ± 114.02
No	114.27 ± 60.05	588.49 ± 236.94
	t = 0.952 p-value = 0.342	t = 0.202 p-value = 0.840
Maternal death		
Yes	90.00 ± 0.00	2500.00 ± 0.00
No	115.26 ± 60.50	576.92 ± 177.02
	t = -0.416 p-value = 0.678	t = 10.829 p-value = 0.0001*

Table 6: *Comparison of mean duration of surgery and estimated blood loss by surgical complications among women attending RSUTH. *Statistically significant (p < 0.05).*

Table 7 shows the relationship between surgical complications and DOS among women after categorizing into < 120 minutes and ≥ 120 minutes in a bivariate analysis. There was a statistically significant association between DOS with anaemia (P = 0.0001) and sepsis (P = 0.004) on bivariate analysis. However, on multiple logistic regression (Table 8), only anaemia (P = 0.001) remained statistically significant.

	Duration of surgery		
Variables	<120 minutes n (%)	≥120 minutes n (%)	Total n (%)
Anaemia			
Yes	10 (34.5)	19 (65.5)	29 (100.0)
No	98 (76.6)	30 (23.4)	128 (100.0)
	Chi Square = 19.500; p-value = 0.0001*		
Sepsis			
Yes	11 (44.0)	14 (56.0)	25 (100.0)
No	97 (73.5)	35 (26.5)	132 (100.0)
	Chi Square = 8.511; p-value = 0.004*		
Intra-operative injury			
Yes	3 (60.0)	2 (40.0)	5 (100.0)
No	105 (69.1)	47 (30.9)	152 (100.0)
	Fisher's exact p-value = 0.648		
Maternal death			
Yes	1 (100.0)	0 (0.0)	1 (100.0)
No	107 (68.6)	49 (31.4)	156 (100.0)
	Fisher's exact p-value = 1.000		

Table 7: *Relationship between surgical complications and duration of surgery among women at the RSUTH. *Statistically significant (p < 0.05).*

Factors	Coefficient (B)	Odds ratio (OR)	95% CI	p value
Anaemia				
Yes	1.606	4.985	1.99 - 12.47	0.001*
No [R]		1		
Sepsis				
Yes	0.703	2.020	0.75 - 5.41	0.162
No [R]		1		

Table 8: *Multiple logistic regression showing factors associated with duration of surgery among women undergoing gynaecological hysterectomy for benign conditions at the RSUTH. *Statistically significant (p < 0.05).*

Table 9 shows the relationship between surgical complications and EBL among women after categorizing into < 500 mL and ≥ 500 mL in a bivariate analysis. There was a statistically significant association between EBL with anaemia (P = 0.0001) and sepsis (P = 0.001) on bivariate analysis. However, multiple logistic regression could not be done because of the zero (0) in one of the categories.

	Estimated blood loss		
Variables	**< 500 mL n (%)**	**≥ 500 mL n (%)**	**Total n (%)**
Anaemia			
Yes	0 (0.0)	29 (00.0)	29 (100.0)
No	45 (35.2)	83 (64.8)	128 (100.0)
	Chi Square = 14.292; p-value = 0.0001*		
Sepsis			
Yes	0 (0.0)	25 (100.0)	25 (100.0)
No	45 (34.1)	87 (65.9)	132 (100.0)
	Chi Square = 811.947; p-value = 0.001*		
Intra-operative injury			
Yes	0 (0.0)	5 (100.0)	5 (100.0)
No	45 (29.6)	107 (70.4)	152 (100.0)
	Fisher's exact p-value = 0.322		
Maternal death			
Yes	0 (0.0)	1 (100.0)	1 (100.0)
No	45 (28.8)	111 (71.2)	156 (100.0)
	Fisher's exact p-value = 1.000		

Table 9: *Relationship between surgical complications and estimated blood loss among women at the RSUTH. *Statistically significant (p < 0.05).*

Table 10 shows the relationship between characteristics of the women (age and parity) with EBL among women in a bivariate analysis. There was a statistically significant association between EBL with age (P = 0.001) and parity (P = 0.0001) on bivariate analysis. However, on multiple logistic regression (Table 11), after categorizing into ≤ 49 and > 49 years, and ≥ para 2 and < para 2, only age (P = 0.001)

remained statistically significant. Women below 49 years are three times likely to have significant blood loss at hysterectomy for benign gynaecological conditions than those 49 years and above.

	Estimated blood loss		
Variables	**< 500 mL n (%)**	**≥ 500 mL n (%)**	**Total n (%)**
Age category			
30 - 39 years	0 (0.0)	17 (100.0)	17 (100.0)
40 - 49 years	5 (7.2)	64 (92.8)	69 (100.0)
50 - 59 years	7 (21.9)	25 (78.1)	32 (100.0)
60 - 69 years	25 (80.6)	6 (19.4)	31 (100.0)
≥70 years	8 (100.0)	0 (0.0)	8 (100.0)
	Fisher's exact test = 81.268; p-value = 0.001*		
Parity			
Para 0	1 (10.0)	9 (90.0)	10 (100.0)
Para 1	1 (14.3)	6 (85.7)	7 (100.0)
Para 2 - 4	7 (8.1)	79 (91.9)	86 (100.0)
Para ≥5	36 (66.7)	18 (33.3)	54 (100.0)
	Fisher's exact test = 56.703; p-value = 0.0001*		

Table 10: *Relationship between age and parity with estimated blood loss among women at the RSUTH.*
**Statistically significant (p < 0.05).*

Factors	Coefficient(B)	Odds ratio (OR)	95% CI	p value
Age category				
≤ 49 years	3.033	20.762	7.45 - 57.77	0.0001*
> 49 years [R]		1		
Parity				
Para 0 and 1	1.233	3.431	0.64 - 18.26	0.148
Para 2 or more [R]		1		

Table 11: *Multiple logistic regression showing factors associated with EBL among women undergoing gynaecological hysterectomy for benign conditions at the RSUTH.*
**Statistically significant (p < 0.05).*

Discussion

The prevalence of Hysterectomy for benign gynaecological conditions in this study population was 12.7%. An earlier study in other tertiary hospitals in the Niger-Delta region by Obilahi., *et al*. [21] had reported a prevalence of 16.6% and a higher figure of 27.9% has been reported in neighbouring city of Uyo by Abah., *et al*. [26], though their study was inclusive of gynaecological malignancies. The finding in this study is however higher than the 3.3% reported in Kano by Rabiu., *et al*. [22], 10.0% reported in Ilorin by Omokanye., *et al*. [18] and 10.7% reported in Maiduguri by Bukar., *et al*. [24], all in northern Nigeria. Slightly higher figures have been reported in other cities in

Nigeria, 18.2% reported in Jos northcentral Nigeria by Anzaku., *et al*. [25] and 18.3% in Abeokuta southwest Nigeria by Arowojolu., *et al* [17]. A much higher prevalence of 36.4% has been reported in Ethiopia by Tinkishea., *et al* [28]. The variations in the reported rates across Nigeria and the region may be attributed to the differences in acceptability of hysterectomy as a definitive treatment by women who want to preserve fertility, general aversion for surgery, religious beliefs, and cultural influences.

About three-quarters of gynaecological hysterectomies are performed by the abdominal route [2,3]. The finding from this study of 71.3% abdominal hysterectomy and 28.7% vaginal hysterectomy is not far from the observation. The ratio of 2.5:1 is also not far from the observed average of 3:1 by previous studies [2,10]. Other studies reported similar vaginal hysterectomy rates of 22.4% [26], 21% [29] and 20.7% [24]. However, the study from Ethiopia by Trikishea., *et al*. reported a very high rate of 49.5%, though it was observed that there was a free surgical outreach campaign for patients with utero-vaginal prolapse in the hospital during the study period. This will also account for the very high prevalence of 36.4% hysterectomies of all major gynaecological surgeries done, found in their study.

Symptomatic uterine fibroids was the commonest indication for abdominal hysterectomy in this study, accounting for 55.4% of all hysterectomies. This was the finding in similar studies from other centers [2,18,22,23,25,27]. This may be attributable to the high prevalence of uterine fibroid in our environment and fibroid is the most common benign gynaecological tumour in black women. The women often presents with huge tumour > 12 weeks size, which makes the abdominal route, and not the vaginal route, the preferred route. In this study, all the vaginal hysterectomies were done for uterovaginal prolapse, and this was like other studies which reported uterovaginal prolapse as the majority indication for vaginal hysterectomy [2,24,26,29]. The major risk factor for genital prolapse in developing countries is the high parity of the women, associated with the large family size desired and high fertility rate found in these regions.

The findings of this study that majority of the women were in their fifth decade of life and are highly parous is like reports from other centers across Nigeria [2,18,22-24,27]. This group of women (40 - 49 years) and those above, are usually multiparous, have completed their family size and are peri- or post-menopausal, and are more likely to accept a hysterectomy than nulliparous women who will want to retain their uterus with hope of bearing children in the future. All the nulliparous women in this study were peri- or post-menopausal, with huge uterine fibroid and had TAH+BSO, except the one death who had huge ovarian tumour.

The commonest complication following surgery in this study was anaemia, defined as PCV on second postoperative day < 30%. This was followed by sepsis from wound infection probably due to poor aseptic conditions that prevail in developing world. The EBL was ≥ 500 mL in 71.3% of the women and this was contributory to the anaemia and the fact that most of the women were almost anaemic before surgery due to menorrhagia. Anaemia was also reported as a common complication in findings from other centers [23,25,27]. Some studies have reported pain [28] and pyrexia [6,21,22,24] as commonest complications, but this study did not include pain and pyrexia, being a retrospective analysis, it was difficult to assess objective score of pain and pyrexia following operations were investigated and were mainly due to malaria or wound infection.

Hysterectomy can sometimes be difficult and complicated and can result in injury to other pelvic organs and tissues, especially where previous surgery has resulted in adhesion formation. Commonly it involves the bladder followed by ureter. In this study, of 5 women that had intra-operative injury, 4 (2.5%) had bladder injury and 1 (0.7%) had ureteric injury. The study by Rabiu., *et al*. [22] reported higher figures of 5 (5.9%) for bladder injury and 2 (2.4%) for ureteric injury, and Rasheed., *et al*. [30] reported a combined urinary tract injury of 14 (7.07%). Lesser figures were reported by Adenaya., *et al*. [27], who reported only 1 (1.2%) bladder injury, while Trikishea., *et al*. [28] reported 2 (0.6%) bladder injury and 1 (0.3%) ureteric injury. Fortunately, most of these cases are managed successfully intraoperatively, when noticed and with the help of a urologist, but can cause serious morbidity if it becomes evident postoperatively. For suspected difficult cases the urologist should be invited to do a stenting before surgery.

This was a retrospective review of cases of gynaecological hysterectomy with patient follow-up limited to what was available in the records which makes it difficult to determine long-term medical and psychological complications. Also, the data collected were from a

single institution, and as such the findings cannot be generalized. However, it might be necessary to consider a multicenter prospective design to improve on the findings in this study.

Conclusion

The prevalence of benign hysterectomy of 12.7% shows it is a common procedure and the complication rates shows it is a relatively safe procedure. Uterine fibroid is the commonest indication for the abdominal route and utero-vaginal prolapse for the vaginal route. Age and parity were determinants for the route, while duration of surgery and blood loss were determinants for complication. Younger and low parity women, who mainly undergo abdominal hysterectomy, were more likely to have significant blood loss at surgery.

The commonest complication was anaemia, stressing the need for proper optimization of patients before surgery. The study has also shown that the indication for vaginal hysterectomy was limited to uterovaginal prolapse despite the numerous advantages it offers over abdominal hysterectomy, being essentially a minimal assess surgery. There is need to advocate for non-descent vaginal hysterectomy for other selected indications that otherwise had abdominal hysterectomy.

Conflict of Interest

All the authors declare no conflict of interest.

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