

Health Related Quality of Life after Hysterectomy Performed for Benign Conditions in Tertiary Hospitals, Rwanda

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ABSTRACT

Objective: Hysterectomy is the most common major surgical procedure performed by gynaecologists. Most studies reporting on surgical procedures emphasize surgical outcomes such as operation time, surgical complications and hospital stay. Most women undergo hysterectomy to relieve symptoms and improve their health-related quality of life (HRQoL). It is an important outcome variable in clinical research for benign gynaecological conditions. The objective of this study was to assess the HRQoL in women after hysterectomy performed for benign gynaecological conditions in Rwanda.

Methods: A prospective longitudinal study was conducted in three tertiary hospitals in Rwanda over 10 months. A total of 110 women were enrolled in the study. Health Related Quality of Life was measured using the Short-Form-36 Health Survey (SF-36) questionnaire. HRQoL scores before surgery and at 3 months postoperative were compared using nonparametric tests.

Results: The mean age of patients was 51 ± 9 years. Most of the women were premenopausal (64.1%). The most common indications for hysterectomy were fibroids (52.2%) and uterine prolapse (22.8%). Most of the hysterectomies (76.1%) were performed transabdominally. The average length of hospital stay was 6 ± 4 days. All domains showed significant improvement in HRQoL scores after hysterectomy ($p < 0.001$). The Physical Health component summary improved from 28.8 to 61.3 ($p < 0.001$) and the Mental Health component summary improved from 35.8 to 67.0 ($p < 0.001$).

Conclusion: Health related quality of life significantly improve after hysterectomy performed for benign gynaecological conditions in Rwanda. These findings are vital and may be useful to patients and health care providers in counselling women before hysterectomy.

Keywords: Health related quality of life; Hysterectomy; Benign condition

Abbreviations: OBGYN: Obstetric and Gynecologic; AOR: Adjusted Odds Ratio

BACKGROUND

Hysterectomy is one of the most common major operation performed by gynecologist worldwide, second only to cesarean section [1-3]. It can be performed using vaginal, abdominal or laparoscopic approaches and the choice of approach is influenced by many factors [3]. Over 600,000 hysterectomies are performed in the United States annually [2]. In almost 90% of women having a hysterectomy, the surgery is carried out for benign conditions, particularly uterine fibroids, which is the most common indication for the procedure [3].

Total abdominal hysterectomy for non-malignant conditions are 89% and the most common indication is fibroids (84.2%) [4,5].

Benign gynecological conditions can cause a diversity of physical symptoms and have a negative impact on quality of life. Hence hysterectomy provides alleviation of any of these disturbing complaints and consequently can improve the quality of life [6]. According to the definition established by the World Health Organization (WHO), quality of life is an individual's perception of life in the context of value systems and the culture in which they live and relating to their expectations, concerns, goals and standards [4,7]. This outcome variable is a broad term, dealing with environment-based quality of life and health-related quality of life (HRQoL) [6].

Nowadays, it is known that the functional impact on patients' lives of medical interventions is important in predicting the need for

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services, and that it is inadequate to measure outcome of medical intervention considering morbidity and mortality [8]. In many studies reporting on surgical procedures, outcome variables focus on patient morbidity such as hospital stay, surgical complications, operation time, and recurrence rate. However, from the patient's perspective, outcome measures related to quality of life and health status such as symptom resolution, satisfaction and return to normal activities are also important as the traditional surgical outcomes [8]. These HRQoL variables measured concurrently and prospectively, contribute additional features to mortality and morbidity measures.

HRQoL involves several areas that cover the generic dimensions necessary to any HRQoL assessment, which are social, physical, emotional functioning and perceptions of overall quality of life corresponding to a disorder or its particulars treatment modalities [4,9]. For particular investigations, however, the assessment of other aspects of HRQoL may be important. These aspects include: sexual functioning, psychological, productivity, symptoms, sleep disturbance and pain. The specific aspects of HRQoL assessed in any study will vary depending on the particular health condition and research subject under investigation [9]. Quality of life is a necessary outcome variable in medical research and in surgery for benign gynecological conditions. Although surgery can have positive and negative effects, most women reported a reduction in physical complaints and an increase in health perceptions after hysterectomy [4,8,10,11]. Hysterectomy improves QoL subscale scores up to 3 months after surgery irrespective of age at the time of operation [12].

Due to the rate of complications after hysterectomy and the significant number of surgeries that do not relieve discomfort, nonsurgical therapy may be more appropriate initially and when nonsurgical management fails to succeed, hysterectomy can be performed to treat benign conditions, hopefully relieving such discomfort and enhancing the quality of life [11].

In Rwanda, hysterectomy was the most common gynaecologic surgery performed (32.1%) [13]. There is lack of information regarding HRQoL after hysterectomy in Rwanda. Therefore, it is important to assess whether hysterectomy improves HRQoL in our setting. As HRQoL refers to an individual's total well-being, having a proper understanding of this concept by nursing and medical staff allows them to provide accurate information to the patient during pre- and postoperative counselling, thereby enhancing the appropriateness of treatment and care. Hence the aim of this study was to assess the health-related quality of life in women after hysterectomy performed for benign conditions in our setting and to determine the associations of HRQoL with patient characteristics, indications of hysterectomy for benign conditions, the types of hysterectomy for benign conditions and the rate of hysterectomy among Obstetrics and Gynaecological (OBGYN) surgeries performed in women.

MATERIALS AND METHODS

This was a prospective longitudinal study conducted from the 1st June 2019 to the 31st March 2020 in women participant who underwent hysterectomy for benign gynecological conditions at Rwanda Military Hospital (RMH), Kigali University Teaching Hospital (CHUK) and Butare University Teaching Hospital (CHUB). These are the national public referral hospitals providing tertiary care services in Rwanda where most surgeries are performed. All patients who consulted OBGYN department at national public

referral hospitals were evaluated either by an OBGYN consultant or an OBGYN senior resident, the diagnosis and management plan were established. A convenience sample of 110 women who underwent hysterectomy for benign conditions as the treatment option were recruited to be participants in the study.

All participants who had hysterectomy for benign gynecological conditions based on the final histopathology report were included and the exclusion criteria was the loss to follow up. Data was collected using a questionnaire. The questionnaire comprised of two parts: the first part was used to assess the demographic and clinical characteristics of participants and the second part was used to assess the HRQoL. Clinical characteristics of participants were collected by either principal investigator or trained nurse in perioperative period from patient's interview and medical records using pre-established questionnaire and the HRQoL data were collected by principal investigator or trained nurse using the SF-36 questionnaire (also known as the RAND 36-Item Health Survey) prior to surgery. During the follow up at 3 months postoperative, the health-related quality of life data was collected by principal investigator, patients were interviewed on telephone and completed the SF-36 questionnaire.

The SF-36 is a 36-items questionnaire which measures eight health subscales: bodily pain; general health; physical functioning; role limitations due to physical health problems; social functioning; energy/fatigue; role limitations due to emotional problems and emotional wellbeing. The SF-36 was built to represent two major subscales of health: the Mental Component Summary (MCS) and the Physical Component Summary (PCS). The summary components comprise 35 of the 36 items in the form; 14 in the MCS and 21 in the PCS [5,6]. For each subscale, item scores are coded, summed and converted into a scale from 0 (worst health) to 100 (best health). These 36 items were adapted from the tool completed by patients participating in the medical outcomes study in different systems providing health care [14]. The SF-36 Kinyarwanda version was used [15].

Data entry was done using Epidata 3.1 then exported to IBM SPSS statistics version 25 for analysis. Descriptive statistics such as means and percentages provided a general description of sample characteristics. Data distribution was evaluated using Shapiro-Wilk test. Because the data were skewed, Kruskal-Wallis and Mann-Whitney U tests were used to analyze the associations between overall QoL and patient characteristics. To assess the HRQoL quality of life, Wilcoxon signed rank test was used to analyze the associations of HRQoL score before and 3months after surgery. Associations were considered to be statistically significant at a p-value <0.05.

All women provided written informed consent before the study. Ethical approval (No144/CMHS/IRB/2019) was obtained from the Institutional Review Board of College of Medicine and Health sciences at University of Rwanda before starting the study. Approval from research ethics committees of CHUK, CHUB and RMH were offered before data collection.

RESULTS

A total of 4211 obstetrical and gynecological surgeries were performed in study period, Hysterectomy was the second most common procedure after cesarean delivery (6.7%) Figure 1.

Of the 110 patients enrolled 92 patients were analyzed, 11 patients were excluded for malignancy confirmed by histopathology.

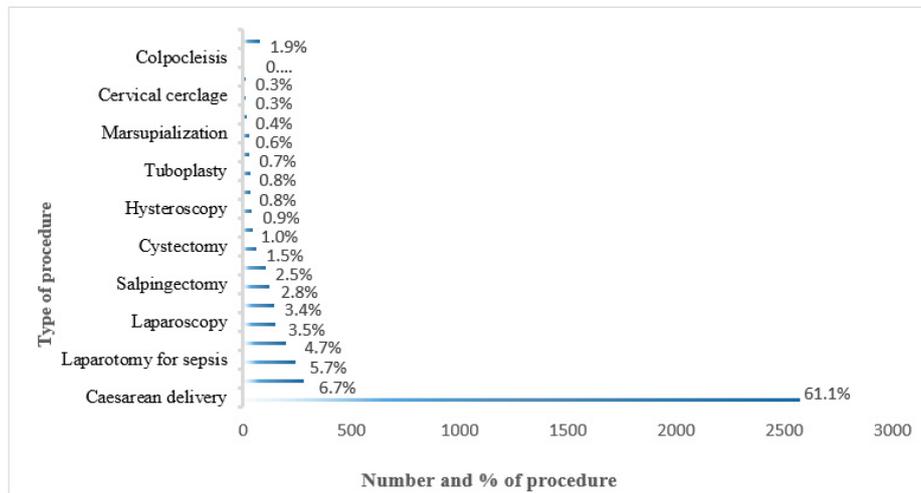


Figure 1: Obstetrics and gynecologic surgeries in tertiary hospitals.

Table 1: Demographics and characteristics of participants.

Variable	N=112	%
Age		
<40 years	5	5.4
40-50 years	44	47.8
>50 years	43	46.7
Health insurance		
CBHI	82	89.1
Private	3	3.3
Others	7	7.6
Religion		
Protestant	42	45.7
Catholic	38	41.3
Muslim	3	3.3
Other	9	9.8
Marital status		
Married/cohabitant	52	56.5
Widow	25	27.2
Single	10	10.9
Divorced	5	5.4
BMI		
<18.5	14	15.6
18.5-24.9	46	51.1
25.0-29.9	20	22.2
30.0-34.9	9	10
>35.0	1	1.1
Parity		
0	13	14.3
1-3	20	22
≥ 4	58	63.7
Educational level		
No formal education	29	31.5
Primary	43	46.7
Secondary	14	15.2
University	6	6.5
Type of anesthesia		
Spinal anesthesia	30	32.6
General anesthesia	62	67.4

Menopausal status		
Premenopausal	59	64.1
Postmenopausal	33	35.9

Source: Primary Data

The mean age of participants was 51 ± 9 years and majority were between 40-50 years (47.8%). Most of participants were premenopausal (64.1%). CBHI was the most health insurance (89.1%). Most women were Protestant (45.7%) and married (56.5%). The majority of the patients undergoing hysterectomy were multiparous with (63.7%) of women having parity of four or more as shown in Table 1.

The average length of hospital stay was 6 ± 4 days. The most common indication for hysterectomy was fibroids (52.2%). Most of the hysterectomies (76.1%) were performed using abdominal approach. Uterine prolapse was an indication for hysterectomy performed at advanced age (60 ± 8) Table 2.

There was a significant difference of QoL before surgery between educational level and parity in overall QoL (p=0.001; p=0.039) respectively and there was statistically significance in QoL between premenopausal and postmenopausal women at 3 months postoperative (p=0.049), however the overall QoL was not significantly different at 3 months between women with and without complications (63.0 (30.2-96.5) vs 68.0 (16.2-98.3), p=0.533). Table 3. The overall complication rate was 10.9% and surgical site infection was the most common complication (5.4%). The presence of complications was significantly associated with increased length of hospital stay (p=0.027).

All domains showed significant improvement in HRQoL scores after hysterectomy (p<0.001). The PCS improved from 28.8 to 61.3 (p<0.001) and the MCS improved from 35.8 to 67.0 (p<0.001) (Table 4).

DISCUSSION

Hysterectomy performed for benign conditions is usually aimed at improving the quality of life for the woman by alleviating the symptoms, resuming function and alleviating the woman's fear of progress to a malignant state. The results of this study have shown a significant improvement in all eight subscales of HRQoL measured before and at three months post hysterectomy for benign conditions. These results are similar to the findings from Taiwan

Table 2: Number, age, length of stay, hysterectomy indication according to the type of procedure.

	Surgical approach			Total
	TAH	TVH	LH	
N (%)	70 (76.1%)	21 (22.8%)	1 (1.1%)	92 (100%)
Age (M ± SD)	48 ± 8.0	60 ± 8.0	-	51 ± 9
Hospital stay (M ± SD)	5 ± 4	6 ± 3	-	6 ± 4
Indications, N (%)				
Uterine fibroids	48 (100.0%)	0 (0.0%)	0 (0.0%)	48 (52.2%)
AUB	10 (90.9%)	0 (0.0%)	1 (9.1%)	11 (12.0%)
Uterine prolapse	0 (0.0%)	21 (100.0%)	0 (0.0%)	21 (22.8%)
Benign ovarian tumor	4 (100.0%)	0 (0.0%)	0 (0.0%)	4 (4.3%)
GTD	7 (100.0%)	0 (0.0%)	0 (0.0%)	7 (7.6%)
Pelvic pain	1 (100.0%)	0 (0.0%)	0 (0.0%)	1 (1.1%)

Source: primary Data

Table 3: Associations between overall QoL and patient characteristics.

Variables	Baseline QoL Med (Min-Max)	p value	QoL at 3 months Med (Min-Max)	p value
Age				
≤ 45 years	33.2 (11.7-84.4)	0.369	71.3 (16.2-96.5)	0.36
>45 years	30.3 (15.9-78.1)		64.8 (30.1-98.3)	
Body mass index				
Underweight	25.6 (15.9-52.4)	0.08	61.2 (30.6-94.7)	0.93
Normal weight	30.5 (11.7-84.4)		68.0 (16.2-98.2)	
Overweight/Obese	35.0 (19.2-60.0)		68.9 (25.8-98.3)	
Menopausal status				
Premenopausal	32.9 (11.7-84.4)	0.145	70.2 (16.2-98.3)	0.049
Postmenopausal	27.4 (15.9-54.3)		59.7 (30.1-97.5)	
Type of anesthesia				
Spinal anesthesia	28.6 (11.7-78.1)	0.185	68.2 (30.1-98.3)	0.816
General anesthesia	32.8 (16.2-84.4)		67.3 (16.2-98.2)	
Comorbidities				
Yes	27.2 (19.2-66.3)	0.351	71.8 (30.2-98.3)	0.428
No	32.9 (11.7-84.4)		64.8 (16.2-98.2)	
Education				
None/Primary	28.6 (11.7-78.1)	0.001	67.3 (16.2-98.3)	0.586
Secondary/University	42.0 (23.2-84.4)		68.0 (38.8-96.5)	
Parity				
≤ 3	33.9 (16.2-84.4)	0.039	70.2 (16.2-98.2)	0.253
≥ 4	28.6 (11.7-73.1)		63.8 (25.8-98.3)	
Complications				
Yes	35.3 (20.1-84.4)	0.41	63.0 (30.2-96.5)	0.533
No	31.5 (11.7-78.1)		68.0 (16.2-98.3)	
Type of hysterectomy				
TAH	32.9 (16.2-84.4)	0.218	69.6 (16.2-98.3)	0.302
TVH	27.4 (11.7-78.1)		60.2 (30.1-92.8)	
Hospital stay				
≤ 6 days	32.9 (11.7-84.4)	0.115	69.2 (16.2-98.3)	0.625
>6 days	26.0 (19.3-44.4)		67.3 (30.1-92.2)	

and Malaysia that used a different tool and demonstrated post-surgery improvement of QoL after 8 and 12 weeks respectively [12,16] with other studies that measured the HRQoL at 6 months and beyond post-surgery have also shown significantly improved and maintained HRQoL afterwards [8,17-20].

Whether a woman with a gynecologic issue still desires for fertility

is one of the drivers in decision making for surgical management and hence it is common for gynecologist to be reluctant in deciding hysterectomy for a woman in reproductive age or who has not completed their childbearing. Even though there was no statistically significance in pre-surgery scores between premenopausal and post-menopausal women, the former was significantly more likely to

Table 4: Quality of life before and after hysterectomy.

SF-36 Component	Baseline	3 months	p value
Physical functioning	47.5 (30.0)	82.5 (25.0)	<0.001
Role limitation due to physical health	0.0 (0.0)	12.5 (50.0)	<0.001
Bodily pain	35.0 (42.0)	88.0 (25.0)	<0.001
General Health perception	25.0 (22.0)	62.5 (40.0)	<0.001
Physical component summary	28.8 (25.2)	61.3 (26.4)	<0.001
Energy/Fatigue	32.5 (29.0)	55.0 (25.0)	<0.001
Social functioning	75.0 (47.0)	100.0 (0.0)	<0.001
Role limitation due to emotional health	0.0 (0.0)	33.0 (100)	<0.001
Emotional wellbeing	36.0 (32.0)	80.0 (32.0)	<0.001
Mental component summary	35.8 (14.9)	67.0 (37.4)	<0.001

Source: Primary Data

have better perception of their HRQoL after hysterectomy even though their natural ability to conceive was lost (70.2 vs 59.7, $p=0.049$). This is contrary to the results from Iran which showed a low quality of life after hysterectomy particularly for social and psychological aspects in premenopausal women but this study also used a different tool to evaluate the HRQoL [21].

The pre-surgery median difference between women who attended at least secondary education and women who had primary or no education was lost when hysterectomy was performed. This implies possible delay in health care seeking behavior among less educated women until they have developed more severe symptoms compared to the more educated women who have more access to health education and are more knowledgeable about symptoms that prompt for early consultation. Similar findings were observed in India that have shown higher mean scores on MCS as a result of higher education but different from Korea where women with lower education had otherwise higher level of sexual satisfaction after surgery [18,22].

During surgical practice, surgeons attempt to minimize all preventable complications of surgery. Among our study participants, complications were associated with longer hospital stay but none of the surgical complications has shown significant association with HRQoL.

This could demonstrate adequate patients' counseling and education on complications of surgery in addition to its proper management while keeping the patients' satisfaction. This was also highlighted by Radosa et al. showing a better perception of quality of life as a result of good counseling [23].

The type of surgical approach chosen to perform hysterectomy has been documented to have a remarkable impact on long-term HRQoL, length of hospital stay and complications [24,25]. While systematic reviews have shown fewer blood loss, shorter hospital stay and better scores of HRQoL compared to TAH [25,26], laparoscopic and vaginal hysterectomies are not yet routinely integrated into practice by local medical staff in Rwanda and hence, it was difficult to compare the effect of different modalities given their small numbers in our cohort.

As the country has engaged the community in improving maternal health through the help of community health workers, there is a need to address other women's issues by education and utilization of health services before the quality of life is compromised. Hysterectomy should be offered when the medical management has failed to alleviate the patient's complaint regardless of the age

and menopausal status but patient autonomy and fertility desire should be fully discussed.

STRENGTHS AND LIMITATIONS

The strengths of our study are the use of the SF-36, the most common used and validated tool of HRQoL worldwide. It was also available in Kinyarwanda (local language) that improved communication with participants. In addition, this questionnaire has been used in other studies, permitting our findings of being compared with those of other studies. It is important to have culturally appropriate and validated methods of assessment as results from other settings may not be able to be extrapolated to Rwanda. Another strength of this study is its prospective follow up design, which decreases the probability of recall bias. Patients were requested to remember only the previous four weeks when they filled the SF-36 [19]. Missing data and loss to follow up were also minimised.

The limitations of our study are that SF-36 instrument does not make examination on disease-specific gynaecologic quality of life such as defecation complaints, urogenital distress, menstrual symptoms, depression, sexual problems or speed of recovery. In addition, there were difficulties in patient enrolment and retention in order to get adequate sample size and to minimise the loss to follow up. There were limited alternative modalities to the transabdominal approach to make valid comparisons.

The results of this study measured the fundamental HRQoL after hysterectomy performed for benign conditions in Rwanda. Considering these results, disease specific quality of life studies could be considered to evaluate the effect of hysterectomy in our settings. Furthermore, long term follow up could be studied as complications evolve over time. Quality of life monitoring for a health system is important to insure that elective surgical interventions have a sustained positive impact on patients. This study represents the first to examine quality of life after hysterectomy and further study is necessary to insure appropriate care for our patients.

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CONTRIBUTON OF AUTHOR

Ntihakose CK and Twahirwa B are the principal authors of this manuscript in all phases from the conception to the submission, data collection, data analysis and manuscript writing.

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Competing interests None declared.

ETHICS APPROVAL

The ethical procedures for data collection were controlled by the CMHS institutional Review Board. Patient consent for publication required.

DATA AVAILABILITY STATEMENT

The data sets generated during the current study are not publicly available, but are available from the corresponding author on reasonable request.

CONFLICT OF INTEREST STATEMENT

The authors declare that there is no conflict of interest.

REFERENCES

- Pandey D, Sehgal K, Saxena A, Hebbar S, Nambiar J, Bhat RG. An audit of indications, complications, and justification of hysterectomies at a teaching hospital in India. *Int J Reprod Med.* 2014;2014:1-9.
- Lonky NM, Mohan Y, Chiu VY, Park J, Kivnick S, Hong C, et al. Hysterectomy for benign conditions: Complications relative to surgical approach and other variables that lead to post-operative readmission within 90 days of surgery. *Womens Health (Lond).* 2017;13:17-26.
- Aarts JW, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BW, et al. Surgical approach to hysterectomy for benign gynaecological disease. *Cochrane Database Syst Rev.* 2015;2015:CD003677.
- Jayasundara CS, Asanka G, Champika G, Dissanayake BS, Kushangi D. Post-operative quality of life assessment after total abdominal hysterectomy. *J Gynecol Reprod Med.* 2017;1:1-5.
- Yang Y, Chao Y, Chen Y, Yao G. Changes and factors influencing health-related quality of life after hysterectomy in premenopausal women with benign gynecologic conditions. *J Formos Med Assoc.* 2006;105:731-742.
- Wodlin NB, Nilsson L, Kjolhede P. Health-related quality of life and postoperative recovery in fast-track hysterectomy. *ACTA Obstet Gynecol.* 2011;90:362-368.
- Lee C, Wen F, Lin S, Lin H. Changing quality of life in hysterectomized women. *J Formos Med Assoc.* 2009;108:414-422.
- Thakar R, Ayers S, Georgakapolou A, Clarkson P, Stanton S, Manyonda I. Hysterectomy improves quality of life and decreases psychiatric symptoms: a prospective and randomised comparison of total versus subtotal hysterectomy. *BJOG.* 2004;111:1115-1120.
- Naughton MJ, McBee WL. Health-related quality of life after hysterectomy. *Clin Obstet Gynecol.* 1997;40:947-957.
- Burckhardt CS, Hanestad BR. Nursing strategies and quality of life outcomes: A systematic review. *Nord J Nurs Res.* 2003;23:4-9.
- Rannestad T, Eikeland OJ, Helland H, Qvarnström U. The quality of life in women suffering from gynecological disorders is improved by means of hysterectomy. Absolute and relative differences between pre- and postoperative measures. *Acta Obstet Gynecol Scand.* 2001;80:46-51.
- Azri M, Suan M, Sehgal S, Tajudin EA, Chan HK, Kannaiah K. Short-term changes in quality of life among women who had hysterectomy for benign indications at young age: A preliminary study. *Thai J Obstet Gynaecol.* 2017;25:284-291.
- Murwanashyaka G, Ntsumbumuyange D, Urania M, Lisa Bazzett-Matabele. Outcomes of women undergoing gynecologic surgery at the national referral hospitals of Rwanda. 2019.
- Ware JE Jr, Sherbourne CD. The MOS 36-item short-form health survey (SF-36). I. Conceptual framework and item selection. *Med Care.* 1992;30:473-483.
- Paul N. Prévalence de l'espérance dans la population rwandaise diversités de figures cliniques et comorbidités. 2015.
- Lee CF, Wen FH, Lin SS, Lin HM. Changing quality of life in hysterectomized women. *J Formos Med Assoc.* 2009;108:414-422.
- Yang YL, Chao YM, Yao G. Changes and factors influencing health-related quality of life after hysterectomy in premenopausal women with benign gynecologic conditions. *J Formos Med Assoc.* 2006;105:731-742.
- Shrivastava D, Chaudhry P. Happy Hysterectomy? Quality of Life after in Rural Women of Central India. *Glob J Med Res E Gynecol Obstet.* 2015;15:3-6.
- Reitsma ML, Vandenkerkhof EG, Johnston SL, Hopman WM. Does health-related quality of life improve in women following gynaecological surgery? *J Obstet Gynaecol Can.* 2011;33:1241-1247.
- Rahkola-Soisalo P, Brummer T, Jalkanen J, Sjöberg J, Sintonen H, Roine RP, Härkki P. Hysterectomy provides benefit in health-related quality of life: A 10-year follow-up study. *J Minim Invasive Gynecol.* 2020;27:868-874.
- Borimnejad L, Mohadeth AF, Jozee HH. Comparison of quality of life after hysterectomy in pre and post menopause period in Iranian women. *Matur Eur Congr Menopause Andropause.* 2012;71:1-10.
- Sung MH, Lim YM. Factors affecting sexual satisfaction in Korean women who have undergone a hysterectomy. *Aust J Adv Nurs.* 2009;27:46-54.
- Radosa JC, Radosa CG, Kastl C, Mavrova R, Gabriel L, Gräber S, et al. Influence of the preoperative decision-making process on the postoperative outcome after hysterectomy for benign uterine pathologies. *Geburtshilfe Frauenheilkd.* 2016;76:383-389.
- Balakrishnan D, Dibyajyoti G. A comparison between non-descent vaginal hysterectomy and total abdominal hysterectomy. *J Clin Diagn Res.* 2016;10:QC11-14.
- Doroftei B, Dabuleanu AM, Ilie OD, Maftai R, Anton E, Simionescu G, et al. Mini-review of the new therapeutic possibilities in asherman syndrome-where are we after one hundred and twenty-six years? *Diagnostics (Basel).* 2020;10:706.
- Kluyvers KB, Johnson NP, Chien P, Vierhout ME, Bongers M, Mol BW. Comparison of laparoscopic and abdominal hysterectomy in terms of quality of life: a systematic review. *Eur J Obstet Gynecol Reprod Biol.* 2008;136:3-8.