

# An Audit of Indications for Hysterectomy in a District Hospital, Madikeri

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## ABSTRACT

**Introduction:** Hysterectomy is the removal of the uterus and is the most common gynaecological operation done in females worldwide. In the early 20<sup>th</sup> century, hysterectomies were done for many conditions like leiomyoma, Dysfunctional Uterine Bleeding (DUB), chronic pelvic pain, endometriosis, adenomyosis, prolapse, and malignancies. Considering that the procedure has a 20-35% life risk, it calls for a thorough justification before consideration. A hysterectomy has mental, physical, social, economic and psychosexual impact, apart from intraoperative and postoperative complications. Thus, an audit on hysterectomies was done to help students, medical fraternity, and the women of Kodagu in having a better understanding of hysterectomies.

**Aim:** To conduct an audit on hysterectomies performed for gynaecological indications to correlate pre-operative diagnosis with the histopathological diagnosis.

**Materials and Methods:** This was a cross-sectional study which included all elective hysterectomies performed for gynaecological indications conducted at the District Hospital of Kodagu Institute of Medical Sciences, Madikeri from January 2018-June 2019. All cases of hysterectomies were considered except Caesarean peripartal hysterectomies. The

histopathological findings of the endometrium, myometrium, cervix, ovaries and fallopian tubes were recorded. Findings were tabulated as frequency and percentage. Then, using the data, preoperative indications were compared with postoperative histopathological findings to know if hysterectomy was justified.

**Results:** A total of 238 hysterectomies were performed during 18 months in the District Hospital. Abdominal and vaginal approaches were used. Panhysterectomy via abdominal approach was the most common type of hysterectomy. The most common age group where hysterectomy occurred was 41-60 years. The most common indication for hysterectomy was found to be Fibroid uterus. Analysis of the myometrial findings revealed that the most common finding was leiomyoma. Majority of ovaries and fallopian tubes did not show significant pathology.

**Conclusion:** Panhysterectomy was the most common type of hysterectomy. Fibroid were the most common histopathological findings and medium and small sized fibroids can be given a trial of nonsurgical management. Injudicious use of hysterectomy procedure has multiple loop holes involving medical fraternity, socioeconomic conditions of women and attitude of society towards female reproductive health.

**Keywords:** Female, Leiomyoma, Reproductive health, Retrospective studies, Uterus

## INTRODUCTION

Hysterectomy is the removal of the uterus. It is the most common gynaecological operation done in females worldwide [1]. It can be a subtotal hysterectomy, where the uterus is partially removed, a total hysterectomy where the uterus with the cervix is removed, or pan hysterectomies where the uterus with the cervix is removed along with a bilateral salphingo-oophorectomy. The uterus is not just an organ for childbearing and removing it impacts a woman's health in various ways [2].

A hysterectomy has mental, physical, social, economic and psychosexual impact, apart from intraoperative and postoperative complications [1,2]. Choice of the type of hysterectomy done is also important, as some procedures are more likely to damage pelvic floor causing damage to nerve supply of the area which in turn affect the sexual wellbeing [3].

In the early 20<sup>th</sup> century, hysterectomies were done for many conditions like leiomyoma, DUB, chronic pelvic pain, endometriosis, adenomyosis, prolapse, and malignancies. With the advent of medical and surgical systems, many of the above conditions are now effectively managed without performing hysterectomies [4,5].

Despite the fact that hysterectomy is a popular surgery it has a number of complications associated with it. The most common are haemorrhage, infection, and injuries to adjacent organs; unintended major surgical procedures and second operations occur in approximately 4% of patients undergoing hysterectomy, while the

rates of visceral injuries range between 0.5 to 2% [6]. Microwave endometrial ablation is an established treatment for DUB [7].

There are variations in hysterectomy rates among developed and developing countries rate being higher in developed countries [8]. Apart from the already known impacts, the choice to undergo a hysterectomy also depends on the education of the woman.

Acceptability of hysterectomy among women also depends upon various socio-demographic factors: married, educated, multiparous women postreproductive age was more open to the procedure [6]. Considering that the procedure has a 20-35% life risk, it calls for a thorough justification before consideration [9].

An audit of hysterectomies can help us know the spectrum of histopathological findings and can help recognise malpractice and lacunae in the knowledge or training of health care service providers or nonavailability of newer alternatives for hysterectomy [10].

This audit will therefore help both, the layman in having a better understanding of hysterectomies and the medical fraternity in better decision making and assessment of symptoms. As there are no hysterectomy audits published from India recently, present study may provide a basis for a future audit of the gynaecologic practice and for comparison of this practice with others. Last audit study published on hysterectomies in was in 2014 [5].

## MATERIALS AND METHODS

This was a cross-sectional study which included all elective hysterectomies performed for gynaecological indications conducted at

the District Hospital of Kodagu Institute of Medical Sciences, Madikeri from January 2018-June 2019. The Institutional Ethical committee clearance was obtained, IEC number "KolMS/IEC/4/19-20"

#### Inclusion and Exclusion criteria:

- All cases of hysterectomies except Caesarean peripartur hysterectomies were considered

Case records were reviewed to collect information of patient characteristics, surgical indications, clinical histories, histopathological diagnosis and complications, if any.

#### Cases were divided in 4 categories based on age:

- 0-20 years
- 21-40 years
- 41-60 years
- More than 60 years.

Among all the cases, various indications were reviewed. Histopathology reports were obtained from the Pathology Department. The corresponding patient details, preoperative diagnosis, and type of surgery were obtained from the histopathology request forms from the Medical Records of the Pathology Department. The histopathological findings of the endometrium, myometrium, cervix, ovaries and fallopian tubes were recorded. Findings were tabulated. Then, the data was analysed to know if the hysterectomy was justified.

## RESULTS

A total of 238 hysterectomies were performed during 18 months in the District Hospital. Abdominal and vaginal approaches were used.

**Types of hysterectomy:** Panhysterectomy via abdominal approach was the most common type of hysterectomy (169, 71%) [Table/Fig-1].

Type	No. of cases	Percentage (%)
PAH	169	71
VH	40	16.8
TAH	26	10.92
TAH w ULISO	3	1.2
Total	238	100%

**[Table/Fig-1]:** Distribution of cases according to route of hysterectomy. PAH: Pan-abdominal hysterectomy; VH: Vaginal Hysterectomy; TAH: Total abdominal hysterectomy; TAH w ULISO: Total abdominal hysterectomy with unilateral salpingo oophorectomy

**Age of the subjects:** The ages of the subjects were divided into four categories, 0-20, 21-40, 41-60, >60 years. The mean age of the patients was 46.46 years. The most common age group where hysterectomy occurred was 41-60 years (143, 60.08%) [Table/Fig-2].

Histopathological findings In endometrium	No. of cases	Histopathological findings of the myometrium	No. of cases	Histopathological findings in cervix	No. of cases
Proliferative	105 (44.12%)	Leiomyoma only	146 (61.34%)	Chronic cervicitis	133 (55.88%)
Secretory	70 (29.41%)	Leiomyoma with adenomyosis	6 (2.52%)	Polypoidal endocervicitis	33 (13.87%)
Senile cystic atrophy	37 (15.55%)	Unremarkable	48 (20.17%)	Unremarkable	30 (12.61%)
Simple hyperplasia	11 (4.62%)	Adenomyosis only	23 (9.66%)	Chronic cervicitis with nabothian cyst	19 (7.98%)
Simple hyperplasia without atypia	6 (2.52%)	Hyalinised blood vessel	9 (3.78%)	Papillary endocervicitis	8 (3.36%)
Disordered proliferative	4 (1.68%)	DUB	4 (1.68%)	Chronic cervicitis W squamous metaplasia	8 (3.36%)
Simple hyperplasia with atypia	2 (0.84%)	Monckeberg's calcification	1 (0.42%)	Tunnel clusters	4 (1.68%)
Syncytial aggregate	1 (0.42%)	Calcified blood vessel	1 (0.42%)	Endocervical glandular hyperplasia	2 (0.84%)
Simple hyperplasia W adenomyomatous polyp	1 (0.42%)		238	Chronic cervicitis W leiomyomatous polyp	1 (0.42%)
Malignant cells in sheets, columns, papillary pattern	1 (0.42%)				238
	238				

**[Table/Fig-4]:** Summary of the histopathological findings in endometrium, myometrium and cervix.

Age	No. of cases	Percentage (%)
<20	0	0
21-40	67	28.15
41-60	143	60.08
>60	28	11.76
Total	238	100

**[Table/Fig-2]:** Age groups undergoing hysterectomy.

**Indication of hysterectomy:** The most common indication for hysterectomy was found to be Fibroid uterus (152, 63.87%). This was followed by Uterovaginal prolapse (48, 20.17%) [Table/Fig-3].

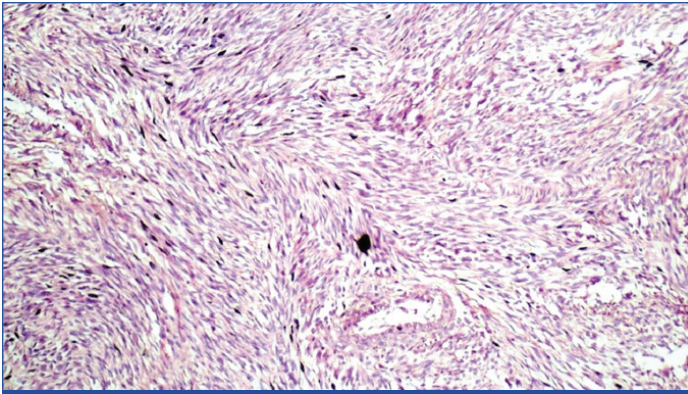
Indication	No. of cases	Percentage (%)
Fibroid	152	63.87
UV prolapse	48	20.17
DUB	18	7.56
DUB w fibroid uterus	12	5.04
PID	5	2.10
UV prolapse and cystocele	3	1.26
Total	238	100

**[Table/Fig-3]:** Indications for Hysterectomy.

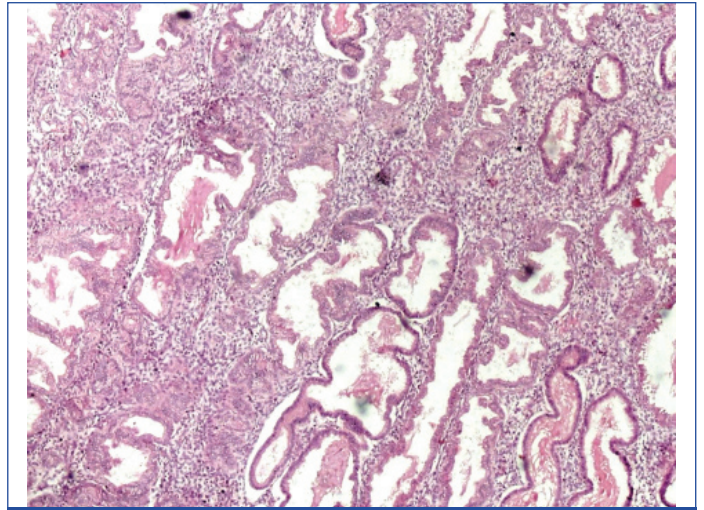
Summary of the histopathological findings of hysterectomies in the present study are given in [Table/Fig-4-13]. The most common endometrial finding was proliferative endometrium (105, 44.12%). Analysis of the myometrial findings revealed that the most common finding was leiomyoma (alone and with adenomyosis) (152, 63.86%) [Table/Fig-4]. Analysis of the cervical findings was done. It was found that chronic cervicitis (133, 55.88%) was the commonest pathological finding in the cervix [Table/Fig-4].

**Analyses of fibroids:** Fibroids were analysed in particular since this was the most common indication in the present study. Two parameters, whether fibroids were single or multiple, and the size of the fibroid were analysed. It was found that out of the total 152 fibroid uteri, 115 (75.65%) of them possessed a single fibroid. 37 (24.34%) of them possessed multiple fibroids [Table/Fig-14]. The analysis of the sizes of the fibroid revealed that most of the fibroids lied in the range of 4.1-6 cm in diameter (54, 35.5%) [Table/Fig-15].

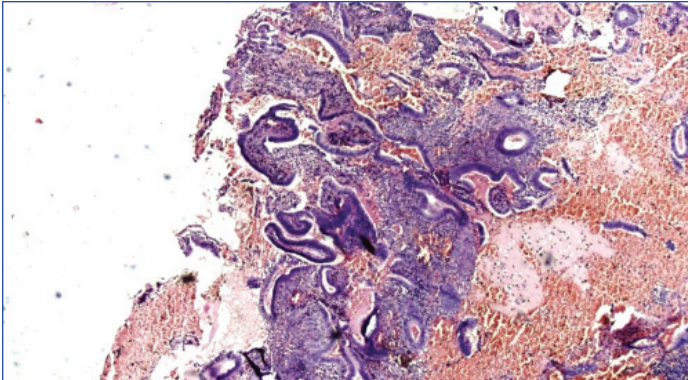
**Analysis of the ovary revealed that the ovary was unremarkable in 60 (34.8%) of the cases, followed by corpus albicans 37 (21.5%). All the lesions that were identified were benign. Analysis of the fallopian tubes revealed that in a majority of cases (142, 82.55%) it was within normal limits [Table/Fig-16].**



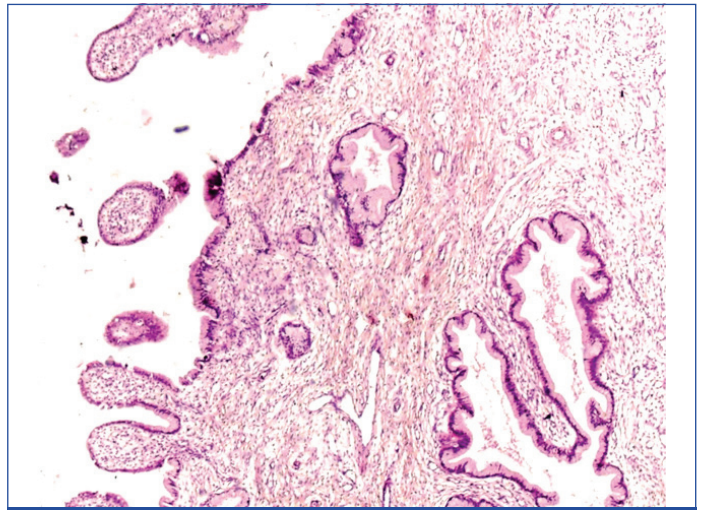
**[Table/Fig-5]:** Smooth muscle cells arranged in bundles and fascicles with whorled pattern H&E Stain (100X).



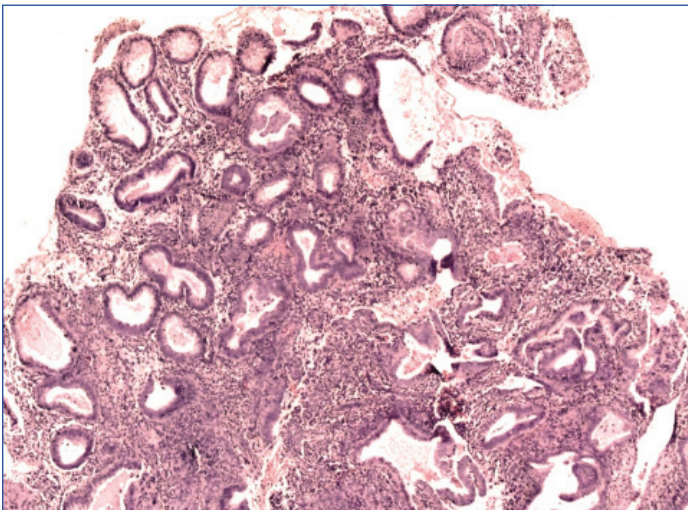
**[Table/Fig-9]:** Secretory endometrium, H&E Stain (100X).



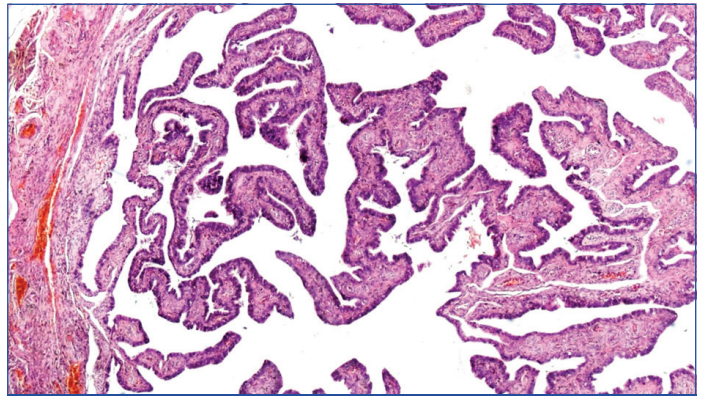
**[Table/Fig-6]:** Haemorrhage with focal glandular and stromal breakdown H&E Stain (100x).



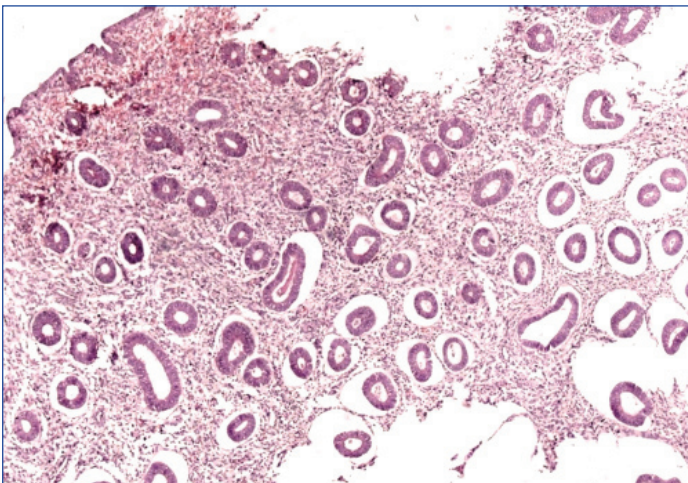
**[Table/Fig-10]:** Polypoid endocervicitis, H&E Stain (100X).



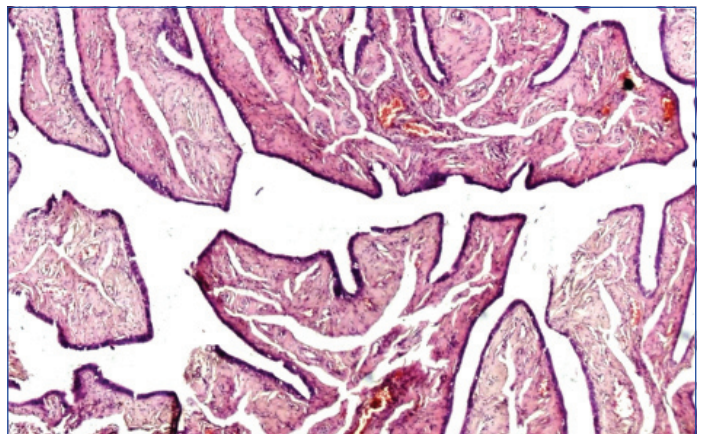
**[Table/Fig-7]:** Endometrial glands showing back to back arrangement without atypia, H&E Stain (100X).



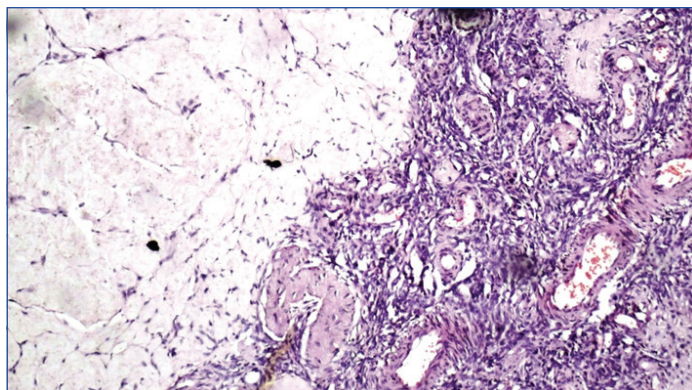
**[Table/Fig-11]:** Normal fallopian tube, H&E Stain (100X).



**[Table/Fig-8]:** Proliferative endometrium, H&E Stain (100X).



**[Table/Fig-12]:** Fallopian tube lined by flattened plicae hyosalpinx, H&E Stain (100X).



**[Table/Fig-13]:** Normal ovary showing ovarian stroma and corpus albicans, H&E Stain (100X).

No. of fibroids	Number of cases	Percentage of cases
Multiple fibroids	37	24.34%
Single fibroid	115	75.65%
Total	152	100%

**[Table/Fig-14]:** Number of fibroids.

Diameter of fibroid (in cm)	Frequency	Percentage (%)
<4	47	30.9
4.1-6	54	35.5
6.1-8	13	8.55
>8	38	25
Total	152	100

**[Table/Fig-15]:** Size of fibroid.

Histopathological findings of ovary	No. of cases	Histopathological findings of fallopian tube	No. of cases
Unremarkable	60 (34.8%)	Within normal limits	142 (82.55%)
Corpus albicans	37 (21.5%)	Congestion	4 (2.32%)
Follicular cyst	22 (12.7%)	Simple serous cyst	3 (0.17%)
Simple serous cyst	22 (12.7%)	Follicular cyst	3 (0.17%)
Corpus haemorrhagicum	15 (8.7%)	Paratubal cyst	2 (0.11%)
Corpus luteum	6 (3.48%)	Mucinous cystadenoma	1 (0.05%)
Luteal cyst	4 (2.3%)	Cortical cyst	1 (0.05%)
Congestion	4 (2.3%)	Endometriosis	1 (0.05%)
Serious cystadenoma	1 (0.58%)	Hydrosalpinx	11 (6.39%)
Fimbrial cyst	1 (0.58%)	Salpingitis	4 (2.32%)
	172		172

**[Table/Fig-16]:** Summary of the histopathological findings in fallopian tubes and ovaries.

### Study in the Age Group 21-40 Years

A detailed analysis of the age group 21-40 years was done. As they are in the reproductive age, they experience the full-blown consequences of a hysterectomy, both reproductively and in other aspects. The most commonly performed surgery was still panhysterectomy (59, 88.05%) [Table/Fig-17].

Type of hysterectomy	No. of cases	Percentage (%)
PAH	59	88.05
TAH	4	5.97
VH	3	4.47
TAH w ULISO	1	1.49
Total	67	100

**[Table/Fig-17]:** Distribution of types of hysterectomies in 21-40 years age group.

The indications and spectrum of histopathological findings was studied and results were tabulated. Out of the 67 cases, 53 cases

in the age group of 21-40 years showed histopathological findings of fibroids, irrespective of the reason operated. It was found that the most common indication was fibroids in this age group (53, 79.10%). The size of the fibroid that most commonly occurred was in the range of 4.1-6 cm (20, 37.73%) [Table/Fig-18,19].

Size of fibroids	No. of cases
<4 cm	17
4.1-6 cm	20
6.1-8 cm	9
>8.1 cm	7
Total	53

**[Table/Fig-18]:** Size of fibroid in age group 21-40 years.

Indications for surgery	No. of cases	Histopathology findings	
Fibroids	53	Fibroids	46
		Adenomyosis	3
		Ademyosis with fibroid	2
		Endometrial polyp	1
		Adenocarcinoma	1
Pelvic inflammatory disease	4	PID+ Adenomyosis	2
		PID+ Fibroid	2
UVP	6	4 Cases had unremarkable histology 2 cases showed fibroids in addition to UV Prolapse	
DUB/AUB	4	3- Unremarkable histology 1-Fibroid	

**[Table/Fig-19]:** Comparison of preoperative indications and histopathological findings in women in the age group of 21-40 years.

UVP: Uterovaginal prolapse; DUB: Dysfunctional uterine bleeding; AUB: Abnormal uterine bleeding

## DISCUSSION

Hysterectomy was the most common operative procedure done after caesarean section in women. Many of these surgeries are done in reproductive age women for nonmalignant indications. Many alternate therapeutic options like levonorgestrel-releasing intrauterine system, endometrial ablation or fibroid embolisation can be tried in many cases before the hysterectomy is considered [11]. In one study, done by Kriplani A et al., Ormeloxifene was an effective and a safe therapeutic option for the medical management of menorrhagia [12].

Hysterectomy is a major surgery which has its own physical, economical, emotional, sexual and medical significance in women [1,2]. Various previous studies were in concordance with the findings found in this study [Table/Fig-20] [3,4 ,5,6,7,13-17].

In a study by Prusty RK et al., the average prevalence rate of hysterectomy was estimated to be 17/1000 among even married women in the ages of 15-49 years [8]. Out of the very few audits done to compare preoperative diagnosis with histopathological examination of specimens, a study by Tiwana KK et al., pointed out that 7-8% of rural women and 5% of urban women had undergone hysterectomy at an age of 37 years [4].

An audit was conducted on hysterectomies done in district hospital Madikeri, so that common public can be educated with the choice of hysterectomy and helps the medical fraternity in better decision making and assessment of symptoms. In this study in addition to the audit we gave importance to women in reproductive age groups and studied the pattern of indications and histopathological findings in them, as they are the women who face the brunt of unjustified hysterectomies mostly.

Age distribution: The youngest patient was 26 years while the oldest was 79-year-old. The mean age for hysterectomy was 46.46 years of age.

Indication: Most common indication for hysterectomy in our study

Author name	Year of publishing	Number of cases	Important findings agreeing with present study
Sivapragasam V et al., [14]	2018	198	The route of hysterectomy was most commonly abdominal (83.07%) followed by vaginal route (18.4%) Proliferative endometrium (41%) was the most common endometrial finding. Leiomyoma (51.7%) was the most common myometrial finding. Non-specific chronic cervicitis was the most common cervical finding. The ovaries were unremarkable in 62% and the fallopian tubes were unremarkable in 91% of specimens.
Chavhan S et al., [16]	2018	50	Leiomyoma (66%) was the most common myometrial finding. Non-specific cervicitis (78%) was the most common cervical finding.
Imam ZS et al., [17]	2018	220	The route of hysterectomy was most commonly abdominal (73.18%) 75% of the endometrial specimens had normal histology. 50.45% myometrial specimens were unremarkable, followed by leiomyoma (29.1%). Chronic cervicitis (70.9%) was the most common cervical finding. The ovaries were unremarkable in 45.9% specimens and the fallopian tubes were unremarkable in 36.36% specimens.
Verma D et al., [1]	2016	152	The route of hysterectomy was most commonly abdominal (63.8%) and followed by vaginal (37.5%). Proliferative endometrium was most found. Chronic cervicitis w/ w/o sq. metaplasia was most found.
Medhi P et al., [13]	2016	150	Leiomyoma (26%) followed by Adenomyosis (26%) were the most common myometrial findings. Chronic cervicitis was the most common cervical finding.
Gangadharan V et al., [15]	2016	318	The route of hysterectomy was most commonly abdominal (72.9%), followed by vaginal route (24.3%) Fibroid (39.3%) was the most common indication. Leiomyoma (42.13%) was the most common myometrial finding.
Tiwana KK et al., [4]	2014	373	The route of hysterectomy was most commonly abdominal (95.17%) followed by vaginal (4.83%). Leiomyoma was the most common indication. Leiomyoma followed by adenomyosis were the most common myometrial findings.
Pandey D et al., [5]	2014	527	The route of hysterectomy was most commonly abdominal (74.8%) followed by vaginal route (17.83) Fibroid uterus (39.84%), followed by UV prolapse (16.31%) were the most common indications
Bansal N et al., [11]	2013	342	The route of hysterectomy was most commonly abdominal (41.5%) followed by vaginal route (11.11%) Fibroid (27.8%) followed by DUB (22.80%) were the most common indications.
Awoleke JO et al., [6]	2012	103	The route of hysterectomy was most commonly abdominal (87.37%) followed by vaginal (10.6%). Fibroid uterus (84.46%) followed by malignancies (6.8%) were the most common indications.
Siwath S et al., [10]	2012	1270	Fibroid (39.3%) followed UV Prolapse (22.6%) were the most common indications.
Bashir R et al., [7]	2005	316	The route of hysterectomy was most commonly abdominal (87.97%) followed by vaginal route (12.02%).
Roovers JP et al., [3]	2003	352	The route of hysterectomy was most commonly abdominal (59.94%) followed by vaginal (25.28%)
Present study		238	The route of hysterectomy was abdominal (83.19%) Fibroid was the most common indication (63.8%) followed by UV prolapse (20.1%) Proliferative endometrium was most commonly found (20.1%) Leiomyoma was the most common myometrial finding (44.11%) Chronic cervicitis was the most common cervical finding (55.88%) 25.2% and 59.6% of the ovaries and fallopian tubes respectively were within normal limits.

**[Table/Fig-20]:** Studies with similar findings.

was leiomyoma uterus, while few other studies showed different results for most common indication for hysterectomy, Verma D et al., utero-vaginal prolapse, Nausheen F et al., dysfunctional bleeding, Sivapragasam V et al., AUB [1,2,14]. This variation in the most common indication for hysterectomy in other studies and can be because of variation in the age group of predominant population in the study [1].

Adenomyosis was most common incidental finding which was frequently missed preoperatively. This is in concordance with a few other studies [4,13].

This was followed by fibroids of size between 4.1-6 cm (54, 35.5%), fibroids of less than 4 cm in diameter (47, 30.9%). 38 fibroids (25%) were >8 cm in diameter. Least number of fibroids was in the 6.1-8 cm range (13, 8.5%) [Table/Fig-15].

It was observed that these 47 (30.9%) cases which had a fibroid of dimension less than 4 cm in diameter and at least few cases with fibroid between the size of 4.1-6 cm could have been managed non-surgically first, before proceeding with hysterectomies. Adenomyosis cases can initially be treated with hormonal therapy, endometrial ablation and the many other nonsurgical options before deciding to perform surgery.

It is alarming that majority of these ovaries and fallopian tubes showed normal benign conditions histopathologically. Except for one case of adenocarcinoma, where panhysterectomy was justified. All these cases were of women in the reproductive age group where retaining the uterus and adnexa is important. An even more intriguing fact was that except for uterovaginal prolapse, many of these women were also subjected to panhysterectomy with bilateral removal of adnexa. Unnecessary removal of ovaries in these patients lead

to deficiency of oestrogen, hastens the onset of menopause and patient's psychosexual health is affected, apart from the vast array of health issues [8].

In such young population in reproductive age group effort should be made to retain adnexal structures when adnexa are normal and indication is benign. 16 cases had fibroid size more than 6.1 cm and histopathology confirmed the indication. 37 patients had fibroids of size less than six cm and 17 cases were with fibroids less than four cm in diameter in greatest dimensions. In these 37 cases, nonsurgical approach could have been attempted first. Therefore, choosing panhysterectomy over other options needs to be debated on as the aftermath is tremendous. Reporting of all hysterectomies should be made mandatory so that the audit results can be used for improvement in the quality of health services.

#### **Controversies:** Is it All the Fault of Health Care Providers?

One report in Maharashtra started with a somewhat troublesome question- "why do many women in Maharashtra's Beed district have no wombs?" - investigated in a report published on April 11 2019 by India's Business Line newspaper. Contractors of the sugarcane industry never hired women with wombs, forcing thousands of women to undergo hysterectomies. A PIL was filed and the Government of India decided in 2013 to get a national estimate of hysterectomy in women of reproductive age group through the fourth round of the "National Family Health Survey". The latest National Family Health Survey, from 2015-16, has state-wise data on hysterectomy. But, unfortunately, many instances of coercive hysterectomies linked to livelihoods are still being reported [18]. In India, the research and debate on hysterectomies for benign reproductive health ailments has tended to focus invariably more on health provider, as said in a

study by Desai S, which dealt with complex factors operating in the decision of hysterectomies [19].

Studies have showed that hysterectomies have both pros and cons with respect to women's health. One such study done by Prusty RK et al., stated that "on the one hand, by relieving suffering from gynaecological ailments such as abnormal bleeding and pelvic pain, hysterectomy is found to lead to decreased anxiety and depression among women and thereby improvement in their quality of life, particularly 6 to 12 months after the surgery. Apart from this, research also shows several adverse effects of hysterectomy such as urinary incontinence, sexual dysfunction, late medical problems such as backache, weakness and early onset menopause [8].

Oophorectomy in reproductive age women can have various complications associated with hormonal imbalance like increased risk of osteoporosis, coronary heart disease and thus poses excess mortality risk [8]. There is need for education among poor rural women about dangers of hysterectomies and alternative management strategies [2].

Taboo against menstruation, poverty, illiteracy, socioeconomic factors, poorly developed medical infrastructure and some degree of possible malpractice by health care providers have together added to the complexity of performing a hysterectomy [19].

India's health system currently caters to a limited range of health services for women, largely related to pregnancy, delivery, family planning, and postpartum care. There is thus a need for improvements in management of chronic gynaecological complaints in advanced way and stop using hysterectomies as a one stand option for chronic gynaecological complaints.

### Limitation(s)

Limitation of this study was that, since the study was cross-sectional in nature, follow-up of women and the consequences could not be studied and further study needs to be done focussing on follow-up.

### CONCLUSION(S)

The indications for hysterectomies were frequently for benign conditions, yet the rate of panhysterectomy was higher. Menace of unnecessary hysterectomy is a complex problem which is a result of multiple deficiencies in healthcare, socioeconomic, individual loopholes. Though, it is an effective treatment option for various gynaecological problems it should be used judiciously after careful evaluation of the necessity. Regular audits to confirm the indications by histopathological support are a necessity.

Although hysterectomy is a good procedure in justified cases, in many benign cases, use of advanced alternate management can save the woman from the trouble of going under the knife and the

many postoperative complications associated with the procedure.

### Acknowledgement

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### REFERENCES

- [1] Verma D, Singh P, Kulshrestha R. Analysis of histopathological examination of the hysterectomy specimens in a north Indian teaching institute. *Int J Res Med Sci.* 2016;4(11):4753-58.
- [2] Nausheen F, Iqbal J, Bhatti FA, Khan AT, Sheikh S. Hysterectomy: The patient's perspective. *Annals KEMU.* 2004;10:339-41.
- [3] Roovers JP, van der Bom JG, Van der Vaart CH, Heintz AP. Hysterectomy and sexual wellbeing: Prospective observational study of vaginal hysterectomy, subtotal abdominal hysterectomy, and total abdominal hysterectomy. *BMJ.* 2003;327(7418):774-78.
- [4] Tiwana KK, Nibhoria S, Monga T, Phutela R. Histopathological audit of 373 nononcological hysterectomies in a teaching hospital. *Patholog Res Int.* 2014;2014:468715.
- [5] Pandey D, Sehgal K, Saxena A, Hebber S, Nambiar J, Bhat R. An audit of indications, complications and justification of hysterectomy at a tertiary hospital in India *International Journal of Reproductive Medicine.* 2014;2014:279273.
- [6] Awoleke JO. An audit of hysterectomy at the Lagos University Teaching Hospital, Lagos. *Trop J Obstet Gynaecol.* 2012;29(1):96-102.
- [7] Bashir R, Parveen Z, Sultana R, Khan B. A two years audit of complications of hysterectomy at Ayub Teaching Hospital Abbottabad. *J Ayub Med Coll Abbottabad.* 2005;17(2):47-49.
- [8] Prusty RK, Choithani C, Gupta SD. Predictors of hysterectomy among married women 15-49 years in India. *Reprod Health.* 2018;15(1):3.
- [9] Spilisbury K, Semmens JB, Hammond I, Bolck A. Persistent high rates of hysterectomy in Western Australia: A population-based study of 83 000 procedures over 23 years. *BJOG.* 2006;113(7):804-09.
- [10] Siwath S, Kundu R, Mohan H, Huria A. Histopathological audit of hysterectomy specimen in a tertiary care hospital Sri Lanka. *J Obst Gynae.* 2012;34:155-58.
- [11] Bansal N, Hiremath PB, Meenal C, Vishnu Prasad R. An audit of indications and complications associated with elective hysterectomy at SVMCH and RC, Ariyur, Pondicherry. *Int J Med Res Health Sci.* 2013;2(2):147-55.
- [12] Kriplani A, Kulshrestha V, Agarwal N. The efficacy and safety of ormeloxifene in the management of menorrhagia: A pilot study. *J Obstet Gynaecol.* 2009;35(4):746-52.
- [13] Medhi P, Dowerah S, Borgohain D. A histopathological audit of hysterectomy: Experience at a tertiary care teaching hospital. *Int J Contemp Med Res.* 2016;3(4):1226-28.
- [14] Sivapragasam V, Rengasamy CK, Patil AB. An audit of hysterectomies: Indications, complications and clinico pathological analysis of hysterectomy specimens in a tertiary care center. *Int J Reprod Contracept Obstet Gynaecol.* 2018;7:3689-94.
- [15] Gangadharan V, Prasanthi C. Hysterectomy-A clinico-pathological correlation in a rural setting. *Indian Journal of Basic and Applied Medical Research.* 2016;5(2):08-15.
- [16] Chavhan S, Pathrikar R, Dhoble S, Tiple N. Histopathological spectrum of uterine and cervical lesions in hysterectomy specimens. *Journal of Medical Science and Clinical Research.* 2018;6(1):32699-701.
- [17] Imam ZS, Chandra K, Monalisa BK, Sinha A, Singh A, Singh SK. Histopathological spectrum of hysterectomy specimens-A retrospective analysis at IGIMS, Patna, Bihar. *Age.* 2018;41:50.
- [18] Chatterjee P. Hysterectomies in Beed district raise questions for India. *Lancet.* 2019;394(10194):202.
- [19] Desai S. Pragmatic prevention, permanent solution: Women's experiences with hysterectomy in rural India. *Soc Sci Med.* 2016;151:11-18.

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