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***Original research article***

# PREVALENCE AND DETERMINANTS OF HYSTERECTOMY IN THE GYNECOLOGY UNIT OF AYUB TEACHING HOSPITAL, ABBOTTABAD

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**Abstract:** *Hysterectomy is one of the most common obstetric surgery performed on women. It provides symptomatic relief, reduces morbidity and enhances the quality of life but can also lead to complications like mental stress, infertility, fractures and cardiovascular insults. To the best of our knowledge, no studies have provided information regarding the prevalence and risk factors of hysterectomies in Pakistani females.* ***Objective:*** *The goal of this study is to investigate the prevalence and socio-demographic determinants of hysterectomy in a teaching hospital in Pakistan,* ***Methods:*** *This descriptive cross-sectional study was done in the Gynecology C unit of Ayub Teaching Hospital, Abbottabad from 25th July 2024 to 10th Oct, 2024 after taking approval from ethical committee. 246 patients who underwent major gynaecological procedures were included in this study. Basic demographics, type of procedure and indication for hysterectomy were noted after obtaining consent from the patient.* ***Results:*** *The overall prevalence of hysterectomy was around 36.9% in our study. Heavy menstrual bleeding (43.95%) was found to be the leading cause of hysterectomy followed by fibroid uterus and adenomyosis in 25.27% and 16.48% cases respectively. Additionally, age group 45-49 (OR: 1.04, 95% CI: 0.5-2.1), urban residence (OR: 1.08, 95% CI: 0.64-1.8), more gravida (OR: 2.08, 95% CI: 0.88-4.92) and higher socioeconomic levels (OR: 1.28, 95% CI: 0.62-2.64) were found to increase odds of hysterectomy, whereas having a job (OR: 0.83, 95% CI: 0.47-1.44) and getting college education (OR: 0.83, 95% CI: 0.4- 1.7) were found to decrease the risk of hysterectomy.* ***Conclusion:*** *The prevalence of hysterectomy was found to be higher than in other countries. Urban residence, multigravida, higher socioeconomic levels and older age groups tend to increase the odds of hysterectomy.*

**Keywords:** Hysterectomy, Determinants, Prevalence, Gynecology.

## Introduction

Hysterectomy is one of the most common non-obstetric surgery performed on women. Hysterectomy is a surgical procedure which involves the removal of the uterus. There are several types of hysterectomy depending upon the extent of the underlying disease. (1) There are various indications for hysterectomy including both cancerous and non-cancerous conditions. Cancerous conditions include cancer of the cervix, uterus, ovaries and fallopian tubes. But in about 90% of cases, a hysterectomy is done for non-cancerous gynaecological conditions including fibroid uterus, endometriosis and pelvic organ prolapse. (2, 3) Hysterectomy is also indicated in certain obstetric conditions and is known as peripartum hysterectomy. It is usually done in complicated vaginal or caesarean deliveries to save the life of the mother. It is a complicated procedure and involves heavy blood loss and prolonged duration. Previous history of caesarean section, multiple parity and increased maternal age pose the risk of increased incidence of peripartum hysterectomy. (4)

Hysterectomy can be performed through various surgical procedures. These procedures include abdominal (Total Abdominal Hysterectomy), vaginal (vaginal hysterectomy) and laparoscopic approaches. These different modes are selected based on different indications. In the case of a fixed and enlarged uterus, the abdominal route is used. The abdominal route is also preferred whenever there is obliteration of the pouch of Douglas or when there is no proper vaginal access. (5) Vaginal approach is preferred when there is an increased risk of complications with the abdominal approach such as more blood loss, prolonged hospital stay or decreased chances of recovery. (6) So, laparoscopic and vaginal hysterectomies are preferred due to the low risk of complications but in developing countries, abdominal hysterectomy is still the procedure of choice due to the high cost and less expertise available in laparoscopic and vaginal hysterectomies in these countries. (7) Abdominal hysterectomy still makes up the largest proportion of all the hysterectomies performed accounting for 66% of all the procedures done. It is followed by vaginal (22%) and laparoscopic (12%) hysterectomies. (8)

The prevalence of hysterectomies varies greatly among different countries. Most of the studies regarding the prevalence of hysterectomy are done in high-income countries. Recent studies have shown a prevalence of 21.1% in the United States1 and 9.7% in the United Kingdom. (9) A population-based study in Canada reported a prevalence of 15.4%. (10) The prevalence also varies in the different areas of the same country. In Germany, the prevalence was found to be 24.3% in Essen, 21.8% in Dortmund, 18.7% in Bavaria, and 10.8% in West Pomerania. (11) Further research is needed to identify the prevalence of hysterectomies in other countries of the world especially in low and middle-income countries.

Studies have also been done to identify the determinants and predictors of hysterectomy. One study done in India has suggested that urban residence, doing jobs and a better socioeconomic level may be linked to hysterectomy. (2)

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However, another study found that increased age and rural residence and older age were determinants of hysterectomy. (12) Furthermore, menarche age, levels of triglycerides, level of education, and history of previous cesarean section were also found to be related to hysterectomy. (13, 14)
Hysterectomy provides symptom relief, enhances life quality and reduces morbidity from untreated conditions. It can reduce the burden of health care costs by decreasing admission frequency due to treatment of underlying gynaecological conditions. (15-17) However, it can also result in significant complications including mental health disorders due to hormonal imbalance, cardiovascular insults and fractures due to osteoporosis. (18, 19) Hysterectomy can also affect family planning and impact fertility. (13) Therefore, even though a hysterectomy improves the quality of life and could be a lifesaving procedure, an unnecessary increase in its prevalence can be detrimental to the health system due to unwanted complications.
Many studies have examined the prevalence of hysterectomies in various countries but significant gaps in research still exist. Most of the literature focuses on Western populations, with insufficient attention given to South Asian countries, including Pakistan. Furthermore, there is a dearth of studies that investigate the implications of hysterectomy prevalence in diverse socioeconomic and cultural contexts, which likely influence both the rates and outcomes of the procedure. As a result, this study aimed to explore the prevalence and socio-demographic factors related to hysterectomies in the gynaecological department of Ayub Teaching Hospital, Abbottabad. By identifying the actual prevalence of hysterectomies in the local population and the factors responsible for them, we can devise better healthcare policies to prevent unnecessary hysterectomies and reduce the complications associated with them.

**Methodology**

This descriptive cross-sectional study was done in the Gynecology C unit of Ayub Teaching Hospital, Abbottabad from 25th July 2024 to 10th Oct 2024 after obtaining approval from the ethical committee. By using the WHO sample size calculator, considering the proportion of 21.1%1 patients with hysterectomies with a margin of error of 5.1% and a 95% confidence level, an estimated sample size of 246 patients was obtained. Patients who underwent major gynaecological procedures were included in the study. Patients with comorbidities such as Ischemic heart disease, chronic kidney disease and other obstetrical complications like emergency caesarean hysterectomies were excluded from the study. Written informed consent was taken from all the patients before the study. SPSS version 23.0 was used as a statistical tool.

**Results**

The majority of the participants belonged to the age group of 45-59 years (45.52%). Most of them resided in rural areas (57.31%). 36.58% of women had no formal education and did not attend any school. 60.9% of women were multiparous with only 13.4% nulliparous. Half of the women belonged to middle-class families. Two-thirds of the women were non-working (Table 1).

**Table 1. Descriptive statistics of the study population.**

| Variable | Category | Frequency | percentage |
|---|---|---|---|
| Age | 15-44 | 41 | 16.67 |
| | 45-59 | 112 | 45.52 |
| | >60 | 88 | 35.77 |
| Residence | Urban | 105 | 42.68 |
| | Rural | 141 | 57.31 |
| Education | No education | 90 | 36.58 |
| | School | 70 | 28.45 |
| | College | 46 | 18.69 |
| | University | 40 | 16.26 |
| No of children | Nulliparous | 33 | 13.4 |
| | Uniparous | 63 | 25.6 |
| | Multiparous | 150 | 60.9 |
| Occupation | Working | 82 | 33.33 |
| | Non-Working | 164 | 66.66 |
| Socioeconomic status | Poor | 66 | 26.82 |
| | Middle | 125 | 50.81 |
| | Rich | 55 | 22.35 |

The overall prevalence of hysterectomy was around 36.9%. The highest (40.17%) prevalence of hysterectomy was reported among participants aged 45– 59 years.). The prevalence of hysterectomy was found to be almost the same (38.09% vs. 36.17%) among women living in rural areas and urban areas. Hysterectomy also had a similar prevalence among women with different educational backgrounds. Women belonging to rich families tend to have a higher prevalence (45.45%) of hysterectomy. We

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observed hysterectomy to be less among nulliparous women (24.24%) (Table 2).

**Table 2: Prevalence of hysterectomy across various socio-demographic characteristics of the study population.**

| Variable | Category | Hysterectomy | |
|---|---|---|---|
| | | Number | Prevalence % |
| Age | 15-44 | 16 | 39.02 |
| | 45-59 | 45 | 40.17 |
| | >60 | 30 | 34.09 |
| Residence | Urban | 40 | 38.09 |
| | Rural | 51 | 36.17 |
| Education | No education | 35 | 38.88 |
| | School | 25 | 35.71 |
| | College | 16 | 34.78 |
| | University | 15 | 37.5 |
| No of children | Nulliparous | 8 | 24.24 |
| | Uniparous | 23 | 36.05 |
| | Multiparous | 60 | 40 |
| Occupation | Working | 28 | 34.14 |
| | Non-Working | 63 | 38.14 |
| Socioeconomic status | Poor | 26 | 39.39 |
| | Middle | 40 | 32 |
| | Rich | 25 | 45.45 |

Heavy menstrual bleeding (43.95%) was found to be the leading cause of hysterectomy. Fibroid uterus and Adenomyosis were found to be the reason in 25.27% and 16.48% of cases respectively. These were followed by endometrial hyperplasia (10.98%) and recurrent PID (3.29%) (Table 3)

**Table 3: Indications of hysterectomy**

| Indication | Number | Percentage |
|---|---|---|
| Heavy Menstrual Bleeding | 40 | 43.95 |
| Fibroid Uterus | 23 | 25.27 |
| Adenomyosis | 15 | 16.48 |
| Endometrial hyperplasia | 10 | 10.98 |
| Recurrent PID | 3 | 3.29 |

No significant relationship was found between any variable and hysterectomy. Women in the age group 45-59 tend to have hysterectomies more (1.04) than the younger age group while the older population >60 yrs had fewer hysterectomies (0.81). Women living in urban areas (1.08) had a higher chance of getting hysterectomies than those living in rural areas. Women with formal education had less chances of getting hysterectomies than the uneducated ones. No children increase the chances of getting a hysterectomy done with multiparous women (2.08) having an increased likelihood for hysterectomy. Women with affluent backgrounds also had a high likelihood (1.28) of hysterectomies (Table 4).

**Table 4: Association between hysterectomy and various socio-demographic characteristics**

| Variable | Category | OR (95% CI) | P value |
|---|---|---|---|
| Age | 15-44 | Reference | Reference |
| | 45-59 | 1.049440 (0.5-2.1) | 0.448625 |
| | >60 | 0.808190 (0.37-1.74) | 0.293115 |
| Residence | Rural | Reference | Reference |
| | Urban | 1.085973 (0.64-1.8) | 0.378546 |
| Education | No education | Reference | Reference |
| | School | 0.873016 (0.45-1.6) | 0.340398 |
| | College | 0.838095 (0.4-1.7) | 0.000000 |
| | University | 0.942857 (0.43-2.03) | 0.440294 |
| No of children | Nulliparous | Reference | Reference |
| | Uniparous | 1.796875 (0.69-4.63) | 0.112592 |
| | Multiparous | 2.083333 (0.88-4.92) | 0.047295 |
| | Non-Working | Reference | Reference |

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| | | | |
|---|---|---|---|
| Occupation | Working | 0.831276 (0.47-1.44) | 0.256776 |
| Socioeconomic status | Poor | Reference | Reference |
| | Middle | 0.723982 (0.38-1.34) | 0.153810 |
| | Rich | 1.282051 (0.62-2.64) | 0.250863 |

**Discussion**

The present study sought to explore the prevalence and socio-demographic factors related to hysterectomies among women in Pakistan. We found a high prevalence of 36.9% in the study population. Our results indicated that older age, living in urban areas, higher socioeconomic status, being unemployed, and multiple pregnancies were associated with increased odds of undergoing a hysterectomy. The prevalence of hysterectomy was 36.9% in our study. This prevalence is much greater than the prevalence of hysterectomy in other countries. The prevalence of hysterectomy is 21.1% in the USA1, 15.4% in Canada10 and 9.7% in the UK9. The reason for this high prevalence could be a lack of awareness regarding health among individuals and also the low socioeconomic level of the country. Another reason could be the low sample size of the study. In our study, hysterectomy was done more in the age group of 45-59 years. Concerning age, women are more prone to develop certain gynaecological conditions (fibroids, prolapse and cancer) as they get older. Moreover, women of older age are more comfortable undergoing hysterectomies for non-life-threatening conditions because their families are complete and they don't have to worry about fertility. Our results were similar to the results of Kumari et al. (12), Shekhar et al. (20) and Prusty et al. (21) In our study, women living in urban areas were more likely to get hysterectomy done. This could be due to better education, high socioeconomic level and easy access to healthcare facilities for the residents living in urban areas (22, 23). However, some studies reported more odds of hysterectomy in rural areas as compared to urban areas (12, 19, 20). Few studies also suggested no difference between these areas in terms of risk of hysterectomy (21, 24). This difference in results could be due to different settings in rural and urban areas in these studies. This study reported an increased risk of hysterectomy among women of high socioeconomic levels. Similar results were also reported by some other studies which found increased odds of hysterectomy in women with high socioeconomic levels (12, 20, 21). However, studies done by Desai et al. (24) and Kuppermann et al. (25) did not report any difference in the odds of hysterectomy between women belonging to different socioeconomic classes. The reason for these discrepancies could be differences in the definition of wealth among different countries. Sample sizes and different ethnicities can also cause these differences. In this study, the odds of a hysterectomy decreased with employment. However, one study reported an increased risk of hysterectomy with occupation22 while others reported no difference in terms of occupation. (24, 25) Unemployment tends to increase the risk of hysterectomy because unemployed persons have an increased burden of chronic conditions due to increased stress and decreased access to healthcare facilities which can lead to the increased need for surgical intervention like hysterectomy. This could be the reason for the decreased risk of hysterectomy in employed women. Our study also reported increased odds of hysterectomy in multipara women. These results are similar to the trends observed in other regional studies. (26, 27) Similar positive association between hysterectomy and parity was also reported by Rachel et al. Their study suggested that multipara women are more likely to undergo hysterectomy when offered by physicians because it provides them a way to prevent further pregnancies. (28) These findings were also favoured by another study in which multipara women agreed to hysterectomy more than nulliparous women. (29) These findings suggest that nulliparous women favour conservative procedures more because their family is still incomplete while multiparous women are more likely to go for surgery.

**Conclusion**

In conclusion, this study highlights a significant prevalence of hysterectomy at 36.9% in the local population, which exceeds rates reported in many other countries. The findings indicate that multiparous women, those who are unemployed, individuals from higher socioeconomic backgrounds, women in urban settings and older age groups, are more likely to undergo this procedure. These results underscore the need for targeted educational initiatives and healthcare policies aimed at addressing the underlying determinants of hysterectomy in this region. By understanding these patterns, we can work towards improving women's health outcomes and ensuring that surgical interventions are appropriately indicated and performed. This study is done on a smaller sample size and further research is essential to explore the implications of these findings and to develop strategies that promote informed decision-making regarding reproductive health among women in Pakistan.

**Declarations**

**Data Availability statement**
All data generated or analyzed during the study are included in the manuscript.
**Ethics approval and consent to participate.**
Approved by the department concerned. (IRBEC-TCHT-33/23)
**Consent for publication**
Approved
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**Conflict of interest**

The authors declared an absence of conflict of interest.

**Authors' Contribution**

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*Revisiting Critically*

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*Concept & Design of Study*

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