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# Study of Etiology, Symptomatology of Uterine Prolapse and to Grade the Severity according to Pop-Quantification System

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## ABSTRACT

**Background:** Uterine prolapse, the descent of the uterus into or beyond the vaginal canal due to weakening of the pelvic floor muscles and ligaments, remains a significant health issue in women, particularly in developing countries. It often leads to distressing symptoms that impact quality of life and is commonly underreported due to sociocultural barriers.

**Objectives:** To assess the clinical profile, risk factors, and severity of uterine prolapse in women attending the gynecology outpatient department (OPD) of a tertiary care hospital.

**Materials and Methods:** This prospective clinical study was conducted over a defined period among patients presenting with symptoms of pelvic organ prolapse. Detailed histories were taken, and clinical examinations were performed using the Pelvic Organ Prolapse Quantification (POP-Q) system. Relevant demographic and clinical data were collected and analyzed statistically.

**Results:** The majority of women affected were multiparous and above 40 years of age. Prolonged labor, home deliveries, and lack of postnatal care were common risk factors. Most patients presented in stage III or IV of uterine prolapse. Pelvic discomfort, mass per vagina, urinary complaints, and sexual dysfunction were the predominant symptoms. Surgical intervention was the preferred mode of treatment in advanced cases.

**Conclusion:**
Uterine prolapse is a common yet preventable condition. Awareness, early diagnosis, and accessible gynecological services can significantly reduce disease burden and improve quality of life for affected women. Community-based education and promotion of institutional deliveries are essential public health strategies to combat this issue.

**Keyword:** *Uterine prolapse, pelvic organ prolapses, POP-Q, gynecology, tertiary care, multiparity, pelvic floor.*

## INTRODUCTION:

Pelvic organ prolapse (POP) is a prevalent gynecological disorder in women, particularly among the elderly and those with a history of multiple vaginal deliveries. It refers to the downward displacement of pelvic organs through the vagina due to weakness or injury to the pelvic floor muscles and supportive connective tissues[1]. Uterine prolapse, a type of POP involving descent of the uterus, can significantly impact a woman's physical, psychological, and sexual well-being[2].

The etiology of uterine prolapse is multifactorial. Key risk factors include increasing age, high parity, mode of delivery (especially vaginal births), menopause, obesity, chronic constipation, prior pelvic surgeries, and activities that elevate intra-abdominal pressure such as chronic coughing or heavy lifting[3]. In low-resource settings, the burden is often higher due to delayed presentation and limited access to medical care[4].

Symptoms vary from a sense of vaginal fullness or protrusion, pelvic pressure, and lower backache, to urinary and bowel disturbances and sexual dysfunction[5]. Since these symptoms can significantly affect quality of life, accurate assessment and timely intervention are essential.

The Pelvic Organ Prolapse Quantification (POP-Q) system, introduced by the International Continence Society, provides an objective, standardized, and reproducible method to assess and stage pelvic organ prolapse[6]. It uses specific anatomical landmarks to grade the severity of prolapse, which aids in clinical decision-making and monitoring of treatment outcomes[7].

This study aims to analyze the etiology and symptomatology of uterine prolapse and to grade its severity according to the POP-Q system. A thorough understanding of the contributing factors and clinical presentation will facilitate improved prevention strategies and patient-centered management.

## MATERIALS AND METHODS

### Study Design and Setting

This cross-sectional study was conducted in the outpatient department of Obstetrics and Gynecology at a hospital-based setting from **November 2022 to November 2024**.

### Sample Size Calculation

The sample size was calculated using the Cochrane formula:

n=(1.96)2×p×qe2n = \frac{{(1.96)^2 \times p \times q}}{{e^2}}n=e2(1.96)2×p×q

where
*p* = prevalence of uterovaginal prolapse = 10%
*q* = (1 – p) = 90%
*e* = allowable error = 5%

Using the formula:

n=(1.96)2×10×9025=138.3n = \frac{{(1.96)^2 \times 10 \times 90}}{{25}} = 138.3n=25(1.96)2×10×90=138.3

After accounting for a 10% non-response rate, the final sample size was **152**.

### Inclusion Criteria

- Patients presenting with a history of prolapse
- Patients presenting with symptoms suggestive of prolapse

### Exclusion Criteria

- Patients with virginal status
- Patients diagnosed with other gynecological disorders
- Pregnant women or those in the puerperium
- Patients with known malignancies
- Patients refusing to provide informed consent

### Ethical Considerations

Ethical clearance was obtained from the Institutional Ethics Committee prior to the initiation of the study. Written informed consent was obtained from all participants after explaining the nature, objectives, and procedures of the study.

### Methodology

Eligible patients attending the casualty and outpatient departments were evaluated and enrolled after meeting the inclusion and exclusion criteria. Each participant was thoroughly informed regarding the purpose of the study, and detailed demographic and clinical data were recorded.

### History and Clinical Evaluation

A comprehensive medical, surgical, obstetric, and gynecologic history was taken. Special emphasis was placed on symptoms such as vaginal bulge, pelvic pressure, urinary dysfunction, defecatory symptoms, and sexual dysfunction.

### Physical Examination

- **Abdominal Examination**: Conducted to rule out masses, hernias, or previous surgical scars.
- **Pelvic Examination**: Conducted in the dorsal lithotomy position using a speculum to assess the extent of prolapse.

**Pelvic Organ Prolapse Quantification (POP-Q) System**

The severity of prolapse was graded using the standardized **POP-Q system**, which stages prolapse from 0 (no prolapse) to 4 (complete vaginal eversion). The examination was performed with an empty bladder and the patient in dorsal lithotomy with a 45° head-up tilt. All measurements, except total vaginal length, were taken during maximal straining. Tools used included a bivalve speculum, Sims' speculum, a clear plastic ruler, and IUGA sticks.

Key measurement points recorded included:

- **Genital hiatus (gh)**
- **Perineal body (pb)**
- **Point Aa, Ba, Ap, Bp, C, D**
- **Total vaginal length (tvl)**

The POP-Q values were documented in a standardized grid to create a vaginal profile.

**Cough Stress Test for Urinary Incontinence**

All patients underwent a **Cough Stress Test (CST)** under five conditions:

1. Standing without prolapse reduction
2. Semi-lithotomy without prolapse reduction
3. Semi-lithotomy with posterior speculum reduction
4. Semi-lithotomy with pessary in place
5. Standing with pessary in place

A **positive CST** was defined as urine leakage concurrent with coughing in at least one condition. Post-void residual urine was calculated after spontaneous voiding using transurethral catheterization.

**Pelvic Floor Muscle Assessment**

Pelvic muscle strength was assessed by digital palpation of the **puborectalis** and **pubococcygeus** muscles at 4 and 8 o'clock positions within the hymenal ring. The **modified Oxford scale** was used to grade pelvic muscle strength from 0 (no contraction) to 5 (strong contraction with elevation of vaginal wall). A recto-vaginal examination was also performed to assess the anal sphincter complex.

| Grade | Description |
|---|---|
| 0 | No response |
| 1 | Flicker of contraction |
| 2 | Weak, sustained contraction |
| 3 | Moderate contraction with slight elevation |
| 4 | Strong contraction with elevation toward pubic symphysis |
| 5 | Firm compression with marked upward movement |

**Data Collection and Statistical Analysis**

A pre-designed study proforma recorded data regarding symptomatology, prolapse grade, urinary and bowel dysfunction, and pelvic muscle strength.

- **Qualitative data** were presented as frequencies and percentages.
- **Association** between selected variables was analyzed using the **Chi-square test**.
- A **p-value < 0.05** was considered statistically significant.

**RESULTS AND OBSERVATIONS;**

**Table no. 1 Age group**

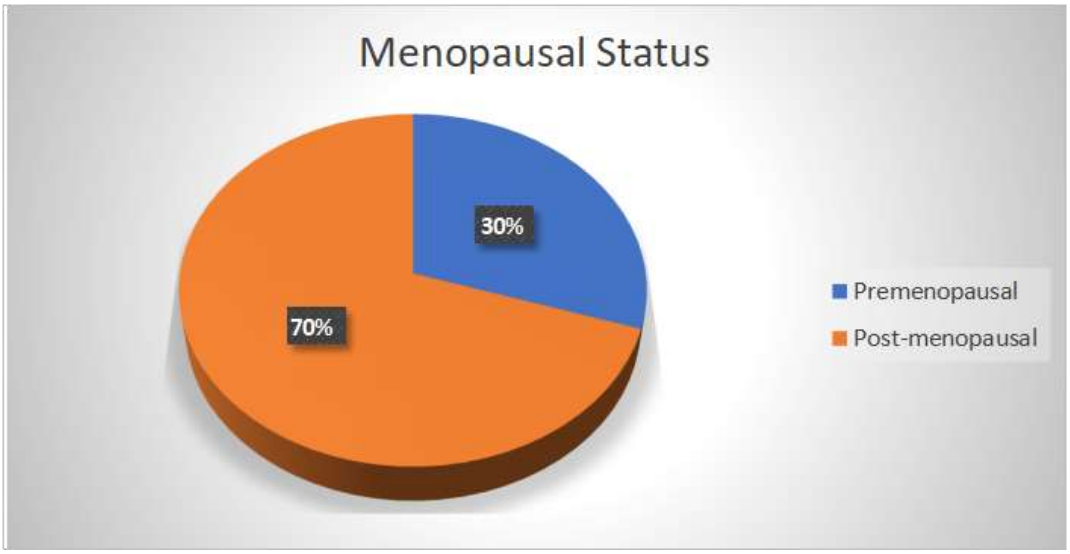
| Age group | Frequency | Percent |
|---|---|---|
| 31 to 45 years | 25 | 16.3 |
| 46 to 60 years | 90 | 59.2 |
| more than 61 years | 37 | 24.5 |
| Total | 152 | 100 |

The majority of the study population (59.2%) is aged between 46 and 60 years, indicating that this study predominantly involves middle-aged individuals. There is also a notable proportion of individuals aged over 60 years (24.5%), suggesting a significant presence of elderly participants in the study

**Table no. 2 BMI**

| BMI | Frequency | Percentage |
|---|---|---|
| **<18.5** | 46 | 30 |
| **18.5 - 24.9** | 68 | 45 |
| **25 - 29.9** | 30 | 20 |
| **30 - 39.9** | 8 | 5 |
| **Total** | 152 | 100 |

In the group of 152 patients, 30% (46 patients) had a BMI less than 18.5, i.e., underweight 45% (68 patients) had a normal BMI of 18.5 to 24.9, 20% (30 patients) were overweight with a BMI between 25 and 29.9, and 5% (8 patients) were obese with a BMI between 30 and 39.9




**Figure; 1 Menopausal Status**

**Table: 3 Demographic, Clinical, and Medical History Characteristics of Study Population (n = 152)**

| Characteristic | Frequency | Percentage (%) |
|---|---|---|
| **Family History of Prolapse** | | |
| Present | 38 | 25.0 |
| Absent | 114 | 75.0 |
| **Total** | **152** | **100.0** |
| **Bowel Habits** | | |
| Chronic Constipation | 15 | 10.0 |
| Irregular | 46 | 30.0 |
| Regular | 91 | 60.0 |
| **Total** | **152** | **100.0** |
| **Mode of Delivery** | | |
| Vaginal | 106 | 70.0 |
| Operative/Instrumental | 31 | 20.0 |
| C-section | 15 | 10.0 |
| **Total** | **152** | **100.0** |
| **Previous Gynecological Surgeries** | | |
| Abdominal Surgery | 30 | 20.0 |
| Laparoscopic Surgery | 15 | 10.0 |
| Post Hysterectomy | 8 | 5.0 |
| **Total** | **53** | **35.0** |
| **Pulmonary Disorder History** | | |
| Asthma | 12 | 8.0 |
| TB (Tuberculosis) | 8 | 5.0 |
| Other Pulmonary Disorders | 11 | 7.0 |
| **Total** | **31** | **20.0** |

**Table no. 4 Urinary Symptoms**

| Urinary Symptoms | Frequency | Percentage |
|---|---|---|
| Urinary incontinence | 23 | 18.25 |
| Urinary frequency | 42 | 33.33 |
| Urinary urgency | 24 | 19.05 |
| Weak or prolonged urinary stream | 5 | 3.97 |
| Hesitancy | 6 | 4.76 |
| Feeling of incomplete emptying | 13 | 10.32 |
| Manual reduction of prolapse to start or to complete voiding | 7 | 5.71 |
| Position changes to start or to complete voiding | 6 | 4.76 |
| Total | 126 | 100.00 |

This table shows that urinary frequency was the most prevalent symptom, experienced by 33.33% of participants. Urinary urgency was reported by 19.05%, while urinary incontinence affected 18.25%. Other symptoms included a feeling of incomplete emptying (10.32%), manual reduction of prolapse to start or complete voiding (5.71%), position changes to start or complete voiding (4.76%), hesitancy (4.76%), and a weak or prolonged urinary stream (3.97%). There were a total of 126 recorded instances of these symptoms

**Table: 5 Bowel and Sexual Symptoms of Study Population (n = 152)**

| Characteristic | Frequency | Percentage (%) |
|---|---|---|
| **Bowel Symptoms** | | |
| Incontinence of flatus/stool | 10 | 14.71 |
| Feeling of incomplete emptying | 11 | 16.18 |
| Hard straining to defecate | 15 | 22.06 |
| Urgency to defecate | 5 | 7.35 |
| Digital evacuation to complete defecation | 13 | 19.12 |
| Splinting of vagina/perineum to start/complete defecation | 6 | 8.82 |
| Feeling of blockage or obstruction during defecation | 8 | 11.76 |
| **Total (Bowel Symptoms)** | **68** | **100.00** |
| **Sexual Symptoms** | | |
| Dyspareunia | 2 | 14.29 |
| Decreased lubrication | 5 | 35.71 |
| Decreased sensation | 2 | 14.29 |
| Decreased arousal/orgasm | 5 | 35.71 |
| **Total (Sexual Symptoms)** | **14** | **100.00** |

**Table:6 Stages of Prolapse, Post-Menopausal Prolapse Stages, and Outcome of POP-Q**

| Characteristic | Frequency | Percentage (%) |
|---|---|---|
| **Stages of Prolapse** | | |
| Stage I | 33 | 22.0 |
| Stage II | 90 | 59.0 |
| Stage III | 18 | 12.0 |
| Stage IV | 11 | 7.0 |
| **Total (Stages of Prolapse)** | **152** | **100.0** |
| **Stages of Prolapse in Post-Menopausal Women** | | |
| Stage I | 20 | 18.86 |
| Stage II | 63 | 59.43 |
| Stage III | 16 | 15.09 |
| Stage IV | 7 | 6.60 |
| **Total (Post-Menopausal Women)** | **106** | **100.0** |
| **Outcome of Different Stages of POP-Q** | | |
| Stage I | PFMT, Pessaries | 22.0 |
| Stage II | Vaginal Hysterectomy with PFR | 59.0 |
| Stage III | Vaginal Hysterectomy PFR + McCall's Culdoplasty | 12.0 |
| Stage IV | Vaginal Hysterectomy with PFR + HULS or SSLF or Sacrocolpopexy | 7.0 |
| **Total (Outcome of POP-Q)** | **152** | **100.0** |

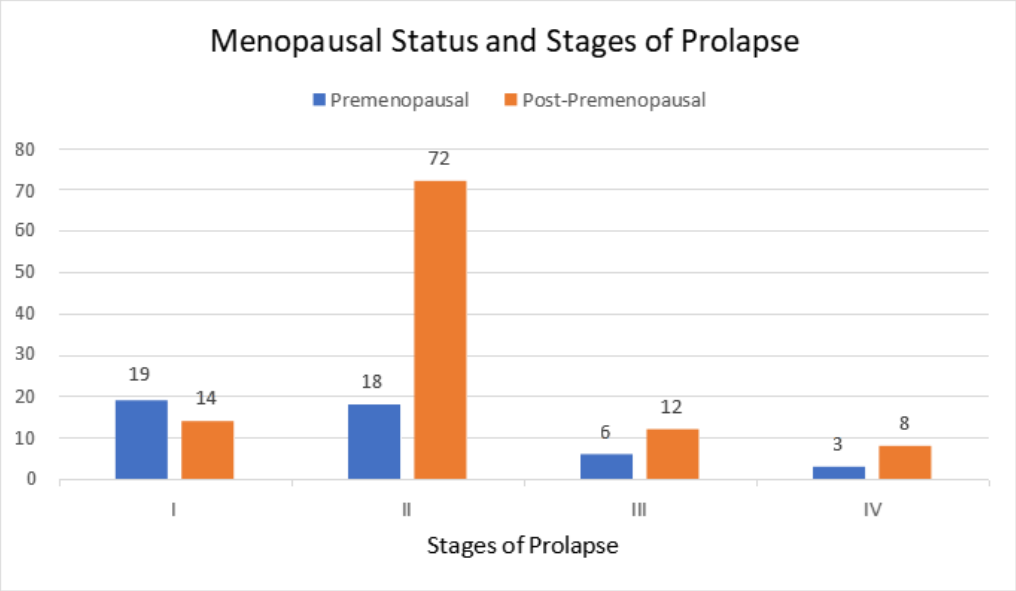
**Table: 7 Urinary Incontinence and Management of Stress Urinary Incontinence**

| Characteristic | Frequency | Percentage (%) |
|---|---|---|
| **Urinary Incontinence** | | |
| Stress Incontinence | 8 | 5.26 |
| Mixed Incontinence | 5 | 3.28 |
| Urge Incontinence | 10 | 6.57 |
| **Total (Urinary Incontinence)** | **23** | **15.13** |
| **Management of Stress Urinary Incontinence (Concomitant with Vaginal Hysterectomy)** | | |
| TOT Procedure | 3 | 1.97 |
| Kelly's Procedure | 2 | 1.31 |
| PFMT (Pelvic Floor Muscle Training) | 3 | 1.97 |
| **Total (Management of Stress Incontinence)** | **8** | **5.26** |

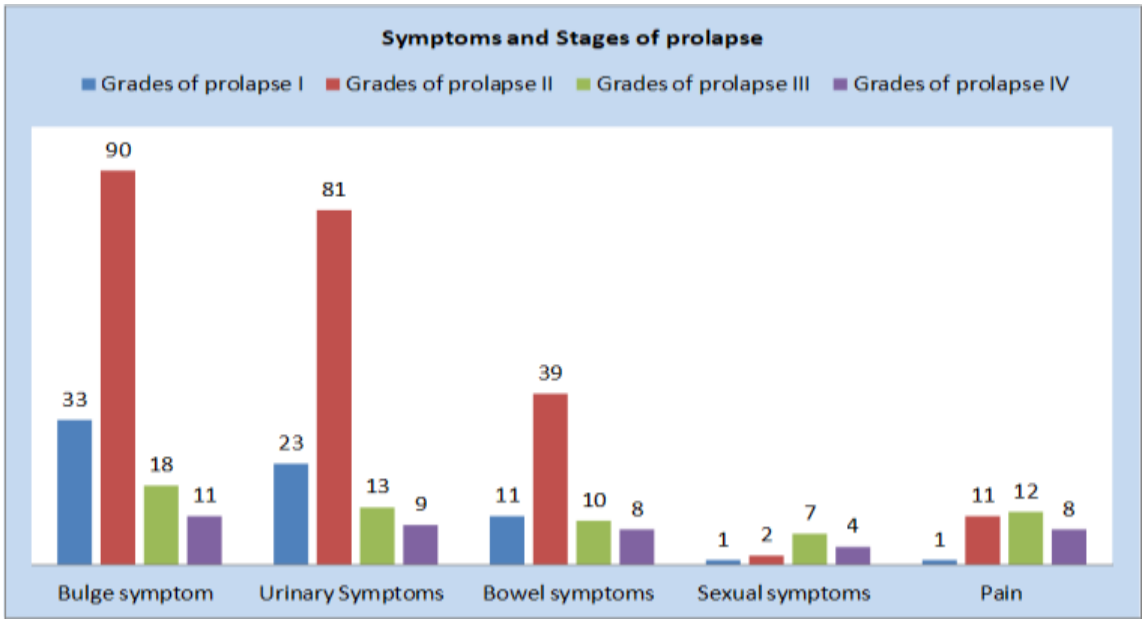
**Table 8: Association between Parity and Stages of prolapse**

| Parity | Stages of prolapse | | | | Total | Chi-square Test | p-value |
|---|---|---|---|---|---|---|---|
| | I | II | III | IV | | | |
| **Primiparous** | **06** | **07** | **11** | **07** | **31** | **39.42** | **P<0.0001 S** |
| **Multiparous** | **27** | **83** | **07** | **04** | **121** | | |
| **Total** | **33** | **90** | **18** | **11** | **152** | | |

The table shows the association between the parity and stages of prolapse with a chi- square test value of 39.42 and p-value of <0.0001 depicting a significant association




**Figure; 2 Association between Menopausal Status and Stages of prolapse**




**Figure;3 Association between Symptoms and Stages of prolapse**

## DISCUSSION

Uterine prolapse, a manifestation of pelvic organ prolapse (POP), represents a significant public health concern, particularly in developing countries where access to gynecological care is limited. The condition results from the weakening of pelvic floor structures, including the levator ani muscles, endopelvic fascia, and uterosacral ligaments, which are essential for maintaining the normal anatomical position of the uterus[1]. In our study, the most commonly observed predisposing factors for uterine prolapse were advanced age, high parity, postmenopausal status, and a history of vaginal deliveries—findings that are consistent with existing global literature[2].

**Parity and obstetric history** play a crucial role in the pathophysiology of uterine prolapse. Multiple vaginal deliveries, especially those associated with prolonged labor or instrumental interventions, can cause direct trauma to the pelvic floor musculature and nerves[3]. Our data revealed that women with four or more full-term vaginal deliveries were more likely to develop prolapse, in agreement with the findings of Hendrix et al., who reported a strong association between parity and prolapse severity[4].

**Age and menopausal status** were also significant contributors. As women age, there is a natural decline in collagen content and elasticity of pelvic connective tissues, exacerbated by estrogen deficiency following menopause[5]. This hormonal change accelerates atrophic changes in pelvic support structures, leading to an increased risk of prolapse in postmenopausal women[6]. Our findings showed that the majority of patients presenting with uterine prolapse were above 50 years of age, mirroring the demographic data from large cohort studies in Western and South Asian populations[7].

**Socioeconomic status and education** level were indirectly linked to the severity and chronicity of the condition. Many of the patients in our study belonged to rural or underserved communities, where awareness regarding pelvic health is limited, and access to maternal care is often delayed or absent. This contributes to late presentation and poor health-seeking behavior, a trend also observed in studies conducted in Ethiopia, Nepal, and Bangladesh[8,9]. Delays in seeking medical attention result in the majority of patients being diagnosed in stage II or III of prolapse, as observed in our study. This not only increases the likelihood of surgical intervention but also negatively impacts quality of life due to persistent symptoms such as vaginal bulging, urinary incontinence, backache, and sexual dysfunction[10].

The **Pelvic Organ Prolapse Quantification (POP-Q) system** was used in our study for objective staging of uterine prolapse. This standardized method improves reproducibility and communication between clinicians and researchers. Studies have validated the POP-Q system as being superior to traditional grading methods for pelvic organ prolapse[11]. In our analysis, POP-Q stages II and III were the most frequently encountered, consistent with findings from other tertiary care centers in India and globally[12].

**Conservative and surgical management** options depend largely on the patient's age, stage of prolapse, fertility wishes, and associated comorbidities. Pessary use is a non-surgical option, particularly beneficial for elderly or unfit patients, though it requires routine follow-up and hygienic maintenance[13]. In our study, only a small proportion of women opted for conservative management, possibly due to lack of awareness or inadequate follow-up systems. Surgical options like vaginal hysterectomy with pelvic floor repair remain the gold standard in severe and symptomatic cases. Similar surgical preferences have been documented in studies from South Asia and sub-Saharan Africa[14].

Preventive strategies such as **pelvic floor muscle training (Kegel exercises)**, institutional deliveries, avoiding early and repeated pregnancies, managing chronic cough and constipation, and promoting menopausal health awareness are critical in reducing the incidence of uterine prolapse[15]. Community-level education and regular gynecological check-ups, especially in high-risk groups, can aid in early detection and timely intervention. Furthermore, integrating pelvic health education into maternal and child health programs can improve outcomes in underserved populations[16].

In summary, the findings of this study reaffirm that uterine prolapse is a multifactorial condition heavily influenced by obstetric history, hormonal status, aging, and socioeconomic determinants. Our results emphasize the need for early detection, standardized grading, and patient-centered care to reduce the burden of uterine prolapse, especially in low-resource settings.

## CONCLUSION

Uterine prolapse continues to be a significant gynecological concern, particularly in developing countries, where factors such as high parity, advancing age, menopause, poor pelvic floor support, and limited access to obstetric care contribute to its prevalence. This study highlights that most patients present in the advanced stages of prolapse, often due to a lack of awareness, delayed health-seeking behavior, and sociocultural barriers. The condition adversely impacts physical, psychological, and sexual health, thereby compromising the overall quality of life.

Early detection, patient education, and community-level awareness campaigns are crucial in preventing the progression of uterine prolapse. Strengthening maternal health services, encouraging institutional deliveries, and integrating pelvic floor exercises into postnatal care can significantly reduce the burden. Furthermore, the use of standardized diagnostic tools like the POP-Q system and the availability of both conservative and surgical management options tailored to individual patient needs are essential for improving outcomes.

Our study underscores the urgent need for targeted public health interventions and policy-level changes to address this often-neglected yet highly impactful condition, especially in rural and underserved populations.

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