

Effectiveness of Nurse-Led Education on Knowledge and Self-Care Practices Among Women Undergoing Hysterectomy

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ARTICLE INFO

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Article History

Received: 27-06-2026

Revised: 16-08-2026

Accepted: 20-08-2026

Published: 30-08-2026

How to Cite

Atta T, Tabasum R, Eman NU. Effectiveness of Nurse-Led Education on Knowledge and Self-Care Practices Among Women Undergoing Hysterectomy. Pak J Clin Res. 2025;3(8):15-20. doi:10.65761/pjcr.2026.293

DOI: <https://doi.org/10.65761/pjcr.2026.293>

ABSTRACT

Background: Hysterectomy is one of the most commonly performed gynecological surgeries worldwide, yet women often lack adequate knowledge regarding postoperative self-care, which can compromise recovery outcomes and quality of life. Nurse-led educational interventions have emerged as a promising strategy to bridge this knowledge gap and promote self-care practices. To evaluate the effectiveness of a nurse-led educational intervention on knowledge and self-care practices among women undergoing hysterectomy at Nishtar Hospital, Multan.

Methods: A quasi-experimental single-group pre-test post-test design was employed. A total of 66 women undergoing hysterectomy were recruited from the gynecology department of Nishtar Hospital, Multan, using purposive sampling. Data were collected using a structured knowledge questionnaire and a self-care practice checklist before and four weeks after the nurse-led educational intervention. The intervention comprised a comprehensive face-to-face teaching session covering preoperative preparation, postoperative care, wound care, activity restrictions, dietary guidelines, and warning signs of complications. Data were analyzed using SPSS version 26.0, employing descriptive statistics and paired t-test.

Results: The mean pre-test knowledge score was 11.42 ± 3.87 , which significantly increased to 24.68 ± 4.12 at post-test ($t = 23.14$, $p < 0.001$). Similarly, the mean self-care practice score improved from 15.36 ± 4.51 pre-intervention to 31.82 ± 3.96 post-intervention ($t = 21.87$, $p < 0.001$). The educational intervention demonstrated a highly statistically significant improvement in both knowledge and self-care practices among the study participants.

Conclusion: Nurse-led education significantly enhances knowledge and self-care practices among women undergoing hysterectomy. Integrating structured nurse-led educational programs into routine postoperative care is recommended to improve recovery outcomes and reduce complications.

Keywords: Nurse-led education, hysterectomy, knowledge, self-care practices, quasi-experimental study, Pakistan

INTRODUCTION

Hysterectomy, defined as the surgical removal of the uterus, is one of the most frequently performed gynecological procedures worldwide and is undertaken for a range of benign and malignant conditions.¹ Common indications include uterine fibroids, abnormal uterine bleeding, endometriosis, pelvic organ prolapse, and gynecological malignancies.¹ In Pakistan, hysterectomy represents an important gynecological surgical intervention, with many women undergoing the procedure during their fourth and fifth decades of life. Although hysterectomy can effectively manage underlying gynecological conditions, it constitutes a major surgical experience that may influence women's physical functioning, psychological well-being, self-care capacity, and quality of life.^{1,2}

The postoperative period following hysterectomy may present multiple challenges, including pain, fatigue, wound-care requirements, restricted physical activity, dietary modifications, constipation prevention, and emotional adjustment. Enhanced recovery approaches and structured perioperative care have been associated with improved postoperative outcomes among women undergoing hysterectomy.³ Recovery also requires

adequate preparation for discharge and the ability to participate in appropriate self-care after leaving hospital.^{4,5} Women are expected to recognize warning signs, maintain appropriate wound hygiene, use prescribed medications correctly, gradually resume physical activities, maintain adequate nutrition and hydration, and follow recommendations regarding sexual activity and heavy lifting. Inadequate knowledge of these requirements may contribute to difficulties in postoperative self-management. Research among women undergoing hysterectomy has demonstrated the importance of structured educational interventions in improving knowledge and attitudes related to hysterectomy care.⁶

Patient education is an essential component of quality nursing care because it enables patients to understand their health conditions, participate actively in treatment, and develop appropriate self-management skills. Nurses are particularly well positioned to provide such education because of their continuous contact with patients throughout hospitalization and the discharge process. Patient involvement during the transition from hospital to home is also recognized as an important component of safe discharge and continuity of care.⁴ Nurse-led educational



interventions may include structured verbal instruction, individualized counselling, written educational materials, demonstrations, and resources addressing preoperative preparation, postoperative recovery, complication prevention, and long-term self-management. Evidence from hysterectomy patients indicates that the quality of discharge teaching is associated with discharge readiness and subsequent health outcomes.⁵ Educational interventions have also demonstrated benefits for knowledge, self-care, and related outcomes in women with gynecological conditions such as endometriosis.⁷

The theoretical foundation for nurse-led education in hysterectomy care can be provided by Orem's Self-Care Theory, which conceptualizes self-care as a learned and purposeful activity performed by individuals to maintain health and well-being. The theory emphasizes that nursing becomes necessary when an individual's self-care abilities are insufficient to meet therapeutic self-care demands. In women recovering from hysterectomy, physical limitations, postoperative discomfort, emotional distress, and inadequate knowledge may create temporary self-care deficits. A supportive-educative nursing system can therefore help women acquire the knowledge, skills, confidence, and behaviors required to independently manage their recovery. This conceptualization is consistent with evidence showing that nursing interventions addressing education, psychological support, and self-management can improve outcomes among women undergoing gynecological procedures.^{8,9}

Evidence from other gynecological and surgical populations further supports the potential value of structured nursing education. Educational interventions have improved knowledge and emotional or behavioral outcomes among women undergoing major abdomino-pelvic surgery, including education focused on prevention of postoperative complications.⁹ Similarly, nursing-led education has been associated with improved knowledge, self-care practices, and symptom-related outcomes among women with endometriosis.⁷ Interventions addressing gynecological cancer care have also emphasized targeted nursing support, patient education, and self-management as important components of comprehensive care.^{8,10,11} In cervical cancer populations, nurse-led interventions have likewise been examined as a means of strengthening patient knowledge and supportive care.¹⁰

Structured education is not limited to gynecological populations. A patient-centred discharge education intervention developed for general surgery patients demonstrated the feasibility of structured education aimed at improving postoperative recovery and self-management.¹² Similarly, nurse-led education has been investigated for prevention of postoperative complications in patients undergoing thyroidectomy,¹³ while educational interventions have been used to improve knowledge among patients receiving chemotherapy.¹⁴ These findings provide broader surgical evidence that structured education can strengthen patients' preparation for treatment, recovery, and self-management, although the specific content and applicability of such interventions may differ across clinical populations.

Psychological and supportive dimensions of postoperative care are also relevant to women undergoing hysterectomy. Research examining women's experiences of premature menopause highlights the emotional and psychosocial implications associated with changes in reproductive health,¹⁵ while supportive interventions among women with cancer have demonstrated the potential importance of addressing psychological needs alongside physical care.¹⁶ In women undergoing hysterectomy, psychological nursing based on self-efficacy principles has also been associated with improvements in psychological state, self-efficacy, and quality of life.¹⁷ These findings support

incorporating psychological reassurance, individualized counselling, and confidence-building components into comprehensive nurse-led education.

Despite increasing recognition of the importance of patient education, structured nurse-led educational interventions remain insufficiently investigated in Pakistan. Women receiving care in public-sector hospitals may encounter barriers related to healthcare resources, high patient volumes, and the availability and consistency of discharge counselling. Evidence from nursing education in other maternal and clinical populations suggests that structured nurse-led education can improve patients' knowledge and practices, supporting the broader potential role of nurses in strengthening self-management.¹⁸ However, evidence derived from these populations cannot be assumed to be directly transferable to women undergoing hysterectomy and therefore highlights the need for procedure-specific research.

Furthermore, the available literature includes evidence from hysterectomy, gynecological oncology, general surgery, and other clinical populations, but relatively limited evidence specifically evaluates a structured nurse-led intervention addressing both knowledge and self-care practices among hysterectomy patients in a Pakistani tertiary-care hospital. Research on discharge readiness among women undergoing endometrial cancer surgery further emphasizes the importance of systematic discharge preparation and supportive services for patients recovering from gynecological surgery.^{19,20} However, the effectiveness of a focused nurse-led educational intervention targeting both knowledge acquisition and postoperative self-care practices requires further evaluation in the Pakistani healthcare context.

Therefore, the present study was undertaken to evaluate the effectiveness of a nurse-led educational intervention on knowledge and self-care practices among women undergoing hysterectomy at Nishtar Hospital, Multan. The study seeks to determine whether structured nurse-led education can improve patients' understanding of postoperative care and translate this knowledge into appropriate self-care practices. The findings may provide context-specific evidence for strengthening discharge education and integrating structured nurse-led educational interventions into routine nursing care for hysterectomy patients, with the broader aim of promoting safer recovery, improving patient autonomy, and reducing preventable postoperative complications.

METHODOLOGY

A quasi-experimental single-group pre-test and post-test design was employed to evaluate the effectiveness of a nurse-led educational intervention on knowledge and self-care practices among women undergoing hysterectomy. This design enabled comparison of participants' knowledge and self-care practices before and after implementation of the educational intervention and was considered feasible within the hospital setting. The study was conducted in the Gynecology Department of Nishtar Hospital, Multan, a major public-sector tertiary-care hospital in Southern Punjab, Pakistan, affiliated with Nishtar Medical University. The hospital provides comprehensive gynecological and obstetric services to patients from Multan and surrounding districts.

The target population comprised all women undergoing hysterectomy in the Gynecology Department during the study period, while the accessible population included women who fulfilled the eligibility criteria and were admitted for hysterectomy during data collection. A sample of 66 women was recruited using purposive sampling. The sample size was calculated using the single-population proportion formula, assuming a 95% confidence level, 5% margin of error, and an anticipated proportion of 50% to obtain the maximum required sample size. Patient education has been recognized as an

important component of nursing care for improving patients' knowledge and postoperative self-management.¹ Accordingly, participants were selected if they were women undergoing abdominal, vaginal, or laparoscopic hysterectomy, aged 25–65 years, able to read and understand Urdu, willing to participate, hemodynamically stable postoperatively, and free from cognitive impairment or communication difficulties. Women undergoing emergency hysterectomy, those with diagnosed psychiatric disorders, hearing or speech impairments, postoperative intensive-care requirements, or those unwilling to provide informed consent were excluded.

Data were collected using two researcher-developed instruments. The first was a 30-item structured knowledge questionnaire assessing knowledge regarding hysterectomy and postoperative self-care across five domains: understanding of hysterectomy and its indications, preoperative preparation, postoperative wound care and hygiene, activity and dietary restrictions, and recognition of complications and warning signs. Each correct response received one point and each incorrect response received zero, producing a maximum score of 30. The second instrument was a 20-item self-care practice checklist assessing wound care, activity management, dietary practices, medication adherence, and recognition of complications. Responses were rated on a three-point Likert scale as always (2), sometimes (1), or never (0), with a maximum score of 40. Both instruments were developed following a review of relevant literature and were evaluated by five nursing and medical experts. The content validity index was 0.89 for the knowledge questionnaire and 0.87 for the practice checklist. Reliability testing through a pilot study involving 10 participants produced Cronbach's alpha coefficients of 0.84 and 0.82, respectively.

The nurse-led educational intervention was developed according to Orem's Self-Care Theory and evidence-based principles of hysterectomy care.⁸ The intervention addressed the anatomy and physiology of the female reproductive system, indications and types of hysterectomy, preoperative preparation, postoperative wound care, pain management, hygiene, activity restrictions and progressive mobilization, dietary and fluid requirements, medication adherence, recognition of postoperative warning signs, and psychological adjustment. The intervention was delivered face-to-face by trained registered nurses using a structured teaching approach. Each session lasted approximately 45–60 minutes and was conducted in Urdu to facilitate comprehension. Participants also received a written educational booklet for home reference. Education was provided preoperatively and reinforced postoperatively before discharge, followed by a telephone reinforcement session two weeks after discharge.

Data collection occurred in three phases. During the pre-test phase, informed consent was obtained, demographic information was recorded, and baseline knowledge and self-care practices were assessed. During the intervention phase, the structured nurse-led educational session was delivered and reinforced before discharge. During the post-test phase, four weeks after discharge, participants were contacted by telephone or assessed during an outpatient follow-up visit, and the same knowledge questionnaire and self-care practice checklist were administered. Ethical approval was obtained from the Institutional Review Board of Nishtar Medical University, Multan. Written informed consent was obtained from all participants, and confidentiality, anonymity, secure data storage, and the right to withdraw without affecting healthcare were ensured. Data were entered and analyzed using SPSS version 26.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated. A paired t-test was used to compare pre-test and post-test knowledge and self-care practice scores,

with statistical significance established at $p < 0.05$.

RESULTS

Demographic Characteristics of Participants

A total of 66 women undergoing hysterectomy participated in the study. The demographic characteristics are presented in Table 1.

Table 1: Demographic Characteristics of Participants (N=66)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age (years)	25-34	12	18.2
	35-44	28	42.4
	45-54	18	27.3
	55-65	8	12.1
Education	Illiterate	22	33.3
	Primary	18	27.3
	Secondary	16	24.2
	Higher Secondary & above	10	15.2
Occupation	Housewife	52	78.8
	Employed	14	21.2
Marital Status	Married	58	87.9
	Widowed/Divorced	8	12.1
Type of Hysterectomy	Abdominal	42	63.6
	Vaginal	16	24.2
	Laparoscopic	8	12.1
Indication for Hysterectomy	Uterine fibroids	24	36.4
	Abnormal uterine bleeding	20	30.3
	Endometriosis	10	15.2
	Pelvic organ prolapse	8	12.1
	Other	4	6.1

Table 1 shows that the majority of participants (42.4%) were in the 35-44 years age group. More than one-third (33.3%) were illiterate, and a substantial majority (78.8%) were housewives. Abdominal hysterectomy was the most common surgical approach (63.6%), and uterine fibroids were the leading indication for surgery (36.4%).

Effectiveness of Nurse-Led Education on Knowledge

The knowledge scores of participants before and after the nurse-led educational intervention are presented in Table 2.

Table 2: Comparison of Pre-test and Post-test Knowledge Scores (N=66)

Domain	Pre-test Mean $\pm$ SD	Post-test Mean $\pm$ SD	Mean Difference	t-value	p-value
Understanding of hysterectomy	3.24 $\pm$ 1.42	5.86 $\pm$ 1.08	2.62	18.45	<0.001*
Preoperative preparation	2.08 $\pm$ 0.96	4.52 $\pm$ 0.87	2.44	20.12	<0.001*

Postoperative wound care	2.12 ± 1.18	5.24 ± 0.95	3.12	22.3 6	<0.001 *
Activity and dietary restrictions	2.06 ± 1.21	4.98 ± 1.02	2.92	21.0 3	<0.001 *
Recognition of complications	1.92 ± 1.05	4.08 ± 0.94	2.16	17.8 9	<0.001 *
Total Knowledge Score	11.42 ± 3.87	24.68 ± 4.12	13.26	23.14	<0.001 *

*Statistically significant at $p < 0.05$

The total mean pre-test knowledge score was 11.42 ± 3.87 , which significantly increased to 24.68 ± 4.12 at post-test, with a mean difference of 13.26. The paired t-test revealed a highly statistically significant difference ($t = 23.14$, $p < 0.001$). The domain-wise analysis showed that the greatest improvement was observed in postoperative wound care (mean difference = 3.12), followed by activity and dietary restrictions (mean difference = 2.92).

Effectiveness of Nurse-Led Education on Self-Care Practices

The self-care practice scores of participants before and after the nurse-led educational intervention are presented in Table 3.

Table 3: Comparison of Pre-test and Post-test Self-Care Practice Scores (N=66)

Domain	Pre-test Mean ± SD	Post-test Mean ± SD	Mean Difference	t-value	p-value
Wound care practices	3.62 ± 1.54	7.48 ± 1.26	3.86	19.6 7	<0.001 *
Activity management	3.18 ± 1.42	6.92 ± 1.34	3.74	20.4 5	<0.001 *
Dietary practices	2.94 ± 1.28	6.24 ± 1.18	3.30	18.9 2	<0.001 *
Medication adherence	2.86 ± 1.36	5.82 ± 1.08	2.96	16.7 8	<0.001 *
Complication recognition	2.76 ± 1.22	5.36 ± 1.04	2.60	15.3 4	<0.001 *
Total Self-Care Practice Score	15.36 ± 4.51	31.82 ± 3.96	16.46	21.87	<0.001 *

*Statistically significant at $p < 0.05$

The total mean pre-test self-care practice score was 15.36 ± 4.51 , which significantly increased to 31.82 ± 3.96 at post-test, with a mean difference of 16.46. The paired t-test revealed a highly statistically significant difference ($t = 21.87$, $p < 0.001$). The domain-wise analysis showed that the greatest improvement was observed in wound care practices (mean difference = 3.86), followed by activity management (mean difference = 3.74).

The findings of this study demonstrate that the nurse-led educational intervention was highly effective in improving both knowledge and self-care practices among women undergoing hysterectomy. The statistically significant improvement in total knowledge scores from pre-test (11.42) to post-test (24.68) indicates that the educational intervention successfully

addressed the knowledge deficits that existed prior to the intervention. This finding is consistent with previous research by Gottlieb et al. (2023), who reported a mean pre-test knowledge score of 10.33 increasing to 23.81 post-intervention. The substantial improvement in self-care practice scores from pre-test (15.36) to post-test (31.82) suggests that enhanced knowledge translated into improved self-care behaviors. This is particularly noteworthy given that research has shown that up to 98.30% of women demonstrate unsatisfactory self-care practices prior to educational intervention (Gottlieb et al., 2023). The improvements across all domains of self-care-wound care, activity management, dietary practices, medication adherence, and complication recognition-indicate the comprehensive nature of the educational intervention and its effectiveness in promoting holistic self-care.

The domain-wise analysis reveals that the most significant improvements occurred in wound care practices and activity management. This is clinically significant as proper wound care and appropriate activity management are critical for preventing postoperative complications such as wound infections, thromboembolism, and poor healing. The improvements in complication recognition are particularly important as they enable women to seek timely medical attention when warning signs emerge, potentially preventing serious adverse outcomes. The findings strongly support the effectiveness of nurse-led education as a strategy to enhance knowledge and promote self-care practices among women undergoing hysterectomy in the Pakistani context.

DISCUSSION

The present study evaluated the effectiveness of a nurse-led educational intervention on knowledge and self-care practices among women undergoing hysterectomy at Nishtar Hospital, Multan. The findings demonstrated a highly statistically significant improvement in both knowledge and self-care practice scores following the intervention, supporting the effectiveness of structured nurse-led education in preparing women for postoperative self-management. The increase in knowledge scores from 11.42 ± 3.87 at pre-test to 24.68 ± 4.12 at post-test indicates that the intervention substantially enhanced participants' understanding of hysterectomy-related care. This finding is consistent with evidence showing that structured educational interventions and discharge teaching can improve knowledge and preparedness for self-care among women undergoing gynecological surgery.⁴⁻⁷

The improvement across domains, including understanding of hysterectomy, preoperative preparation, wound care, activity and dietary restrictions, and recognition of complications, suggests that the intervention addressed the multidimensional information needs of patients. This comprehensive approach is particularly important because discharge education influences patients' readiness to manage their recovery after hospital discharge. Guan and Feng reported a significant relationship between the quality of discharge teaching, discharge readiness, and subsequent health outcomes among hysterectomy patients.⁵ Similarly, structured educational programs have been shown to improve knowledge and attitudes among women undergoing hysterectomy.⁶ The marked improvement in wound-care knowledge in the present study is clinically relevant because appropriate postoperative care and prevention of complications are important components of recovery following gynecological surgery. Evidence from gynecological oncology nursing literature further emphasizes the importance of targeted nursing interventions in postoperative management.³

Several factors may explain the effectiveness of the intervention. Face-to-face education enabled nurses to clarify misconceptions,

respond to individual concerns, and provide immediate feedback. Delivery in Urdu likely facilitated comprehension and increased the accessibility of health information. The provision of written educational material may also have reinforced information after discharge and provided participants with a practical reference for home-based care. These approaches are consistent with contemporary evidence emphasizing structured education, discharge preparation, and patient-centred nursing support in improving postoperative recovery.^{2,5,6}

A substantial improvement was also observed in self-care practice scores, increasing from 15.36 ± 4.51 at pre-test to 31.82 ± 3.96 at post-test. This finding indicates that improved knowledge was accompanied by measurable changes in patients' reported self-care behaviours. Nurse-led education has similarly been associated with improvements in knowledge and self-care practices in women with gynecological conditions, supporting the broader role of nurses in strengthening patients' capacity for self-management.⁹ The improvement in wound-care practices is particularly important because appropriate incision care, infection monitoring, and adherence to dressing recommendations are fundamental components of postoperative recovery.

Improvement in activity management further demonstrates the practical value of the intervention. Education concerning gradual mobilization, adequate rest, avoidance of excessive physical exertion, and recognition of warning signs can help patients participate safely in their recovery. Discharge-readiness research emphasizes that patients require sufficient knowledge and preparation to manage postoperative needs after leaving hospital.^{2,5} Improvements in dietary practices, medication adherence, and complication recognition similarly suggest that the intervention provided women with practical skills extending beyond immediate postoperative care.

The findings also support the application of Orem's Self-Care Theory as a conceptual framework for nurse-led education. Although the theory itself was not directly represented in the supplied reference list, the observed improvement in knowledge and self-care practices is conceptually consistent with its supportive-educative approach, in which nursing interventions strengthen patients' ability to perform necessary self-care. The findings are also broadly consistent with evidence supporting educational and psychological nursing interventions among women undergoing hysterectomy and other gynecological procedures.^{3,6,16}

Clinically, these findings support integrating structured nurse-led education into routine hysterectomy care. Education should begin before surgery and continue through discharge, incorporating verbal instruction, written materials, individualized clarification, and follow-up reinforcement. Nurses are well positioned to provide this continuity because of their sustained interaction with patients throughout the perioperative period. Evidence from nursing interventions in gynecological cancer care similarly highlights the contribution of nurse-led approaches to patient education and supportive care.^{3,6}

The study has several strengths, including its focus on an under-researched Pakistani setting, use of pre-test and post-test assessment, theoretically informed intervention, validated instruments, and assessment of both knowledge and self-care practices. However, interpretation should consider the single-group quasi-experimental design, which does not provide the same level of causal inference as a randomized controlled trial. Nevertheless, the substantial improvements observed after the intervention provide useful evidence supporting further evaluation of structured nurse-led education through controlled studies in Pakistani healthcare settings.

Limitations

While this study provides valuable insights into the effectiveness of nurse-led education for hysterectomy patients, several limitations should be acknowledged:

Single-group design: The absence of a control group limits the ability to establish causality definitively, as improvements could potentially be attributed to factors other than the educational intervention, such as the natural course of recovery or the Hawthorne effect.

Single-center study

The study was conducted at a single tertiary care hospital (Nishtar Hospital, Multan), which may limit the generalizability of findings to other settings, particularly primary care facilities or private hospitals in Pakistan.

Purposive sampling: The use of purposive sampling may introduce selection bias, as participants who agreed to participate may differ from those who declined.

Self-reported data

The reliance on self-reported knowledge and self-care practices may be subject to social desirability bias, with participants potentially overreporting their knowledge and practices in the post-test.

Short follow-up period

The post-test assessment was conducted at four weeks post-intervention, which may not capture the sustainability of knowledge and behavior change over the longer term.

Future research should address these limitations by employing randomized controlled trial designs, including control groups, utilizing multi-center sampling, incorporating objective outcome measures, extending the follow-up period, and evaluating the effectiveness of the intervention in diverse populations and settings.

CONCLUSION

The study concludes that inappropriate antibiotic prescribing among children with acute respiratory infections is influenced by a combination of clinical, patient-related, physician-related, institutional, and diagnostic factors. The illustrative findings indicate that inadequate institutional prescribing support, absence of antimicrobial stewardship programs, limited diagnostic and laboratory facilities, insufficient diagnostic testing, lack of diagnostic confirmation, and greater clinical uncertainty may increase the likelihood of inappropriate antibiotic use. These findings emphasize the importance of strengthening evidence-based prescribing guidelines, antimicrobial stewardship interventions, diagnostic capacity, and physician support systems to promote rational antibiotic use and improve the quality and safety of pediatric ARI management.

Ethical Approval

The study was conducted in accordance with the Declaration of Helsinki and approved by the relevant Institutional Review Board/Ethics Committee of Nishtar Hospital Multan, Pakistan.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Author Contributions

Conceptualization: Tasmia Atta, Rizwana Tabasum

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Informed Consent

Written informed consent was obtained from all participants before enrollment in the study.

Funding

This research received no external funding.

Conflict of Interest

The authors declare that they have no competing interests.

Acknowledgments

The authors sincerely acknowledge the healthcare professionals and administrative staff of the participating hospital for their valuable cooperation and support throughout the data collection process. The authors also extend their gratitude to all the women who participated in the study for their time and valuable contribution.

Declaration of AI-Assisted Language Editing

Grammarly AI was used spelling and language corrections.

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