Original Article

Impact of Teaching Interventions on Awareness and Complications During Pregnancy in Uterine Leiomyoma Patients

Aasma Nazir, Madiha Mukhtar and Sarfraz Masih

ABSTRACT

Objective: To determine the impact of teaching interventions on awareness about uterine leiomyoma and on complication awareness and to measure the complications of uterine leiomyoma patients during pregnancy.

Study Design: A quasi-experimental study

Place and Duration of Study: This study was conducted at the Nishter Hospital and Medical University Multan and Khawaja Fareed Social Security Hospital Multan from March 2025 to June 2025.

Methods: A quasi-experimental single-group pre- and post-test design was employed and a total of 74 pregnant women with uterine leiomyomas were selected through convenience sampling. Data were collected using validated tools: a demographic questionnaire, awareness scale (17 items), complication awareness scale (12 items), and a complication checklist (15 items). Following ethical approval, participants completed a pre-test, received a structured teaching intervention comprising five sessions over ten weeks, and were re-assessed post-intervention. Data were analyzed using SPSS V25. Wilcoxon Sign Test and Fisher's Exact Test were used to analyze the data

Results: The findings of study show that among 74 participants, most were aged 36–45 years (63.5%), nearly half had high school education (48.6%), and the majority were housewives (59.5%). Awareness scores significantly improved after the teaching intervention, with median scores rising from 28 to 35 ($p<0.001$), and 97.3% showing improvement. The most frequent complications reported were cesarean delivery (74.3%), labor dystocia (64.9%), and preterm labor (41.9%), while less common complications included placenta previa (10.8%) and peripartum hysterectomy (9.5%). No significant associations were found between complications and demographic factors ($p>0.05$).

Conclusion: The study showed that awareness about uterine leiomyoma significantly improved after the teaching intervention, with 97.3% of participants gaining knowledge. Common complications included cesarean delivery, labor dystocia, and preterm labor, while no significant link was found between demographics and complication severity.

Key Words: Teaching intervention; Awareness; Complications; Pregnancy; Uterine leiomyoma

Citation of article: Nazir A, Mukhtar M, Masih S. Impact of Teaching Interventions on Awareness and Complications During Pregnancy in Uterine Leiomyoma Patients. Med Forum 2025;36(9):85-89. doi:10.60110/medforum.360916.

INTRODUCTION

Uterine leiomyomas, commonly known as fibroids, are the most prevalent benign tumors of the female genital tract and a major cause of gynecological morbidity. They are composed mainly of smooth muscle tissue and can lead to infertility, recurrent abortions, excessive uterine bleeding, pelvic pain, and pressure symptoms on nearby organs.

Department of Lahore School of Nursing, The University of Lahore.

Correspondence: Aasma Nazir, MSN Student, Lahore School of Nursing, The University of Lahore.
Contact No: 0300 0693433
Email: aasmanazir.7264@gmail.com

Received: July, 2025
Reviewed: August, 2025
Accepted: August, 2025

Globally, fibroids affect up to 60% of women under 45 years of age, with about one-third being symptomatic[1], while in Pakistan, their prevalence ranges between 20–40%[2]. They are among the leading causes of hospital admissions for gynecological problems and the most frequent indication for hysterectomy, with over 70% of women developing fibroids by menopause[3].

Although the exact cause of uterine fibroids remains unclear, hormonal, genetic, and environmental factors play a key role. Risk factors include null parity, obesity, family history, and premenopausal age, while combined oral contraceptive use appears protective[4]. Less than half of the cases are asymptomatic, with common symptoms including abnormal uterine bleeding, pelvic pressure, urinary frequency, subfertility, and abdominal swelling[5]. Fibroids can also complicate pregnancy, leading to miscarriage, preterm labor, and obstructed vaginal delivery[6]. Diagnosis is often incidental during routine gynecological examinations or pregnancy, but can also be made through ultrasound, laparoscopy, hysterosalpingography, CT, or MRI[7].

Management strategies vary depending on age, symptoms, and reproductive desires. Options include medical therapy, uterine artery embolization, myomectomy, or hysterectomy, with hysterectomy being the most definitive treatment but associated with loss of fertility and psychosocial implications[8]. Despite being highly prevalent, awareness about fibroids and their complications remains low, leading to delayed diagnosis and treatment[9]. This lack of knowledge, coupled with the significant financial and social burden, highlights the need for patient education, early detection, and tailored treatment approaches to reduce morbidity and improve quality of life[10].

METHODS

A quasi-experimental single-group pre- and post-test design was conducted at Nishtar Hospital and Nishtar Medical University Multan and Khawaja Fareed Social Security Hospital Multan from March 2025 to June 2025. The study population included 74 pregnant women diagnosed with uterine leiomyomas, selected through convenience sampling, with inclusion and exclusion criteria strictly applied. Data were collected over six months using validated tools, including a demographic questionnaire, an adopted awareness scale[11], a researcher-developed complication awareness questionnaire, and an observation checklist[12], all tested for reliability (Cronbach's alpha ≥0.70) and content validity (CVI ≥0.92). The intervention consisted of five structured educational sessions delivered over ten weeks using interactive lectures, audiovisual aids, booklets, and group discussions. Data were collected in three phases—pre-intervention, intervention, and post-intervention—and analyzed in SPSS v.25 using descriptive and non-parametric inferential statistics (Wilcoxon Signed-Rank Test and Fisher's Exact Test), with a p-value <0.05 considered significant. Ethical approval was obtained from the University of Lahore Research Ethics Board (UOL/IREB//25/6/0004), and informed consent, confidentiality, and anonymity were ensured throughout the study.

RESULTS

Table 1 presents that most of participants were aged 36–45 years (63.5%), followed by 26–35 years (31.1%), while only 5.4% were in the 46–50 years age group. In terms of education, nearly half had completed high school (48.6%), while 32.4% had primary education, 10.8% were illiterate, and only 8.1% had education at the intermediate level or above. Regarding occupation, the majority were housewives (59.5%), followed by others (29.7%), and 10.8% were retired.

Table No.1: Demographics characteristics of participants (n=74)

Demographic Variables	Category	Frequency (f)	Percentage (%)
Age	26-35 Year	23	31.1
	36-45 Year	47	63.5
	46-50 Year	4	5.4
Education Level	Illiterate	8	10.8
	Primary school	24	32.4
	High school	36	48.6
	Intermediate & above Level	6	8.1
Occupation	Housewife	44	59.5
	Retired	8	10.8
	Others	22	29.7

n=number of participants

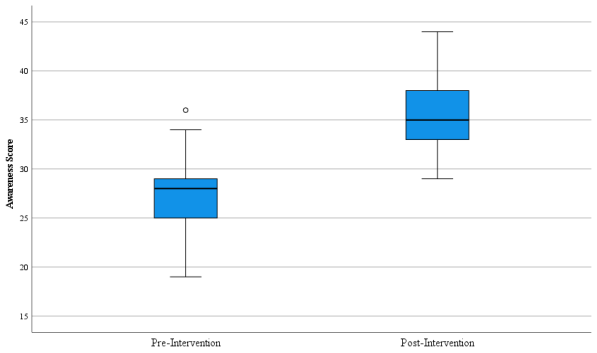

Figure No.1: Comparison of before and after intervention awareness score

Awareness score before teaching intervention was 28(IQR 25-29) and Awareness score after teaching intervention it increases to 35(IQR 33-38). Median Improvement in awareness score was Statistically significant (Wilcoxon Sign Test 7.37, p-value <0.001). Overall awareness score was decreased in 2(2.7%) and improved in 72(97.3%) of the participants.

Thus, the alternative hypothesis (H1-1), stating that teaching interventions have an impact on awareness during pregnancy in uterine leiomyoma patients, is accepted.

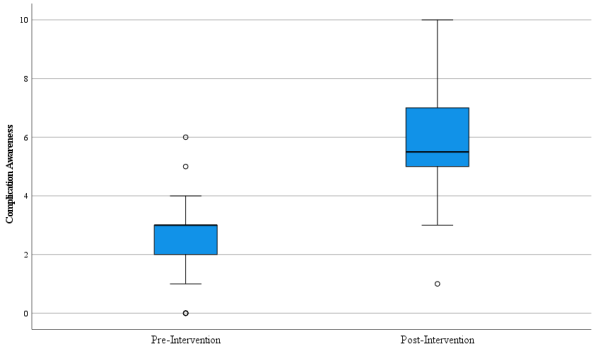

Figure No.2: Comparison of before and after intervention complication awareness score

Median complication awareness score before teaching intervention was 3(IQR 2-3) and after intervention was 5.5 (IQR 5-7). Median difference in complication awareness after intervention was statistically significantly improved from before intervention score (Wilcoxon Sign Test 7.16, p-value <0.001)

Overall complication awareness score was decreased from pre intervention in 5(6.8%) of the participants and no difference was observed in 2(2.7%) and improved score was observed in 67(90.5%) of the participants.

Thus, the alternative hypothesis (H1-2), stating that teaching interventions have an impact on complication awareness during pregnancy in uterine leiomyoma patients, is accepted.

Table No.2: Comparison of complications among patients with uterine leiomyoma (n=74)

Complications	No f (%)	Yes f (%)
Cesarean delivery	19(25.7)	55(74.3)
Malpresentation	39(52.7)	35(47.3)
Labor dystocia	26(35.1)	48(64.9)
Postpartum hemorrhage	48(64.9)	26(35.1)
Per partum hysterectomy	67(90.5)	7(9.5)
Retained placenta	74(100.0)	0(0)
Chorio or endometriosis	74(100.0)	0(0)
IUGR (Intrauterine growth restriction)	62(83.8)	12 (16.2)
Preterm labor	43(58.1)	31(41.9)
Preterm delivery	47(63.5)	27(36.5)
Placenta previa	66(89.2)	8(10.8)
First-trimester bleeding	53(71.6)	21(28.4)
Abruption	62(83.8)	12(16.2)
PPROM (Preterm premature rupture of the membranes)	59(79.7)	15(20.3)

n= number of participant, f=frequency of participants, %= percentage of participants

Table 4.5 shows that most common complication reported was cesarean delivery (74.3%), followed by labor dystocia (64.9%) and preterm labor (41.9%). Other frequent complications included preterm delivery (36.5%), postpartum hemorrhage (35.1%), and first-trimester bleeding (28.4%). Less common complications were intrauterine growth restriction (16.2%), placental abruption (16.2%), and preterm premature rupture of membranes (20.3%). Rare complications such as placenta previa (10.8%) and peripartum hysterectomy (9.5%) were also noted. None of the participants experienced retained placenta or chorio/endometritis.

DISCUSSION

The current study demonstrated a significant improvement in awareness scores after teaching interventions, with median scores increasing from 28 (IQR 25–29) to 35 (IQR 33–38). Almost all participants showed improvement, indicating the effectiveness of structured teaching interventions in enhancing knowledge among uterine leiomyoma patients.[13]

These findings align with recent literature highlighting the role of educational interventions in improving awareness among women with gynecological conditions. A study by Ahmed et al. (2023)[2] found that structured health education programs significantly enhanced patients' understanding of uterine fibroids and their associated complications. Similarly, a systematic review concluded that patient-centered educational interventions were effective in increasing disease-related knowledge and reducing misconceptions, which supports the outcomes of the current study.[14] Another recent study also emphasized that nurse-led educational strategies significantly improved awareness levels and treatment adherence in women with reproductive health issues.

The findings of the current study revealed a significant improvement in complication awareness scores following teaching interventions. These findings highlight the effectiveness of structured educational interventions in enhancing women's knowledge about complications associated with uterine leiomyomas during pregnancy.

Recent evidence supports the effectiveness of nurse-led and structured teaching interventions in improving maternal awareness and risk perception regarding pregnancy complications. For instance, researcher reported that health education interventions significantly enhanced pregnant women's understanding of potential obstetric complications, leading to better preparedness and timely healthcare-seeking behavior.[15] Similarly, another researcher found that tailored patient education programs improved awareness and early recognition of complications among women with high-risk pregnancies. These outcomes align with the current study, reinforcing that education is an essential strategy to mitigate risks in vulnerable populations.[16]

This study evaluated complications among pregnant patients with uterine leiomyomas (n = 74) following a teaching intervention aimed at improving awareness about pregnancy-related risks. The most frequent adverse outcomes were cesarean delivery (74.3%), labor dystocia (64.9%), and preterm labor (41.9%), with additional burdens from preterm delivery (36.5%), postpartum hemorrhage (PPH; 35.1%), and first-trimester bleeding (28.4%). Less common but notable events included

PPROM (20.3%), placenta previa (10.8%), abruption (16.2%), and IUGR (16.2%). Peripartum hysterectomy occurred in 9.5%, while no cases of retained placenta or chorio/endometritis were recorded.

The very high cesarean rate (74.3%) aligns with contemporary evidence that fibroids substantially increase the likelihood of operative delivery. A meta-analysis of 24 studies involving 237,509 pregnancies reported significantly higher odds of cesarean delivery among women with fibroids, as well as increased risks of malpresentation and labor abnormalities[17]. Your malpresentation rate (47.3%) and labor dystocia (64.9%) are directionally consistent with this pooled evidence, although the absolute percentages are higher than most pooled estimates—likely reflecting case-mix, fibroid size, and tertiary-center referral bias. Similar findings were reported in recent case series, which documented higher rates of malpresentation and intrapartum complications among women with uterine fibroids[18].

Preterm labor (41.9%) and preterm delivery (36.5%) were elevated compared with the general obstetric population and lie at the higher end of reported ranges in fibroid-affected pregnancies. A systematic review concluded that fibroids increase risks of preterm birth and premature rupture of membranes[19].

The PPH rate (35.1%) is consistent with global evidence that fibroids impair uterine contractility and predispose women to hemorrhage. Placental complications were also notable: placenta previa (10.8%) and abruption (16.2%), higher than baseline rates. These findings are in line with evidence linking fibroids with increased risks of previa and abruption, particularly when lesions are large or lower-segment[20].

Current evidence emphasizes the importance of structured counseling and shared decision-making in fibroid-affected pregnancies[18].

CONCLUSION

The findings of this study reveal that the majority of participants were women aged 36–45 years, with most being housewives and nearly half having completed high school education. Awareness about uterine leiomyoma significantly improved after the teaching intervention, with 97.3% showing increased knowledge. Cesarean delivery, labor dystocia, and preterm labor were identified as the most frequent complications, while rare complications included placenta previa and peripartum hysterectomy.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Aasma Nazir, Madiha Mukhtar
Drafting or Revising Critically:	Aasma Nazir, Sarfraz Masih
Final Approval of version:	All the above authors
Agreement to accountable for all aspects of work:	All the above authors

Conflict of Interest: The study has no conflict of interest to declare by any author.

Source of Funding: None

Ethical Approval: No.UOL/IREB/25/06/004 Dated 17.03.2025

REFERENCES

1. Achanna KS, Nanda J. Evaluation and management of abnormal uterine bleeding. Med J Malaysia 2022;77(3):374-83.
2. Ahmad A, Kumar M, Bhoi NR, Badruddeen, Akhtar J, Khan MI, et al. Diagnosis and management of uterine fibroids: current trends and future strategies. J Basic Clin Physiol Pharmacol 2023;34(3):291-310.
3. Ali M, Ciebiera M, Wlodarczyk M, Alkhrait S, Maajid E, Yang Q, et al. Current and Emerging Treatment Options for Uterine Fibroids. Drugs 2023;83(18):1649-75.
4. Alkhrait S, Malasevskaia I, Madueke-Laveaux OS. Fibroids and Fertility. Obstetrics and gynecology clinics of North America 2023;50(4):663-75.
5. Barinov SV, Tirskaya YI, Lazareva OV, Kadcyna TV, Shamina IV, Medyannikova IV, et al. Pregnancy outcomes in women with large uterine fibroids. The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstet 2022;35(25):5369-74.
6. Bendarska-Czerwińska A, Zmarzły N, Morawiec E, Panfil A, Bryś K, Czarniecka J, et al. Endocrine disorders and fertility and pregnancy: An update. Frontiers Endocrinol 2022;13:970439.
7. Coutinho LM, Assis WA, Spagnuolo-Souza A, Reis FM. Uterine Fibroids and Pregnancy: How Do They Affect Each Other? Reproductive sciences (Thousand Oaks, Calif) 2022;29(8):2145-51.
8. Critchley HOD, Babayev E, Bulun SE, Clark S, Garcia-Grau I, Gregersen PK, et al. Menstruation: science and society. Am J Obstet Gynecol 2020;223(5):624-64.
9. Disi ES. Sciatica in Early Pregnancy With Coexisting Uterine Leiomyoma and Tarlov Cyst: A Case Report. Cureus 2022;14(8):e27855.
10. 10. Lasmar RB, Lasmar BP, Moawad NS. Hysteroscopic Myomectomy. Medicina (Kaunas, Lithuania) 2022;58(11)
11. Li H, Hu Z, Fan Y, Hao Y. The influence of uterine fibroids on adverse outcomes in pregnant women: a meta-analysis. BMC pregnancy and childbirth 2024;24(1):345.
12. MacLean JA, 2nd, Hayashi K. Progesterone

Actions and Resistance in Gynecological Disorders. Cells 2022;11(4).
13. Peng J, Wang J, Shu Q, Luo Y, Wang S, Liu Z. Systematic review and meta-analysis of current evidence in uterine artery embolization vs myomectomy for symptomatic uterine fibroids. Scientific reports 2024;14(1):19252.
14. Pritts TL, Ogden M, Parker W, Ratcliffe J, Pritts EA. Intramural Leiomyomas and Fertility: A Systematic Review and Meta-Analysis. Obstet Gynecol 2024;144(2):171-9.
15. Pulgar VM. Uterine leiomyoma and hypertensive disorders in pregnancy. Journal of hypertension 2021;39(5):869-70.
16. Simpson S, Pal L. Vitamin D and infertility. Current opinion in Obstet Gynecol 2023; 35(4):300-5.
17. Sobel M, Hobson S, Chan C. Uterine fibroids in pregnancy. CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne 2022;194(22):E775.
18. Somigliana E, Reschini M, Bonanni V, Busnelli A, Li Piani L, Vercellini P. Fibroids and natural fertility: a systematic review and meta-analysis. Reproductive biomedicine online 2021;43(1): 100-10.
19. Vannuccini S, Petraglia F, Carmona F, Calaf J, Chapron C. The modern management of uterine fibroids-related abnormal uterine bleeding. Fertility and Sterility 2024;122(1):20-30.
20. Venkatesh SS, Ferreira T, Benonisdottir S, Rahmioglu N, Becker CM, Granne I, et al. Obesity and risk of female reproductive conditions: A Mendelian randomisation study. PLoS Med 2022;19(2):e1003679.