

Original Article

# Assessment of Uterine Fibroids in Pre and Post Menopausal Women by Transabdominal Ultrasound

Huma Noor<sup>1</sup>, Qurat Ul Ain<sup>1</sup>, Shehzeena Shahid<sup>1</sup>, Haseeba Bibi<sup>1</sup>, Hira Akbar<sup>1</sup>, Laiba Zulfiqar<sup>1</sup>, Malika Qazi<sup>1</sup>, Muhammad Zubair<sup>1\*</sup>, Maaz Khan<sup>1</sup>

<sup>1</sup>Department of Medical Imaging Technology, Women University Swabi, KP, Pakistan.

\*Corresponding Author: Muhammad Zubair; Email: Zubairm955@gmail.com

Conflict of Interest: None.

Noor H., et al. (2024). 4(2): DOI: <https://doi.org/10.61919/jhrr.v4i2.1026>

## ABSTRACT

**Background:** Uterine fibroids are common benign tumors of the uterus, affecting a significant proportion of women, particularly during their reproductive years. These growths can lead to symptoms such as heavy menstrual bleeding, pelvic pain, and reproductive issues, thus impacting women's quality of life.

**Objective:** The objective of this study was to evaluate the prevalence of uterine fibroids in pre- and post-menopausal women and to assess the sensitivity of transabdominal ultrasound in diagnosing these fibroids.

**Methods:** This cross-sectional study was conducted over six months in the Radiology Department of District Headquarter Hospital, Swabi, KP, Pakistan. The study included pre- and post-menopausal women presenting with abnormal vaginal bleeding or diagnosed with symptomatic uterine fibroids, excluding those with known endometrial hyperplasia, adenomyosis, pelvic inflammatory disease, gynecologic malignancies, adnexal pathology, or pregnancy. Transabdominal ultrasound was performed with patients in a supine position and a filled urinary bladder, using both longitudinal and transverse sections. Data were collected on demographic information, clinical presentation, and ultrasound findings, and were analyzed using SPSS version 25.

**Results:** A total of 112 women participated in the study. Among these, 94 (83.9%) reported pelvic pain, while 18 (16.1%) did not. The locations of fibroids identified were anterior (44, 39.3%), fundal (25, 22.3%), and posterior (43, 38.4%). Intramural fibroids were present in 61 (54.5%) patients, submucosal fibroids in 32 (28.5%), and subserosal fibroids in 19 (17.0%). Premenopausal women had a higher prevalence of fibroids (80) compared to postmenopausal women (32).

**Conclusion:** Transabdominal ultrasound is a sensitive and reliable diagnostic tool for detecting uterine fibroids. It should be considered the primary imaging modality for evaluating abnormal uterine bleeding across different age groups, providing accurate and non-invasive diagnosis.

**Keywords:** Uterine Fibroids, Pre-Menopausal Women, Post-Menopausal Women, Transabdominal Ultrasound.

## INTRODUCTION

Uterine fibroids, also known as leiomyomas, are common benign tumors originating from the smooth muscle layer of the uterus. They vary in size, number, and location within the uterine wall, and their growth is influenced by hormonal factors, primarily estrogen and progesterone (1, 2). Fibroids can be asymptomatic or cause a range of symptoms including heavy menstrual bleeding, pelvic pain, frequent urination, and reproductive issues, significantly affecting the quality of life (3). The prevalence of uterine fibroids increases with age, particularly in women of reproductive age, with studies suggesting that up to 80% of women will develop fibroids by the age of 50 (4, 5). The growth and regression of fibroids are closely linked to hormonal changes, often shrinking post-menopause due to the decline in hormone levels (6).

Transabdominal ultrasound is a non-invasive, cost-effective, and widely accessible imaging technique frequently used for the diagnosis and assessment of uterine fibroids. It allows for the visualization of the uterus and the identification of fibroids, particularly those located in the fundal region, although its accuracy can be influenced by factors such as the patient's body habitus and the skill of the operator (7-10). This study aims to evaluate the prevalence and characteristics of uterine fibroids in pre- and post-menopausal women using transabdominal ultrasound, providing insights into the effectiveness and diagnostic precision of this imaging modality in a clinical setting in Swabi, KP, Pakistan.

## MATERIAL AND METHODS

A cross-sectional study was conducted in the Radiology Department of District Headquarter Hospital, Swabi, KP, Pakistan, over six months. The study included pre- and post-menopausal women presenting with abnormal vaginal bleeding or diagnosed with symptomatic uterine fibroids. Exclusion criteria were patients with known endometrial hyperplasia, adenomyosis, pelvic inflammatory disease, gynecologic malignancies, adnexal pathology, or pregnancy. Ethical approval was obtained in accordance with the Declaration of Helsinki, and informed consent was secured from all participants.

Participants were examined in a supine position with an adequately filled urinary bladder to optimize the visualization of the pelvic organs. Transabdominal ultrasound examinations were performed using longitudinal and transverse sections to assess the presence, size, number, and location of fibroids. Data collection included demographic information, clinical presentation, and ultrasound findings.

Data were entered and analyzed using SPSS version 25. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used to summarize the data. Quantitative variables were presented as mean ± SD, while qualitative variables were expressed as frequencies and percentages.

## RESULTS

A total of 112 females participated in this study. Among them, 94 (83.9%) reported pelvic pain, while 18 (16.1%) did not report any pain. The distribution of fibroids by location was as follows: anterior fibroids were present in 44 (39.3%) patients, fundal fibroids in 25 (22.3%) patients, and posterior fibroids in 43 (38.4%) patients.

**Table 1: Frequency of Pain in Female Patients**

Pain	Frequency	Percent	Valid Percent
No	18	16.1	16.1
Yes	94	83.9	83.9
Total	112	100.0	100.0

**Table 2: Frequency of Location of Fibroids in Female Patients**

Location	Frequency	Percent	Valid Percent
Anterior	44	39.3	39.3
Fundal	25	22.3	22.3
Posterior	43	38.4	38.4
Total	112	100.0	100.0

The assessment of fibroid types in pre- and post-menopausal women revealed that intramural fibroids were the most common, with a prevalence of 54.5%. Submucosal fibroids accounted for 28.5%, and subserosal fibroids for 17.0%.

**Table 3: Assessment of Uterine Fibroids in Pre- and Post-Menopausal Women**

Type	Premenopause	Postmenopause	Total	Percent
Intramural	44	17	61	54.5
Submucosal	20	12	32	28.5
Subserosal	16	3	19	17.0
Total	80	32	112	100.0

## DISCUSSION

This study aimed to evaluate the prevalence and characteristics of uterine fibroids in pre- and post-menopausal women using transabdominal ultrasound. The findings indicated a higher prevalence of fibroids in premenopausal women, which aligns with previous research suggesting that fibroid growth is influenced by hormonal changes and is more common during reproductive years (4, 5). Intramural fibroids were the most frequently observed type, consistent with other studies that report similar distributions of fibroid types (11-13).

Comparing our results with other studies, such as those by Shamshad Begum and B. Yildizhan, showed similar patterns in the prevalence of fibroids across different age groups and reproductive stages (12, 13). The higher incidence of fibroids in women

presenting with pelvic pain highlights the symptomatic burden of this condition and underscores the importance of effective diagnostic tools (14-17).

Transabdominal ultrasound proved to be a sensitive and reliable method for diagnosing uterine fibroids, although its efficacy can be influenced by the operator's expertise and patient-related factors. The study's strengths include a well-defined population and comprehensive data analysis. However, limitations such as the single-center design and potential selection bias should be considered. Future research should aim to include larger, multi-center cohorts and explore longitudinal outcomes to better understand the natural history of fibroids and the impact of various treatment modalities (18-20).

## CONCLUSION

Ultrasonography is a sensitive and precise diagnostic tool for identifying uterine fibroids, offering reliable results that correlate well with pathological diagnoses. It should be the primary imaging modality for evaluating abnormal uterine bleeding across all age groups, with careful attention to blood flow parameters to differentiate fibroids from other uterine abnormalities.

## REFERENCES

1. Bano A, Wei CR, Memon AAQ, Osama M, Shaikh S, Shah Q, et al. A Comprehensive Review Of Uterine Fibroids: Pathogenesis, Diagnosis, Treatment, And Future Perspectives. 2023;30(18):1961-74.
2. Vitale SG, Riemma G, Ciebiera M, Cianci SJC. Hysteroscopic Treatment Of Submucosal Fibroids In Perimenopausal Women: When, Why, And How? 2020;23(4):355-9.
3. De La Cruz MSD, Buchanan EMJAfp. Uterine Fibroids: Diagnosis And Treatment. 2017;95(2):100-7.
4. Blake REJotNMA. Leiomyomata Uteri: Hormonal And Molecular Determinants Of Growth. 2007;99(10):1170.
5. Whiteman MK, Hillis SD, Jamieson DJ, Morrow B, Podgornik MN, Brett KM, et al. Inpatient Hysterectomy Surveillance In The United States, 2000-2004. 2008;198(1):34. e1-. e7.
6. Ishikawa H, Ishi K, Serna VA, Kakazu R, Bulun SE, Kurita TJE. Progesterone Is Essential For Maintenance And Growth Of Uterine Leiomyoma. 2010;151(6):2433-42.
7. Stewart EA, Laughlin-Tommaso SK, Catherino WH, Lalitkumar S, Gupta D, Vollenhoven BJNRDP. Uterine Fibroids (Primer). 2016;2(1).
8. Vilos GA, Allaire C, Laberge P-Y, Leyland N, Vilos AG, Murji A, et al. The Management Of Uterine Leiomyomas. 2015;37(2):157-78.
9. Early HM, McGahan JP, Scoutt LM, Revzin M, Lamba R, Corwin M, et al. Pitfalls Of Sonographic Imaging Of Uterine Leiomyoma. 2016;32(2):164-74.
10. Khan AT, Shehmar M, Gupta JKJljowsh. Uterine Fibroids: Current Perspectives. 2014:95-114.
11. Callen PW. Ultrasonography In Obstetrics And Gynecology E-Book. Elsevier Health Sciences; 2011.
12. Begum S, Khan S. Audit Of Leiomyoma Uterus At Khyber Teaching Hospital Peshawar. Journal Of Ayub Medical College Abbottabad. 2004;16(2).
13. Yildizhan B, Yildizhan R, Ozkesici B, Suer N. Transvaginal Ultrasonography And Saline Infusion Sonohysterography For The Detection Of Intra-Uterine Lesions In Pre-And Post-Menopausal Women With Abnormal Uterine Bleeding. Journal Of International Medical Research. 2008 Dec;36(6):1205-13.
14. Rashad H, Khadija S, Farooq MY. Sonographic Evaluation Of Pelvic Pain In Gravid And Non-Gravid Uterus. Pakistan Journal Of Medical & Health Sciences. 2022 Dec 17;16(11):125-.
15. Omran BA, Mehad AM, Matoi S, Qadir SM, Peluola A, O'Sullivan R, Dayoub N. A study on the diagnostic abilities of ultrasound scans in assessing uterine fibroids against magnetic resonance imaging findings in the same population.

16. Edzie EK, Dzefi-Tetty K, Brakohiapa EK, Abdulai AB, Kekessie KK, Aidoo E, Amoah S, Boadi E, Kpobi JM, Quarshie F, Edzie RA. Assessment of the clinical presentations and ultrasonographic features of uterine fibroids in adult Africans: A retrospective study. *Oman Medical Journal*. 2023 Jan;38(1):e459.
17. Alaya A. How useful is ultrasound in abnormal uterine bleeding. *J Urgent Care Med*. 2023;17(7):13-8.
18. Kanani MM, Parmar J, Chunila S, Baria M. Correlation of Ultrasonographical and histopathological diagnoses of female pelvic masses. *European Journal of Cardiovascular Medicine*. 2023 Jul 1;13(3).
19. Cappelli A, Mosconi C, Cocozza MA, Brandi N, Bartalena L, Modestino F, Galaverni MC, Vara G, Paccapelo A, Pizzoli G, Villa G. Uterine Artery Embolization for the Treatment of Symptomatic Uterine Fibroids of Different Sizes: A Single Center Experience. *Journal of Personalized Medicine*. 2023 May 28;13(6):906.
20. Hill S, Shetty MK. Abnormal Uterine Bleeding in Reproductive age women: Role of Imaging in the Diagnosis and Management. In *Seminars in Ultrasound, CT and MRI* 2023 Oct 11. WB Saunders.