



African Journal of Biological Sciences



“Uterine Fibroid Detection in Premenopausal Women: An Ultrasonography-Based Investigation”

Hina Syed¹, Dr. Bushra Mumtaz², Dr. Muhammad Hamza³, Muhammad Junaid Iqbal⁴, Zoobia Malik⁵, Saba Ashraf⁶, Sadia Riaz⁷, Syeda Aymen Tahir⁸, Aneeza Mushtaq⁸, Ismat Zhaira⁹, Dua Zhaira¹⁰

²Consultant Radiologist THQ Hospital, Gujar Khan

³Department of Community Medicine, Khyber Teaching Hospital.

⁴Mukhtar A. Sheikh Hospital, Multan

⁵Bakhtawar Amin Medical and Dental College, Multan.

⁷COMSATS University, Islamabad

^{1,8}Rawalpindi Medical University, Rawalpindi

^{9,10}Faculty of Rehabilitation and Allied Health Sciences, Riphah International University, Islamabad

Corresponding Author: Dua.zaidi@riphah.edu.pk

ABSTRACT

Uterine fibroids are any discrete, well-defined, solid masses within the myometrium that are distinguishable from surrounding. The possibility of developing fibroids increases with age. The objective of this study was to determine the frequency of leiomyoma in premenopausal women using ultrasonography and non-probability techniques. Both the Life Care Laboratory and the Dhq Hospital in Rawalpindi took part in this investigation. Data was collected between April 2023 and September 2023. The study was carried out following approval from the study setting hospital's internal review board (IRB). 360 female patients took part in the study. This study was divided into three groups, each with a ten-year age difference. Before scanning, the patient's marital status, signs and symptoms, and prior Ultrasound scan were all taken into consideration. on the basis of the research. The study included 360 female patients. The participants in the study were divided into three age groups separated by years. The majority of females, 37.2%, were between the ages of 31 and 40. Excessive vaginal bleeding was the most common sign and symptom in the study, accounting for 47.5%. Only 2.5% of all patients were expecting. According to ultrasonography, 63.2% of females did not have uterine fibroids, although intramural fibroids were common in others. Females had a regular menstrual cycle in 63.7% of these patients.

INTRODUCTION:

Article History

Volume 6, Issue 5, 2024

Received: 15 May 2024

Accepted: 22 May 2024

doi: 10.33472/AFJBS.6.5.2024.6327-6335

Uterine fibroids are the most common type of tumor in females. Uterine fibroids, also known as leiomyomas and myomas, are benign uterine neoplasms with high extracellular matrix content that are mostly composed of smooth muscle and fibroblast cells. Any distinct, well-defined solid mass or masses inside the myometrium that can be identified on ultrasonography apart from the surrounding tissue are called leiomyomas. A pseudo capsule made of areolar tissue with one or two feeding vessels envelops this malignancy. Fibroid expansion may result in them outgrowing their blood supply, leading to fatty, carneous, hyaline, cystic, or myxomatous degeneration in addition to ischemia. These tumors usually disappear during menopause and are estrogen-dependent.(1)

Fibroids are categorized into 3 main types based on where they are located in the uterus' layers: submucosal fibroids, intramural fibroids, and subserosal fibroids. Submucosal fibroids can border a cavity and appear in different places. They are associated with irregular or excessive bleeding because submucous fibroids that extend into the uterine cavity are the most disruptive to endometrial integrity, implantation, and the myometrium's ability to contract and stop menstrual bleeding from the endometrial blood vessels. Subserosal fibroids are defined as those that are located in the endometrial cavity of the uterus; they can only exert pressure that the patient perceives as pelvic discomfort. Intramural, which is found in the myometrial wall. No matter their size or location, fibroids may have extensive enough paracrine molecular effects on the nearby endometrium to result in excessive uterine bleeding or poor implantation (2)

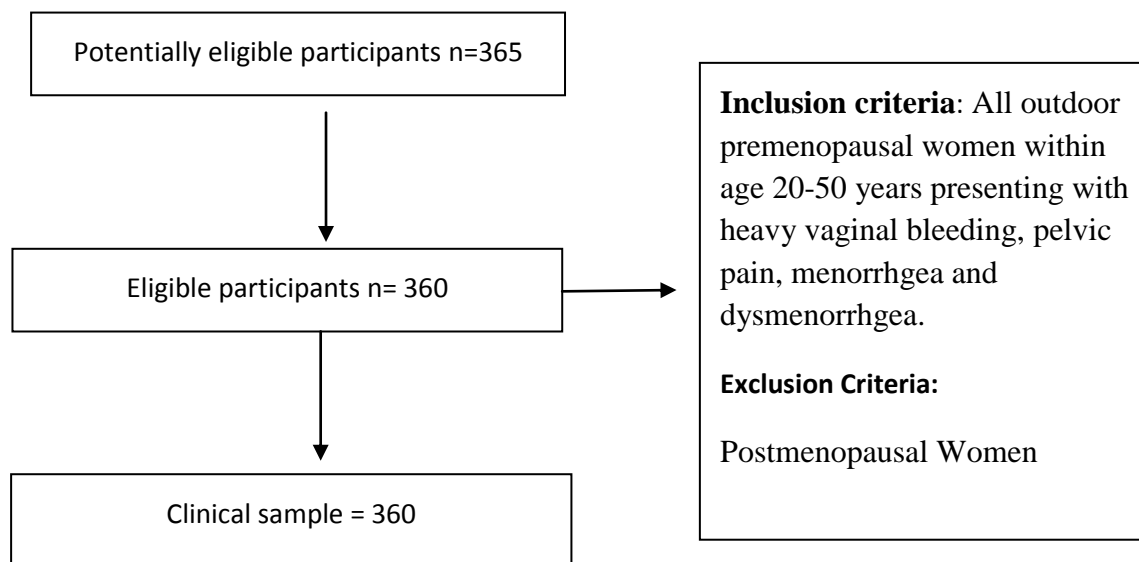
Clinically, patients present with a variety of symptoms, such as pelvic discomfort unrelated to menstruation, pressure feelings such as bloating, frequent urination, and bowel problems, and menstrual irregularities such as dysmenorrhagia, menorrhagia, and intermenstrual haemorrhage. Furthermore, they may disrupt reproductive processes, leading to subfertility, miscarriages early in pregnancy, and complications such as pain, premature labour, miscarried pregnancies, increased risk of caesarean delivery, and bleeding after delivery. They may cause significant, prolonged bleeding, which subsequently leads to an iron deficit.(3)

Diagnostic imaging such as x-ray, ultrasound, MRI and CT scan are useful for diagnosis of leiomyoma. Compared to other imaging modalities, ultrasound is portable, radiation-free, and reasonably priced. Additionally, ultrasound offers a "cross-sectional" perspective of anatomical structures in real time imaging. A transducer sends brief ultrasonic echo pulses into the body. During the ultrasound waves' bodily penetration while travelling through tissues, some sound waves are reflected back to the transducer (echo signals). To create an image, the echo signals returned from numerous sequential coplanar pulses are analyzed and merged. Thus, an ultrasound transducer serves as both a speaker and a microphone, producing and receiving sound waves, respectively. (4) To confirm uterine fibroids that have been clinically suspected, sonography is ideal. The most typical sonographic finding is a hypoechoic or heterogeneous uterine mass. The normally linear central endometrial echo may be distorted by submucous or tiny mural leiomyoma. Large submucous myomas can occasionally be observed as a mass inside the endometrial cavity, with the endometrial echoes covering the lump. Therefore, leiomyoma may be mildly echogenic; if cystic impairment is prevalent, asymmetrical anechoic regions are visible. With calcific deterioration, echoes with distal acoustic shadowing are rather typical. Transvaginal imaging offers enhanced discrimination and can find incredibly tiny lesions distinguishing a submucous from a mural lesion, Transvaginal sonography should be performed in conjunction with transabdominal sonography because of the transvaginal approach's

constrained field of view, which could lead to the missing detection of subserosal or pedunculated fibroids. (5)

Material and Methods:

In this descriptive cross-sectional research, patients between the ages of 20 and 50 who presented with uterine fibroids symptoms and signs were included. Both the DHQ hospital in Rawalpindi and the life care laboratory and medical diagnostic center took part in the study. The sample size, which included 360 females' sample, was chosen using a practical non-probability sampling approach. Age, signs & symptoms, menstruation, and pregnancy-related clinical data were collected. Utilizing a Toshiba Xario machine and a pelvic scan transvaginal transducer with a frequency of 3.5 MHz, use scans were carried out. Patients were laid out transversely and supine, and all had static and moving longitudinal grey scale imaging. Investigations on color Doppler were conducted to better understand the outcome on gray scale photographs. Ultrasonography was used for a transvaginal exam. Before the scan, the patient was instructed to drink a lot of water. The ultrasonography was used to collect the data. The information was compiled based on the menstrual cycle's regularity, pregnancy, uterine fibroid risk factors, and forms of uterine fibroid.



Results:

Complication and statistical analysis of the data was performed using IBM SPSS statistics ver.22 and MS excel. Data was analyzed using descriptive statistics such as frequency, mean, standard deviation (SD) and presented in the form of percentages, graphs and charts. The study included 360 patients, all of them were women. The study was divided into three age groups with years between them. The majority of the females, 37.2%, were between the ages of 31 and 40. The most common sign and symptom in the study was excessive vaginal bleeding, which was 47.5%. Only 2.5% of all patients were pregnant. According to ultrasonography, 63.2% of females did not have uterine fibroids, while intramural fibroids were frequent in other individuals. Females had a regular menstrual cycle in 63.7% of these patients. Menstrual cycles were investigated as well in the study.

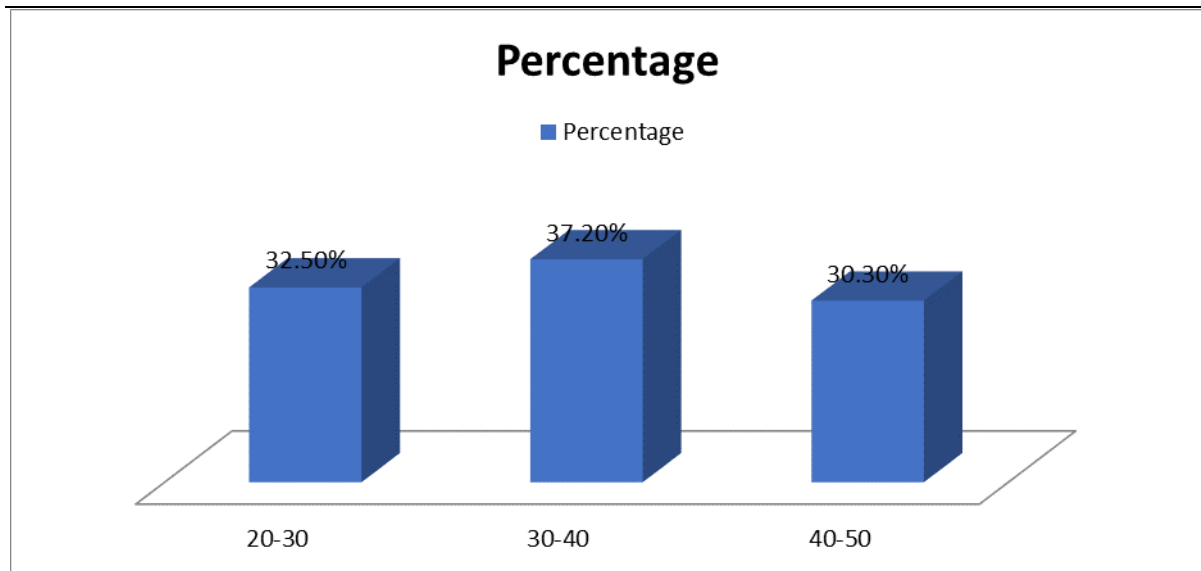


figure 01: Age Distribution. There are 360 patients in three age groups: 21-30, 31-40, and 41-50. 32% of patients belong to the first category, 37% to the second group, and 30% to the third group. This graph depicts the percentage of patients in each age group.

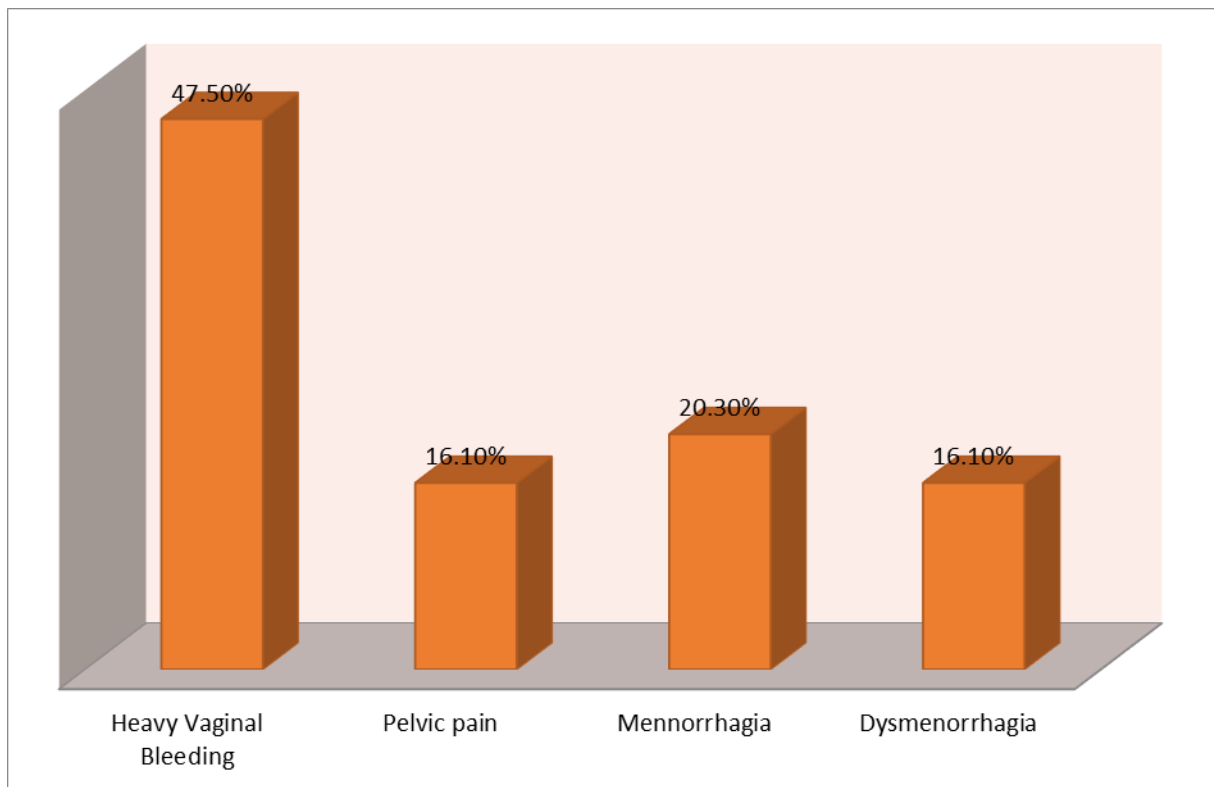


Figure 2: Sign And Symptoms. The above figure shows that 47.5% patients with uterine fibroids who had significant vaginal bleeding, 16.1% who had pelvic pain, 20.3% who had mennorrhagia symptoms, and 16.1% who had dysmenorrhagia symptoms. These are the most prevalent indications and symptoms of uterine fibroids. Total sample size is 360

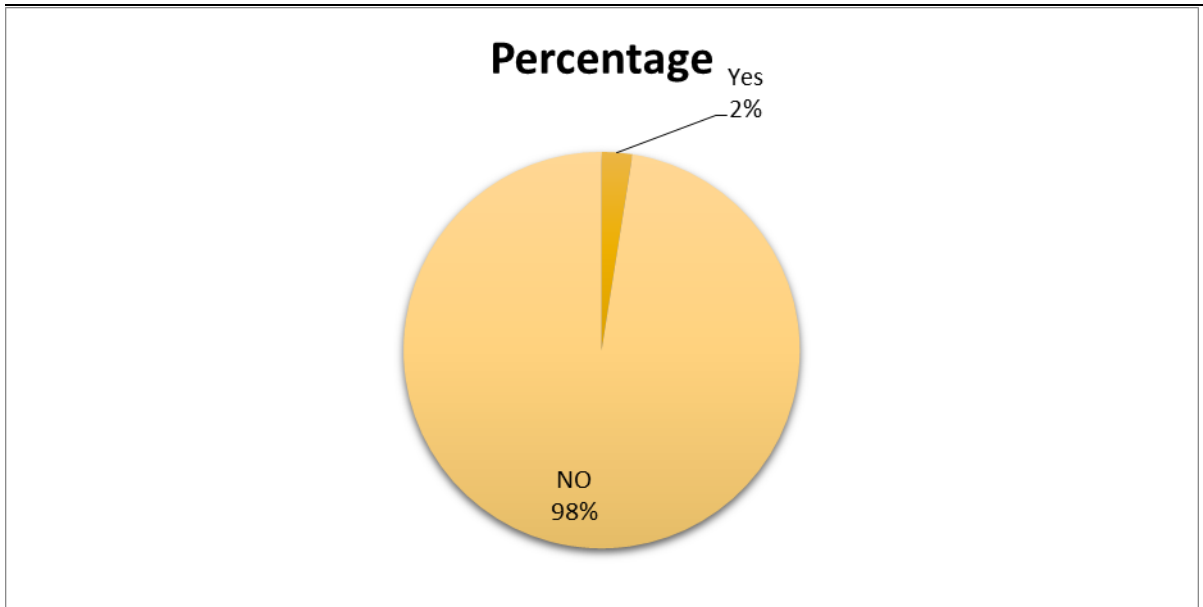


Figure 3: Pregnancy. In our study, we discovered that only 2.5% of patients had uterine fibroids throughout pregnancy. However, the vast majority of pregnant women (97.2%) did not have uterine fibroids. Uterine fibroids are thus uncommon during pregnancy.

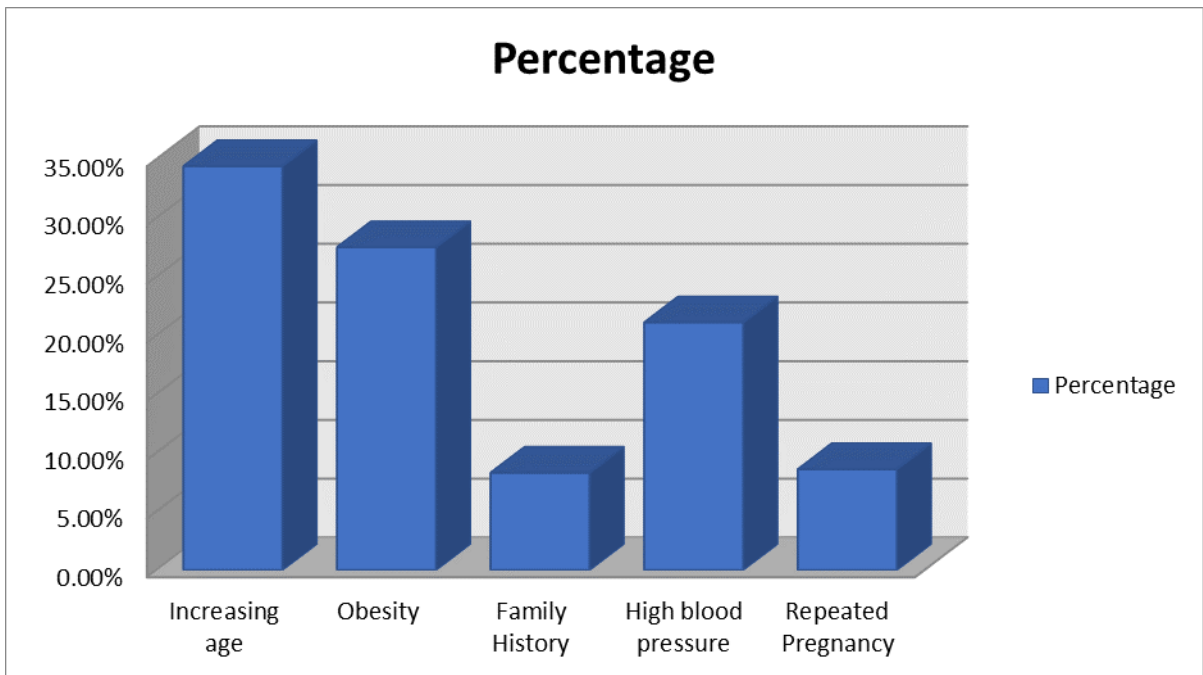


Figure 4: Risk Factors. Uterine fibroids are more common as you get older, with 34.4% of patients having them. Obesity is a risk factor as well, 27.5% females who gain weight more at a higher risk. Another factor is family history, with around 8.3% of patients at risk. High blood pressure is linked to a 21.1% risk, while multiple pregnancies are linked to an 8.6% risk. These factors all increase the likelihood of uterine fibroids.

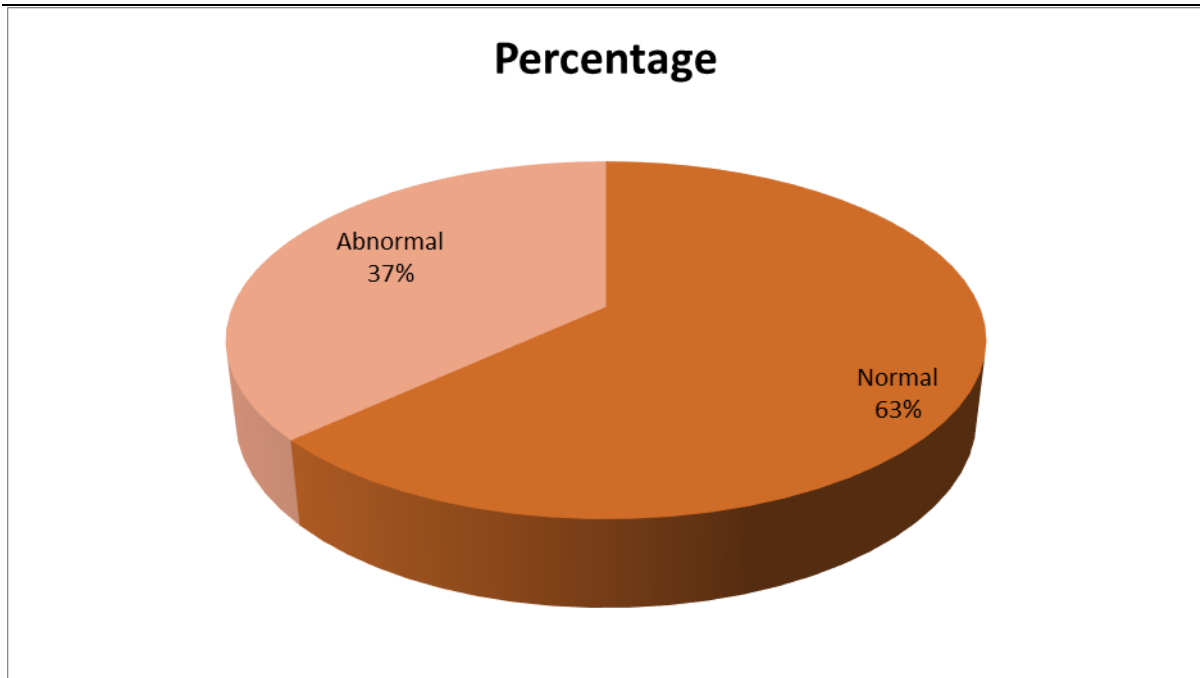


Figure 5: Ultrasound Findings. The ultrasound data revealed that roughly 63.3% of patients had a normal ultrasonography with no fibroids. In contrast, 36.8% of patients had an abnormal ultrasonography that revealed the existence of uterine fibroids. As a result, the majority of the ultrasounds were normal, but a substantial minority revealed the presence of fibroids.

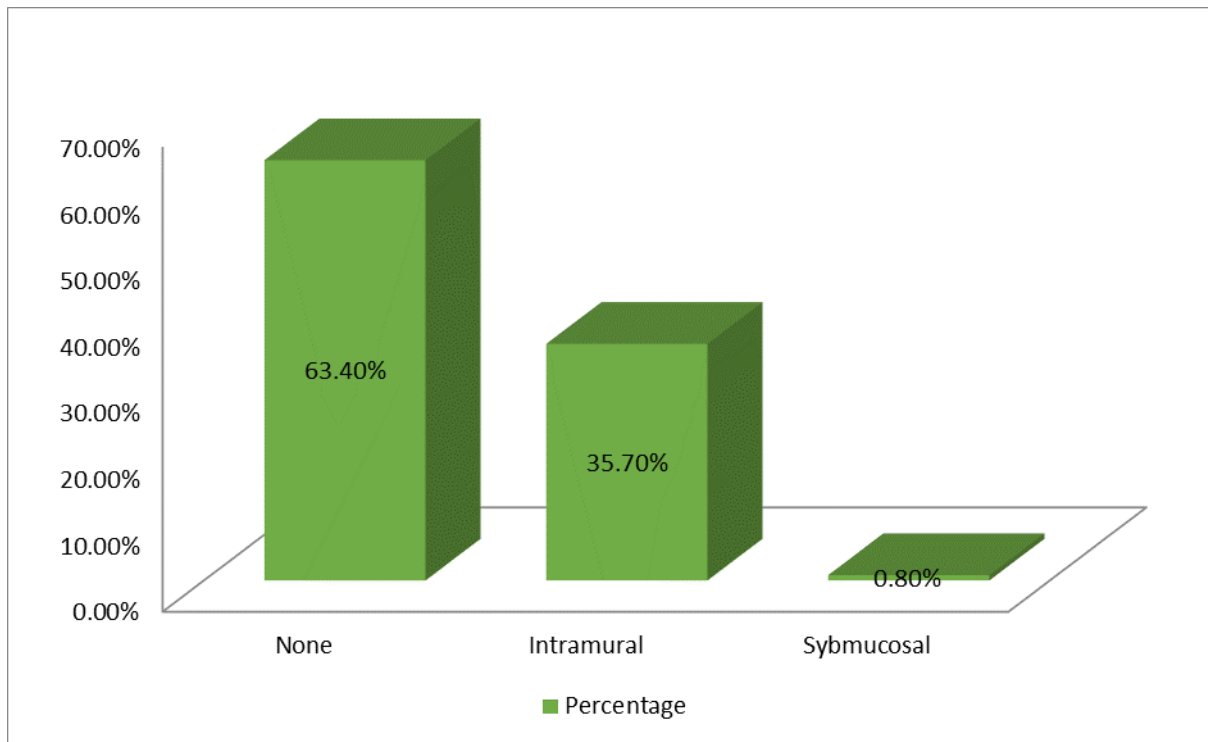


Figure 6: Type of Fibroid. There are two types of uterine fibroids: intramural and submucosal. Intramural fibroids affect 35.7% of patients, while submucosal fibroids affect only 0.8%. The vast majority of patients, 63.4%, do not have fibroids.

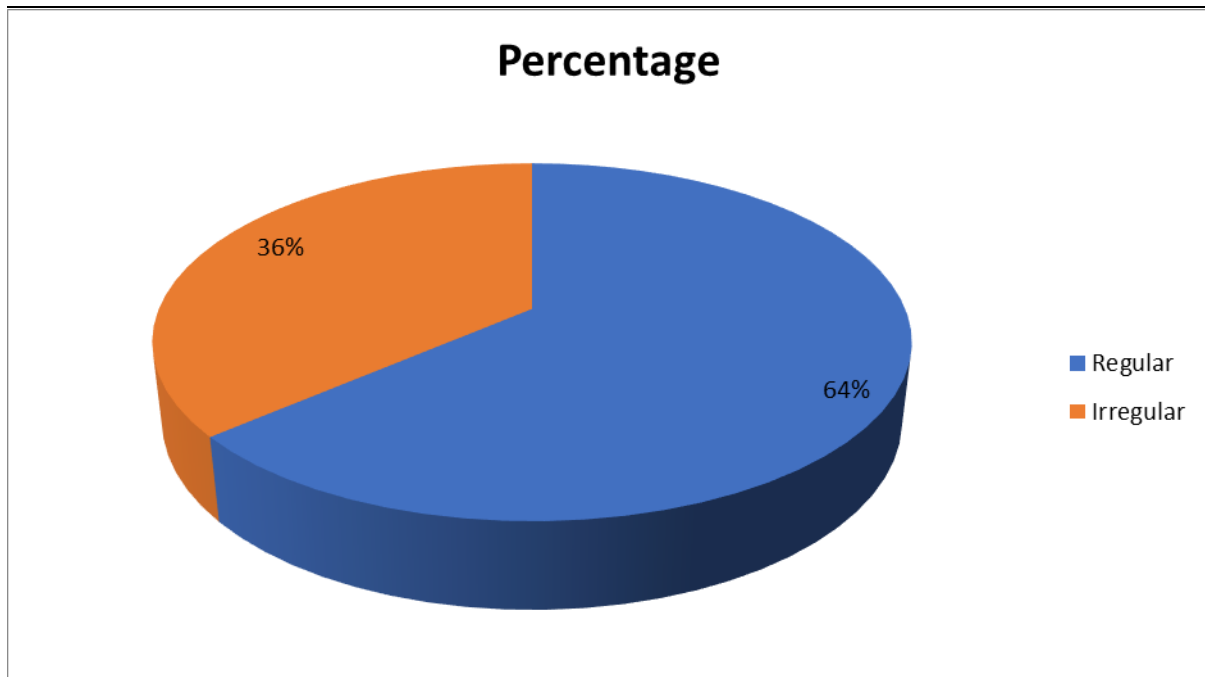


Figure 7: Periods Duration. Some people with uterine fibroids have regular periods, whilst others have erratic cycles. According to this research 63.7% of patients have regular menstrual cycles, while 36.3% have irregular menstrual cycles due to fibroids. As a result, fibroids can disrupt menstrual cycle regularity.

DISCUSSION:

In my study, there are 360 patients, all of which are females, and their ages should be split into three categories. The first age group is 20_30, and there are 117 female patients in that group, making 32.5%. The second age group is 31_40, and there are 134 patients in total, the percentage is 37.2. While the number of patients in the third age group is 109, for a total percentage of 30.3.

By classification of uterine fibroids into signs and symptoms, the percentage of heavy vaginal bleeding is 47.5, pelvic discomfort is 16.1, menorrhagia was seen in 20.3%, and dysmenorrhea is 16.1. There were 2.5 percent of 360 women who were pregnant and 97.2 percent being non-pregnant.

There are multiple risk factors causing uterine fibroids in women. In 34.4% of individuals, the probability of having uterine fibroids increases with age. Obesity enhances the risk of uterine fibroids by 27.5%. 8.3% of women are influenced by family history. In 21.1% of women, high blood pressure raises the incidence of uterine fibroids. Uterine fibroids were found in 8.6% of women experiencing multiple pregnancies.

Uterine fibroids were examined using ultrasonography. In total, 63.2% of females had no uterine fibroids. The ultrasound results seem to be normal. In 36.8% of females has abnormal ultrasound findings ultrasound confirmed fibroids. They were suffering from uterine fibroids.

Following the ultrasound, several types of uterine fibroids were identified. Uterine fibroids were not observed in 63.4% of females. In 35.7% of cases, intramural fibroids were found. Sub mucosal uterine fibroids are another type of uterine fibroids. This was observed in 0.8% of females. The cycles of menstruation were also evaluated in the study. Females had a normal menstrual cycle in 63.7% of cases. However, 36.3% of females suffered menstrual cycle abnormalities.

REFERENCES

1. Stewart EA, Laughlin-Tommaso SK, Catherino WH, Lalitkumar S, Gupta D, Vollenhoven BJNrDp. Uterine fibroids. 2016;2(1):1-18.
 2. Bulun SEJNEJoM. Uterine fibroids. 2013;369(14):1344-55.
 3. Gupta S, Jose J, Manyonda IJBp, obstetrics rC, gynaecology. Clinical presentation of fibroids. 2008;22(4):615-26.
 4. Chan V, Perlas AJAou-gpiipm. Basics of ultrasound imaging. 2011:13-9.
 5. Karasick S, Lev-Toaff AS, Toaff MEJAAjor. Imaging of uterine leiomyomas. 1992;158(4):799-805.
 6. Ellis HJA, Medicine IC. Anatomy of the uterus. 2011;12(3):99-101.
 7. Laughlin SK, Schroeder JC, Baird DD, editors. New directions in the epidemiology of uterine fibroids. Seminars in reproductive medicine; 2010: Published in 2010 by Thieme Medical Publishers.
 8. Pavone D, Clemenza S, Sorbi F, Fambrini M, Petraglia FJBP, Obstetrics RC, et al. Epidemiology and risk factors of uterine fibroids. 2018;46:3-11.
 9. Parazzini F, Tozzi L, Bianchi SJBp, obstetrics rC, gynaecology. Pregnancy outcome and uterine fibroids. 2016;34:74-84.
 10. Giuliani E, As- Sanie S, Marsh EEJJoG, Obstetrics. Epidemiology and management of uterine fibroids. 2020;149(1):3-9.
 11. Zimmermann A, Bernuit D, Gerlinger C, Schaeffers M, Geppert KJBwsh. Prevalence, symptoms and management of uterine fibroids: an international internet-based survey of 21,746 women. 2012;12:1-11.
 12. Stewart EA, Cookson C, Gandolfo RA, Schulze- Rath RJBAIJoO, Gynaecology. Epidemiology of uterine fibroids: a systematic review. 2017;124(10):1501-12.
 13. Foth D, Röhl F-W, Friedrich C, Tylkoski H, Rabe T, Römer T, et al. Symptoms of uterine myomas: data of an epidemiological study in Germany. 2017;295:415-26.
 14. Yu O, Scholes D, Schulze-Rath R, Grafton J, Hansen K, Reed SDJAJoO, et al. A US population-based study of uterine fibroid diagnosis incidence, trends, and prevalence: 2005 through 2014. 2018;219(6):591. e1-. e8.
 15. Xu F, Li F, Li L, Lin D, Hu H, Shi QJF, et al. Vitamin D as a risk factor for the presence of asymptomatic uterine fibroids in premenopausal Han Chinese women. 2021;115(5):1288-93.
 16. Lam S-J, Best S, Kumar SJAJoo, gynecology. The impact of fibroid characteristics on pregnancy outcome. 2014;211(4):395. e1-. e5.
 17. Islam MS, Protic O, Stortoni P, Grechi G, Lamanna P, Petraglia F, et al. Complex networks of multiple factors in the pathogenesis of uterine leiomyoma. 2013;100(1):178-93.
 18. Marsh EE, Al-Hendy A, Kappus D, Galitsky A, Stewart EA, Kerolous MJJowsh. Burden, prevalence, and treatment of uterine fibroids: a survey of US women. 2018;27(11):1359-67.
 19. Luoto R, Kaprio J, Rutanen E-M, Taipale P, Perola M, Koskenvuo MJM. Heritability and risk factors of uterine fibroids—the Finnish Twin Cohort study. 2000;37(1):15-26.
 20. Sarkodie BD, Botwe BO, Adjei DN, Ofori EJFR, Practice. Factors associated with uterine fibroid in Ghanaian women undergoing pelvic scans with suspected uterine fibroid. 2016;2(1):1-7.
 21. Bizjak T, Bečić A, But IJGO. Prevalence and risk factors of uterine fibroids in North-East Slovenia. 2016;6(350):2161-0932.
 22. Moore AB, Flake GP, Swartz CD, Heartwell G, Cousins D, Haseman JK, et al. Association of race, age and body mass index with gross pathology of uterine fibroids. 2008;53(2):90-6.
 23. Drayer SM, Catherino WHJJoG, Obstetrics. Prevalence, morbidity, and current medical management of uterine leiomyomas. 2015;131(2):117-22.
-

24. Muezzinoglu B, Corakci AJP-R, Practice. Pathological characteristics and clinical outcome of uterine leiomyomas associated with pregnancy. 2011;207(11):691-4.
 25. Geethamala K, Murthy VS, Vani BR, Rao SJJom-lh. Uterine leiomyomas: an ENIGMA. 2016;7(1):22.
-