

Prevalence of Risk Factors for Uterine Fibroids at Tertiary Care Teaching Hospital: A Cross-sectional Study

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ABSTRACT

Objectives: To examine the prevalence of risk factors in patients suffering from uterine fibroid at tertiary care teaching hospital. **Methods:** A cross-sectional study carried out between June to December 2019 includes patients who were diagnosed with uterine fibroids in the gynecology department, SVIMS, Tirupati. The position and number of the fibroids were counted and noted by the reports of Ultrasound examinations. Especially we assessed the prevalence of risk factors for uterine fibroids based on the questionnaire filled by the patients. The data were processed with the statistical program SPSS 25 and P value less than 0.05 were considered to be statically significant. **Results:** A total of 137 patients was studied, the majority of subjects were below the age group of 36-50 years (63.5%) followed by 21-35 years (24.08%) and 51-65 years (12.4%). The average age of the participants was 42.08 ± 8.89 years. BMI showed that women with 25 kg/m² to 29.9 kg/m² (54.74%) and ≥30 kg/m²(8.75%) experienced a higher prevalence of fibroids ($\chi^2 = 11.55$, $P = 0.003$) than women with 18.5 kg/m² to 24.9 kg/m² (36.49%). The average body mass index (BMI) of

women with fibroids that were detected in our study was 27.5kg/m². Other risk factors were not significantly linked with uterine fibroids. **Conclusion:** Fibroid prevalence had a significant correlation with age and BMI. Early detection and reduced body weight may bring down the occurrence of uterine fibroids.

Key words: Uterine fibroids, Cross-sectional study, Risk factors, Obesity, Body Mass Index (BMI).

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INTRODUCTION

Uterine fibroids (UFs), also known as uterine leiomyomas, are benign smooth muscle tumors of the uterus that affect women of reproductive age.¹⁻³ They may be asymptomatic or cause a range of severe and chronic symptoms. The most common presenting symptom is heavy menstrual bleeding, which can lead to anemia and fatigue and painful periods.⁴⁻⁹ The growth of leiomyoma is dependent on estrogen production. UFs are more common in overweight women because of increased estrogen from adipose aromatase activity.¹⁰

Many different risk factors have been associated with the development of UFs, including biological, demographic, reproductive and lifestyle factors such as age, obesity, overweight, caffeine consumption, early age at menarche, vitamin D deficiency, black race, family history, hypertension, diabetes, use of soya bean milk, polycystic ovarian syndrome and red meat consumption.^{11,12} Management of UFs mainly depends on the symptoms, location and size of the fibroid. UFs are one of the contributing causes of hospitalizations for gynecological disorders are the most frequent reason for the hysterectomy. There is little known about risk factors for uterine fibroids, therefore, this study aimed to examine the prevalence of risk factors for uterine fibroid in the outpatient department (OPD) and inpatient department, Sri Venkateswara Institute of Medical Sciences (SVIMS), Tirupati, Andhra Pradesh, India.

MATERIALS AND METHODS

Study design and Ethical consideration

A cross-sectional study on the prevalence of risk factors for uterine fibroids was conducted in a tertiary care teaching hospital Sri Venkateswara

Institute of Medical Sciences, Tirupati, Andhra Pradesh, India in 2019. The ethical clearance was obtained from the Institutional Ethics Committee with approved IEC NO. 918 from Sri Venkateswara Institute of Medical Sciences and the consent was taken from subjects. The study was performed per ICH GCP Guidelines.

Selection criteria

Patients between 21-65 years, patients diagnosed with uterine fibroids, and patients willing to participate were taken inclusion criteria. The pregnant women were omitted from the study.

Sample size

One hundred and thirty-seven patients diagnosed with uterine fibroids were taken as sample size and examined as per study guidelines.

Method of Collection of Data

The informed consent form was obtained from all subjects prior the study. On the day of the examination, all participants were allowed to sign in the Informed Consent Form. In addition to basic information regarding the age, altitude, weight and education, we assessed the location, size and number of fibroids with the help of Ultrasonography reports [USG]. The questionnaire also asked about smoking, caffeine consumption, parity, participant's health status (hypertension, diabetes mellitus) and close to the family history of the disease (fibroids) in the patient.

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Statistical analysis

The data was collected and recorded in a pre-designed proforma and managed using Microsoft Excel worksheet (Microsoft Corp, Redmond, WA) and SPSS version 25 (Statistical Package for Social Sciences) during the final analysis. Socio-demographic details, location and several nodules were represented in percentage. The relationship between descriptive variables was analyzed with the Pearson chi-square test by testing equality between the observed and expected frequencies. The limit of statistical significance was at $p < 0.05$.

RESULTS

A Total number of 290 uterine fibroid patients were approached to contribute to this field, but only 137 uterine fibroid patients were responding to our study and participated in the study, Before that we have clearly explained about the study to the subjects. All the subjects involved in this study were voluntarily accepted to participate.

Data evaluation based on location and number of fibroids

The results of the fibroids characteristics such as positioning and number are presented in Figures 1 and 2. Fibroid incidence showed a statistically significant correlation with Age. The majority of subjects were under the age group of 36-50 years ($n=87$) constituting 63.5% of patients observed by age group of 21-35 years ($n=33$) constituting 24.08% of patients followed with the age group of 51-65 years ($n=17$) constituting 12.4% of patients as shown in Table 1.

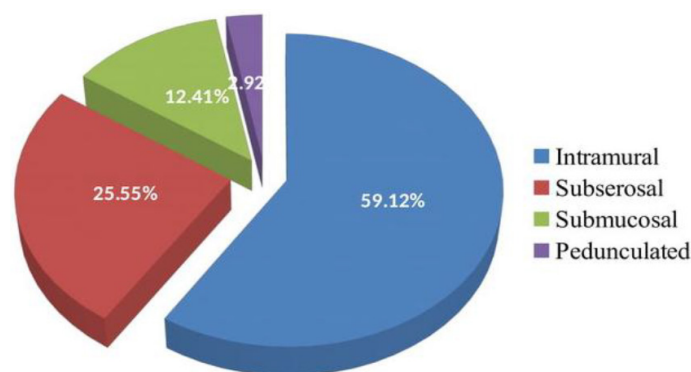


Figure 1: Distribution of Uterine fibroids patients based on the location of fibroids.

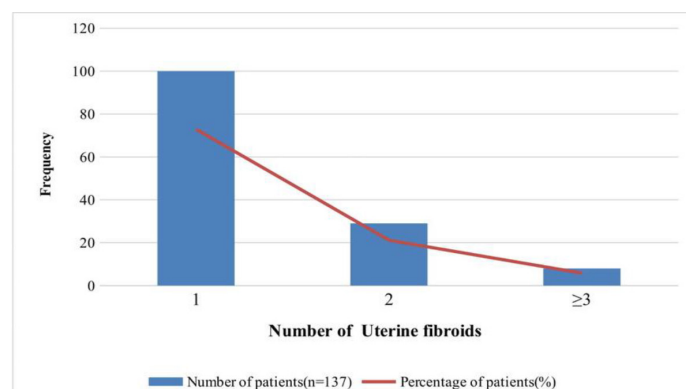


Figure 2: Distribution of Uterine fibroids patients based on number of fibroids.

Data evaluation based on social-demographic details of the patient

Out of 137 study populations, the average age of the participants was 42.08 ± 8.89 years and 95.6% were married and the rest were unmarried and widowed, 64.9% of patients were illiterate and 35.05% were literate. The rural patients are 71.5% and 28.05% were from the urban part and out of all 91.9% of the patients belong to the Hindu faith and the rest of all belongs to Muslim and Christian, which were shown in Table 2.

Analysis of the main significant risk factor associated with the prevalence of fibroids

The average body mass index (BMI) of women with fibroids that were detected in our study was 27.5 kg/m^2 . Based on the BMI score women were divided into 3 categories; Normal (18.5 kg/m^2 to 24.9 kg/m^2), Overweight (25 kg/m^2 to 29.9 kg/m^2) and obese ($\geq 30 \text{ kg/m}^2$). The comparison of individual categories of BMI, the results showed that women with overweight (54.74%) had a higher prevalence of fibroids ($\chi^2=11.55, P=0.003$) than women with normal BMI (36.49%). BMI distribution was shown in Figure 3.

Non-significant risk factors associated with the prevalence of fibroids

In our study, we also found the importance of the other risk factors which might throw a possible role in the occurrence of fibroids. Three major groups of risk factors were analyzed: gynecological history (age at menarche, family history of fibroid), Lifestyle (caffeine ingestion) and Medical history (hypertension, diabetes mellitus) were not statistically significantly associated with fibroids. These results are shown in Table 3.

Table 1: Age distribution among all uterine fibroids patients.

S.NO	Age Group (Years)	Number of Patients (n=137)	Percentage (%)
1	21-35	33	24.08
2	36-50	87	63.50
3	51-65	17	12.40

Table 2: Socio-demographic data of the uterine fibroid patients in the department of OBG.

	Category	Number of Patients (n=137)	Percentage (%)
Marital Status	Married	131	95.6
	Unmarried	1	0.72
	Widow	5	3.64
Education	Literate	48	35.05
	Illiterate	89	64.9
Religion	Hindu	126	91.9
	Muslim	10	7.29
	Christian	1	0.72
Residency	Urban	39	28.5
	Rural	98	71.5
Parity	Nulliparous	14	10.2
	1	16	11.6
	2	78	56.9
	≥3	29	21.1

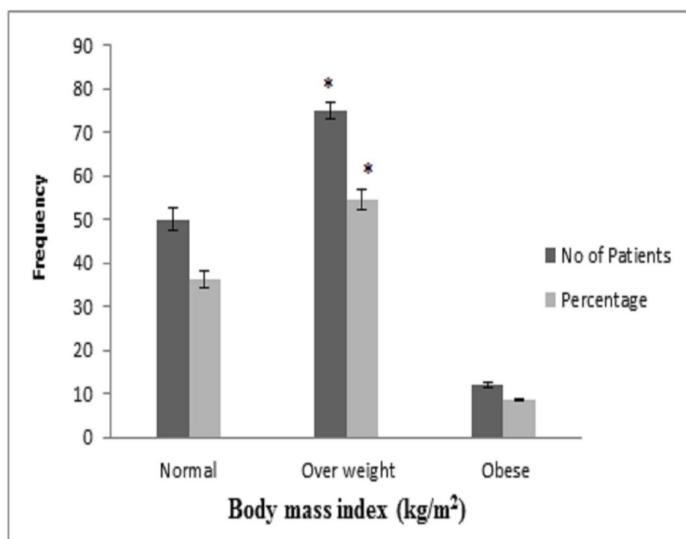


Figure 3: The uterine fibroid patients Body Mass Index, a significant risk factor associated with the prevalence of fibroids.

Table 3: The non-significant effects of risk factors associated with uterine fibroids patients.

Risk Factors	Statistical Significance
Caffeine consumption	$\chi^2=1.83$, $p=0.400$
Family history	$\chi^2=2.30$, $p=0.317$
Hypertension	$\chi^2=0.16$, $p=0.922$
Diabetes mellitus	$\chi^2=1.69$, $p=0.428$
Early age at menarche	$\chi^2=0.36$, $p=0.833$

$p < 0.05$ statistically significant

DISCUSSION

Uterinemyomas or fibromyomas are rising from the myometrium smooth muscle and it's a slow growing benign (non-cancerous) tumor. The fibroids developing gradually into the massive size and make menorrhoea condition.¹³ One-third of Gynaecology admissions are leiomyomas with menstrual disturbance, anemia and lump with abdomen colic.¹⁴ Fibroids gradually get escalation in size as women get older and it's a basis pressure warning sign leads to the majority required surgical interventions resembling myomectomy or hysterectomy.¹⁵ The present study aimed to assess the prevalence of risk factors for uterine fibroids among women aged between 21-65 years.

The socio-demographic data summarized that married women predominantly affected with fibroids. The present study findings were consonances with an earlier study that there was no association between the incidence of fibroids and the matrimonial status of the patient.¹⁶ More Hindu religion people (91%) came to the hospital and diagnosed with uterine fibroids compared to the other religious people, it might be due to more hindu population in study area. In our study, more than 80% of the patients from rural areas were found fibroids than urban areas due to a lack of health care centers. More than half of this study sample population (64.9%) were illiterate and had no knowledge of reproductive health and hygiene which can potentially delay the women seeking treatment at the initial stages of reproductive health problems.

Age is a significant and clear predictor for uterine fibroid in women. In our present study, we found an increase in the occurrence of the fibroid

in the age group of 35-50 years. These detections were under the previous study reports that the presence of this uterine fibroid condition was more frequently seen in the 40-44 years, age groups.¹⁷

It was perceived that Uterinemyomas are most common (BMI > 30 kg/m²) in obese women. Body weight of 70 kg or more denotes a nearly three-fold augmented risk of incidence of fibroids compared with a body weight of 50 kg.¹⁸ Raised BMI has a more influence on the risk of the incidence of fibroids after the age of 18, if it is higher than 20 kg/m². Its supreme effect has been seen between 27.5 kg/m² and 29.9 kg/m².¹⁹ In the present study outcomes of BMI revealed that women with 25 kg/m² to 29.9 kg/m² (54.74%) and ≥ 30 kg/m² (8.75%) experienced a higher prevalence of fibroids ($\chi^2=11.55$, $P=0.003$) than women with 18.5 kg/m² to 24.9 kg/m² (36.49%). Parallel results were noticed in another study that, the higher BMI shows a significant association with uterine fibroids ($\chi^2=9.6$, $p=0.002$).²⁰

Intramural fibroid appears to decline fertility than other types of fibroid which indicate the strong connection between different type of fibroids and reproductive consequence.²¹ In the present study, more intramural fibroids are prominent (59.12%) which has a positive association to cause spontaneous abortion.

We assessed the importance of the other risk factors which might throw a possible role in the occurrence of fibroids. Three major groups of risk factors were analyzed such as gynecological history, lifestyle and medical history. Although early age at menarche showed to be important in association with fibroids development however our study did not reveal any significance.^{22,23} Moreover, we did not get any significant correlation between any of the lifestyle habits, like caffeine consumption and the occurrence of fibroids, even though some authors describe these features as significant.^{24,25} The family history is one of the main predisposing factors for uterine leiomyoma,²⁶ but in our study family history have not shown any significant association with uterine fibroids. Some reports in the literature showed fibroids to be more frequent in women who experience arterial hypertension and diabetes,²⁷ However, our results do not confirm this association. There is a negative association between parity and the risk of fibroids in our subject area which is consistent with the findings in previous studies.^{28,29}

CONCLUSION

Uterine fibroids can cause multiple bleeding and painful symptoms which might harm women's life, influencing their sexual, social and work life. The prevalence of risk factors for uterine fibroids in our area were found to be significantly associated with higher BMI and age between 35-50 years. We found that gynecological history, lifestyle and medical history of the patients were not significantly associated with uterine fibroids. Early detection and health awareness camps in rural areas would help in early management and thereby reduce the morbidity.

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CONFLICT OF INTEREST

Authors declare no conflicts of interest.

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