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Prevalence of Uterine Fibroids and Associated Risk Factors - A Prospective Observational Analysis



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HUMAN

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ABSTRACT

Uterine fibroids are the most prevalent gynaecological disorder which requires surgery when symptomatic. The objective of our study was to estimate the prevalence of uterine fibroids, identify its chronic complications, determine the associated risk factors and to assess drug – drug interactions in prescriptions. The prospective observational study was conducted on 100 women, admitted in the Gynaecology ward of a multi-specialty hospital in Coimbatore, Tamil Nadu. Information on demographic and clinical characteristics of patients was collected to using a structured data entry format. The micromedex drug database was used to identify the drug-drug interactions. The overall prevalence of uterine fibroids was 28%. The most common complications observed were heavy menstrual bleeding, preterm delivery and haemorrhage. Upon analysis of risk factors, age was the strongest factor associated with uterine fibroids, followed by primigravida, endogenous hormone factors, obesity, hypertension and dietary habits. 11 major drug – drug interactions were identified. Uterine fibroids show strong relationship to age, obesity and dietary habits with complications ranging from menorrhagia to reproductive dysfunction. Early detection and intervention can have a significant impact on patient health and quality of life.



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INTRODUCTION

Uterine fibroids are benign monoclonal tumors of the uterine smooth muscle. The extracellular matrix of the tumor is composed of collagen, fibronectin, and proteoglycan.¹ Depending on the size, number of fibroids and their location; there can be deformation of the uterus and substantial effects on fertility. They may cause recurrent miscarriage due to premature rupture of membranes, preterm labour, placental abruption, malpresentations and fetal growth restriction.² Approximately 60% of the women with fibroids become pregnant after myomectomy. The global estimated prevalence of uterine fibroids is 20% - 40% in women during their reproductive years, while the prevalence in India has been reported as 37% in rural women and 24% in urban women.³ The reported risk factors for uterine fibroids include obesity, red meat and caffeine consumption, family history, early age at menarche, tubal ligation, prior pelvic inflammatory disease, prior intrauterine device expulsion, use of estrogens, vitamin D deficiency, polycystic ovarian syndrome, hypertension, and diabetes.⁴⁻⁶ Symptoms of uterine fibroids vary by patient but are most associated with menorrhagia. This increase in menstrual flow can further cause anaemia, a common serious complication. Fibroids are also associated with dysmenorrhea, dyspareunia, chronic pelvic and back pain, pelvic fullness, constipation, tenesmus, hydronephrosis, and urinary frequency.⁷⁻⁹ The adopted treatment strategy (medical or surgical treatment) depends on the individual's clinical presentations, symptom severity and informed choice of the patient.¹⁰

In spite of literatures and reviews available on risk factors and complications of uterine fibroids, only few systematic reports are published. With this context, the current study was undertaken to observe the prevalence of uterine fibroids, identify its chronic complications, determine the associated risk factors and to assess drug – drug interactions in prescriptions and their severity. Owing to the commonality and severity of uterine fibroids, this knowledge can facilitate research and generate a better understanding about the disease.

MATERIALS AND METHODS

We performed a 6-month prospective observational study on 100 women admitted in the Gynaecology ward of a multi-speciality hospital in Coimbatore, Tamil Nadu. Women included in the study were inpatients with complaints of menstrual disorders, outpatients, and intensive care patients. Patients not willing to participate in the study and patients with insufficient data in their records were excluded. The study was approved by the hospital

ethics committee [ECR/690/Inst/TN/2014/RR-18]. Written informed consent was obtained from all the participants.

Information on demographic and clinical characteristics were collected using a structured and validated data-entry form. Participants reported on several aspects of their menstrual cycle and pregnancies. Clinical presentation, medical history, laboratory investigations, chronic complications, and ultrasonogram reports were abstracted by a comprehensive review of the participants hospital records. The data collected was individually screened to assess the prevalence, risk factors and complications of uterine fibroids among the study population. The micromedex drug database was used to identify the drug-drug interactions and their severity in prescriptions.

RESULTS

A total of 100 participants were included in the study and the overall prevalence of uterine fibroids was 28% as illustrated in figure 1. The prevalence increased with age from 6% among women aged 15-19 to 46% among women >40 (table 1). Body Mass Index (BMI) was determined with accurate height and weight measurements. Notably, a high prevalence of uterine fibroids was observed in over-weight individuals (49%) followed by normal (42%) and obese patients (9%). Nearly 43% of patients did not have a family history of the disease.

Figure 2 presents the complications of uterine fibroids among the study participants. The findings highlighted that heavy menstrual bleeding, preterm delivery and haemorrhages were most common. Other complications observed were infection, degeneration in fibroids and malignant transformation. Upon analysis of risk factors as depicted in figure 3, age was the strongest factor associated with uterine fibroids, followed by primigravida, endogenous hormone factors, obesity, hypertension and dietary habits. With regard to gravidity status, 32% were at primigravida and 68% were multigravida patients. Among the study population, 41% women were diagnosed with uterine fibroid during the 3rd trimester, followed by diagnosis during the 2nd trimester (36%) and 1st trimester (23%). The common symptoms observed in the study population were heavy menstrual bleeding (39%), pelvic pain (20%), constipation (2%), anemia (11%), obstetric complications (9%), infertility (16%), and difficulty with urination (3%). Patients with and without co-morbid conditions were 33% and 67% respectively. Prescriptions of the study participants were analyzed for drug interactions. The major interactions are listed in table 2.

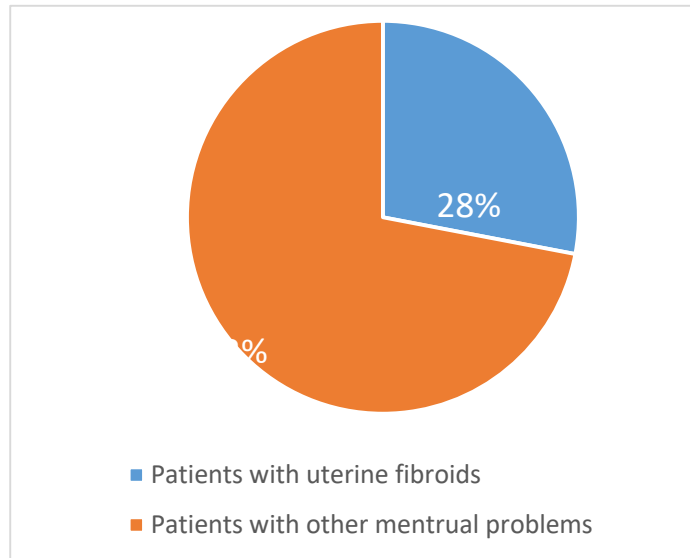


Figure No. 1: Prevalence of Uterine Fibroids

Table No. 1: Age Categorization

Age (In Years)	Percentage (%)
15-19	6%
20-29	20%
30-39	28%
>40	46%

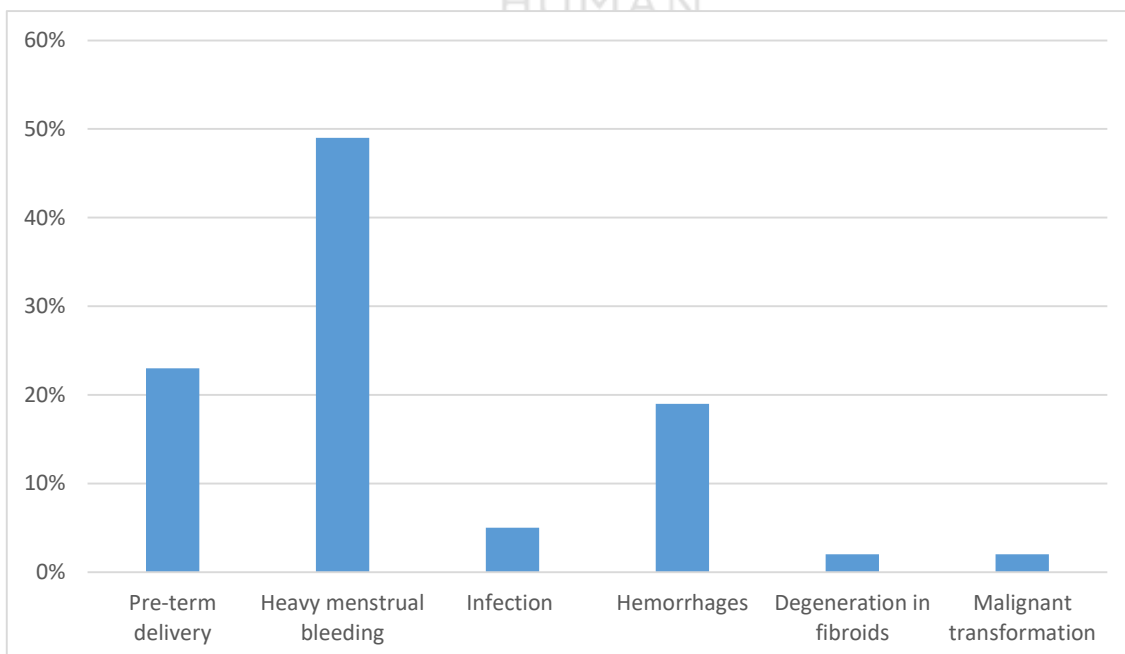


Figure No. 2: Complications of Uterine Fibroids

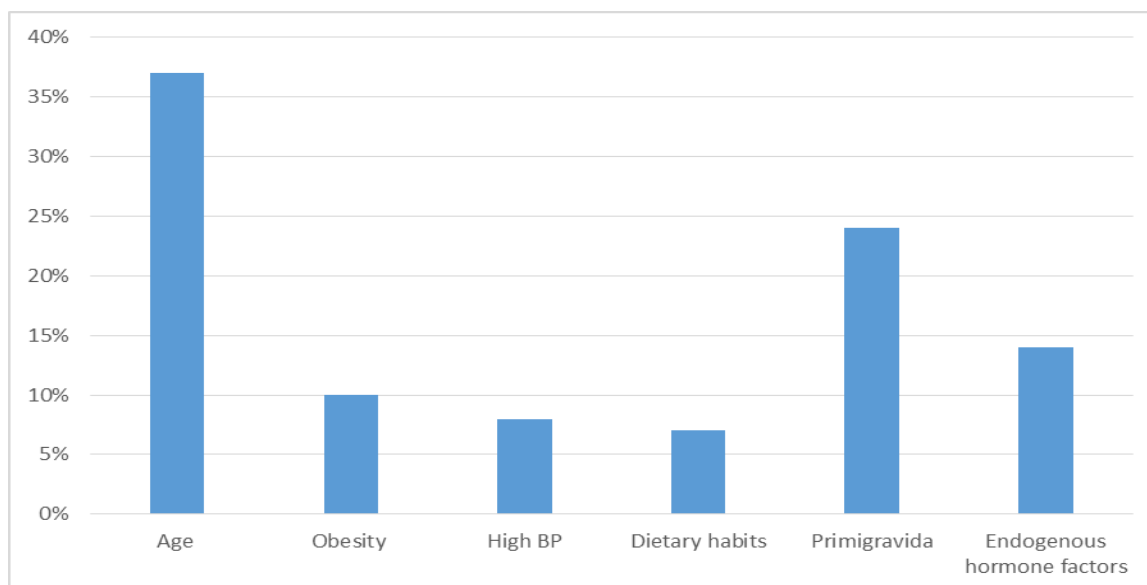


Figure No. 3: Risk Factors for Uterine Fibroids

Table No. 2: Major Drug – Drug Interactions

S. No.	Drugs	Severity	Interactions effect
1	Ofloxacin + Budenoside	Major	May result in increased risk of tendon rupture.
2	Promethazine + Meperidine	Major	Concurrent use of these drugs results in increase CNS and respiratory depression.
3	Ketoconazole + Budenoside	Major	Ketoconazole is a potent CYP3A4 inhibitor there by the effect of budenoside is increased.
4	Formeterol + Ketoconazole	Major	Both increase QT interval
5	Ketoconazole + Prednisolone	Major	Ketoconazole will increase the level of prednisolone by affecting hepatic/intestinal enzyme CYP3A4 metabolism.
6	Rabeprazole + Ketoconazole	Major	Rabeprazole will decrease the level of ketoconazole by increasing gastric PH.
7	Promethazine + Meperidine	Major	Concurrent use of three drugs results in increase CNS and respiratory depression.
8	Diclofenac + ketorolac	Major	Either increase the toxicity of the other
9	Aspirin + Metformin	Major	Concurrent use of aspirin and metformin may result in increased risk of hypoglycemia.
10	Thyronorm + Pantoprazole	Major	Concurrent use of levothyroxine and proton pump inhibitor may result in decreased levothyroxine effectiveness.
11	Meperidine + Promethazine	Major	Concurrent use of meperidine and promethazine increase the risk of CNS and respiratory depression.

DISCUSSION

The current study examined the burden of uterine fibroids in the south Indian study population. We found a greater incidence of uterine fibroids among women over 40 years which was similar to the study conducted by Srilatha *et al*⁶. An important finding of our study was leiomyoma, a common condition among women with an estimated prevalence of 28%. This was in par with the study conducted by Munusamy *et al*.² Further, overweight and obese individuals were found to be at greater risk than healthy patients (49.95% vs 19.98%). A similar trend can be seen in several other reported studies.¹³⁻¹⁵ Heavy menstrual bleeding, preterm delivery and haemorrhages were common complications observed among our patient who reaffirms the finding by Stewart in his systematic review.¹⁶

As previously described by Ukwenya *et al*,¹⁷ we identified age, obesity, high BP, unhealthy eating habits, and primigravida were the risk factors for uterine fibroids.

An international internet-based survey of 21,746 women conducted by Zimmermann *et al*¹⁸ showed that women diagnosed with uterine fibroids report bleeding and pain symptoms more often than undiagnosed women. Another study by Nuruddin *et al*¹⁹ similarly reported abnormal uterine bleeding in 74.1% of cases, followed by pain in 29.3% of cases. These reports were consistent with our study findings.

CONCLUSION

Uterine Fibroids are an increasing cause of morbidity among women, with significant prevalence in India. Uterine fibroids show strong relations to age, obesity and dietary habits with complications ranging from menorrhagia to reproductive dysfunction. Early detection and intervention can have a significant impact on patient health and quality of life.

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