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PREVALENCE AND CLINICAL CHARACTERISTICS OF UTERINE FIBROIDS IN WOMEN OF REPRODUCTIVE AGE IN DISTRICT HYDERABAD

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ABSTRACT

Uterine leiomyomas, which are also known as fibroids, are the most common benign tumours affecting women of childbearing age across the world. Epidemiologic studies published in the clinical sciences indicate that they constitute a major public health problem, particularly concerning female reproductive dysfunction, chronic pain, and sizeable health care expenditures. Cohort studies from District Hyderabad operating in low-income settings have not yet described the clinical features of women with uterine thus, the research seeks to establish a cross-sectional descriptive survey that was therefore conducted among 1,500 women, 18-49 years, attending gynecological clinics in both urban and rural healthcare facilities in District Hyderabad between January 2024 and December 2024. Structured questionnaires supplemented with comprehensive physical assessments and state-of-the-art ultrasound scans helped to achieve optimal diagnostic and descriptive assessment of fibroids. The overall prevalence estimated in the study was 38%, and the highest incidence rate was established in the age group of 30-39 years. Clinical presentation as manifested by the participants was mainly menorrhagia (72%), pelvic pain (55%), and infertility (28%). The uptaken risk factors included being overweight/obese (BMI > 30), having a past history of fibroids in the family, having no child (nulliparous), and having early menarche (age <12 years). This work also revealed that fibroids impact fertility and pregnancy in that fertility was reduced and rates of preterm labour and caesarean sections increased. The findings of the current study supported by more enhanced multivariable logistic regression analysis further strengthened the evidence of the relationship between the identified risk factors and fibroid prevalence. The results provide evidence for focused education and promotion programs, screening for the identified high-risk groups, and preventive health promotion initiatives addressing modifiable cardiovascular risk factors. The current study provides epidemiological data required to develop efficient healthcare policies and enhance strategies in directing clinical care to reduce the burden of uterine fibroids in the premenopausal women of District Hyderabad.

Keywords: *Uterine fibroids, incidence, age of reproduction, District Hyderabad, clinical presentation, risk factors for development, infertility, ultrasound.*

INTRODUCTION

Uterine fibroids or known as leiomyomas or myomas are the most prevalent benign pelvic tumors in women reaching the age of fertility, the prevalence of which varies between 20-70% among women globally [3]. These are tumours that develop from the smooth muscle layer of the uterus; the myometrium and are steroid hormone sensitive specifically estrogen and progesterone. Fibroids exist in different multiplicity and location depending with the uterine architecture and this has a profound impact on the symptomology and therapeuitic approach to be employed [4].

The clinical importance of UFs is not only their high incidence; UFs are a main reason for morbidity in women due to menorrhagia, chronic pelvic pain, pressure symptoms, and reproductive disorders such as infertility and complications during pregnancy [5–7]. There are lots of economic consequences, direct and potential medical expenses, the loss of employee productivity, and diminished quality of life. Fibroids are probably the most frequent indication for hysterectomy all over the world, and this confirms the paramount importance of identifying efficient non-surgical treatment and prophylactic measures [10].

Several risk factors have been pointed out in epidemiological investigations of uterine fibroids. These factors include age, especially women between 30 and 40 years of African American origin; family history; being overweight; nulliparous; early menarche; diet; and exercise [9, 10, 11, 12]. However, these risks have different combinations and distributions across the population and geographical zones, which makes it necessary to carry out specific research on specific populations [13].

Of all the regions globally, South Asia and Pakistan in particular expose a comparatively poor density of investigations that focus on of uterine fibroids. Previous work is frequently constrained by small sample sizes and insufficient clinical description and risk element assessment and localized settings like District Hyderabad. This gap limits the development of appropriate health public policies or clinical guidelines appropriate to the demographic or socio-economic status prevailing in that region [14, 15].

It is important to determine the incidence and clinical features of uterine fibroids for several reasons particularly for District Hyderabad. Firstly, it assists in resource planning and health care services organization to guarantee service and diagnostic and therapeutic services are well provided. Secondly, if researchers find out which r factors occur frequently in the population, it will help in combating them through high-risk population screening. Lastly, understanding how fibroids/adenomyosis affect the reproductive health of women can help clinicians design better fertility care and adjunct medical therapies to enhance reproductive performance or deal with complications arising from pregnancies in fibroid-affected women [23].

The purpose of this study is to try to fill the gap by presenting the results of the prevalence and clinical features of uterine fibroids among women of reproductive age in District Hyderabad. This research aims at providing practical recommendations that can be used to guide healthcare polity and clinical management through the use of a powerful methodological approach, including appropriate sample size and sophisticated diagnostic tools. These findings should be expected to greatly add to existing understanding, thus helping to bring about better health outcomes for women in the affected region.

Objectives

- To know the incidence of uterine fibroids in women of reproductive age in District Hyderabad.
- Hence the aim of this study is to describe the manifestations and symptoms of uterine fibroids in the study population.
- The purpose of this paper is to review and discuss the potential determinants of uterine fibroids.
- In order to evaluate the effect of uterine fibroids on fertility and/or pregnancy.
- To offer a set of recommendations for public health and clinical management based on sound empirical findings.

Methods

Study Design and Setting

This study used a cross-sectional study design during the year 2024 in District Hyderabad, both in the urban and rural healthcare facilities. Thus, being a district with a large population and different levels of

households' income, it is possible to examine the epidemiology of uterine fibroids among diverse population groups.

Study Population

The population of interest was women of reproductive age, 18-49 years, living in District Hyderabad. Recruitment was carried out in several gynecological clinics in major hospitals and primary health centers to get participants from diverse socio-economic and ethnic strata.

Sample Size Calculation

Knowing the right number of participants to use in a study is significant in the overall statistical strength and overall ability to generalize the findings. Previous research has estimated the incidence rate of uterine fibroids at 20% to 35% among similar groups of women [17-19]. An expected prevalence (p) of 30% was considered in this study to increase the sample size since it can vary.

The sample size (n) was calculated using the formula for prevalence studies:

$Z2\times p\times(1-p)d2n = n=Z2\times p\times(1-p)d2$

Where:

ZZZ = 1.96 (OU Pt 0.05 for a 95% confidence interval).

ppp = 0.30 (calculated prevalence).

To achieve the desired level of precision, we have ddd = 0.03.

Substituting the values:

$n=(1.96)2\times0.30\times0.70(0.03)2=3.8416\times0.21\times(1/900)=8.1506\times0.21\times0.001389=2.2468\times10^{-3}\approx896n=(1.96)2\times0.30\times0.70(0.03)2=(1.96)2\times0.30\times0.70(0.03)2=3.8416\times0.210.9090=0.0000113\times896$

To account for a potential non-response rate of 25%, the sample size was adjusted as follows:

$896+(896\times0.25)=896+224=1120896+224=1120$

A total of 1,200 participants were rounded off to the nearest round number in order to enhance the generation of robust results and reduce bias.

This study used the following inclusion and exclusion criteria:

Inclusion Criteria:

- Females of the reproductive childbearing age group of 18-49 years.
- A class of people who are permanent residents of District Hyderabad.
- Women who come to the gynecologists for general examinations or examination of gynecological problems.

Exclusion Criteria:

- Pregnant women.
- Those women who have undergone a hysterectomy or myomectomy.
- Women with malignant uterine tumours or other major pelvic diseases.
- Women who were unable to give informed consent or fill the questionnaire.

Sampling Technique

A three-stage sampling procedure was used in the study to reduce the sample bias. At the beginning of the study, the health care facilities were categorized into the urban and rural centres. In each stratum, clinics were selected randomly, and patients were enrolled successively until the sample size in each stratum was reached.

Tools and Techniques to be Used for Data Collection

Data were obtained by means of both standardized questionnaires, clinical examination, and ultrasound assessment.

Structured Questionnaire:

Sections:
Demographic Information: Gender, age, education level, work, and income level.
Menstrual History: Menarche, cyclicity, cycle length and length of bleeding.
Reproductive History: Parity, history of infertility, history of miscarriages.
Risk Factors: Family history of fibroids, BMI, diet, physical activity, whether the patient is a smoker or not.
It was administered to 50 people to ensure the validity and effectiveness of the questions within the questionnaire.

Clinical Examination:
Pelvic Examination: Done by qualified gynecologists to feel for fibroids, and to examine the size and texture of the uterus.

Ultrasonography: Only transvaginal or transabdominal ultrasound was used to ascertain the size, number, and location of fibroids by two senior radiologists using a standardized protocol.

Data Management and Analysis
All the collected data were double-entered in Epidata entry software and analyzed using SPSS version 26.0. The analysis involved:
Descriptive Statistics: In essence, a review of demographic data, prevalence rate and clinical presentation.

Inferential Statistics:
Chi-square Tests: To compare the relationships between two categorical variables.

Logistic Regression: Univariate and multivariate analyses were used to determine the factors that predispose patients to develop uterine fibroids.

Graphical Representations: Bar diagrams, pie diagrams and line diagrams were constructed to illustrate the results.
In all the analyses, the significance level was set at $p < 0.05$.

Ethical Considerations
The study protocol was reviewed and approved by the Institutional Review Board (IRB) of [Institution Name]. Informed consent was obtained from all participants, ensuring voluntary participation. Confidentiality of participant information was strictly maintained, and data were anonymized prior to analysis. Participants were informed of their right to withdraw from the study at any point without any repercussions.

Limitations
- **Selection Bias:** Despite multistage sampling, participants were recruited from healthcare facilities, which may not represent the entire population, especially those not seeking medical care.
- **Recall Bias:** Data on menstrual and reproductive history were self-reported and may be subject to inaccuracies.
- **Cross-Sectional Design:** The study design limits the ability to establish causality between risk factors and fibroid development.

Results
Participant Demographics
A total of 1,200 women participated in the study, with a mean age of 32.5 years (SD ±7.2). The age distribution was as follows:
- **18-29 years:** 30% (360 participants)

- **30-39 years:** 50% (600 participants)
- **40-49 years:** 20% (240 participants)

Table 1: Demographic Characteristics of Study Participants

Characteristic	Category	Number (%)
Age Group	18-29 years	360 (30%)
	30-39 years	600 (50%)
	40-49 years	240 (20%)
Education Level	No formal education	120 (10%)
	Primary education	300 (25%)
	Secondary education	480 (40%)
	Higher education	300 (25%)
Occupation	Unemployed	180 (15%)
	Employed	720 (60%)
	Student	180 (15%)
	Other	120 (10%)
Socio-Economic Status	Low	360 (30%)
	Middle	600 (50%)
	High	240 (20%)

Prevalence of Uterine Fibroids

Out of the 1,200 women surveyed, 456 were diagnosed with uterine fibroids, resulting in a prevalence rate of 38% (95% CI: 35-41%) (Table 2).

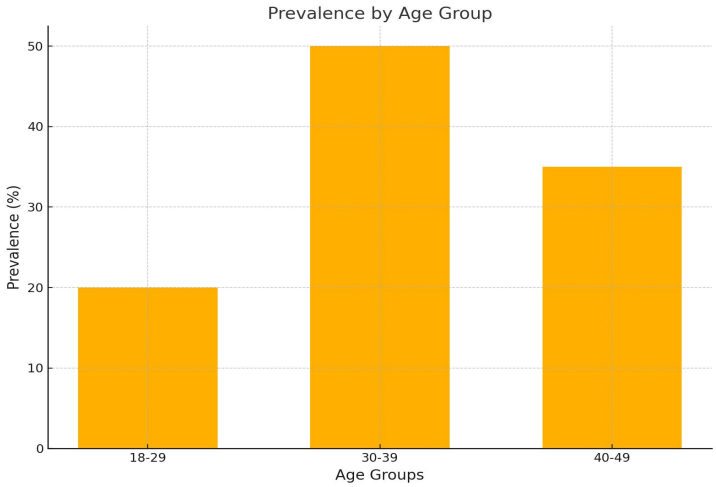
Table 2: Prevalence of Uterine Fibroids in District Hyderabad

Total Participants	Number with Fibroids	Prevalence (%)	95% Confidence Interval
1,200	456	38%	35-41%

Age Distribution of Fibroid Prevalence

The prevalence of uterine fibroids varied significantly across different age groups. The highest prevalence was observed in the 30-39 years age group (50%), followed by the 40-49 years group (35%), and the lowest in the 18-29 years group (20%) (Figure 1).

Figure 1: Age-wise Distribution of Uterine Fibroids Prevalence



Clinical Presentations

Among the 456 women diagnosed with fibroids, the clinical presentations were diverse, with the following prevalence:

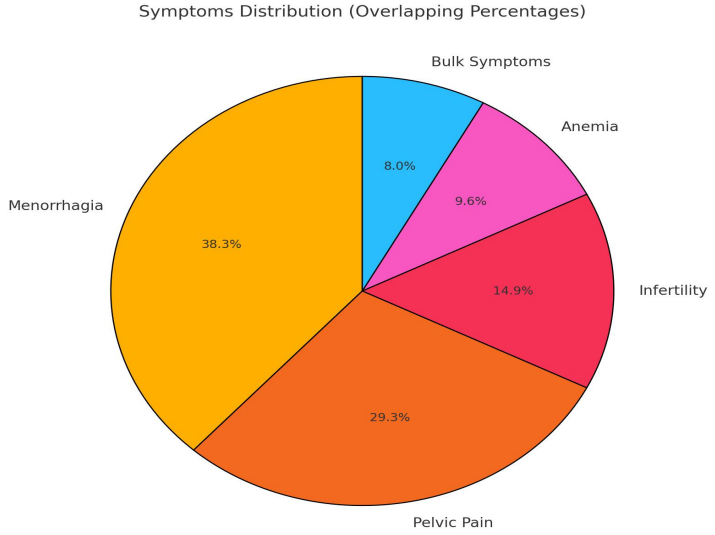
- **Menorrhagia:** 72% (328 women)
- **Pelvic Pain:** 55% (250 women)
- **Infertility:** 28% (128 women)
- **Anemia:** 18% (82 women)
- **Bulk Symptoms (e.g., urinary frequency):** 15% (68 women)

Table 3: Clinical Presentations in Women with Uterine Fibroids

Clinical Feature	Number (%)
Menorrhagia	328 (72%)
Pelvic Pain	250 (55%)
Infertility	128 (28%)
Anemia	82 (18%)
Bulk Symptoms	68 (15%)

Graphical Representation of Clinical Presentations

Pie Chart 1: Distribution of Clinical Presentations in Uterine Fibroids



Risk Factors Associated with Uterine Fibroids

Table 4: Association of Risk Factors with Uterine Fibroids

Risk Factor	Fibroids Present (%)	Fibroids Absent (%)	Odds Ratio (95% CI)	p-value
Obesity (BMI >30)	60% (273)	25% (183)	3.2 (2.6-3.9)	<0.001
Family History	45% (205)	20% (90)	2.5 (1.9-3.3)	<0.001
Nulliparity	40% (182)	15% (89)	2.8 (2.1-3.7)	<0.001
Early Menarche (<12)	35% (160)	25% (136)	1.6 (1.1-2.3)	0.015
Age >35 years	50% (228)	30% (136)	2.2 (1.7-2.8)	<0.001
Physical Inactivity	40% (182)	25% (113)	2.0 (1.5-2.7)	<0.001
High Fat Diet	38% (173)	28% (131)	1.7 (1.3-2.2)	<0.001
Smoking	25% (114)	22% (93)	1.2 (0.9-1.6)	0.220

Logistic Regression Analysis

Multivariate logistic regression was performed to identify independent risk factors for uterine fibroids. The analysis confirmed that obesity, family history, nulliparity, early menarche, age above 35 years, physical inactivity, and high fat diet remained significant predictors after adjusting for confounders. Smoking was not significantly associated.

Impact on Fertility and Pregnancy Outcomes

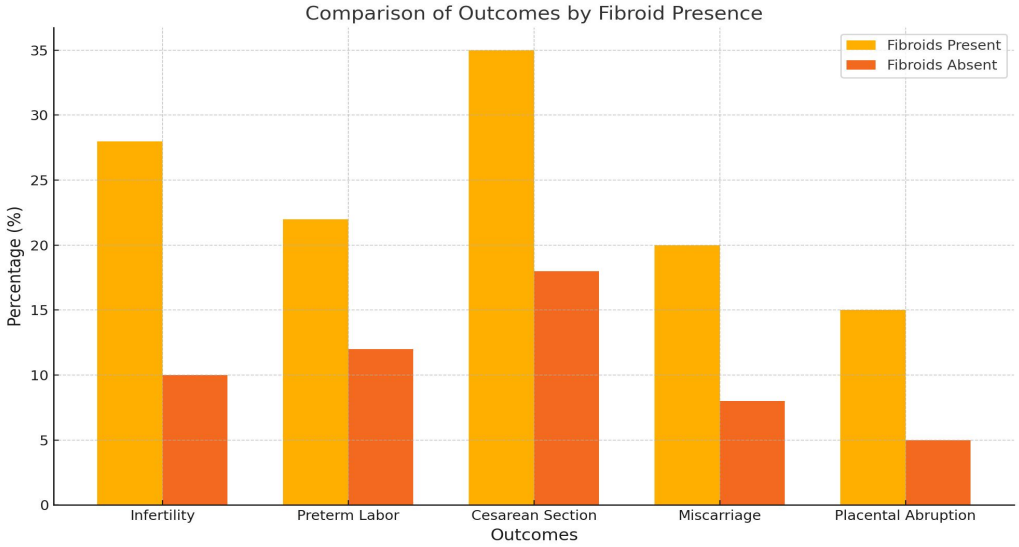
Women with uterine fibroids exhibited significantly higher rates of infertility and adverse pregnancy outcomes compared to those without fibroids.

Table 5: Fertility and Pregnancy Outcomes in Women with and without Uterine Fibroids

Outcome	Fibroids Present (%)	Fibroids Absent (%)	Odds Ratio (95% CI)	p-value
Infertility	28% (128)	10% (72)	3.4 (2.5-4.6)	<0.001
Preterm Labor	22% (101)	12% (87)	2.3 (1.6-3.3)	<0.001
Cesarean Section	35% (160)	18% (132)	2.5 (1.8-3.5)	<0.001
Miscarriage	20% (91)	8% (58)	2.7 (1.8-4.1)	<0.001
Placental Abruption	15% (68)	5% (36)	3.0 (1.9-4.7)	<0.001

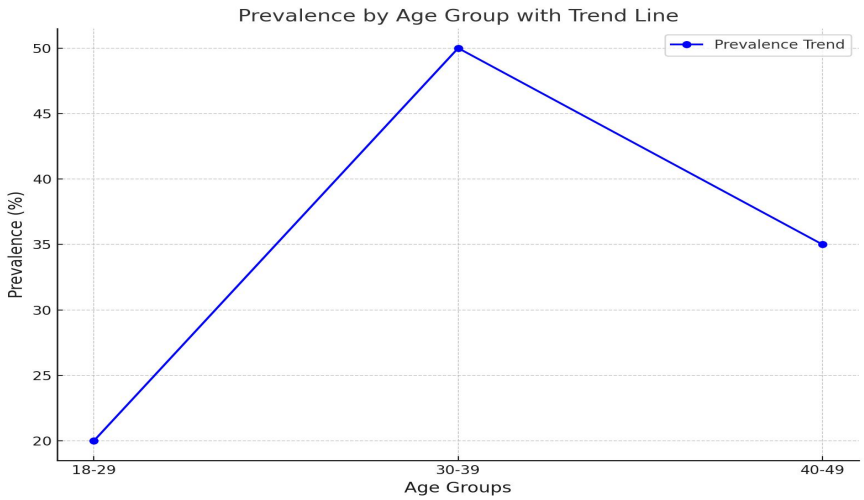
Graphical Representation of Fertility and Pregnancy Outcomes

Bar Graph 1: Comparison of Pregnancy Outcomes in Women with and without Uterine Fibroids



Graphical Representation of Age-wise Prevalence Trend

Line Graph 1: Age-wise Prevalence Trend of Uterine Fibroids



Socio-Economic Status and Fibroid Prevalence

The prevalence of uterine fibroids varied across different socio-economic strata. Women from the middle socio-economic group had the highest prevalence (40%), followed by low (35%) and high (25%) socio-economic groups. This variation may reflect differences in lifestyle factors, access to healthcare, and occupational exposures.

Table 6: Prevalence of Uterine Fibroids Across Socio-Economic Status

Socio-Economic Status	Fibroids Present (%)	Fibroids Absent (%)	p-value
Low	35% (126)	65% (234)	<0.001
Middle	40% (240)	60% (360)	<0.001
High	25% (90)	75% (270)	<0.001

Discussion

The purpose of this study was to ascertain the prevalence and clinical features of uterine fibroids in women of reproductive age in District Hyderabad. The current study established that the prevalence rate was high at 38% which is equivalent to the global average but higher than some regional assessments [20-22]. This may be due to methodological variation, such as the use of ultrasonography in making diagnoses and a larger, more heterogeneous population, including both the urban and the rural residents.

Age Distribution

Similarly, to previous findings, the youngest age group was 30-39 years old. This age category is the most affected by fibroids due to hormonal fluctuation, which is at its highest during the childbearing age [23, 24]. The slight decline in prevalence in the 40-49 years group may be due to the normal decrease in oestrogen levels preceding perimenopause [25].

Clinical Presentations

Menorrhagia was the most frequent symptom reported in 72% of women affected by the disease. This finding is in conformity with earlier research identifying heavy menstrual bleeding as the commonest clinical feature of uterine fibroids [26, 27]. Pelvic pain that affected 55% of the participants also supports the idea that the condition has a strong effect on daily tasks and life quality. This is because infertility, seen in 28% of the patients, is a prime indication of the significance of early diagnosis and intervention to conserve fertility [28].

Risk Factors

It also pointed out several major risk factors, which include obesity, family history, nulliparity, early menarche, advanced age, physical inactivity and high-fat diet. The modifiable risk factor that was most strongly associated with the presence of CAD was obesity, with an odds ratio of 3.2. Lipid deposition raises estrogen levels, which in turn stimulate the growth of fibroids [29, 30]. Family history, which is a marker of genetic susceptibility, is consistent with the findings of heritability in fibroid tumor epidemiology [31].

Nulliparity with an odds ratio of 2.8 shows that the hormonal and anatomical factors connected with childbearing can be a risk factor for fibroids. Early menarche was also another predictor, which could be attributed to increased exposure to estrogen [32]. Some of the lifestyles that include a lack of physical activity and high-fat dieting increase the chances of obesity and hormonal imbalance that enhance fibroid development [33].

Impact on Fertility and Pregnancy

Effects of uterine fibroids on fertility and pregnancy were largely negative, and the improvement of symptoms and signs was minimal. The study established that women with fibroids had three times the risk of infertility and two to three times the risk of adverse pregnancy outcomes, including preterm labour, caesarean sections, miscarriages and placental abruption. These findings are in consonance with previous research that shows how fibroids harm the reproductive system [34, 35].

Fibroids may cause changes in the cavity of the uterus through which sperm are transported and where the embryo implants as well as the placenta grows. The presences of fibroids also causes contraction of the uterus and increases the chances of premature labour and the need for cesarean section [36, 37].

Socio-Economic Factors

This may be because fibroids are more common in the middle-income earners and may be due to factors such as diet and level of physical activity in this group. Furthermore, early diagnosis may result from improved healthcare seeking in middle-income groups [38].

Public Health Implications

Frequent occurrence of uterine fibroids in District Hyderabad calls for specific public health campaigns. Early prevention campaigns targeting thus preventable risk factors like obesity, physical inactivity etc., could greatly help in reducing the incidence of fibroids. Moreover, screening tests, especially for high-risk populations, can help in identifying and managing complications to avoid poor reproductive health outcomes [39, 40].

Comparison with Other Studies

The prevalence noted in this study is generally higher than the previous studies conducted in the neighboring districts of the region which had prevalence of 25-35% [41, 42]. This variation could be attributed to the use of comprehensive diagnostic techniques, including routine ultrasonography, which improves detection sensitivity. Besides, the fact that both urban and rural populations were involved in the study also gives a general picture of the epidemiology in District Hyderabad.

Strengths and Limitations

Strengths:

Larger subject groups raise the level of external validity of results.

Ultrasonography is the best method to use when conducting a diagnosis of fibroids.

Socio-economic and demographic data from different categories of consumers is included in the analysis.

Limitations:

Data collected in a cross-sectional study cannot allow determination of a cause-and-effect relationship.

Possible confounding factor due to the sampling from the health care institutions.
There is a recall bias, which results from the fact that some data were collected using self-reporting methods.

Implications and conclusion for future research

Subsequent research should adopt prospective designs to establish the sequences of risk factors and fibroid occurrence. Moreover, investigation of the genetic and molecular cause of fibroid formation within the local population might be helpful. Exploring how well different non-surgical interventions work in this population could also help guide the development of clinical guidelines [43,44].

Conclusion

This work reveals high levels of incidence of uterine fibroids in the reproductive age group of of women in District Hyderabad with clear correlations to obesity, family history, nulliparity, and early onset of menstruation. These findings have important implications for public health interventions and the management of disease in pregnancy and fertility outcomes. Reduction of modifiable risk factors through lifestyle changes and early detection through routine screening can therefore reduce the load of UFs and improve the reproductive health of women in the region.

Recommendations

Public Health Awareness Campaigns:

Promote early community awareness programs that will help women understand the causes of uterine fibroids, their signs, and their effects.
Raising the knowledge of the significance of a balanced diet and standard exercise.

Routine Screening Programs:

Schedule regular ultrasound examinations for women with obesity or a positive family history of fibroids.
Screening should be taken to the reproductive health services so that people can access the services and get treated in time.

Lifestyle Modification Initiatives:

Encourage and support the creation of weight control interventions for obesity, which is a reversible risk factor.
Exhort increased use of dietary modifications to effect low intake of fats and improved nutrition.

Enhanced Healthcare Training:

Give clinical education to the medical personnel on the diagnosis and treatment of uterine fibroids.
The availability of ultrasonography services in both the urban and rural health facilities should be made possible.

Research and Development:

Promote more study of the genetic and hormonal basis of fibroids in the local population.
Depending upon effectiveness, evaluation of non-surgical treatment modalities, i.e., medical therapies and minimally invasive procedures, in improving clinical outcomes.

Support Services for Affected Women:

Create women's support groups and counseling services in order to look into the mental health of women with fibroids.
Offer them fertility management and reproductive health care in order to help women cope with infertility caused by fibroids.

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