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Original Research Article

Predictors and symptomatic burden of uterine fibroids among women in South-Eastern India: a cross-sectional survey analysis

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ABSTRACT

Background: Uterine fibroid is the most common pelvic tumor in women of reproductive age and are asymptomatic in at least 50% of affected women. Various risk factors are associated with development of uterine fibroids during this reproductive age. The present study established various associated risk factors increases the prevalence of uterine fibroid among reproductive age group and clinical symptoms burden of diagnosed case.
Methods: A cross sectional study design was used to collect samples for a period of six months in an OPD basis. Purposive sampling technique was used to select the 362 sample of reproductive age group (15-45 years) women in a tertiary care hospital, Southeastern India. Women diagnosed with uterine fibroid by ultrasonography were included as cases. Symptomatic features and associated risk factors of UF were collected through structure interview schedule.
Results: Point prevalence of uterine fibroid among women in reproductive age group during the period of six months was 20%. Majority of them were in the age group of 30-39 years. Demographic factor such as overweight and obesity and consume dairy products daily has increased the prevalence of UF, whereas use of oral contraceptive pills and normal BMI had inverse relationship with UF risk. Most of the cases reported of having menstrual disturbances like heavy bleeding, passes blood clots during menstruation, prolonged period, urinary symptoms and pressure symptoms were considered independent predicting factors for the occurrence of uterine fibroid.
Conclusions: Uterine fibroid is more prevalent among women of reproductive age causing various bleeding and renal symptoms that can have negative impact on quality of women's life.

Keywords: Determinants, Menstrual irregularities, Reproductive age group, Uterine fibroid

INTRODUCTION

Uterine leiomyoma is a highly prevalent, benign smooth muscle tumor of the uterus. They are the most common pelvic tumor in women of reproductive age and are asymptomatic in at least 50% of affected women.[1,2] The global prevalence rate compromises of 21.4% among 30-60 years age group and highest prevalence range of fibroids estimates is 3-20%, with African American and older women.[3,4] The frequency of uterine fibroid is presented differently among women of different age group. But cause of uterine fibroid is poorly reported yet represent an important gynecological pathology condition and mostly associated with abnormal uterine bleeding, pelvic pain and may have reproductive effects on infertility and adverse pregnancy outcomes.[4]

There is considerable evidence that estrogens and progestrogens proliferate tumor growth as the fibroids rarely appear before menarche and regress after menopause.[5,6] Hormonal disturbances and genetic alterations are postulated to contribute to the

development of uterine leiomyoma, although their precise functions are not completely understood.[7,8]

Fibroids develop in women between the ages of 30-50 years. Approximately 25% of Indian women in their reproductive years have noticeable fibroids. According to a 2010 World Health Organization report, fibroids affects between 20-25% of middle and later reproductive women, and close to 235 million women which represent 6.6% of global women population are estimated to have been affected worldwide.[3,9]

Literature shows that risk factors for development of uterine fibroids includes nulli-parity, early menarche, increased frequency of menses, history of dysmenorrhoea, family history of uterine fibroids, obesity, and age.[10,11]

There is less evidence of uterine fibroid prevalence among Indian women of reproductive age group and therefore, the aim of this study was to assess the prevalence of fibroids in present population of reproductive age group women and to discover possible risk factors for its occurrence and associated symptom burden.

METHODS

A cross sectional study was conducted among women of reproductive age group attending tertiary care hospital, Bhubaneswar, Odisha. The sample size was 362; it was calculated by open EPI software. Non-probability purposive sampling technique was used to select the sample.

The structured questionnaire was developed based on previous studies and literature review and validated by five experts from senior gynecologist and senior nursing faculties.

Content validity was measured by Content validity index (CVI) was 0.91, KMO coefficient of structured validity was 0.712 and reliability coefficient of the tool was measured by cronbach alpha, found to be reliable(r=0.7).

The tool consists section A: demographic variables such as age, marital status, weight, BMI, Hb%, parity, family history, dietary pattern, and section B: structured interview schedule containing 18 questions item based on clinical symptoms, physical activities, sexual functioning and psychological disturbance.

The data was collected from February to July 2018. During the data collection process, the women were interviewed in outpatient basis through structured interview schedule.

Ethical consideration was obtained by taking written permission from the authority of the hospital. Permission was obtained from Institutional Ethical Review Board, AIIMS, Bhubaneswar. Self-introduction and the purpose of the study to the participants were explained. Informed consent was obtained from the study samples and interviewed patients to get the information. Confidentiality and anonymity were assured.

Inclusion criteria

- Women of reproductive age group (15-45) years, who were undergone ultra sound during data collection period and diagnosed case of uterine fibroid were analyzed for finding the risk factors.

Statistical analysis

Data was analyzed using statistical package for Social Science programme version (SPSS) 20. Descriptive statistics like frequency and percentage were used to describe the demographic characteristics and determinants of uterine fibroid. Inferential statistics such as chi square test was used to find out the significant association between study variables.

RESULTS

Descriptive statistic

The result of the study was that overall point prevalence of diagnosed ultrasonography uterine fibroids was 20% and it ranged from 4.5% (20-29 years) to 9.4% (30-39 years), reaching 6.6% (40-45 years) among the age group of 15-45 years. The mean age of the women with uterine fibroid was 35 years.

Majority (20.2%) were married, multigravida (14.1%), primigravida (5.5%) and only 1.1% were nulligravida. There were less cases (6%) reported family history of uterine fibroid and 9.4 % had reported the history of taking oral contraceptive pills.

With respect to nutritional status, 6.1% were underweight, 11.3% were overweight and fewer proportions (3.3%) of women were normal weight. In regard to dietary pattern 15.7% were non-vegetarian, 17.1% had reported of taking regular dairy products.

Most of the participants were below the normal range of hemoglobin which accounts of 18.5% of women were suffering from anemia among the participants diagnosed with uterine fibroid.

Demographic factor such as overweight and obesity (p=0.000) and consume dairy products daily (p=0.000) has increased the prevalence of UF, whereas use of oral contraceptive pills and normal BMI had inverse relationship with UF risk (p= 0.005).

Other demographic variable such as age, marital status, parity, tobacco habits and hereditary factors were found not associated with uterine fibroid prevalence (Table 1).

Table 1: Association between the uterine fibroid and selected demographic variable among reproductive age women (n=362).

Characteristics	Non-diagnosed case		Diagnosed case		P value
	N	%	N	%	
Age					
20 to 29	70	19.3	17	4.7	0.709
30 to 39	115	31.8	34	9.4	
40 to 45	102	28.2	24	6.6	
Marital status					
Married	0	0	02	0.6	0.042
Unmarried	287	79.3	73	20.2	
BMI					
Underweight	71	19.6	22	6.1	0.286
Normal	146	40.3	12	3.3	
Overweight and obesity	70	19.3	41	11.32	
Parity					
Nulligravida	11	3.0	04	1.1	0.829
Primigravida	81	22.4	20	5.5	
Multigravida	195	53.9	51	14.1	
Family history of UF					
No	275	76.0	67	18.5	0.029
Yes	12	3.3	8	2.2	
Oral contraceptive history					
No	181	50.0	41	11.3	0.005
Yes	106	29.3	34	9.4	
Dietary pattern					
No regular dairy products	116	22.1	13	3.6	0.000
Regular dairy products	171	57.2	62	17.1	
Tobacco chewing					
No	240	66.3	58	16.0	0.204
Yes	47	13.0	17	4.7	
Hb% status					
Anaemic	264	72.9	67	18.5	0.465
Non anaemic	23	6.4	8	2.2	

Clinical symptoms burden in diagnosed uterine fibroid among reproductive age women

Risk factors of uterine fibroid are presented in the figures. 20% women experienced weight loss. More than half of the respondents (54%) had menstrual problems: among them 46% women experienced heavy bleeding, 44% had prolonged periods during menstruation, 32% complained bleeding between periods, 28% experienced frequent period and 34% felt pain during menstruation (Figure 1).

A quarter of participants complained of bowel and bladder symptoms: among them 34% experience frequent urination during the daytime whereas 23% experience frequent night-time urination, also 60% of them had complain of pressure symptoms (Figure 2).

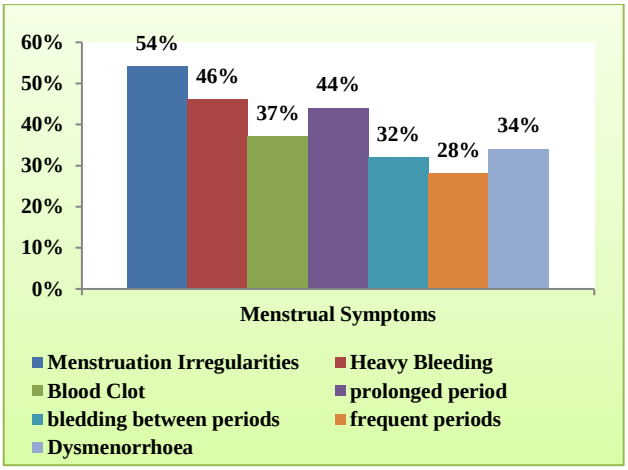

Figure 1: Menstrual symptoms.

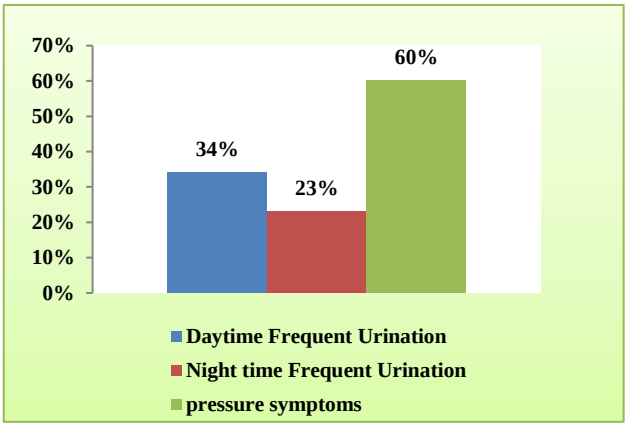

Figure 2: Bladder and bowel symptoms.

Some participant also had burden of altered physical, psychological and sexual functioning: 56% women experienced disturbance in the daily physical activities, 47% women felt stressful and embarrassment due to disease condition and only 8% women complained of pain during sexual intercourse. Also, very less participants (9%) had gynecological infections (Figure 3).

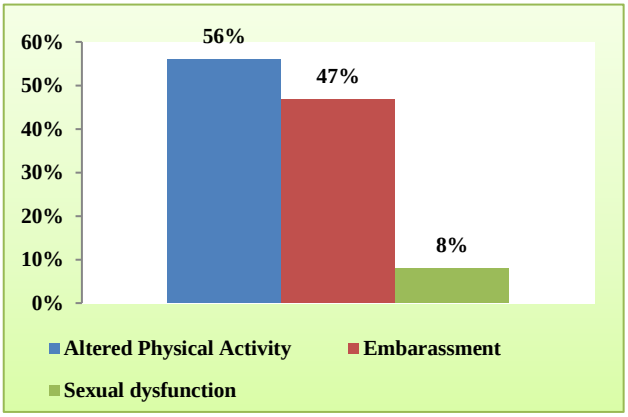

Figure 3: Physical, psychological and sexual functioning.

Association between clinical symptoms and prevalence of the uterine fibroid among reproductive age women

Table 2 depicts the major findings related to risk participants having heavy bleeding (p=0.000), passes blood clots during menstruation (p=0.000), prolonged period (p=0.001), participants feeling tightness of pelvic area (p=0.002) were found significantly associate with uterine fibroid.

Table 2: Risk factors of uterine fibroid among reproductive age women (n=362).

Characteristics	Non-diagnosed case		Diagnosed case		P value
	N	%	N	%	
Gynaecological infection					
No	264	72.9	64	17.7	0.079
Yes	23	6.4	11	3.0	
Gynaecological surgery					
No	265	73.2	65	18.0	0.124
Yes	22	6.1	10	2.8	
Weight loss					
No	251	69.3	38	10.5	0.000*
Yes	36	9.9	37	10.2	
Heavy bleeding					
No	195	53.9	29	8.0	0.000*
Yes	92	25.4	46	12.7	
Pass blood clots					
No	197	54.4	31	8.6	0.000*
Yes	90	24.9	44	12.2	
Fluctuation in duration-prolonged period					
No	173	47.8	29	8.0	0.001*
Yes	114	31.5	46	12.7	
Fluctuation in the length-frequent period					
No	161	44.5	38	10.5	0.400
Yes	126	34.8	37	10.2	
Bleeding between period					
No	161	44.5	51	10.5	0.410
Yes	126	34.8	24	32	
Tightness of pelvic area-pressure symptoms					
No	173	47.8	30	8.3	0.002*
Yes	114	31.5	45	12.4	
Frequent urination daytime					
No	227	62.7	49	13.5	0.013
Yes	60	16.6	26	7.2	
Frequent night-time urination					
No	251	69.3	58	16.0	0.027
Yes	36	9.9	17	4.7	
Altered daily physical activities					
No	115	31.8	33	9.1	0.538
Yes	172	47.5	42	11.6	
Stressful and embarrassment due to this disease					
No	196	54.1	40	11.0	0.015
Yes	91	25.1	35	9.7	
Altered sexual activity					
No	264	72.9	69	19.1	0.997
Yes	23	6.4	6	1.7	

*statistically significant

However, no association was found with uterine fibroid with family history of uterine fibroid (p=0.029), gynecological infection (p=0.079), gynecological surgery (p=0.124), habit of chewing tobacco (p=0.204), fluctuation in the length of menstruation (p=0.400), frequent urination daytime (p=0.013), Frequent night-time urination (p=0.027).

Also altered in physical and sexual function had no significant association with UF prevalence (Table 2).

Logistic regression model determining predictors for uterine fibroid among reproductive age women

To determine the predictors of uterine fibroid, forward stepwise method of logistic regression analysis was used for statistically significant factors listed in Table 3.

Logistic regression analysis showed that consume dairy products daily, menstrual symptoms like heavy bleeding, pass blood clots, prolonged period, urinary symptoms such as frequent urination in day and night time , pressure symptoms such as feeling tightness in pelvic area and stressed and embarrassment due to disease were considered independent risk factors for the occurrence of uterine fibroid but use of oral contraceptives pills and lower BMI has lowered the chance of occurring UF (Table 3).

Table 3: Multivariate logistic regression analysis on the occurrence of uterine fibroid among reproductive age women (n=362).

Characteristics	OR (95% CI)	AOR (95% CI)	P value
Oral contraceptives pills	0.72 (0.20-1.23)	2.05 (1.23-3.44)	0.006*
Low BMI	1.91 (1.34-2.48)	6.78 (3.83-12.02)	0.000*
Consume dairy products daily	1.17 (0.53-1.81)	3.23 (1.70-6.15)	0.000*
Heavy bleeding	1.21 (0.68-1.73)	3.36 (1.98-5.69)	0.000*
Pass blood clots	1.13 (0.61-1.65)	3.10 (1.84-5.24)	0.000*
Prolonged period	0.87 (0.35-1.39)	2.40 (1.42-4.05)	0.001*
Pressure symptoms	0.82 (0.30-1.34)	2.27 (1.35-3.82)	0.002*
Frequent urination daytime	0.69 (0.14-1.25)	2 (1.15-3.49)	0.014*
Frequent night-time urination	0.71 (0.07-1.35)	2.04 (1.07-3.88)	0.030*
Stressed and embarrassment due to disease	0.63 (0.11-1.15)	1.88 (1.12-3.16)	0.016*

*statistically significant

DISCUSSION

The findings of the study were discussed with reference to the objectives and hypothesis and with the findings of the previous studies. Uterine fibroid occurring as the most common pelvic tumor in women with a prevalence rate of 21.4% globally.[3] An international internet-based survey of 21,746 women which was done by online method approach and self-reported prevalence of uterine fibroids ranged from 4.5% (UK) to 9.8% (Italy), reaching 9.4% (UK) to 17.8% (Italy) in the age group of 40-49 years.[10] Whereas only 5% case of uterine fibroid reported in a survey conducted in US among 59411 women of aged 18-54 years and 6.83% among 2575 female patients in south western Nigerian population and 15% was reported among ultrasound-diagnosed fibroids in which more found in black women compared to white women and 21.1% in north east Slovenia.[11-14] The global prevalence rate is more close to Indian scenario 24% among 46-50 years age group in rural South Indian women which supports present study prevalence rate of 20% among women of reproductive age. [15]

This prevalence rate of UF was more among young age group <30 years, the peak of detected fibroids was at the age of 39, after which the prevalence of fibroids was decreasing until the age of 45 years. Advanced age above 45 was not studied in present study. Previous study also supports age of the patients is significantly associated with the prevalence of fibroids, lower rate found among younger women and increases to the peak at the age of 49 and decreased significantly after age of 50.[14] This can be justifiable that growth of fibroid is depending upon hormone level; therefore, the prevalence rate varied in different age groups.[16] Hence the fibroids may significantly reduce their size during menopause period due to exposed to lower levels of female sex hormones.[17]

The epidemiological factors for development of uterine fibroids includes nulli-parity, obesity, age, family history of uterine fibroids, prenatal hormone exposure, polycystic ovary syndrome, diabetes and hypertension.[10,11,18-23] Present study findings did not show any statistical significant with these epidemiological factors but more number of cases reported among advanced age. It was reported that obese and high body mass index increases risk of uterine fibroids compared with low BMI.[18,19,24,25] These results are consistent with present results showed that BMI in women was in average 0.9kg/m^2 higher with fibroids compared to women without fibroids. Present results showed that the prevalence of fibroids was higher (11.32%) in women with BMI between 26 and 29kg/m^2 than in women with a BMI between 17.5 to 23.9kg/m^2 (3.3%).

Some factors reduced UF risk and have like use of oral contraceptive or the injectable contraceptive depot medroxy progesterone acetate, smoking in women, with low body mass index and parity.[26,27] Also present study established an inverse relationship between history of taking oral contraceptive pills, consume dairy products daily and low body mass index with prevalence of uterine fibroids. Genetic and hereditary as the major cause and the genetic influence especially for early onset of uterine fibroid.[7,8,27] But present study found a very negligible percentage (6%) had family history of uterine fibroid and genetic exploration was not under the scope of present study.

Uterine fibroid cases are mostly asymptomatic and the symptoms of fibroid uterus found 81% of symptomatic patient comes with complains menstrual irregularities.[28] Present study found maximum cases complained irregularities during menstrual period (54%) and had more bleeding symptoms such as heavy bleeding (38%) prolonged bleedings (44%), bleeding between periods (32%), frequent periods (28%), dysmenorrhoea (34%). present study result is matching to the result published in previous studies reported more menstrual symptoms like menorrhagia, dysmenorrhea, metrorrhagia, polymenorrhea, and leucorrhoea.[15,28,29]

Present study reveals participants also reported about bowel and bladder symptoms, among them 24% experience frequent urination during the daytime whereas 15% experience frequent night-time urination, 44% experienced tightness of pelvic area and also 8% women complained of pain during sexual intercourse in case of fibroids present near the vagina or cervix. Study finding was supported with previous studies which shows that women mostly experienced lower back pain, bladder or bowel symptoms and complained of pain during sexual intercourse.[30]

Present study also explored patient experiencing physical and psychological disturbances due to disease process found 59% women experienced disturbance in the daily physical activities, self-reported stress among 27% women and 35% women felt embarrassment due to disease condition. A supportive study agreed the symptom burden of uterine fibroid influences the quality of women's life.[30]

Menstrual irregularities like bleeding symptoms, blood clots during menstruation, fluctuation in the duration of menstruation, renal symptoms and pressure symptoms are predictors of uterine fibroid risk depicted in present study findings. These results are consistent with other previous studies.

The literature reviews related lifestyle risk factors of UF including diet, physical activity and stress and occupational intensity on uterine fibroids, has no significant association with risk of uterine fibroid in women.[31] Present study found the similar reports that there is no effect of gynecological infection, gynecological surgery, habit of chewing tobacco, altered physical and sexual functions on prevalence of uterine fibroid with history bur dietary habits of taking more dairy products had impact on uterine fibroid risk.

CONCLUSION

A study of 75 cases of fibroids was made over a period of six months among 362 samples which supports uterine fibroids are the commonest tumour of the reproductive age. Uterine fibroids are not monopoly of null parity but also to multigravida. The incidence of anaemia, heavy bleeding with clots and metrorrhagia in fibroids is quite high to a contrary which effect to psychological condition by embarrassment due to disease condition which a result interferes daily activity. At times fibroids are asymptomatic and do not require treatment, contrast to this sometimes sever symptoms like menorrhagia, dysmenorrhoea and pressure symptoms occur which makes treatment necessary which can have a negative impact on different aspects of women's life.

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