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*Research Article*

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# Uterine Fibroids in Tripoli: A Study of Prevalence, Risk Factors, and Reproductive Health Outcomes

**Sleman. A. Aljared[1@], Mohamed. A. Aborokia[1], Magfera .A. Alselami[2], Nour AlhudaA. Dakhil [2], Sohib. N. Alrandi [2], Emtenan. F. Alkaraz[2] and Hanan.R. Swess[3]**

[1]Department of basic nursing, Nursing College University of Tripoli, Libya

[2]Department of Anesthesia and intensive care, Technical Medical College, University of Tripoli, Libya

[3]Ministry of Education Tripoli, Libya

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## ABSTRACT

Uterine fibroids (UF) (also called leiomyoma) are one of the commonest female benign tumors, particularly of women of reproductive age. Although, they are very common and affect women widely in a variety of ways, UFs have received very little attention regarding general awareness and epidemiology in Libya.

*Objective:* The objective of this study was to establish the prevalence of uterine fibroids and evaluate their risk factors and complications in women in Tripoli, Libya.

A hospital-based cross-sectional study was carried out in gynecology department of Tripoli Medical Centre from February to April 2023. Three hundred women were sampled using convenient sampling method and data was collected via a structured, self-administered questionnaire concerning demographic factors, reproductive history, clinic presentation and suspected risk factors. Diagnosis of uterine fibroid was based on clinical records and records available in records section. Data analysis was conducted using SPSS version 26 at $P < 0.05$ significance level.

Uterine fibroids occur at 63.3% (190/300) and showed significant correlation with age and between 41-50 age groups of the women. There was also significant correlation with Obesity and mode of delivery. Most of the complaints were abnormal bleeding and heavy menstrual bleeding while infertility was found to be the commonest complication.

*Conclusion*: Uterine fibroids are common in women of Tripoli and are associated with a lot of modifiable and non-modifiable risk factors like obesity and age. Awareness and early diagnosis along with effective health education program should be provided to lessen the burden and morbidities related to this disease.

***Keywords-*** *Uterine fibroids; Leiomyoma; Benign tumor; Hysterectomy; Hysteroscopy.*

## INTRODUCTION

Uterine fibroids (UFs) are the most frequent benign tumors of the female genital tract, found worldwide in women of reproductive age.[1] Although they are common, there is still not enough information available about their burden among Libyan women.[2] In general, the prevalence of UFs ranges from under 5% to over 60% of women in various populations[3-4] which might be due to differences in genetics, environment and lifestyle

UFs primarily occur in women of late reproductive age, and are often found in those >40 years of age.[5] Risk factors identified include increasing BMI, hormonal influences, low parity and genetic background.[6-7]

Differences in racial predisposition have also been demonstrated, with UFs occurring with greater frequency and severity in women of African heritage.[8]

Clinically, UFs can present with symptoms that include pelvic pain, abnormal bleeding and an anemia as well as urinary and gastrointestinal pressure symptoms.[9,10] Many of these will affect quality of life and may result in poor pregnancy outcomes and infertility.[11]

The nature of fibroids (size, quantity and site) are factors of disease severity and reproductive outcome.[12] Large fibroids and location of fibroids have been found to be at increased risk of infertility and spontaneous miscarriage.[13] Due to lack of local data on UFs and the high burden it imposes on the health sector, additional study will be beneficial to provide clearer understanding on their epidemiology in Libya.

*Study objectives*

The objectives of this study were to determine the incidence, the risk factors, and the complications of uterine fibroids in women residing in Tripoli, Libya.

## MATERIALS AND METHODS

***Study design and setting:***

A hospital based cross-sectional study was conducted in Tripoli Medical Centre, Tripoli, Libya to investigate the prevalence, risk factors, and complications of Uterine Fibroids among women attending gynecology department. The study was conducted during three months from February 2023-April 2023.



@ Author to whom correspondence should be addressed: *Prof. Sleman. A. Aljared*, Tel*: +218 91 3306414; e-mail: S,elgared@uot.edu.ly*

***Study population and sampling:***

Women presenting at the gynecology unit throughout the study duration constituted the study population. A total of 300 participants were recruited by using convenience sampling method.

***Inclusion and exclusion criteria:***

*Inclusion criteria*

• Women 20-70 years old.

• Women attending the gynecology clinic during the study period.

*Exclusion criteria*

• Women less than 20 years of age or over 70 years of age.

***Data collection methods:***

The data were collected by a well-structured, self-administered questionnaire to collect data on Sociodemographic features, obstetric and gynecological history & signs and symptoms related to uterine fibroids.

Diagnosis of uterine fibroids was verified from clinical record and or clinician assessment. Patients were divided into groups of symptomatic and asymptomatic with different grades of symptoms (mild to severe).

***Statistical analysis:***

Data were coded, cleaned and entered into a SPSS version 26 software package for analysis. Descriptive statistics were used to describe the data; categorical data will be presented as frequencies and percentages and continuous variables will be presented as means and standard deviations where applicable. Relationships between variables could be tested using appropriate tests, such as chi-square, and statistical significance levels were established with $P < 0.0$

## RESULTS

***Demographic and Clinical Characteristics of Participants:***

300 women participated in the study in which 38% of women were between 41-50 years, while 32% were between 31-40 years and 10% between 20-30 years. 62.7% of women were married while 37.3% were single. 32.3% women had had a caesarean section, while 23.3% had had a vaginal delivery. 44.3% did not give an obstetric history. The results demonstrated that 64.7% of women were obese (Figure 1 & 2).

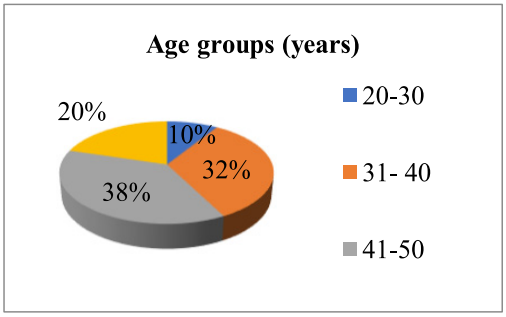



**Figure 1:** Shows age groups

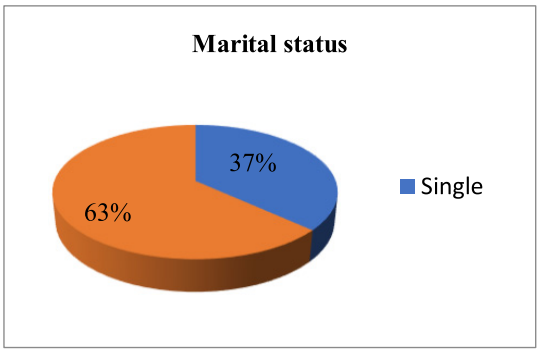



**Figure 2:** Shows marital status.

***Comparison between uterine fibroids group and control group:***

Ninety-six, 190 women with uterine fibroids were compared to 110 healthy women of controls.

There was a significant relationship between the age and uterine fibroids ($P$= 0.02) where the age of majority of uterine fibroids patients were 41-50 yrs (52.6%) while that of majority controls was 31-40 yrs (50.9%).

No significant association was noted between the marital status and fibroids ($P$= 0.632).

Mode of delivery had a significant relationship with uterine fibroids ($P$= 0.05) where 70.6% of the women had CS delivery and only 38.5% of women in control groups had CD. But 61.5% of the women controls had VD where only 29.4% of fibroid group have VD.

There was a significant association between obesity and uterine fibroids ($P$= 0.03) 85.8% women with fibroid were obese compared to 28.2% controls (Figures 3-6).

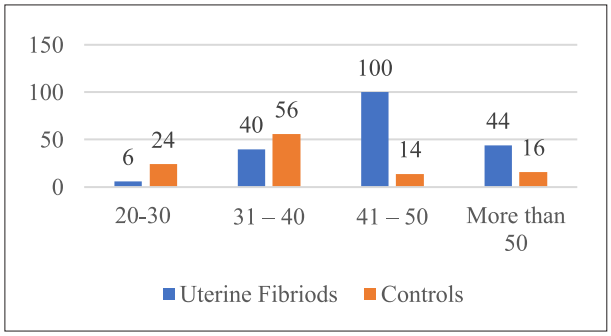



**Figure 3:** Shows age groups

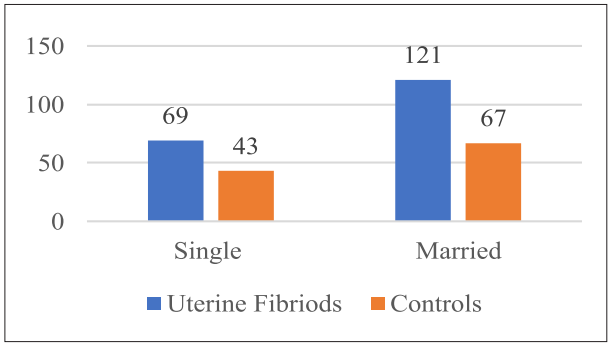



**Figure 4:** Shows marital status

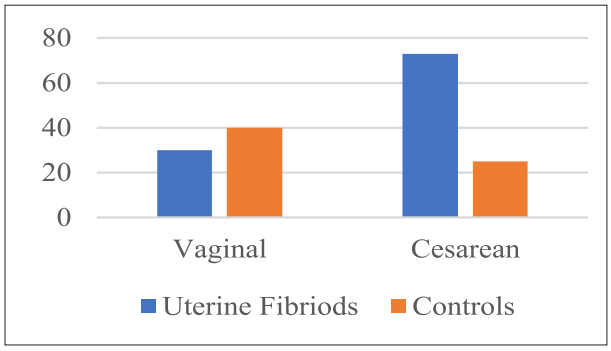



**Figure 5:** Shows type of delivery.

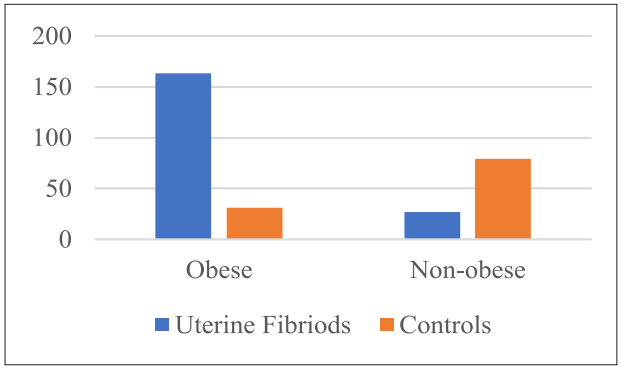



**Figure 6**: Shows obesity status.

***Residential distribution:***

The distribution of patients according to areas of residence was shown as follows: the highest rates were seen in the Ain Zara and El-Hadba areas (15.8%) and (11.1%), respectively. Abu Salim and Souq El-Joma appeared as in 10% and 7.4%, whereas others were only representing by small amounts: Al-Khoms, and Sebha (0.5%, respectively) (Table 1).

**Table 1:** Displays residential area of women diagnosed with uterine fibroids.

| Residential area | Frequency (n) | Percentage (%) |
|---|---|---|
| Abo-Salim | 19 | 10.0% |
| Ain-Zara | 30 | 15.8% |
| Al-Drebi | 15 | 7.9% |
| Al-Hadba | 21 | 11.1% |
| Al-Khoms | 1 | 0.5% |
| Al-Madina | 11 | 5.8% |
| Al-Zawia | 2 | 1.1% |
| Fashloum | 9 | 4.7% |
| Gergaresh | 4 | 2.1% |
| Ghout Al-Shaal | 3 | 1.6% |
| Gorji | 3 | 1.6% |
| Hay Al-Andalus | 4 | 2.1% |
| Janzour | 8 | 4.2% |
| Salah Al-Deen | 13 | 6.8% |
| Sebha | 1 | 0.5% |
| Souq Al-Joma | 14 | 7.4% |
| Tajoura | 19 | 10.0% |
| Tariq almatar | 13 | 6.8% |

***Characteristics of Reproduction and Pregnancy*:**

Most patients with uterine fibroids were not pregnant when diagnosed (98.9%) and only 1.1% were pregnant at the time of diagnosis. These pregnancy diagnoses were all made in the third trimester.

With regard to parity, over one half of patients had borne children (53.7%) and one half had not (46.3%) (Table 2).

**Table 2:** Shows reproductive history and pregnancy characteristics of participants with uterine fibroids.

| Characteristic | Frequency (n) | Percentage (%) |
|---|---|---|
| Pregnancy status at diagnosis | | |
| Pregnant | 2 | 1.1% |
| Not pregnant | 188 | 98.9% |
| Month of pregnancy diagnosis (if yes) | | |
| 1-3 (First trimester) | 0 | 0% |
| 4-6 (Second trimester) | 0 | 0% |
| 7-9 (Third trimester) | 2 | 100% |
| Maternal status | | |
| Yes | 102 | 53.7% |
| No | 88 | 46.3% |

***Medical and Hormonal Profiles*:**

We found a high incidence of co morbid disease in women with fibroids, vitamin D deficiency being reported in 90% of cases, and anemia in 96.8%. Hormonal imbalance was extremely common (95.3%) only a few participants admitted to being on diet (1.1%) (Figure 7).

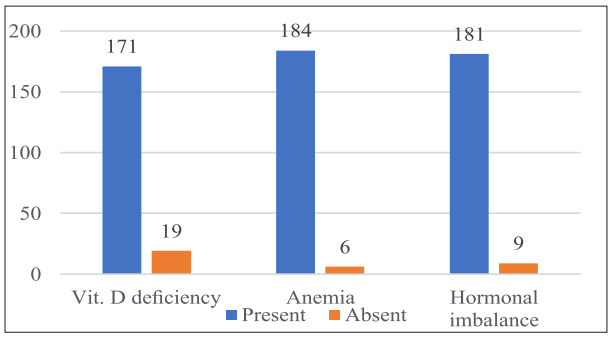



**Figure 7:** Shows medical conditions of UF patients.

***Risk Factors*:**

More than majority of the respondents denied having any family history of uterine fibroids (88.4%). Regarding complexion the respondent were light (60.5%) and dark (39.5%).

From the above parity shows the respondent were having children from 2 to 4 (51%) and the nulliparous are (46.3%) (Table 3).

**Table 3:** Displays risk factors of UF participants

| Characteristic | Frequency (n) | Percentage (%) |
|---|---|---|
| Family history of uterine fibroids | | |
| Yes | 22 | 11.6% |
| No | 168 | 88.4% |
| Race | | |
| Dark-skinned | 75 | 39.5% |
| Light-skinned | 115 | 60.5% |
| Parity | | |
| 0 (null) | 88 | 46.3% |
| 1 (low) | 14 | 7.3% |
| 2 – 4 | 52 | 27% |
| 5 – 7 (high) | 33 | 17.4% |
| No response | 3 | 1.5% |

***Clinical picture (signs & symptoms)*:**

The common symptoms of UFT seen in women were bleeding and profuse menstrual bleeding (41.6%, 27.9%). Endometrial hyperplasia was 10.5%.

Other less common signs and symptoms were back pain 4.7%, pain and pressure in pelvic region 3.7%, urinary symptoms. Only very small number women had no signs and symptoms (1.1%) (Table 4).

**Table 4:** Shows the symptoms experienced by UF patients.

| Symptom | Frequency (n) | Percentage (%) |
|---|---|---|
| Backache | 9 | 4.7% |
| Bleeding | 79 | 41.6% |
| Heavy menstrual bleeding | 53 | 27.9% |
| Menstrual irregularities | 2 | 1.1% |
| Abdominal swelling | 1 | 0.5% |
| Dysuria | 1 | 0.5% |
| Frequent urination | 4 | 2.1% |
| Endometrial hyperplasia | 20 | 10.5% |
| Painful intercourse | 1 | 0.5% |
| Pelvic pain or pressure | 7 | 3.7% |
| Uterine prolapse | 3 | 1.6% |
| Infertility | 9 | 4.7% |
| Miscarriage | 1 | 0.5% |
| No symptoms | 2 | 1.1% |

***Complications*:**

Most common complication was infertility (4.7%) whereas miscarriage was observed at only 0.5% (Table 5).

**Table 5:** Shows frequency of UF complications.

| Complication | Frequency (n) | Percentage (%) |
|---|---|---|
| Infertility | 9 | 4.7% |
| Miscarriage | 1 | 0.5% |

***Treatment outcomes:***

Significant association was found between treatment and cure status ($P$<0.001).

The outcome of highest cure rate (93.1%) was surgery, whereas the partial cure rate (100%) was achieved in medical management. There was no change in condition after diet manipulation (Table 6).

**Table 6:** Chi-square test displays the relationship between therapeutic intervention and cure status in UF patients.

| Therapeutic intervention | Cure status | | Total | *P*-value |
|---|---|---|---|---|
| | Complete healing (n=175) | Partial healing (n=15) | | |
| Medication (%) | 0 (0%) | 2 (100%) | 2 | 0.001 |
| Dietary modification (%) | 0 (0%) | 0 (0%) | 0 | |
| Surgical procedure (%) | 175 (93.1%) | 13 (6.9%) | 188 | |

***Diagnostic modalities*:**

MRI was the highest among the diagnostic modality used (98.4%) followed by US (50.5%). CBC and Biopsy was used in 44.2% and 11.6% respectively (Table 7).

**Table 7:** Displays the medical test used to diagnose UF patients.

| Diagnostic test | Frequency (n) | Percentage (%) |
|---|---|---|
| Complete Blood Count (CBC) | 84 | 44.2% |
| Ultrasound | 96 | 50.5% |
| Magnetic Resonance Imaging (MRI) | 187 | 98.4% |
| Biopsy | 22 | 11.6% |

***Tumor characteristics*:**

Majority of cases were unicentric tumors (61.1%) with the mean size of tumors being 4.5± 3.6 cm. Small sized tumors (< 5 cm) were highest (62.5%) compared to medium sized (31.1%) and large sized tumors (6.4%).

Anatomical location was most often intramural (90.5%), followed by subserosal (20.5%) and submucosal (13.7%) (Figure 8). Rare cases were calcified leiomyoma and cervical fibroids (0.5% each) (Table 8).

**Table 8:** Shows the clinical characteristics of tumors in UF patients.

| Characteristic | Frequency (n) | Percentage (%) |
|---|---|---|
| Number of tumors (Mean ± SD = 1.6 ± 0.9) | | |
| Single | 116 | 61.1% |
| Multiple | 74 | 38.9% |
| Size of tumor (in cm) (Mean ± SD = 4.5 ± 3.6 cm) | | |
| Small (<5 cm) | 187 | 62.5% |
| Medium (5 – 10 cm) | 93 | 31.1% |
| Large (>10 cm) | 19 | 6.4% |
| Location of tumor | | |
| Intramural | 172 | 90.5% |
| Subserosal | 39 | 20.5% |
| Submucosal | 26 | 13.7% |
| Calcified leiomyoma | 1 | 0.5% |
| Cervical fibroid | 1 | 0.5% |

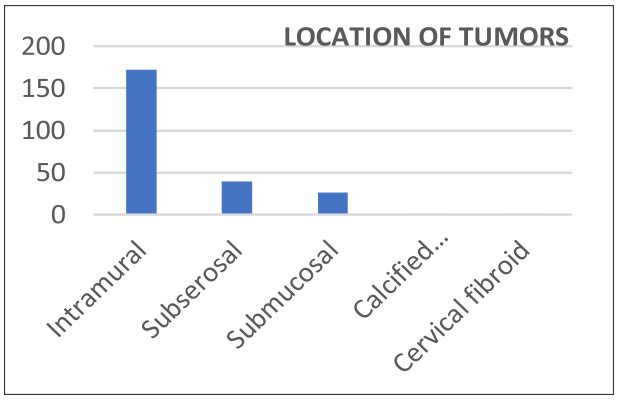



**Figure 8:** Shows location distribution of tumors.

## DISCUSSION

Uterine fibroids (UFs) are still among the most prevalent benign gynecological neoplasms worldwide, and are considered a major issue of public health, affecting women quality of life and fertility. In the present work the incidence of UF among women living in Tripoli was 63.3%, which is considered high although consistent with the incidence recorded in other series, in particular for women living in the developing countries and of black African race.[12,13] These different values may be influenced

by several factors, including diagnosis modalities, ethnicity, genetic background as well as environmental and lifestyle parameters.[14]

Age was also found to be one of the significant risk factor in this study; having the highest rate among women aged 41-50 years. This study corroborates the findings from others that increase in fibroid growth was associated with increased reproductive age. This can be attributed to the increase period of exposure to estrogen and progesterone. [15,16] It further adds credence to the theory that fibroids are hormono-dependent tumor that proliferates with age.[17]

In this investigation, marital status was not statistically associated with the prevalence of UFs ($P$=0.632). The present findings are in line with results from other investigators who proposed that marital status itself does not directly predict the risk but influences it indirectly through reproductive practices, such as parity and contraception .[18] In light of this finding, the current result appears to be biologically appropriate.

There was a statistically significant correlation between mode of delivery and the presence of uterine fibroids, with an elevated rate of Cesarean section in this population. Such findings were substantiated by previous literature showing that UFs correlate with a higher rate of obstetric complications, including malpresentations, obstructed labor, and Cesarean delivery.[19,20]

In this study obesity was also found to be a significant risk factor as there were more obese women in the fibroid group than in controls ($P$<0.05). This result is in accord with the increasing evidence suggesting a connection between obesity and an increased fibroid risk due to excessive estrogen, chronic inflammation and change in adipokine signaling.[21,22]

The clinical manifestation presented in this study; abnormal uterine bleeding and heavy menstrual bleeding, corroborates with worldwide literature on identifying this symptom group as the leading cause of UFs.[25] These can have detrimental effects on the patients' quality of life and cause complications, such as anemia.

As for side effects, the most frequently encountered was the loss of fertility. This agrees with other previous investigations on uterine fibroids which reported the detrimental effects of the latter on fertility, primarily due to the alteration of uterine cavity configuration and endometrial receptivity.[26]

The study also mentioned a significantly higher incidence of vitamin D deficiency in fibroid women. Recent studies suggest that vitamin D may have an anti-fibroid effect.[27]

Surgery provided the highest cure rate in the present study, which agrees with the existing treatment recommendation.[28]

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