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Research Article

## Studying the effect of some factors on the high incidence of uterine fibroid in Libyan women

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### ABSTRACT

**Background:** Uterine fibroids (UF), they are also called uterine leiomyoma's or myomas, are benign growth of smooth muscle of the uterus or womb. The body of uterus consists of 3 layers ;serosa, myometrium and endometrium. The myometrium is composed of bundles of smooth muscle and connective tissue. This study performed to investigate the reasons of high incidence of UF among Libyan women.

**Methods:** The Factors implicated in this case are analyzed using questionnaire on a random patient sample (152 cases) within (2010-2014) from the archive of Aljalaa hospital.

**Results:** Results show that, UF could affect women in young ages and above 40 years as well (P = 0.14). Marital status and the race of the patients significantly affect the rate of UF. The number of UF increased among married and white women comparing with single one and black one (P = 0.00) respectively. UF cases in the women holding O+ blood group were significantly higher than other groups (P=0.00). The educated women exhibit significant decrease in the UF incidence compared with less education status (P=0.00). Both normal delivered mode women and those received contraception pills showed a significant high rate of UF comparing with caesarian cut and with non-treated group (P=0.00), respectively. Menorrhagia was significantly higher than abdominal pain and infertility. Recurrent and family history was invaluable in UF incidence. Its ratio was significantly higher among women with no previous history and who have no family history (P=0.00). Myomectomy was significantly different from other choices; trans-abdominal hysterectomy and others (P=0.00).

**Conclusions:** According to our results, marital status, hormones disturbances, life style including stress factors, race and knowledge about the case are the most implicated causes in the incidence of the case. Further studies on the ultra-structural level (Model) are needed to verify the possible role/s for genes.

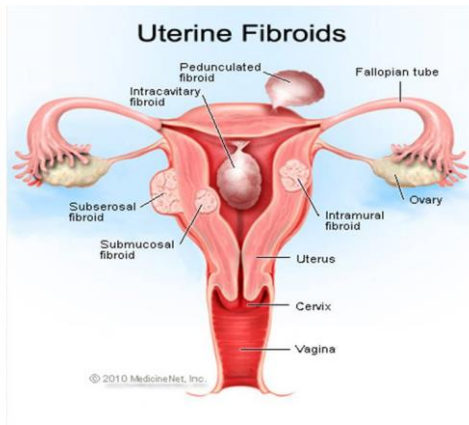
**Keywords:** Leiomyoma; Fibromyoma; Myoma; Fibroids; Libyan women

### INTRODUCTION

Uterine fibroids (UF), also known as uterine leiomyomas or myomas, benign growth of smooth muscle of the

uterus or womb.<sup>1</sup> The body of uterus consists of 3 layers: serosa, myometrium and endometrium. The myometrium is composed of bundles of smooth muscle and connective tissue.<sup>1-3</sup>

Fibroids can grow in four different locations: 1) in the muscle wall of the uterus (myometrial), 2) just under the surface of the uterine lining (submucosal), 3) just under the outside lining of the uterus (subserosal) and 4) on a long stalk on the outside the uterus or inside the uterus (pedunculated) that may grow in mass to several kilograms<sup>1,2,4</sup> as in Figure 1.



**Figure 1: Uterine fibroids.**

Approximately 80% of women will have fibroids in their lifetime although some of affected women show no fibroid symptoms. Other gynecologists have reported that highest percentages of UF were recorded among African, Eastern and Chinese women respectively, comparing with low incidence in the Europeans. Moreover, uterine fibroids could exist at an earlier age (30-40 years) in the African descent's women. However, a medical report by Borkan recorded that UF is rarely to affect women under age 20.<sup>2-8</sup>

### Complications

It is important to concern that fibroids themselves do not require treatment but women with fibroids can develop complications as a result of fibroids including menstrual disturbances such as menorrhagia, dysmenorrhea and inter-menstrual bleeding, pressure symptoms, bowel disturbance and chronic pelvic pain. Fibroids can also cause recurrent miscarriage, infertility, premature labor, and labor complications. It is because of symptoms that doctors may suggest treatment for a fibroid. However, a substantial majority of women with fibroids are able to have successful pregnancies unless the uterine cavity is unusually distorted.<sup>9</sup>

The cause of fibroids is still unknown. Fibroids seem to respond to the female hormones estrogen and progesterone.<sup>1</sup> Some women have specific genes that may predispose them and their families to fibroids and lifestyle and reproductive factors influence fibroids. Some fibroids grow with time and others shrink. Fibroids can also have growth spurts where they grow quickly over a short period of time.<sup>2</sup>

In fact, UF classified into three main types as in Figure 1, a) *Sub mucosal*: these grow just underneath the inner uterine lining.

b) *Intramural*: these grow within the muscular wall of the uterus in between layers of muscle.

c) *Subserosal*: these grow on the outside of the uterus as reported by Trehan, 2009.<sup>11</sup>

Whilst a hysterectomy (removal of the uterus) is often used in order to treat fibroids, this is not an option for patients wishing to maintain their fertility and organs, and hence a myomectomy is performed despite the fact that fibroid might grow again.<sup>4</sup>

### METHODS

Uterine fibroids (UF) are benign tumor of the uterus and as no one so far knows the real implicated factor/s influence it's high incidence among Libyan women. Our study was aimed to make an accurate and wide survey covering different cities in Libya using the recorded information that filed during 2010 to 2014 at Aljalaa Hospital in Tripoli, as this Hospital receives such cases from many Libyan cities. We have used analytical information's questionnaire from randomly chosen one hundred fifty two (152) of uterine leiomyoma patients.

Files of the studied cases were taken from the archive of Aljalaa hospital and treated manually by specialists under control of the medical archive managers and supervised by Dr. Abdulmonem M. Eljadi. The corporative team in this study has designed a questioner form (see below) to collect the required information from 152 cases. Afterwards, the information was under going to certain classification according to date and selective criteria that has been chosen before evacuated in tables for statistical analysis.

### Statistical analysis

Data are expressed as P values and Chi-square test analysis was carried out to assess significant differences among cases we have examined.<sup>12</sup> Statistical analyses were performed using SPSS software. Differences were considered statistically significant when  $p < 0.05$ .

### RESULTS

#### *Effect of age of women on the incidence of uterine fibroid (UF):*

By applying of questioner that worked on many factors or aspects of our hypotheses- one of them or more than one might play an important role in the high incidence of UF among Libyan women. The data from 152 woman suffering of different stages of uterine fibroid (UF) from different cities in Libya was evacuated manually.

As shown in Figure 2A, the 44.10% of UF incidence was not significant by advanced the age compared with the young ages, the women above 40's were more susceptible

in which the difference between 55.90 % of UF incidence of both categories; less than 40's and above was not significant (P = 0.14).

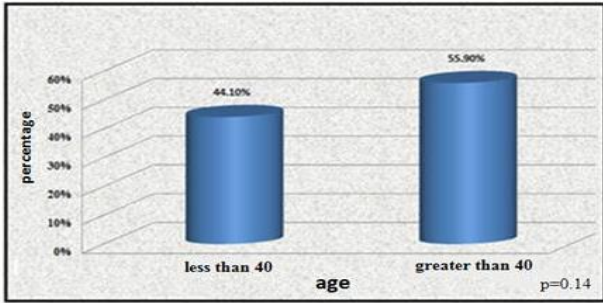


Figure 2A: Effect of age on uterine fibroid.

As shown in Figure 2B, the occurrence of UF was in 59.30 % in the married women comparing with single and other categories. The analysis shows that difference on number of cases among married female, single and divorced for example was extremely significant (P = 0.00).

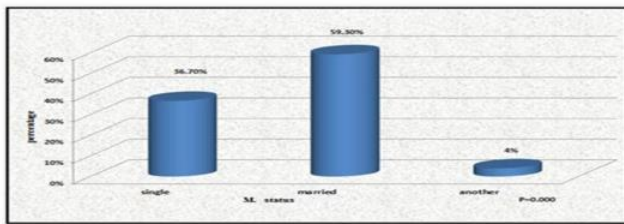


Figure 2B: Effect of marital status on uterine fibroid.

As shown in Figure 2C, from the random sample we have choose, the different of UF incidence among Libyan white women was significant (62.60%) comparing with Libyan black and others respectively with (P=0.00).

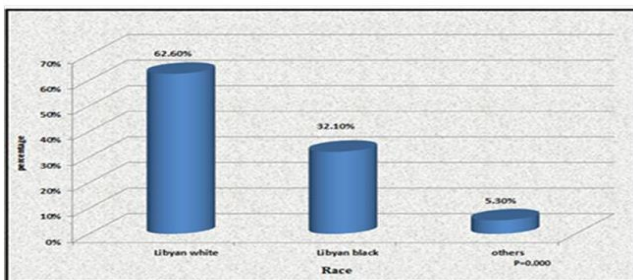


Figure 2C: Effect of race on uterine fibroid.

From the sample that collected randomly and as shown in Figure 3A, the incidence of uterine fibroid among Libyan women originated from Tripoli, was significantly higher (45%), than the cases among those from different cities (P = 0.002).

As shown in Figure 3B, the incidence of UF was high (45%) between the women holding O+ blood group and

significantly different(P=0.00), from those holding blood groups A and B which recorded as 28% and 20%, respectively.

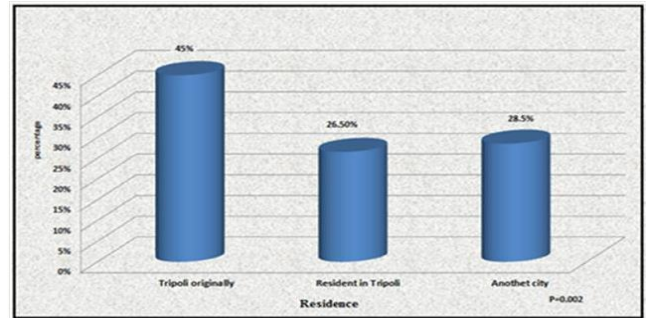


Figure 3A: Effect of residence on uterine fibroid

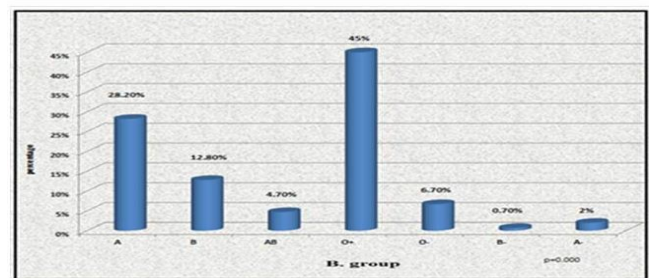


Figure 3B: Effect of Blood group on uterine fibroid.

As shown in Figure 3C, the incidence of UF between the highly educated women was significantly lower (6.8 %) (P=0.00), than the incidence among other two categories (reasonable educated women and house wives) where the percentages of the UF incidence were 45% - 50% respectively.

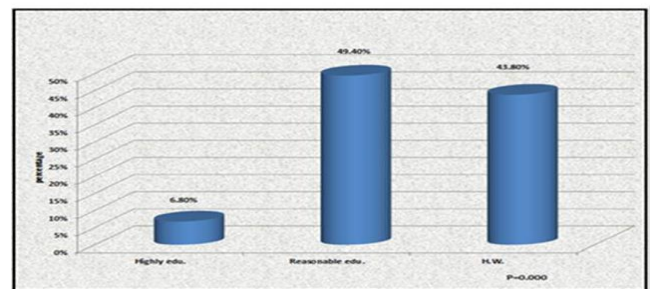


Figure 3C: Effect of occupation on uterine fibroid.

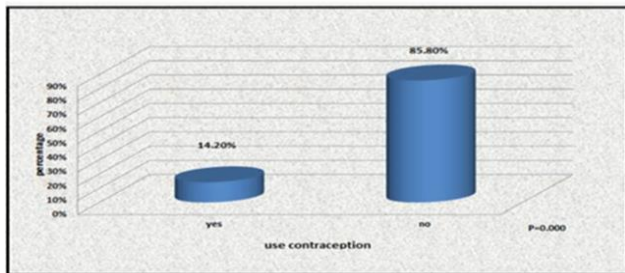
As shown in Figure 4A, the incidence of uterine fibroid between different two modes of delivery in Libyan women was significantly different (P=0.00), where normal mode of delivery show high rate of UF comparing with caesarian cut.

As shown in Figure 4B, the patient women that have had contraception pills show a very low rate of uterine fibroid incidence compared with those that had no contraception.

The difference between two factors was significant (P=0.00).

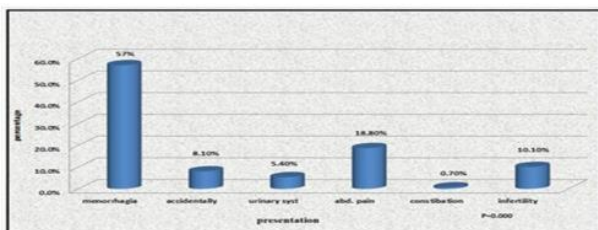


**Figure 4A: Effect of mode of delivery on uterine fibroid.**



**Figure 4B: Effect of using of contraception on uterine fibroid.**

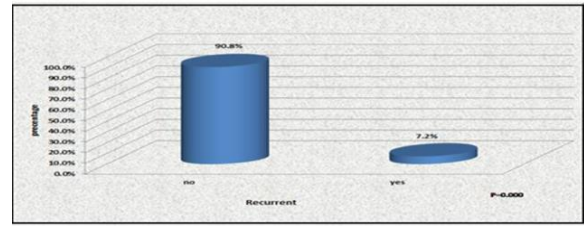
As shown in Figure 4C, within the sample, most of the cases recorded with menorrhagia, abdominal pain and infertility respectively. However the ratio of presentation with menorrhagia was significantly higher from other cases of presentation.



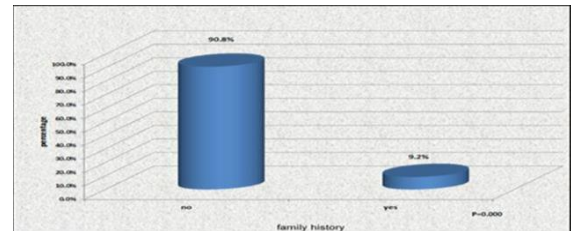
**Figure 4C: Effect of presentation on uterine fibroid.**

As shown in Figure 5A, in our sample, the recurrent of the UF case was not valuable in its high incidence, and the ratio of affected women with uterine fibroid which had no previous history was significantly higher from those with previous history (P=0.00).

As shown in Figure 5B, from the sample, family history has no effect on existence of uterine fibroid among Libyan women. The incidence of uterine fibroid in women that had family history was significantly lower than those who had no family history (P=0.00).

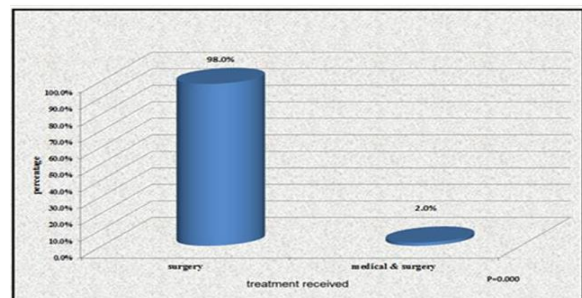


**Figure 5A: Effect of recurrent on uterine fibroid.**



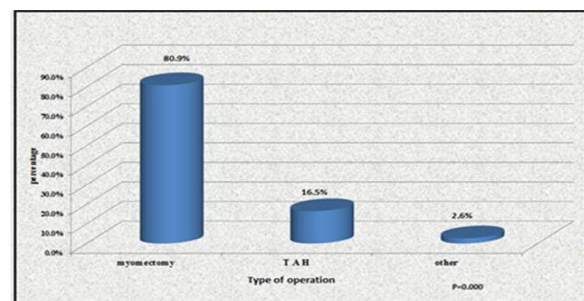
**Figure 5B: Effect of family history on uterine fibroid.**

As shown in Figure 6A, the surgery solution was significantly (P=0.00) different and preferable from the other choices (drugs).



**Figure 6A: Effect of treatment received on uterine fibroid.**

As shown in Figure 6B, the myomectomy was the preferable solution among the sample (higher rate) and the ratio between of myomectomy alone and with trans-abdominal hysterectomy (TAH) and others was significant (P=0.00).



**Figure 6B: Effect of type of operation on uterine fibroid.**

## DISCUSSION

The reason why some women develop uterine fibroid (UF) is not yet understood. Family history may play a role since there is history of fibroids developing in women of the same family. Also for poorly understood reasons, fibroids are more common in African-American women (who have a two to three fold increased risk) than in white American or Asian women. Medical researchers have reported that UF are not restricted to certain age<sup>4, 9</sup>. There were several reports investigated the uterine fibroid disease (or phenomenon) in African-Americans, Caucasians, White American.<sup>5</sup> Despite the high incidence of this case in Libyan women as medical records proved no study about uterine fibroid has been conducted on Libyan women in particular nor in North African women generally yet.

In order to investigate the causes of increase in the rate of UF between Libyan women we have conducted this survey depending on medical information provided from specialized medical center. We have applied a questioner deals with sum factors that might be implicated in the existence of uterine fibroid; maternal status, age, blood group, occupation, geographic, educational, family history, mode of delivery, treatment, recurrence, and race differences that might existed in Tripoli city.

The survey shows that age of women has no effect on the incidence of uterine fibroid where 44.10% of young age and 55.90% of age above 40 year. The difference between two different ages was non-significant in this agreement with previous studies where people found that uterine fibroid could exist in young ages as 20 years to more than 50 years.<sup>1,4</sup>

The marital status has a vital role in the incidence of UF among Libyan women. The ratio between married and non-married women was significantly different. Married one had more cases of UF as shown in Figure 2B. This in contradiction with previous finding where people recoded that women who has no kids at all or only one or young girls with first menstrual period (menarche) prior to age 10 undergoes a high risk of developing fibroids.<sup>9</sup> Girls in the big cities tend to finish their studies or prefer to work long time before thinking in marriage and this could be a reason why the 45% of uterine fibroid is significantly higher in women from Tripoli originally. Taking into the account of stress factor that lay on working women shoulders and it is consequences on the female hormones as in Figure 3A.

Despite the fact that the sample used in this survey was restricted and the archived information was not complete in some cases but one should take society education in consideration when argue about uterine fibroid in Libya. We have tried to take the race in our account as we have such difference in the origin of Libyan people. The statistical analysis for sample has shown from the three

different races we had chosen (white Libyan, black Libyan and other such as black African).

In our study as shown in Figure 2C, the uterine fibroid rate in white, black and other races was 62.60%, 32.10% and 5.30% respectively. This result was contradicted with other finding where medical investigators, 2011 in the ACOG have reported that African and dark skin women are more susceptible to have UF more than white and Caucasians. However, Libyan women of North African are of dark skin generally. Most of the cases were reported between women that originally from Tripoli city, resident in Tripoli, from another city of 45%, 26.5% and 28.5% respectively. But we still think about the sample size, accuracy of archived information.

We have tried to assess the effect of blood group on the incidence of uterine fibroid as in Figure 3B, interestingly; most cases within the investigated sample were hold O<sup>+</sup> blood group. A<sup>+</sup> blood group was the next in the number of the cases. Whether this is true or not one needs more investigation.

Stress factors were implicated in many medical reports as one of probable cause of UF. The analysis of sample under effect of occupational position of the patient has shown that rate of UF in the highly educated women is significantly lower than the UF rate in the reasonable educated and house wife women as in Figure 3C. The only interpretation for relationship between the significantly decrease of UF among highly educated Libyan women, that lifestyle of educated women might help to take control on the stress factors.

Our study shows a high incidence of uterine fibroid among women who are not taking contraceptive pills, this is not consistent with the findings reported<sup>9</sup> who have stated that the increase of female hormones: estrogen during menses, progesterone during pregnancy, which represent one of the most important compounds of the contraceptive pills, are implicated in the incidence of uterine fibroid. The increase in the incidence of uterine fibroid among Libyan women who are not taking contraceptive pills in our study could be due to the incomplete of the patient's case history in Figure 4B.

In addition, our study recorded that family history as in Figure 5B has no effect on the existence of uterine fibroid in the Libyan women where statistical analysis revealed high incidence of uterine fibroid in those who have no family history which contradicted with previous medical reports that showed existence of positive family history of fibroid in women who have uterine fibroid<sup>9</sup>. Our results also not agreed with previous report by Rodrigue and cooperatives, 2010<sup>13</sup> that suggested genes also could play a vital role in passing of UF from generation to generation in the same family.

However, the case history information about the patient sample we have treated was neither complete nor

accurate enough. Many other factors were studied in the sample such as mode of delivery, presentation of the patient with uterine fibroid, recurrent of uterine fibroid, treatment they have received both by medical and surgical.

The statistical analysis of the patient sample has shown the rate of uterine fibroid was high significantly in Figure 4A among women with normal delivery while the percentage of uterine fibroid was considerably low among women have had caesarian section and women who have had both caesarian section and normal delivery (13.20%, 65.80%) respectively. This explains the fact that most of pregnant women with fibroid deliver normally.

Many symptoms could accompanied of uterine fibroid, the statistical analysis recorded that menorrhagia is the main aspect of presentation with rate of 57% among patient sample, followed by abdominal pain, constipation, urinary symptoms and infertility. This was in agreement with most of previous medical research in this regard<sup>1</sup>. Our result recorded no relation between the incidence of uterine fibroid and the recurrent of the illness. The 7.2% of recurrence significantly low in the patient sample (less than 10%).

Treatment received and type of operation applied and their effect on the uterine fibroid among Libyan women were also statistically analyzed. The result revealed that surgical treatment (Myomectomy or Hystrectomy) is the most common and effective mode of treatment of fibroids than medical treatment (98%-2%) respectively. Our result is in agreement with Moss and colleagues 2011<sup>14</sup> who reported that surgery is the most likely to choose. However, the effect of myomectomy as surgical operation on the incidence of UF was the highest (98%) comparing with the other methods. On the other hand, Myomectomy, total abdominal hysterectomy (TAH), and other techniques treatment were 80.9%, 16.5% and 2.6% respectively, which support that treatment approach with or without myomectomy are the good choice for Libyan women and the safe approach especially if patient want to have children. Taking into our consideration that it will not be able to prevent fibroid from growing again<sup>4</sup> This is somewhat in agreement with recent medical research findings that reported the ability of medical treatment to certain limit, in certain stage of fibroid and certain condition to reduce heavy bleeding and painful period.<sup>3,9</sup>

In summary, the current data shows the high incidence of UF among: above 40 years women, married women comparing with single one and this issue could interpret to our culture where girls resist the idea of gynecologist visit. Blood group also seems to have vital impact on the UF incidence. Our data shows that highest rate of UF incidence was among women who hold O+. The mode of delivery and using of contraception also have a role in UF incidence among Libyan women. The education factor also showed that UF in high educated women was

significantly lower (6.8%) comparing with house wife (43.80%) and reasonable educated one (49.40%), which means more efforts is needed to increase the education level between all Libyan women categories about UF and its consequences. Our data has shown that family history and medical treatment had no significant effect on the increase of UF incidence among Libyan women and these results do not agreed with previous medical reports.

However, this trail needs to use bigger sample and more accurate information about the patient case history (electronic archive) to assess the role of each factor has suggested in our questioner precisely. However, in this survey a lot of information was missed in the used questioner. Ultimately, our data couldn't put finger on the exact causative agent or factor/s that implicated directly in this illness (UF). Heavy duty still waiting to do from gynecologists and physiologists to answer the questions why Libyan women have this high ratio and why only certain categories among Libyan women suffering of uterine fibroid as factors implicated in the UF incidence could be varied among group of women leaving in the same place and same family using advanced electronic achieve with precise case histories for patients.

## CONCLUSIONS

Ultra structural studies are needed in order to verify the implicated receptors and to identify the mechanism by which this disease exist and whether UF is controlled by certain gene or not (applying model trail).

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