Awareness of uterine fibroid with prevalence and symptomatic burden among women in Saudi Arabia - A cross-sectional survey

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ABSTRACT

Objectives: Women at the middle and late reproductive years are at high risk of developing fibroids. It is the most common benign tumor in females. So, the objective of this study is to assess the awareness of Saudi women about uterine fibroid and to assess its prevalence and symptomatic burden among them. Methods: A cross-sectional study that included Saudi women (≥18 years) of age. A questionnaire formed of nineteen questions translated into Arabic was used. The included questions were about the demographics, history of being diagnosed to have UF, methods used to for diagnoses, any gynecological and non-gynecological...
1. INTRODUCTION

Uterine fibroid (UF) is a benign neoplasm that arises from the smooth muscles of the uterus. It has different synonyms like leiomyoma or myoma of the uterus (Stewart et al., 2017; Shobeiri et al.; 2019; Stoler et al., 2020). Women at the middle and late reproductive years are at a high risk of developing uterine fibroids, which are considered as the most common benign tumors in females (Sohn et al., 2018; Zimmermann et al., 2012; Lawal et al., 2019). Fibroids can grow in different sites including intramural (grow within the myometrium), submucosal (bulge into the uterine cavity) and subserosal (project outside the uterus) with possibility to project out to nearby organs like bladder, bowel or intestine (De La and Buchanan, 2017). There is no obvious etiologies for uterine fibroids, however there are several risk factors that can predispose to it (Al-Hendy et al., 2017). The most common risk factor of UF is positive family history, where genetic predisposition had been studied in many cryptogenic and genetic studies that emphasized the presence of some chromosomal abnormalities in UF patients (Mehine et al., 2014; Saldana et al., 2013; Pavone et al., 2018). Age is considered as one of the significant risk factors that increase the incidence of UF by ten folds especially at age of forty and older with declining of the risk at the age of sixty (Stewart et al., 2017; Sohn et al., 2108; Zimmermann et al., 2012). The higher prevalence of UF during the premenopausal age compared to the postmenopausal reflects the role of gonadal steroid hormones in the growth of UF (Stewart et al., 2017). According to the previous studies, race is an important risk factor for developing UF; where black women had higher prevalence of UF with three-fold higher risk than white women. Also, the tumor growth rate after the age of 45 years is faster in black women compared to white women (Stewart et al., 2013; Stewart et al., 2017; Al-Hendy et al., 2017). There are several risk factors that need to be studied more to define their correlation with UF like nulliparity, obesity and early menarche (younger than 10 years) (Stewart et al., 2017; De La and Buchanan, 2017; McWilliams and Chennathukuzhi, 2017). Symptons of UF vary among patients from life threatening ones to absence of symptoms. The common symptoms of UF are menorrhagia, bleeding or spotting between periods, pelvic pressure, urinary urgency and menstrual or non-menstrual pelvic pain (De La and Buchanan, 2017; McWilliams and Chennathukuzhi, 2017; Fuldeore and Soliman, 2017). Uterine fibroid can cause several complications that affect the patient’s quality of life like infertility, frequent miscarriage especially with intramural UF, anemia and severe drop of hemoglobin, weakness and fatigue (De La and Buchanan, 2017; Al-Hendy et al., 2017; Fuldeore and Soliman, 2017). That gold standard method for diagnosis of uterine fibroid is trans-vaginal ultrasonography with 90-99% sensitivity except in case of small and sub-serosal fibroids (De La and Buchanan, 2017; Levine et al., 2013; Mas et al., 2017). MRI and/or abdominal ultrasonography can also be used for diagnosis of UF (Stoler et al., 2020). In addition, hysterectomy is considered as the most accurate method for diagnosis of submucosal fibroid (Levine et al., 2013; Mas et al., 2017). Treatment of UF depends on several factors including the size and location of fibroid, age of the patient, intensity of symptoms, desire to preserve fertility. Surgical intervention is considered as the principle approach to eradicate UF (Levine et al., 2013; Mas et al., 2017).

In Kingdom of Saudi Arabia, there are no enough studies to measure the epidemiological data of UF with lack of studies that measure the public’s knowledge regarding the disease and its associated risk factors. Abbas et al., 2016 stated only the prevalence and the commonest associated symptoms of UF at King Abdulaziz University Hospital. Also, there are lack of studies that assessed the complications and symptomatic burden of UF for general population in the KSA. Thus, the aim of this study is to assess the awareness of Saudi women aged 18 years and older about uterine fibroid and also to assess its prevalence, complications and symptomatic burden among them.

2. MATERIALS AND METHODS

A cross-sectional questionnaire-based study was conducted in Saudi Arabia. Questionnaires have been distributed through online and hard copies to maximize the number of respondents. The study was conducted from 16 April to 05 May 2019. Ethical approval...
has been obtained from the King Faisal University Deanship of Scientific Research Ethics Committee with reference number KFU-REC/2020-04-03. Informed written consent has been obtained from the participants after explanation of the study purpose.

Inclusion criteria were Saudi females whose age ≥18 years and had uterine fibroid. This has been detected through a question at the beginning of the questionnaire about if they suffered from UF. Exclusion criteria were females (<18 years), and those who did not have uterine fibroid or had not been treated from it. A questionnaire was developed to investigate community knowledge toward UF and measure its prevalence and symptomatic burden.

The questionnaire was formed of nineteen categorical questions as yes/no and MCQ translated into Arabic to be easy for the participants to understand. The ideas of the questionnaire questions were obtained from a previously published study by (Fuldeore and Soliman, 2013) with some modifications. The included questions were divided into three parts: the first part included 6 questions about the demographic data, the second part included 8 questions about the knowledge regarding UF, and the third part included 5 questions about the symptomatic burden of the disease. The symptoms of UF involved in the questions were menorrhagia, spotting between periods and passage of menstrual blood clots, pelvic pressure and menstrual period prolongation for more than seven days, dysuria and bloating. All patients were asked to rate the intensity of symptoms as moderate, severe or no symptoms for respondents who never experienced the symptom. Regarding the knowledge, questions were about definition of UF with its types, causes, associated complications which include (infertility, abortion, anemia, weakness and fatigue), treatment options, goals of treatment and patient's information resources. Scalar-scoring method were used to rank level of knowledge, qualitative analysis was used to rank high, medium and low scores. Those knowledge questions had 3 levels of scores, 0, 1, & 2 representing Poor, Fair and Good level of Knowledge. The total correct answers awarded 16 scoring points, the scores between 14 and 16 were considered as good knowledge, whereas the scores between 11 and 13 were considered as fair knowledge and the score below 10 was considered as poor knowledge.

**Statistical Method**

We estimated that a sample size of 307 patients would have more than 90% power. P-value ≤0.05 has been accepted as the significant level for all statistical tests. The comparison between dependent versus independent variables has been assessed using chi square test. Statistical Packages for Software Sciences (SPSS) version 21 Armonk, New York, IBM Corporation has been used to perform all statistical analysis for this project. Results were represented as numbers (percentages) for all qualitative data, while mean ± standard deviation and median (interquartile range) were used for all quantitative data. Both descriptive and inferential statistics had been conducted.

### 3. RESULTS

1057 participants were recruited in this study, 105 (9.9%) of them have or suffered from uterine fibroid. The age range of the participants was from 18 – 55 years old, where the percentage of patients diagnosed with UF was significantly higher in 45- 54 years old age group (p-value <0.001). Participants with bachelor degree of non-medical specialization represented the highest percentage (36.9%), followed by secondary school (30.6%), bachelor degree with health specialization (10.4%), diploma (8.1%), middle school (7.2%), primary school (5.0%) and the uneducated were the least of them (1.8%). UF cases were significantly higher among participants with bachelor degree of non-health specialization (p<0.001). Nearly all participants were living at Eastern region (94.5%) (p=0.009). Married participants who have children were significantly higher in UF group compared to unmarried participants and married participants without children (p=0.002) as shown in table 1.

<table>
<thead>
<tr>
<th>Study data</th>
<th>Overall N (%) (n=1057)</th>
<th>UF Diagnosis With UF N (%) (n=105)</th>
<th>Without UF N (%) (n=952)</th>
<th>P-value $^*$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age group in years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 24 years</td>
<td>208 (19.7%)</td>
<td>04 (03.8%)</td>
<td>204 (21.4%)</td>
<td></td>
</tr>
<tr>
<td>25 – 34 years</td>
<td>320 (30.3%)</td>
<td>14 (13.3%)</td>
<td>306 (32.1%)</td>
<td>&lt;0.001 **</td>
</tr>
<tr>
<td>35 – 44 years</td>
<td>347 (32.8%)</td>
<td>49 (46.7%)</td>
<td>298 (31.3%)</td>
<td></td>
</tr>
<tr>
<td>45 – 54 years</td>
<td>137 (13.0%)</td>
<td>23 (21.9%)</td>
<td>114 (12.0%)</td>
<td></td>
</tr>
<tr>
<td>&gt;54 years</td>
<td>45 (04.30%)</td>
<td>15 (14.3%)</td>
<td>30 (03.2%)</td>
<td></td>
</tr>
</tbody>
</table>
Of the 105 patients with UF, 81.9% correctly identified the meaning of UF which is a benign tumor arising from the uterine muscle, and 20% of them stated that it is non-cancerous growth in the uterus that appears during childbearing years. However, a relatively few percentage of them said that UF is a cancerous growth in the uterus that often appears during childrearing years. More than half of the participants correctly identified the types and location of UF which are either lymphoma in the uterine wall, lymphoma within the uterine cavity, lymphoma outside the uterine wall or ectopic fibrosis. The most common source of participants’ information about UF was the doctor (71.4%), followed by books and websites (21.9%), social media (16.2%) and the least of them was educational campaign (3.8%). According to the participants, the most risk factor of UF was genetic (69.5%), followed by age ≥40 years (67.3%), while the least of risk factor reported by them was not having children in advance (53.3%). Regarding to the procedure used for diagnosis of UF, more than a half of the affected females underwent ultrasonography, 26.7% underwent hysteroscopy, 20% underwent CT scan, and the least of them underwent MRI and Hystero-salpingography. The commonest symptom of UF according to the participants was anemia (71.4%) followed by feeling tired (55.2%) and the rest of them reported infertility or abortion. There were 55.2% of the participants who believe that the best treatment for UF is surgical intervention to eradicate fibroid or hysterectomy, 33.3% thought that usage of medications was the best treatment. However, 29.5% stated that frequent monitoring without any treatment is the best option, and 13.3% thought that uterine catheterization is the best treatment option. Regarding to the goals of UF treatment, 55.2% stated that the goal is to prevent fibroids from increasing in size, while 54.3% stated that the goal is to prevent the transformation of the benign tumor into malignant tumor. 41% stated that the goal is to relieve symptoms associated with the disease; however 28.6% thought that increasing fertility and reproductive opportunities is the goal of treatment as shown in table 2.

Table 2 General knowledge of patients regarding uterine fibroid

<table>
<thead>
<tr>
<th>Study data</th>
<th>N (%) (n=105)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterine fibrosis or what is known as UF is *</td>
<td></td>
</tr>
<tr>
<td>Non-cancerous growth in the uterus appears during childbearing years</td>
<td>21 (20.0%)</td>
</tr>
<tr>
<td>Benign tumors that formed in the muscle tissue of the uterus or inside and outside the uterine cavity causing a change in size</td>
<td>86 (81.9%)</td>
</tr>
</tbody>
</table>
Cancerous growth in the uterus often appears during childbearing years

Types and locations of UF
- Lymphoma in the uterine wall: 22 (21.0%)
- Lymphoma within the uterine cavity: 19 (18.1%)
- Lymphoma outside the uterine wall or ectopic fibrosis: 07 (06.7%)
- All of the above: 57 (54.3%)

Source of Information of UF *
- Social media: 17 (16.2%)
- Doctor: 75 (71.4%)
- Education campaign on the disease: 04 (03.8%)
- Search books and websites: 23 (21.9%)

Risk factors of UF *
- Genetic factor: 73 (69.5%)
- Age over 40 years: 71 (67.6%)
- Obesity or overweight: 63 (60.0%)
- The onset of menstruation at an early age <10 years: 58 (55.2%)
- Not having children in advance: 56 (53.3%)

Procedure when diagnosed with UF *
- Ultrasonography: 56 (53.3%)
- MRI: 18 (17.1%)
- Hysteroscopy: 28 (26.7%)
- CT scan: 21 (20.0%)
- Hysterosalpingography: 17 (16.2%)

Problems that may be caused by UF *
- Infertility: 32 (30.5%)
- Abortion: 30 (28.6%)
- Anemia: 75 (71.4%)
- Feeling Tired: 58 (55.2%)

Treatment options for UF *
- Frequent monitoring without any treatment: 31 (29.5%)
- Uterine catheterization: 14 (13.3%)
- Surgical intervention to eradicate fibroids or hysterectomy: 58 (55.2%)
- Use of medicines: 35 (33.3%)
- The use of alternative medicine treatments and herbs: 11 (10.5%)

The goals UF treatment *
- Increase fertility and reproductive opportunities: 30 (28.6%)
- Relieve symptoms associated with the disease: 43 (41.0%)
- Preventing increase the size of fibroids: 58 (55.2%)
- Preventing the transformation of the benign tumor into malignant: 57 (54.3%)

UF – Uterine Fibroids; MRI - Magnetic Resonance Imaging; CT – Computer Tomography
* Variable with multiple responses.
† Excluded respondents without uterine fibroids

According to calculated scoring of Knowledge section, 51.4% of the participants had good knowledge regarding various aspects of UF, 45.7% had fair knowledge and only 2.86% had poor knowledge. Figure 1 presents the age distribution of patients at the time of diagnosis with UF; where 46.7% of them were in the 45 – 54 age group, followed by the 35 – 44 age group (27.6%) while the least of them were in the 18 – 24 age group.
The most common symptom being associated with UF according to participants was irregular menstruation, followed by bleeding clots that resemble liver cuts, prolonged menstrual period while the least of them was pain during intimate sexual intercourse as presented in Figure 2.

About 54.1% of UF patient’s suffered from severe pain or pressure in the pelvic area at the time of menstruation, and 44.8% of them suffered from moderate pain or pressure in the pelvic area at a time other than the menstrual period. Also, 41.9% suffered from pain in the lower back or feet of moderate severity as presented in Figure 3.

The most common disease associated with UF was anxiety (55.2%), followed by depression (23.8%) and the least of them was breast cancer (1.9%) which is presented in Figure 4.

Figure 1 Age at diagnosis in years

Figure 2 Symptoms associated with uterine fibroid according to the affected participants
Figure 3 Pain characteristics reported by participants suffering from uterine fibroid

Figure 4 diseases associated with uterine fibroid according to the affected participants

4. DISCUSSION

The present study tackles the prevalence of UF among women in Saudi Arabia. Also, it assesses their knowledge regarding this disease. The findings of this study showed that approximately 10% of the participants were diagnosed to have UF. It is difficult to compare results across all studies that estimate the prevalence of uterine fibroid due to differences in the populations, study sample size, and methodology. The prevalence of UF in our study was lower than that reported by (Abbas et al., 2016) who studied the prevalence of Uterine Fibroid at King Abdulaziz University Hospital in Saudi Arabia. His study showed that among 1111 respondents, 21.2% had been diagnosed with UF. This difference is due to variation of the sample size and duration of each study. Also, in India, the prevalence of UF was relatively higher (37.6%) which deemed as the highest prevalence of UF in a single study (Munusamy et al., 2017).

Our study results showed that UF prevalence increases with increased women age and this is consistent with several published studies. Zimmermann et al., 2012 showed the prevalence of UF increased by age of 40 years old and more. Also, Fuldeore and Soliman, 2017, reported that the prevalence was higher among the 50–54 age group and Abbas et al. showed the prevalence was higher at age of 45 and more. In our study, 46.7% of UF patients were at the age of 54-45 years old and 27.6% were at the age of 44-35 years old which came in accordance to Abbas et al., 2016 as they revealed that 33.9% of patients were at age of 36-45 years old and 43.6% were more than 45 years old.
In this study, the most common symptom of UF among affected patients was irregular menstruation, followed by bleeding clots that resembles liver cut and prolonged menstrual period. Also, irregular menstruation and bleeding were the most common symptoms being identified on various published articles in the same subject (Zimmermann et al., 2012; Fuldeore and Soliman, 2017; Abbas et al., 2016; Marsh et al., 2018; Munusamy et al., 2017). However, Fuldeore and Soliman, 2017 reported that heavy menstrual bleeding, severe constipation and diarrhea are the commonest symptoms. They further stated that women with UF are more likely to have severe menorrhagia than those without UF. Zimmermann et al., 2012 found that bleeding symptoms were more reported significantly by women with UF compared to those without UF. They also noted that women with UF experience more pain such as pressure in the bladder, persistent pelvic pain, pain during sexual intercourse and pain occurring with the time of menstrual bleeding compared to those without UF. This means that bleeding is the commonest indicator of UF since it has been consistently reported in different studies.

Regarding to the complications caused by UF and its effect on the patient’s quality of life, most of the participants reported that anemia and feeling tired are the most common complications that may be caused by UF due to severe menstrual bleeding. This agrees with the paper published by Zimmermann et al., 2012, where they reported that anemia is the most common consequence of severe menstrual bleeding. Also, Munusamy et al., 2017 reported that menorrhagia with severe anemia are the commonest complications associated with UF among Indian women. Most of previous studies documented that UF usually affects women at the reproductive years, mostly at age of 40 years old and its risk declines at age of 60 years old due to the role of gonadal steroid hormones in fibroid growth (Stewart et al., 2017; Sohn et al., 2018; Zimmermann et al., 2012; Lawal et al., 2019).

Regarding to the patient’s awareness about the risk factors for UF, most of them revealed that genetic factor is the commonest one followed by age ≥40. However, Adegbesan et al., 2014 revealed that most of the patients believed that black race, nulliparity and positive family history increase the women’s risk to develop uterine fibroids with 69 % of them consider fibroid as a spiritual problem that needs spiritual treatment. Zimmermann et al., 2014 noted that increase in age is the most common risk factor for UF. Associated diseases are considered as risk factors for developing UF. In this study, we found that anxiety and depression were the most prevalent among women with UF, while the least associated disease was breast cancer. This is congruent to the study published in USA, which showed also that depression and anxiety are the most common diseases among women diagnosed with UF (Marsh et al., 2018). On the other hand, Fuldeore and Soliman, 2017 elaborated gynecological conditions including endometriosis, infertility, polycystic ovarian syndrome, endometrial hyperplasia, adenomyosis, breast cancer and ovarian cancer as the associated disease among UF patients. Also, Zimmermann et al., 2012 reported endometriosis and adenomyosis as concomitant diseases in patients with UF.

The most common source of participants’ information in this study was doctor followed by books and websites then social media. In Nigeria, women preferred radio as their most common source of information regarding UF, followed by parents and relatives while healthcare workers came in the third degree (Adegbesan et al., 2014). In regard to diagnosis method of UF, the majority of the patients underwent ultrasonography, followed by hysteroscopy and CT scan. Regarding to the treatment options of UF, the most common answers by the patients were surgical intervention and medications. Surgical intervention was also the best method of treatment used by the patients in a study conducted by Fuldeore and Soliman, 2017, while Marsh et al., 2018 and Zimmermann et al., 2012 reported that pharmacologic therapies including pain killers, iron supplements and hormonal contraceptives are the best treatment used by the patients diagnosed with UF. In the opposing views, Adegbesan et al., 2014 reported that the conventional way is their best method of treatment for UF, as the patients preferred spiritual home healing (churches, mosque and massage parlors) and herbs.

Furthermore, we also found that age group in years; residence region, educational level and marital status affect the prevalence of UF significantly. This is the first paper that reveals association between basic demographic characteristics of patients and UF. Further researches are needed in order to claim these findings because there are some factors that hinder the generalization of our results such as inconsistency of study data, short study duration, small sample size and the residence region was almost one sided. Limitations also include that the number of patients recruited did not meet the number needed to have a significant result. Future studies also must be conducted to assess the effectiveness of current treatment modalities and patients’ satisfaction about their current treatment, and why lots of symptomatic women are not receiving any treatment.

5. CONCLUSION

Uterine fibroid represents a heavy burden on fertile women that is in agreement with previous studies. Its symptoms may interfere with patient’s quality of life, especially irregular menstruation and bleeding with clots. So, we should direct females for early seeking of medical advice on developing any of UF symptoms to decrease its burden. Also, patient’s knowledge regarding uterine fibroid was good to some extent.
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Authors’ contributions
ZMA searched the previous studies; put the idea of the study and its design with YAI. ZMA collected, analyzed and interpreted the data and wrote the preliminary manuscript. YAI revised the results and shared in the manuscript writing. Both of the authors have read and approved the final manuscript.

Conflict of interest
The authors have no conflict of interest to declare.

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Data and materials availability
All data associated with this study are present in the paper.

Peer-review
External peer-review was done through double-blind method.

REFERENCES AND NOTES