(RESEARCH ARTICLE)

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Prevalence and burden of symptomatic uterine leiomyomata among women in Imo State, South-Eastern Nigeria

Eze Chinwe Catherine [1, *], Ajugwo Gloria Chidiebere [1], Orume Abubakar Sani [1], Nweze Kenneth Emeka [2], Anaebonam Emeka [2] and Onyemeka Regland Michael [3]

[1] Department of Microbiology, Federal University of Technology, Owerri, Nigeria.
[2] Department of Biological Sciences, Chukwuemeka Odumegwu Ojukwu University, Anambra, Nigeria.
[3] Department of Botany, Lagos State University, Lagos, Nigeria.

Abstract

Despite high rates of Uterine Leiomyomata (UL) diagnoses found in black women, there is paucity in research. Therefore, this study aimed at estimating the prevalence and burden of symptomatic UL among women in Imo State, Nigeria. The study is a descriptive cross-sectional hospital-based study that was carried out in Radiology, Obstetrics and Gynaecology departments of three hospitals and two diagnostic Centres covering the three senatorial zones in Imo State. The research was based on a convenience sampling of 2965 women within the age group of 16 to 49 that reside in the 3 senatorial zones referred for an ultrasound scan and who met the selection criteria within the period of study. Eligible and consented women responded to the questionnaire and underwent a transabdominal ultrasound. The data were analysed with the statistical program PASW 18 and p values < 0.05 were taken to be statistically significant. Weighted means and percentages were reported and prevalence across the senatorial zones was examined. Symptom burden among women with and without uterine fibroids was compared using weighted logistic regressions. Of 2965 respondents who met study inclusion criteria, a total of 652(22.0%) were diagnosed having UL while 2313 (78.0%) do not have the disease. Hence the overall prevalence of UL at clinics/Diagnostic centres in Imo State was 22%. Uterine fibroids impose a heavy burden on women aged 16–49 years in Imo State. It represents an important gynecologic pathology in women due to its relatively high prevalence and its significant impact on patient's quality of life.

Keywords: Prevalence; Leiomyomata; Ultrasonography; Burden; Frequency; Fibroids

1. Introduction

Uterine Leiomyomata (UL) otherwise called myomas or fibroids is benign tumours of the uterus and is the most occurring pelvic tumours in women. Because of their prevalence, fibroids represent an important pathology, hence can be the cause of abnormal uterine bleeding, pelvic pain/pressure and may have reproductive effects on infertility and adverse pregnancy outcomes. The prevalence rate for UL is approximately 1 in 20 or 5% or 13.6 million people globally [1, 2].

Not much is known about the true prevalence of ULs in low-resource settings. This is because most ULs are asymptomatic and with decreased availability of ultrasound and preventive gynaecological examinations, therefore, most of these women never find out that they have uterine tumours [3]. The prevalence of UL differs greatly, depending on the populace being researched in terms of study design, sample size, ethnicity, age, UL detection method and ultrasonographic screening. According to a 2010 World Health Organization report, ULs affects between 20 – 25% of women, and close to 235 million women which represent 6.6% of the global women population are estimated to have

*Corresponding author: Eze Chinwe Catherine
Department of Microbiology, Federal University of Technology, Owerri, Nigeria.

been affected worldwide. The incidence rates and prevalence of ULs are likely underestimated as they only take into account those women who have symptoms or consult a healthcare professional. Women in Africa generally experience greater morbidity and or higher rates of mortality from fibroid disease possibly due to late presentation, access to care and limited knowledge on uterine leiomyomata and may die from complications of wrong disease management.

UL can be diagnosed by using sophisticated imaging techniques such as ultrasonography, saline-infusion sonography, hysteroscopy, magnetic resonance imaging (MRI) among others for confirming the presence of ULs in the uterus, however, Abdominopelvic examination is the simplest way of diagnosing ULs. The sensitivity of these procedures varies in their diagnosis of ULs. Imaging is seen as necessary in preoperative evaluation of ULs for uterus-sparing procedures and also surgical procedures [4]. Generally, Ultrasound has been utilized as an invaluable imaging modality in evaluating and detecting ULs.

UL represents a major public health problem in African women. Despite the high rates of UL diagnoses found in black women, there is limited knowledge about its prevalence in Imo State, therefore, this study aims to assess the prevalence and burden of symptomatic uterine leiomyomata among women in Imo State, South-Eastern Nigeria.

2. Material and methods

2.1. Study Area

The study was carried out in Gynaecology, Radiology and Obstetrics units of selected hospitals and health Centres located in the three senatorial zones (Owerri, Orlu and Okigwe) in Imo State, South-Eastern Nigeria. Owerri zone consists of Federal Medical Centre and Everight Diagnostic Centre; Okigwe Zone consists of Okigwe General Hospital and Okigwe Medical Centre while Orlu Zone consists of Imo Teaching Hospital. These facilities were selected because they serve as referral points for all other smaller hospitals in Imo State.

2.2. Study Duration

The study was carried out over six months; from October 2020 to March 2021 which involved diagnostic examination of women that are aged 16 to 49 years of age at Gynaecology OPD.

2.3. Sample Size

The quantitative minimum sample size for the study was 652 women. This sample size was derived using Cochrane's [5] sample size formula for cross-sectional studies. To make up for the attrition rate, the sample size was augmented by 65%. In all, a total of 652 women from the chosen facilities were sampled as the minimum sample size in the research to account for omitted instruments and non-response values.

The sample size was calculated based on the following assumptions: addition of 65% of minimum sample size (N) to correct for non-response rate and participants who withdraw from the study prematurely.

2.4. Study Procedure

Patients who visited the selected health facilities in the Gynaecological, Obstetrics and Radiology units to seek medical care, during the study period were gathered and enlightened concerning the study. Those that consented to be part of the study were recruited. For those who accepted to participate in this study, informed written consent was obtained from each participant. All consenting women presented for a pelvic ultrasound between the ages of 16 and 49 years were included in the study. Women who declined consent, women below the age of 16 years, and women above the age of 49 years were excluded from the study. Recruitment for participants was ceased on observation of theoretical saturation of data.

All the diagnostic scans were done by Clinical Radiologists. To obtain qualitative results, all patients were placed in a supine position on the examination couch. Coupling gel was rubbed over the suprapubic region, the front part of the abdomen region following patients' preparation, systematic scanning commenced by moving the transducer (identical curvilinear probe) gently over the pelvis/abdomen to observe the womb. All the images were done in transverse and longitudinal planes (anteroposterior and widest transverse dimensions examinations were carried out using Mindray Digital Ultrasound Imaging System (Model DC6; Shenzhen Mindray Biomed Electronics, Shenzhen, China), 3.5 MHz curvilinear transducer and a GE LOGIC 5 real-time ultrasound machine fixed with 3.5MHz curvilinear transducer were used to scan the patients for generation of data. The full bladder was required for effective scanning.

Figure 1 Longitudinal ultrasound scan of the uterus showing a round hypoechoic fibroid located in the anterior aspect of the uterus

2.5. Data Analysis

As part of the initial data analysis, the mean and standard deviation were calculated for numerical variables while percentages distributions were calculated for categorical data. A test of normality was conducted to determine if the outcome variables are normal. Prevalence trends across age and health facilities were also examined.

3. Results

Of the 2965 women who access medical facilities from the Hospital and Diagnostic Centres of study, a total of 652 (22.0%) were diagnosed having UL while 2313 (78.0%) do not have the disease (Figure 2). Hence the overall prevalence of UL at the Clinics/Diagnostic Centres in Imo State is 22%.

3.1. Prevalence of Uterine Leiomyomata at Clinics/Diagnostic Centre in Imo State

In terms of classifications based on the three zones of Imo State, Table 1 shows that the prevalence was within the same range among the three zones of the state. It was 22.2% in each of the Orlu and Okigwe zones but slightly lower; 21.7% in the Owerri zone.

Table 1 Prevalence of Uterine Leiomyomata at Clinics/Diagnostic Centre in Imo State

| Facility		UL Present: Yes		UL Present: No	
Zone	Total	Number	%	Number	%
Owerri	1458	317	21.7	1141	78.3
Orlu	553	123	22.2	430	77.8
Okigwe	954	212	22.2	742	77.8
Total	2965	652	22.0	2313	78.0

Source: Fieldwork, 2021

3.2. Prevalence of Uterine Leiomyomata at Clinics/Diagnostic Centres in Imo State and Year of Diagnosis

The prevalence of UL at Clinics/Diagnostic Centres in Imo state and the year of diagnosis are represented in Table 2. The table shows that the highest prevalent rate (23.6%) was found at Okigwe General Hospital, followed by the Federal Medical Centre, Owerri (FMC) at 23.1%. The lowest obtained was at Everight Centre at 20.7%. It was highest at FMC in

2020 (23.8%) but highest at Okigwe General Hospital in 2021 (24.4%) with a slight margin above the rate found at Ever Right (24.2%). In figure 1, it can be seen that the rate of occurrence of UL was slightly higher in 2021 (23.1%) compared to 20.6% in the year 2020.

Table 2 Prevalence of Uterine Leiomyomata at Clinics/Diagnostic Centres in Imo State and Year of Diagnosis

Facility	Year =2020			Year =2021			Year: 2020 - 2021		
	Total	Yes (%)	No (%)	Total	Yes (%)	No (%)	Total	Yes (%)	No (%)
FMC	265	63 (23.8)	202 (76.2)	385	87 (22.6)	298 (77.4)	650	150 (23.1)	500 (76.9)
Everight	383	64 (16.7)	319 (83.3)	425	103 (24.2)	322 (75.8)	808	167 (20.7)	641 (79.3)
IMSUTH	225	52 (23.1)	173 (76.9)	328	71 (21.6)	257 (78.4)	553	123 (22.2)	430 (77.8)
Okigwe General Hospital	212	48 (22.6)	164 (77.4)	258	63 (24.4)	195 (75.6)	470	111 (23.6)	359 (76.4)
Okigwe Medical Centre	246	47 (19.1)	199 (80.9)	238	54 (22.7)	184 (77.3)	484	101 (20.9)	383 (79.1)
Total	1331	274 (20.6)	1057 (79.4)	1634	378 (23.1)	1256 (76.9)	2965	652 (22.0)	2313 (78.0)
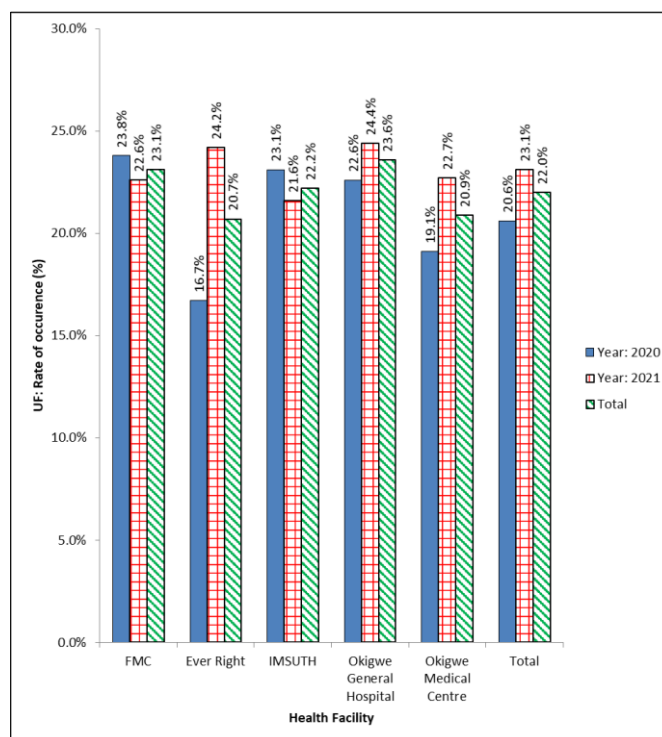
Figure 2 Prevalence of UL at Clinics/Diagnostic centre in Imo State and Year of Diagnosis

4. Discussion

The study assessed the prevalence and burden of symptomatic Uterine Leiomyomata among women in Imo, South-Eastern Nigeria. The prevalence was within the same range among the three zones of the state while the overall prevalence for the state was 22%. The observed prevalence of UL among the women is slightly lower than the incidence rate of 25.9% obtained in Enugu by Ozumba *et al.* [6] and within the incidence range of 17.9 – 26%. This value is more than the figure of 6.83 % reported in South-western Nigeria by Ukwenya *et al*. [7] but consistent with available data [8] which suggests that UL are quite widespread benign pelvic tumour in premenopausal women, causing symptoms in about 25% of women with the general occurrence of fibroids rising to over 70%. The incidence rates reported for some other parts of Nigeria are also lower than the incidence rate recorded in this study. Specifically, 3.0% and 13.4% for Ilorin, Kwara State [9] and 10.7% for both Nnewi in Anambra State [10] and Kano State [11]. The differences in the sociodemographic characteristics of the various study populations might be responsible for the findings. Noteworthy is the fact that FMC and IMSUTH receive several patients, not only from Imo state but also from neighbouring states. This may account for the prevalence rate recorded in this study, since it may be the sum of a shared rate between Imo and neighbouring states.

5. Conclusion

Uterine fibroid has a prevalence of 22% in this study which is about the same as values documented in studies done in some parts of South-South and South-East of Nigeria. Given the high prevalence of this disease, understanding its biology to design early intervention or prevention strategies should be the mandate for the future. Further studies are needed to explore the mechanism by which social economic and biological factors increase the risk of Uterine Leiomyomata in Imo State. The current analyses showed that uterine fibroids impose a heavy clinical burden on women of reproductive age in Nigeria. There is no doubt that uterine fibroid represents a significant public health concern, considering its poorly understood etiology, the symptoms in symptomatic cases, and the nature of its African dominance. More research is needed to assess the quality-of-life implications of such a clinical burden in this population and how it affects the overall societal burden.

The research determined the prevalence and burden of symptomatic Uterine Leiomyomata among women in Imo State, South-Eastern Nigeria. It is the first of its kind to assess prevalence in the three zones which makes up Imo state. Appreciating and tackling the needs of symptomatic women with UL should be key targets for researchers and medical professionals. Thus, increasing awareness and discovering a solution to an endemic problem that plagues Sub-Saharan Africa is of critical importance, not only for the region itself but also for the medical community globally.

Compliance with ethical standards

Acknowledgments

Disclosure of conflict of interest

The authors declare that there are no conflicting interests.

Statement of ethical approval

The institutional review board approved the study protocol. The study was conducted after extensive consultation and with the consent of the institutional board. An introductory letter from the Department of Biological Sciences in the Faculty of Natural Sciences, Chukwuemeka Odumegwu Ojukwu University was presented to the selected hospitals and diagnostic centers. Permission to carry out this study was sort for and obtained from Ethics Committee before the commencement of the study. Strict ethical standards and procedures were adhered to in line with the Helsinki declaration; the anonymity of the participants was ensured.

Statement of informed consent

Before obtaining consent, the participants were thoroughly briefed on the study and ample time was given to them to decide whether or not to participate in the study. The aim of the study was explained to the participants to enable them to make an informed decision. The participants were made aware that participating in the study is voluntary and they

have the right to opt-out of the study at any point in time without explanation. They were also informed that there were no direct benefits or risks involved in the study except for minor discomfort. Code numbers were used in identifying the participants. Privacy was ascertained by scanning the participant in a well-screened partition.

Participants were assured that the results of this study will be disseminated in such a way that no information will be linked to the identity of the participants. Participants were made aware that they may not benefit directly from this study but findings will be disseminated to stakeholders, which will be used to improve outcomes of women with ULs. Participants were told that there is no monetary compensation available for accepting to be part of this study.

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