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Association of Obesity With Uterine Fibroids in South- South Nigeria: A Gynaecology Clinic Review

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Abstract

Introduction:

Obesity is a complex medical condition characterized by excessive fat accumulation that increases the risk of other health conditions. It represents a formidable global public health challenge that has escalated to epidemic proportions, with the World Health Organization(WHO) estimating over 650 million adults affected worldwide. The aim of this study was to determine the prevalence of obesity and uterine fibroid in Gynaecology clinic attendees in Yenagoa, South-South Nigeria. To determine the association of obesity with uterine fibroids, among Gynaecology clinic attendees and the possible predictors of uterine fibroids.

Materials and Method

A retrospective cross-sectional analytical study conducted among Gynaecology clinic attendees in a private-owned health facility in Yenagoa, Bayelsa State, South-South Nigeria. Gynaecology clinic records for a period of 18 months, from October 2024 to March 2026 were reviewed and recorded on proformas designed on google forms. Data analysis was done using the International Business Machines(IBM) SPSS version 25. The exposure variable was obesity, while the outcome variable was uterine fibroids. A p-value of < 0.05 was used for statistical significance and the confidence interval(CI) was 95%..

Results

The prevalence of obesity in the study was 42.9%, while uterine fibroids was 36.5% among the gynaecology clinic attendees. Although uterine fibroids was not significantly associated with obesity, age, parity and BMI(≥ 40Kg/m^2) were statistically significant predictors of uterine fibroid

Conclusion

In South-South Nigeria, the prevalence of obesity and fibroids is high, contributing significantly to gynaecological morbidity. Obesity may be associated with uterine fibroids, but the relationship is influenced by age and parity.

INTRODUCTION

Obesity represents a formidable global public health challenge that has escalated to epidemic proportions, with the World Health Organization estimating over 650 million adults affected worldwide. Obesity is characterized by excessive fat accumulation, typically assessed via body mass index (BMI), waist-to-hip ratio, or body fat percentage.[1, 2] This multifaceted disorder is influenced by an interplay of genetic, environmental, metabolic, behavioral, and hormonal factors.[1–3]

The association between obesity and a multitude of comorbid conditions is robust, encompassing cardiovascular diseases, type 2 diabetes mellitus (T2DM), reproductive disorders such as subfertility and PCOS, as well as gynecological conditions like uterine fibroids. The interrelated nature of these conditions confirms obesity as a systemic disease, driven by metabolic, endocrine, and inflammatory mechanisms that facilitate disease progression. Comprehending these connections is paramount for the formulation of effective preventive and therapeutic strategies.[1–3]

Obesity is a chronic, relapsing disease recognized by the International Federation of Gynaecology and Obstetrics (FIGO) and the World Health Organization (WHO) as a major driver of non-communicable diseases and reproductive health impairment.[4] Globally, more than 650 million adults are obese, and Africa is experiencing one of the fastest-growing prevalence rates.[1] According to WHO, the prevalence of overweight and obesity among African women has nearly tripled over two decades, with the highest burden among women of reproductive age (15–49 years).[1, 2] Nigerian national surveys show rising BMI trends among women, with urbanization, dietary transition, and reduced physical activity contributing significantly.[1–3]

Uterine fibroid (leiomyoma) is a benign tumour of uterine smooth muscle whose real aetiology is not known but has various risk factors which include nulliparity, black race, family history, early menarche, fatty diets low in green vegetables and fruits, alcohol consumption, and obesity. Research and clinical experience identify three main factors in the development of uterine fibroids: genetic factors, hormonal factors and other growth factors.[5, 6] Pregnancy and childbirth, and cigarette smoking appear to reduce its risk.[6] Uterine fibroids are the most common benign tumours of the uterus affecting more than 70% of black women in their reproductive years.[6]

Obesity is correlated with a greater prevalence and larger size of uterine fibroids. Research suggests that each 5 kg/m² increase in BMI escalates the risk of fibroid development by approximately 21%.[7, 8]

The mechanism of this correlation is explained as follows: oestrogen excess (adipose tissue aromatizes androgens to estrogens, stimulating fibroid proliferation); growth factors, cytokines (IGF-1, TNF-alpha) and various adipokines promote smooth muscle proliferation; insulin resistance (hyperinsulinemia amplifies IGF-1 signaling in uterine tissue, fostering tumor growth); and chronic Inflammation (the low-grade inflammation characteristic of obesity establishes a pro-proliferative environment).[7, 8]

Weight management may mitigate fibroid risk and slow disease progression. A holistic approach to care for obese women should concurrently address gynecological health implications.

Specific Objectives:

1. To determine the prevalence of obesity among gynaecology clinic attendees in Bayelsa state South-South Nigeria.
2. To determine the prevalence of uterine fibroids among gynaecology clinic attendees in Bayelsa state South-South Nigeria.

3. To determine the relationship between obesity and uterine fibroids in gynaecology clinic attendees in Bayelsa state South-South Nigeria.
4. To determine the relationship between obesity and previous myomectomies in gynaecology clinic attendees in Bayelsa state South-South Nigeria.
5. To determine the correlation of BMI with size of uterine fibroids, and determine independent predictors of uterine fibroids in gynaecology clinic attendees in Bayelsa state South-South Nigeria.

MATERIALS AND METHODS

This was a retrospective cross-sectional analytical study conducted covering an 18-month period, reviewing clinic records of first gynaecology clinic attendees during the period from October 2024 to March 2026, assessing the association between obesity and uterine fibroids among non-pregnant women attending the Gynaecology clinic of a private-owned hospital in Yenagoa, Bayelsa state, South-South Nigeria.

Bayelsa State, is in the core of the Niger Delta Region in the South-South Geopolitical zone of Nigeria. It is with a total population of 2,394,725 inhabitants (2019), from the National Bureau of Statistics Demographic Statistics Bulletin 2020.[9]

Inclusion criteria was records of women aged 15–49 years (reproductive age) and peri-menopausal women aged up to 55 years; those with complete clinical records for the study; and of women presenting in the gynaecology clinic for any gynaecological complaint at first visit.

Exclusion criteria include pregnant women; women with known malignancy (cervical, ovarian, endometrial); women with chronic steroid-use or antipsychotic therapy affecting weight; and women with incomplete clinical records even after two follow-up visits.

The sample size for the study was 340 eligible women's records, who were all Gynaecology clinic attendees who met the eligibility criteria during the period under review. A consecutive sampling technique was used. Every eligible woman's clinical records and notes was reviewed during the study period and the required information recorded in the proforma developed on google forms. A total of 340 records of eligible women were consecutively recruited into the study.

Group A was used for the obese group with BMI ≥ 30kg/m^2, while group B was for the non-obese women with BMI < 30kg/m^2.

Diagnostic confirmation of uterine fibroids was done through ultrasound scan following clinical history and physical examination assessing the clinical size of the uterine fundus in terms of number of weeks above the pubic symphysis. The uterine size at the pubic symphysis is documented as 12 weeks (smaller than this was recorded as 10 weeks), at the umbilicus was 20 weeks, mid-way between these two was 16 weeks, with 14weeks and 18 weeks mid-way between 12 and 16 weeks, and between 16 and 20 weeks respectively. Sizes above 20 weeks were measured as number of finger-breadths above the

umbilicus, with each finger breath taken as 2 weeks, with uterine fundus at the xymphysternum and up to any of the costal margins recorded as 36 weeks (largest size).

Data entered into the Google forms was exported through excel to IBM SPSS for statistical analysis, done using the IBM SPSS statistical software version 25. Data cleaning, coding, and validation was performed before final analysis. Descriptive Statistics: Continuous variables (like age, BMI) was summarized using means ± standard deviation. These numerical/continuous variables were also categorized for further analysis. Categorical variables (obesity class, uterine fibroids) were expressed as frequencies and percentages. Bivariate Analysis was done to determine association between obesity and uterine fibroids. Chi-square test (or Fisher's exact test) for categorical variables, student's t-test for numerical variables: Association between obesity and uterine fibroids was determined using chi-square test. Effect Size assessed using odds Ratios (OR) with 95% Confidence Intervals calculated.

Multivariate Analysis was done using multiple linear regression and logistic regression; to determine independent predictors of uterine fibroids. Predictors included were BMI, age and parity (analyzed as both numerical/continuous variables, and categorical variables). Level of Significance was a p-value < 0.05 which was considered statistically significant. A scatter plot was used to determine correlation between BMI and clinical uterine size of women with uterine fibroids.

Ethical approval

for the study and to retrieve patients' information was obtained from the Research Ethics Committee of the Federal Medical Centre Yenagoa, protocol number 1051, the nearest body certified to issue ethical approval. Anonymity was ensured in retrieving this data from patients' records. Data was anonymized using unique study IDs. No names or personal identifiers appear in the publication. Study findings may improve clinical care and inform public health interventions.

RESULTS

There were 340 eligible women's records used in this study, classified according to their BMI into two groups. Group A was the obese group (BMI ≥30kg/m^2) and group B, the non-obese group (BMI <30kg/m^2)

The overall prevalence of obesity in the study was 42.9% (146 women), which formed group A, while the non-obese women which were 57.1% (194), formed group B, thus the 2 groups analyzed in the study. Many of the women in the study were married women (75.9%) between the ages of 19 and 55 years, the remaining were unmarried (24.1%), which included single, separated, divorced and widowed women. Among the married women, 48.1% were obese, while 51.9% were not. For the unmarried women, 26.8% of them were obese, while 73.2% were not. The difference was statistically significant (X^2 = 11.45, P-value = 0.001), the married women had a statistically significant higher prevalence of obesity than the unmarried women. Other parameters in the sociodemographics and parity were not statistically different between the 2 groups, except in tribe where women from the Igbo tribe had a significantly higher

prevalence (62.5%) of obese women (X^2 = 15.39, P-value = 0.011). Tribes classified as other were the Yoruba and Hausa tribes and a few Northern Nigerian tribes, who were very few in the study.

Table I: Sociodemographic characteristics and parity of all participants

Characteristic	Obese (n = 146)	Non-obese (n = 194)	t/χ^2	P-value
Age (years)	37.9 ± 9.7	36.7 ± 9.2	1.64	0.814*
≤ 20	2 (1.4%)	6 (3.1%)		
21 - 30	35 (24.0%)	42 (21.6%)		
31 – 40	59 (40.4%)	84 (43.3%)		
41 – 50	38 (26.0%)	49 (25.3%)		
>50	12 (8.2%)	13 (6.7%)		
Marital status:				
Unmarried	22 (15.1%)	60 (30.9%)	11.45	0.001
Married	124 (84.9%)	134 (69.1%)		
Educational status:				
Primary	1 (0.7%)	6 (3.1%)	2.23	0.383*
Secondary	34 (23.3%)	45 (23.2%)		
Tertiary	111 (76.0%)	143 (73.7%)		
Occupation:				
Professional	57 (39.0%)	80 (41.2%)	2.85	0.596*
Skilled	9 (6.2%)	13 (6.7%)		
Business/entrepreneur	63 (43.2%)	74 (38.1%)		
Unskilled	1 (0.7%)	6 (3.2%)		
Unemployed	16 (11.0%)	21 (10.8%)		
Tribe:				
Ijaw	92 (63.0%)	125 (64.4%)	15.39	0.011
Urhobo/Isoko	9 (6.1%)	17 (8.8%)		
Igbo	35 (24.0%)	21 (10.8%)		
Rivers tribes	2 (1.4%)	9 (4.6%)		
Efik/Ibibio	2 (1.4%)	7 (3.6%)		
Other	6 (4.1%)	15 (7.8%)		
Parity				
0 – 1	100 (68.5%)	145 (74.7%)	2.67	0.268

2 – 4	38 (26.0%)	44 (22.7%)
≥ 5	8 (5.5%)	5 (2.6%)

*Fisher's exact P- value, t-test is for numerical variables while chi-squared test (χ^2) is for categorical variables. P - value < 0.05 is statistically significant.

The prevalence of uterine fibroids (both clinical and ultrasonographic diagnosis) in this study was 36.5%, while the prevalence of fibroids among the obese and non-obese groups was 32.2% and 39.7% respectively (**Table 2**). Also 45.8% of the women who did not have fibroid were obese and 54.2% of them were not obese. There was no statistically significant difference in the prevalence of fibroid and the other associated features between the obese and non-obese women. Anatomical location/type of fibroid was indicated in only 116 of the cases reviewed (**Table 2**). Other anatomical types grouped together as other include cervical fibroid, intra-ligamentary fibroid, and fibroid polyp.

Table 2: **Association of fibroids and its associated features, with obesity**

Characteristic	Obese (n = 146)	Non-obese (n = 194)	t/χ^2	P-value
Fibroid				
Yes	47 (32.2%)	77 (39.7%)	2.02	0.155
No	99 (67.8%)	117 (60.3%)		
Abnormal uterine bleeding:				
Yes	20 (13.7%)	30 (15.5%)	0.21	0.649
No	126 (86.3%)	164 (84.5%)		
Abdominal swelling:				
Yes	29 (19.9%)	37 (19.1%)	0.03	0.855
No	117 (80.1%)	157 (80.9%)		
Anatomical type (n=116):				
Subserous	3 (7.1%)	1 (1.4%)	3.77	0.447*
Intramural	13 (31.0%)	26 (35.1%)		
Submucous	10 (23.8%)	14 (18.9%)		
Other	16 (38.1%)	33 (44.6%)		

*Fisher's exact P- value, t-test is for numerical variables while chi-squared test (χ^2) is for categorical variables. P - value < 0.05 is statistically significant.

There were 32 (25.8% of women who had fibroids) women who had significant or symptomatic uterine fibroids and had myomectomy or hysterectomy recommended, and 28 women already had previous myomectomy (**Table 3**). The association of these group of women was tested against their obesity status. Indications for myomectomy in these women include huge uterine fibroids (≥20 weeks size), abnormal uterine bleeding and subfertility. These were also the indications for the previous myomectomies, either singly or in combination. There was no statistically significant difference in these parameters between the obese and non-obese groups. Out of the 28 women who had had previous myomectomy, three had had two previous myomectomies.

Table 3: Association of recommended and previous myomectomy with obesity

Characteristic	Obese (n = 146)	Non-obese (n = 194)	t/χ^2	P-value
Myomectomy recommended:				
Yes	14 (9.6%)	18 (9.3%)	0.01	0.923
No	132 (90.4%)	176 (90.7%)		
Previous myomectomy:				
Yes	11 (7.5%)	17 (8.8%)	0.17	0.683
No	135 (92.5%)	177 (91.2%)		

Chi-squared test (χ^2) is for categorical variables. P - value < 0.05 is statistically significant

A multiple linear regression analysis was done to predict the occurrence of uterine fibroid from age, parity and BMI (**Table 4)**. Only age and parity statistically significantly predicted the occurrence of uterine fibroid, F (3, 336) = 7.142, P < 0.001, R^2 = 0.060. BMI did not statistically significantly predict the occurrence of uterine fibroid p = 0.824. in this analysis (**Table 5**).

Table 4: Multiple Regression analysis for possible predictors of uterine fibroid - ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.723	3	1.574	7.142	.000[b]
	Residual	74.054	336	.220		
	Total	78.776	339			
a. Dependent Variable: Fibroid group						
b. Predictors: (Constant), BMI group, Age group, Parity group						

Table 5: Multiple Regression analysis for possible predictors of uterine fibroid - Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	1.722	.117		14.783	.000	1.493	1.952
	Age group	-.107	.030	-.205	-3.614	.000	-.165	-.049
	Parity group	.201	.051	.226	3.976	.000	.101	.300
	BMI group	-.005	.023	-.012	-.223	.824	-.050	.040

a. Dependent Variable: Fibroid group

Age, parity and BMI were all statistically significant predictors of occurrence of uterine fibroids, using logistic regression as shown below – **Table 6.** The extremes of age (≤20 and >50 years) had significantly reduced occurrence of uterine fibroid. The multiparas and grandmultiparas had a significantly lower occurrence of uterine fibroids**.** The BMI here was more significant in predicting occurrence of uterine fibroid at BMI ≥40kg/m^2 (class III obesity), having χ^2 = 11.42.p-value = 0.035, OR = 11.38, CI = 0.033 – 0.040.

Table 6: Possible predictors of uterine fibroids

Characteristic	Uterine fibroid (n = 124)	No uterine fibroid (n = 216)	t/χ^2	P-value	OR	CI
Age (years)	38.35 ± 7.53	36.56 ± 10.31	15.42	0.003*	16.32	0.002-0.004
≤ 20	1 (0.8%)	7 (3.2%)				
21 - 30	19 (15.3%)	58 (26.9%)				
31 – 40	54 (43.5%)	89 (41.2%)				
41 – 50	44 (35.5%)	43 (19.9%)				
>50	6 (4.9%)	19 (8.8%)				
BMI (kg/m^2 **):**	29.70±6.20	29.08±5.56	11.42	0.035*	11.38	0.033-0.040
<18	3 (2.4%)	4 (1.9%)				
18.00-24.99	21 (16.9%)	51 (23.6%)				
25.00-29.99	53 (42.7%)	61 (28.2%)				
30.00-34.99	28 (22.6%)	70 (32.4%)				
35.00-39.99	11 (8.9%)	23 (10.6%)				
≥40	8 (6.5%)	7 (3.3%)				
Parity	0.73±1.36	1.29±1.65	8.54	0.013*	8.92	0.010-0.014
0 – 1	101 (81.5%)	144 (66.7%)				
2 – 4	20 (16.1%)	62 (28.7%)				
≥ 5	3 (2.4%)	10 (4.6%)				

*Fisher's exact P- value, t-test is for numerical variables while chi-squared test (χ^2) is for categorical variables. P - value < 0.05 is statistically significant.

There is only a very slight positive correlation between clinical size of uterine fibroid and BMI (Pearson's correlation co-efficient r = 0.063, p-value = 0.476) which was not statistically significant – see **figure 1**. The BMI of the women reported in the study ranged from 16.4Kg/m^2 to 47.7Kg/m^2, and uterine size from clinical estimation of women with fibroids ranged from 10 weeks to 36 weeks size.

DISCUSSION

The study determined the prevalence of obesity and uterine fibroids among women attending a gynaecology clinic in Yenagoa, Bayelsa state, South-South Nigeria. It was a retrospective examination of

the association between obesity and uterine fibroids among women attending the gynaecology clinic. The relationship is clinically relevant because uterine fibroids are common benign tumours of the uterine smooth muscle, and constitute an important cause of abdominal mass/swelling, abnormal uterine bleeding, pelvic pressure symptoms, occasionally infertility, and recurrent gynaecological consultations. The prevalence of uterine fibroids was 36.5% in this study, though it has been commonly reported that uterine fibroids are the most common benign tumours of the uterus affecting more than 70% of black women in their reproductive years.[6] This disparity in prevalence may be due to the heterogenous population of the gynaecology clinic attendees included in the study, of women ≤ 20years and > 50years of age (close to the lower extreme and outside the upper extreme of the reproductive years respectively). These extremes of age recorded a significantly lower prevalence of uterine fibroids.

Although the aetiology of uterine fibroid is not exactly known, it may be multifactorial, and accumulating epidemiological evidence suggests that body size and obesity may contribute to fibroid development. This index study only found the association between obesity and uterine fibroid to be significant from BMI ≥ 40kg/m^2. A systematic review of uterine-fibroid epidemiology identified several reproductive, metabolic and demographic factors associated with fibroid risk, while emphasizing substantial heterogeneity between populations and diagnostic methods.[7]

This study got the prevalence of obesity to be 42.9%, and that of clinical and ultrasonographic uterine fibroids to be 36.5%, among gynaecology clinic attendees. These findings from South-South Nigeria are particularly important because obesity is increasingly prevalent in Nigeria. A national systematic review and meta-analysis estimated the prevalence of obesity among Nigerian adults at approximately 14–15%, with women having a higher prevalence than men. Importantly, the South-South geopolitical zone was reported to have an obesity prevalence of 24.7%, which is lower than in the index study, but higher than estimates reported for several other Nigerian geopolitical zones.[10] The prevalence of obesity was higher among the married women (48.1%) than the unmarried women (26.8%), this may be related to the cultural belief that places high premium on married women who are obese as a sign that their husbands are taking good care of them. This is particularly prominent among the Igbo tribe of South-East Nigeria, who also recorded the highest prevalence of obesity (62.5%) in this study. This background provides a plausible public-health context in which an association between obesity and uterine fibroids may become increasingly relevant to gynaecological practice.

Evidence from Nigeria supports a relationship between body weight and uterine fibroids, although the magnitude and consistency of the association vary. This study revealed only a minimal positive correlation between BMI and clinical uterine size in women with uterine fibroids (Pearson's correlation co-efficient r = 0.063, p-value = 0.476) which was not statistically significant. In an earlier study from Umuahia, South-East Nigeria, Okoronkwo reported significantly higher mean BMI among women with uterine leiomyomas than among age-matched controls in women aged 26–40 years. The study consequently identified overweight as being associated with leiomyoma occurrence in the studied population.[11] Similarly, a retrospective study of 169 women undergoing myomectomy at Lagos University Teaching Hospital found that 69.16% had a BMI of at least 25 kg/m². However, obesity was

not significantly associated with the number of fibroid nodules removed, uterine size or duration of symptoms, demonstrating that an association with fibroid occurrence does not necessarily imply an association with disease burden or tumour characteristics.[12]

Evidence specifically from South-South Nigeria is also noteworthy. Ekpo and colleagues conducted a prospective sonographic survey of 240 women aged 20–45 years in the region and reported a statistically significant association between obesity and uterine fibroids, although low, normal and high BMI categories did not demonstrate the same pattern. Their findings also identified delayed childbirth and nulliparity as potentially important reproductive factors.[13] This study found nulliparity and primiparity as significant factors associated with occurrence of uterine fibroids. This observation is relevant to interpretation of a gynaecology-clinic review because obesity may coexist with other recognized determinants of fibroid development. Consequently, an observed association between obesity and fibroids should not automatically be interpreted as evidence of an independent causal effect unless potentially confounding factors such as age, parity, reproductive history and family history are appropriately controlled. This study supports these facts, reporting age, parity and BMI as significant predictive factors for uterine fibroids.

The broader international literature generally supports the association. Marshall et al., in a large prospective cohort of 94,095 premenopausal women, found that increasing adult BMI was associated with a modest increase in the risk of uterine leiomyomata. Weight gain after age 18 was also positively associated with risk. [14] Terry et al. subsequently reported that current BMI, adult weight gain and waist-to-hip ratio were associated with uterine leiomyoma, whereas body size earlier in life showed little evidence of association.[15] These findings suggest that adult obesity, rather than simply early-life body size, may be more relevant to fibroid pathogenesis.

Evidence among Black women is particularly important when considering women in South-South Nigeria as shown in this study. In the Black Women's Health Study, Wise et al. found a complex, inverse J-shaped relationship between BMI and uterine leiomyoma risk. Weight gain since age 18 was also positively associated with risk in some subgroups.[16] This is important because it cautions against assuming that fibroid risk increases linearly with BMI. The relationship may depend on age, reproductive characteristics, metabolic factors and the way obesity is measured.

A recent systematic review and meta-analysis provides further quantitative support. Qin et al. combined 24 studies involving 325,899 participants and 19,593 fibroid cases and found that obesity was associated with a modestly increased risk or prevalence of uterine fibroids (pooled OR 1.19, 95% CI 1.09–1.29). The authors also reported a non-linear, inverse J-shaped relationship between BMI and fibroid risk.[17] Another meta-analysis similarly reported increased risks among overweight and obese women, although the magnitude differed according to whether relative risk or odds ratio estimates were considered.[18] Taken together, these findings support the biological and epidemiological plausibility of an association while demonstrating that the relationship is not necessarily straightforward. This study did not specifically show a statistically significant association of obesity with uterine fibroid.

Several mechanisms could explain the observed association between obesity and uterine fibroids. Adipose tissue is metabolically active and can influence circulating concentrations of sex steroids. Increased peripheral conversion of androgens to oestrogens, alterations in sex-hormone-binding globulin and changes in insulin signalling may expose uterine smooth-muscle cells to a hormonal and metabolic environment favourable to fibroid growth.[7, 8] Obesity is also associated with chronic low-grade inflammation, altered adipokine secretion and insulin resistance. These processes may influence cellular proliferation and extracellular-matrix deposition, both of which are important features of leiomyoma pathophysiology.[7, 8] Nevertheless, these mechanisms remain biologically plausible explanations rather than proof that obesity directly causes fibroids.

The interpretation of a gynaecology-clinic review requires particular caution. Clinic-based studies may over-represent women with symptomatic or clinically significant fibroids and therefore cannot necessarily estimate the prevalence of fibroids in the general population. Detection may also depend on access to ultrasonography, referral patterns and the presence of symptoms. The epidemiological literature from sub-Saharan Africa remains relatively limited; a systematic scoping review found only a small number of eligible studies and emphasized the paucity of robust prospective epidemiological research on uterine fibroids in the region.[19, 20] Thus, these findings from South-South Nigeria are valuable but should be interpreted within the limitations of retrospective or hospital-based study designs.

Another important consideration is the definition of obesity, because BMI is inexpensive and practical for clinical research but does not distinguish visceral from subcutaneous fat. Measures such as waist circumference and waist-to-hip ratio may provide additional information concerning metabolic risk. Furthermore, the use of BMI thresholds should follow the criteria specified in the study protocol and contemporary clinical standards. Differences in BMI categorization may partly explain discrepancies between Nigerian studies and international research.

CONCLUSION

The available evidence indicates that obesity is associated with uterine fibroids, but the relationship is influenced by age, parity and other reproductive, metabolic and environmental factors. In South-South Nigeria, where the prevalence of obesity is high, and fibroids contribute significantly to gynaecological morbidity, routine assessment of body weight and metabolic risk may have value as part of comprehensive gynaecological care. However, obesity should be regarded as one component of a multifactorial risk profile rather than as a solitary explanation for fibroid development.

Further Research

Future multicentre prospective studies in South-South Nigeria should incorporate BMI, waist and hip circumference, reproductive history, family history, metabolic variables and standardized ultrasound

criteria. Such studies would help determine whether obesity represents an independent risk factor and whether modification of obesity subsequently influences fibroid incidence, growth or symptom severity.

Abbreviations

BMI
Body mass index
CI
Confidence interval
FIGO
International Federation of Gynecology and Obstetrics
IBM
International Business Machines
IGF
1–Insulin–like growth factor 1
OR
Odds Ratio
PCOS
Polycystic Ovarian Syndrome
P
value–Probability value
SPSS
Statistical Package for the Social Sciences
t
student's t–test
T2DM
Type 2 Diabetes Mellitus
TNF
α–Tumour necrosis factor alpha
WHO
World Health Organization
X^2
chi–square test

Declarations

- Ethical approval for the study was obtained from the Research Ethics Committee of the Federal Medical Centre, Yenagoa. Protocol number: 1051, in accordance with the Declaration of Helsinki.
- Consent to participate declaration not applicable as it was an anonymized retrospective review of gynaecological records

- Consent to publish declaration not applicable
- The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.
- There are no conflicts of interest
- The research received no external funding
- Contributions of authors:

- Oyeyemi N. – conceptualization, literature review, methodology, data collection, analysis and write up of the manuscript
- Abubakar S.M. – review of the manuscript
- Biakolo A. – literature review and write up of the proposal, and data collection
- The paper was reviewed and approved by all the authors

Author Contribution

o N. O. – conceptualization, literature review, methodology, data collection, analysis and write-up of the manuscripto M S.A. – literature review and review of the manuscripto A.B. – literature review and write up of the proposal, and data collectiono All authors reviewed the manuscript

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Figures

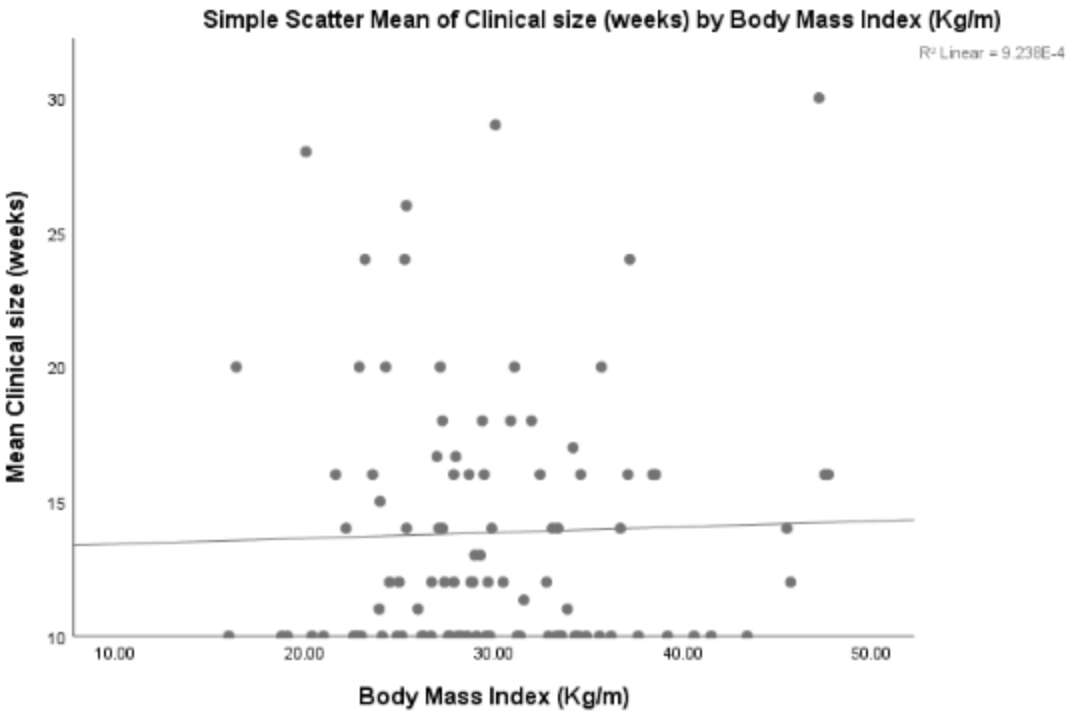


Figure 1

Scatter plot showing correlation between BMI and clinical size of uterine fibroid