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Knowledge and perceptions of uterine fibroids: A descriptive cross-sectional survey among women of childbearing age in KwaZulu-Natal, South Africa

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Abstract

Uterine fibroids are the leading cause of hysterectomies among women of childbearing age. This study aimed to elicit the knowledge and perceptions of childbearing women towards uterine fibroids. A quantitative, cross-sectional descriptive design was used and data were collected from a sample of 362 women of reproductive age residing in a selected township in KwaZulu-Natal, South Africa. Ethical approval to conduct the study was obtained from the Durban University of Technology's Institutional Research Ethics Committee (IREC – Ref No. BIREC 014/21). A pre-tested survey was conducted to collect data for this study. SPSS version 27 was used to analyze data and further employed descriptive statistics. Inferential statistics were also conducted to investigate relationships between important variables and respondents who self-reported being diagnosed with uterine fibroids. Most participants, 73.8% (n=267), had no awareness of uterine fibroids. Participants also demonstrated poor knowledge regarding the aetiology and symptoms of the condition. However, nearly half of the participants, 49.2% (n=178), perceived uterine fibroids to be of spiritual origin, citing evil spirits and witchcraft as the cause. The study findings suggest that women in the selected township lack accurate knowledge about uterine fibroids. Despite the limitations related to the use of a convenience sampling approach for data collection and the subsequently low levels of education observed among certain participants, the study findings provide useful baseline information to inform the development of tailored educational interventions for the condition. *(Afr J Reprod Health 2025; 29 [5]: 74-87).*

Keywords: comprehensive nursing; pregnancy; surgery; uterine myomectomy

Résumé

Les fibromes utérins sont la principale cause d'hystérectomie chez les femmes en âge de procréer. Cette étude visait à évaluer les connaissances et les perceptions des femmes enceintes à l'égard des fibromes utérins. Une étude quantitative, transversale et descriptive a été utilisée et les données ont été collectées auprès d'un échantillon de 362 femmes en âge de procréer résidant dans un township sélectionné du KwaZulu-Natal, en Afrique du Sud. L'approbation éthique de cette étude a été obtenue auprès du Comité d'éthique de la recherche institutionnelle de l'Université de technologie de Durban (IREC – Réf. BIREC 014/21). Une enquête pré-testée a été réalisée pour recueillir les données de cette étude. SPSS version 27 a été utilisé pour analyser les données et a utilisé des statistiques descriptives. Des statistiques inférentielles ont également été réalisées pour étudier les relations entre les variables importantes et les répondantes ayant déclaré avoir reçu un diagnostic de fibromes utérins. La plupart des participantes, soit 73,8 % (n = 267), n'avaient aucune connaissance des fibromes utérins. Les participantes ont également montré une méconnaissance de l'étiologie et des symptômes de la maladie. Cependant, près de la moitié d'entre elles, soit 49,2 % (n = 178), considéraient les fibromes utérins comme d'origine spirituelle, citant les mauvais esprits et la sorcellerie comme causes. Les résultats de l'étude suggèrent que les femmes du township sélectionné manquent de connaissances précises sur les fibromes utérins. Malgré les limites liées à l'utilisation d'un échantillonnage de convenance pour la collecte de données et au faible niveau d'éducation observé chez certaines participantes, les résultats de l'étude fournissent des informations de base utiles pour élaborer des interventions éducatives adaptées à cette maladie. *(Afr J Reprod Health 2025; 29 [5]: 74-87).*

Mots-clés: soins infirmiers complets ; grossesse; chirurgie; myomectomie utérine

Introduction

Uterine fibroids are benign, smooth muscle growths of the uterus that are the most common form of pelvic tumours among women [1]. While the aetiology of fibroids remains relatively unknown, it is stated that the combination of hormonal and genetic factors are determinants of facilitative and

synergistic factors that are influential in their growth.[2-4] Although fibroids are often benign, they possess a combination of smooth muscle and fibroblastic components with a substantial presence of fibrous extracellular matrix, which precipitates the pathogenic process.[5] The location and size of fibroids in the uterus are important determinants of symptomatology and clinical manifestations.[6] Nulliparity, race, obesity and familial history are common predisposing factors to clinically significant fibroids.[2,7,8] The growth of uterine fibroids may be intramural, submucosal and subserosal.[9] Uterine fibroids that are most common and often benign grow intramurally, while the submucosal fibroids are the least common and are often clinically significant.[10]

Epidemiological data on uterine fibroids suggest that uterine fibroids occur in more than 70% of women at the onset of menopause.[11,12] Furthermore, research shows a higher incidence rate among Black women of African descent.[2,13,14] The health outcomes and related complications owing to the occurrence of uterine fibroids are further exacerbated by socio-economic issues of level of education, employment and individual perceptual factors.[15] The clinical symptoms of uterine fibroids vary, depending on the severity. It is estimated that just under 50% of cases are often asymptomatic,[16] while the remaining cases often have symptoms ranging from mild to severe abdominal discomfort, acute pelvic pain, and abnormal uterine bleeding, with variable amounts of bleeding depending on the size and location of the fibroid.[17] Additional clinical features include frequency of micturition, swelling of the abdomen and increased pelvic pressure.[18] Uterine fibroids may also result in complications leading to infertility, miscarriages, premature labour and complications related to prolonged uterine bleeding.[19,20] Pregnant women with uterine fibroids are also at higher risk of post-partum haemorrhage during labour and delivery.[21,22]

While treatment of fibroids depends on the size, location and nature of clinical symptoms, [23-25] the use of oral contraceptives has been proven to be effective in providing some degree of protection against the development of uterine fibroids.[26-28]

The success of treatment interventions for fibroids and potential for reducing morbidity associated with the condition may be largely attributed to health-seeking behaviours, which are influenced by awareness, knowledge and perspectives on the condition. It is argued that the individual views on uterine fibroids can have a significant impact on how quickly women get treatment when the condition arises. Women thus require accurate, comprehensive and holistic information to improve their understanding and awareness on uterine fibroids.[29] This may in turn support women to seek the appropriate treatment timely manner, thereby reducing morbidity associated with the condition.

While research on knowledge, awareness and perceptions of women regarding uterine fibroids has been conducted globally,[30-32] there is a paucity of such data among women of reproductive age, particularly in sub-Saharan Africa, more specifically, in South Africa. Moreover, there is a dearth of context-specific research, meaning that contextual and evidence-informed education interventions related to fibroids remain suboptimal for women of reproductive age. Additionally, current literature suggests that while women may be aware of uterine fibroids, there is generally poor understanding and knowledge of its aetiology and pathophysiology.

The aim of this study was thus to assess the knowledge, attitudes and perceptions towards uterine fibroids among women of childbearing age in rural KwaZulu-Natal, South Africa, to facilitate contextual awareness regarding existing knowledge, attitudes and perceptions concerning uterine fibroids. These findings subsequently have implications for informing educational interventions to facilitate awareness regarding uterine fibroids. Ghant *et al* (2016)[31] argue that there is a need for patient-centred and community-based interventions to improve women's knowledge regarding uterine fibroids so that relevant treatment options may be promoted. It is postulated that awareness may result in positive health-seeking behaviour related to the prevention and treatment of fibroids. This may subsequently have positive outcomes on quality of life and public health, because fibroids are the leading cause of high rates of total hysterectomies among childbearing women.[33]

Methods

The study was located in a KwaZulu-Natal township in South Africa and used a quantitative, cross-sectional descriptive design to assess the knowledge, attitudes, and perceptions of childbearing women, aged 18 to 35, regarding uterine fibroids. Non-probability convenience sampling was used to recruit participants for the study. Three hundred and sixty-two (N = 362) childbearing women were enrolled in the study based on the sample size calculated using the G*Power software version 3.1.9.7.[34]

This is in line with suggestions made by various statistical scholars: Cohen (1992) suggests that a priori sample size determination is necessary for sufficient power in chi-squared tests and statistical power analysis is essential to guarantee that studies can detect effects.[35] The non-centrality parameter affects these tests' power and needed sample size, reflecting the expected test statistic in the event of an alternative hypothesis.[36] Standard large-sample formulas can approximate power, sample size and the smallest detectable effect; [37] conventional effect size values and their corresponding sample sizes for achieving a power of 0.80 offer guidelines.[38] To prevent underpowered studies, effect size estimates from prior research should take uncertainty into account.[39] Considering all of this, G*Power yielded a minimal acceptable size of 32 to 55 for degrees of freedom, *df*, ranging from 1 to 6 respectively for a large effect size, w = 0.50, α err prob = 0.05, power (1-β) err prob = 0.80 which is substantially lower than what was finally sampled.

Childbearing women were recruited to participate in the study at community level through random selection, based on convenience sampling approaches applied at the primary researcher's discretion. This sampling approach might have thus contributed to potential biases affecting the generalizability of findings, as recruitment was limited to a single geographical area and based on the availability of consenting participants who were available at the location of data collection, which was determined by the researcher. A structured, pre-tested interviewer-administered questionnaire was used to collect data from participants. The structured questionnaire comprised questions to elicit demographic details of participants such as age, level of education, occupation and marital status. Specific questions of knowledge and awareness related to signs, symptoms, risk factors and complications of uterine fibroids were also detailed in the questionnaire. The survey questionnaire was initially reviewed by a statistician and two experts in the field to ensure content validity. The experts individually rated the relevance of the questions in relation of the aim and objectives of the study using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The content validity index (CVI) of each question was calculated to ascertain content validity. The experts were also asked to make recommendations for improving the questionnaire. The questionnaire was thereafter piloted on a convenience sample of childbearing women (n=36) located in a community close to the data collection site of the main study. The results of the pilot were not included when conducting the main study and there were subsequently no further changes made to the data collection instrument.

The data collected were entered into Microsoft Excel and analysed using Statistical Product and Service Solutions (SPSS), version 27. Initially, exploratory descriptive statistics were conducted to analyze the frequencies of various categories, behaviours, attitudes, and medical conditions among participants. This step provided a comprehensive overview of the distribution of variables in the dataset, allowing researchers to identify patterns and trends. Following the exploratory descriptive analysis, chi-squared tests were employed to look for connections between these factors and participants' self-reporting of a diagnosis of uterine fibroids. chi-squared tests are commonly used for analyzing categorical data and determining whether there is a significant association between variables.[40] They assess whether the observed frequencies in different categories deviate significantly from what would be expected by chance.[41] In this study, chi-squared tests were chosen due to their ability to handle categorical data and their non-parametric nature, making them suitable for analyzing variables with non-normal distributions.[42,43] The results of the chi-squared tests provided insights into the relationships between various factors and

participants' likelihood of self-reporting a diagnosis of uterine fibroids.

Chi-squared tests are commonly utilized, but it is vital to remember that they have limits, especially when sample sizes are small or the test's assumptions are broken.[44-46] In instances where the expected frequencies are low, Fisher's exact test may be more appropriate as it provides more accurate results.[44-46]Despite this, the initial exploratory descriptive statistics provided valuable context for the subsequent chi-squared analyses, enhancing the overall understanding of the relationships between variables in the study.

Ethical approval and considerations

The Institutional Research Ethics Committee at Durban University of Technology gave its approval to the study, which was carried out in conformity with the Declaration of Helsinki (BIREC 014/21). Prior to data collection, all participants provided verbal informed consent, and the study was carried out in accordance with all ethical research guidelines

Results

Participant demographics

The demographic details of the participants in the study on women of reproductive age in KwaZulu-Natal, South Africa, and their perceptions and knowledge about uterine fibroids are shown in Table 1.

Age

Three age groups of participants were identified: 18–25, 26–31, and 32–40 years old. Most of the participants fell within the age range of 18-25 years (62.7%), followed by 32-40 years (29.0%), and 26-31 years (8.3%).

Level of education

Participants' educational attainment varied, with the majority having tertiary education (75.7%). A smaller proportion had secondary education (19.1%), while a very small percentage had either primary education (1.7%) or could only read and write (1.4%). A minority reported being illiterate (2.2%).

Marital status

There was variation in the participants' marital status; most of them were single. (70.2%). Married women made up (19.1%) of the sample, while smaller percentages were either widowed (6.4%) or divorced (4.4%).

Occupation

The majority of participants reported being unemployed (81.5%), while a smaller proportion were employed (18.5%). These demographic details shed light on the age, educational attainment, marital status, and employment status of the participant sample, all of which are essential for comprehending the target population and appropriately interpreting the research's conclusions.

Furthermore, the study explored associations between participant demographics, perceptions, lifestyles, as well as self-stated diagnosis of uterine fibroids were examined. It matters to note that associations do not necessarily imply causation but allow for future research exploration[40,47-49]Table 2 displays the association between various categories of interest and participants' self-reported diagnosis of uterine fibroids, along with the chi-square statistics for each category. The analysis reflects the following:

Age group

There was a noteworthy correlation discovered between age group and self-reported diagnosis of uterine fibroids ($\chi2 = 42.979$, df = 2, $p < .001$). Specifically, within the 26-31 age group, there were significantly more self-reported diagnoses compared to the other age groups.

Education level

Participants' education levels were classified as primary, secondary, or tertiary. The analysis revealed no substantial correlation between educational attainment and self-reported diagnosis of uterine fibroids ($\chi2 = 0.254$, df = 2, $p = 0.881$).

Table 1: Participant demographics

Characteristics	Frequency (N)	Percentage (%)
Age		
18-25	227	62.7
26-31	30	8.3
32-40	105	29
Level of Education		
Illiterate	8	2.2
Primary School Education	6	1.7
Read and write	5	1.4
Secondary School Education	69	19.1
Tertiary Education	274	75.7
Marital status		
Divorced	16	4.4
Married	69	19.1
Single	254	70.2
Widowed	23	6.4
Occupation		
Unemployed	295	81.5
Employed	67	18.5
TOTAL	362	100

Table 2: Association of categories of interest and the participants' self-reported diagnosis

	Diagnosed			Chi-squared Statistics		
	No	Yes	Total	X^2	df	p-Value
Age Group						
18-25	204	3	207			
26-31	26	2	28	42.979	2	< .001
32-40	73	23	96			
Total	303	28	331			
Education Level						
Primary	15	2	17			
Secondary	56	5	61	0.254	2	0.881
Tertiary	232	21	253			
Total	303	28	331			
Employment Status						
Unemployed	255	16	271			
Working	48	12	60	12.605	1	< .001
Total	303	28	331			
Marital Status						
Single	227	4	231			
Married	49	16	65	53.667	3	< .001
Divorced	14	1	15			
Widowed	13	7	20			

	Total	303	28	331		
Normal Menstrual Cycle						
	No	284	10	294		
	Yes	15	18	33	15.321	1	< .001
	Total	299	28	327		
Heavy Periods						
	No	202	5	207		
	Yes	101	23	124	875.337	1	< .001
	Total	303	28	331		
Children						
	None	236	8	244		
	One	45	4	49	110.93	3	< .001
	Two - Three	18	3	21		
	Four	4	13	17		
	Total	303	28	331		
Gynae Visits						
	Never	246	3	249		
	Once	28	8	36	77.107	3	< .001
	Twice	7	2	9		
	More than two	22	15	37		
	Total	303	28	331		
Reasons for Gynae Visits						
	Abnormal uterine bleeding, Painful periods	85	7	92		
	Fibriods & Cysts	2	3	5	82.77	6	< .001
	Genital warts	1	0	1		
	Infertility	10	5	15		
	Pregnancy	2	0	2		
	UTI	20	12	32		
	None	180	0	180		
	Total	300	27	327		
Heard About the UF						
	No	243	2	245		
	Yes	60	26	86	71.132	1	< .001
	Total	303	28	331		
Requires Treatment						
	Yes	11	0	11		
	No	164	28	192	22.144	2	< .010
	Uncertain	128	0	128		
	Total	303	28	331		
Family History						
	No	284	10	294		
	Yes	15	18	33	146.331	2	< .001
	Total	299	28	327		

Symptoms Score						
8 – 17	38	2	40			
18 – 22	54	0	54	33.019	5	< .001
23 – 27	75	0	75			
28 – 32	40	3	43			
33 – 37	21	3	24			
38 +	74	20	94			
Total	302	28	330			

Employment status

Participants were categorized as unemployed or working. Employment status showed a significant association with self-reported diagnosis of uterine fibroids ($\chi2 = 12.605$, df = 1, $p < .001$). A higher proportion of working participants reported a diagnosis compared to unemployed participants.

Marital status

There were four categories for marital status: single, married, divorced, and widowed. A noteworthy correlation was discovered between marital status and self-reported diagnosis of uterine fibroids ($\chi2 = 53.667$, df = 3, $p < .001$**).** In particular, compared to participants in other marital status categories, married participants were more likely to report a diagnosis, possibly implying a higher degree of health-seeking behaviour among these women as compared to other categories of marital status.

Normal menstrual cycle

Participants were asked about the regularity of their menstrual cycles. There was a strong correlation between having a normal menstrual cycle and self-reported diagnosis of uterine fibroids ($\chi2 = 15.321$, df = 1, $p < .001$). Individuals who had a regular menstrual cycle had higher odds of reporting a diagnosis.

Heavy periods

The question of whether they had heavy periods was posed to the participants. A substantial correlation was seen between the self-reported diagnosis of uterine fibroids and heavy periods ($\chi2 = 875.337$, df = 1, $p <.001$). Individuals who had heavy periods had a much higher likelihood of reporting a diagnosis.

Children

The number of children participants was categorized as none, one, two to three, or four. An important correlation was found between the number of children and self-reported diagnosis of uterine fibroids ($\chi2 = 110.930$, df = 3, $p < .001$). Participants with four children reported the highest proportion of diagnoses.

Gynaecological visits

Participants' frequency of gynaecological visits was categorized as never, once, twice, or more than twice. There was a strong correlation discovered between the frequency of gynaecological visits and self-reported diagnosis of uterine fibroids ($\chi2 = 77.107$, df = 3, $p < .001$). Participants who visited a gynaecologist more than twice were more inclined to file a report for a diagnosis.

Reasons for gynaecological visits

Various reasons for gynaecological visits were explored. A noteworthy correlation was discovered between the reason for visits and self-reported diagnosis of uterine fibroids ($\chi2 = 82.770$, df = 6, $p < .001$). Particularly, visits due to abnormal uterine bleeding and painful times were closely linked to reporting a diagnosis.

Awareness of uterine fibroids

A question concerning participants' knowledge of uterine fibroids was posed.

Table 3: Knowledge of uterine fibroids

Knowledge	Frequency	Percentage (%)
Awareness of uterine fibroids	**237**	**65.5**
Valid knowledge about the causes of uterine fibroids:		
(1) Hormonal Imbalances	(1) 24	(1) 6.6
(2) Lifestyle factors	(2) 30	(2) 8.3
(3) Hereditary factors	(3) 8	(3) 2.2
(4) Early menarche	(4) 15	(4) 4.1

Table 4: Perceptions of uterine fibroids

Perception	Frequency	Percentage (%)
Uterine fibroids affect females >10 years	90	24.9
Uterine fibroids affect females in any age group	30	8.3
Uterine fibroids require treatment interventions	200	55
Uterine fibroids require spiritual treatment	178	49.2
Uterine fibroids require medical treatment	31	8.6
Uterine fibroids require traditional and/or herbal treatment	153	42.3

Perceived need for treatment

If participants thought that uterine fibroids required treatment, that question was posed to them. Perceived treatment requirement and self-reported diagnosis were significantly correlated ($\chi 2$ = 22.144, df = 2, p <.010). Individuals who disclosed a diagnosis exhibited a higher propensity to consider treatment as necessary.

Family history

A question concerning uterine fibroids in the family was posed to the participants. A noteworthy correlation was discovered between self-reported diagnosis and family history ($\chi 2$ = 146.331, df = 2, p <.001). Individuals who had uterine fibroids in their family tree were more likely to report being diagnosed.

Symptoms score

Six groups of participants were created based on their symptom scores. A noteworthy correlation was seen between the self-reported diagnosis and the symptom score ($\chi 2$ = 33.019, df = 5, p <.001). Individuals who reported a diagnosis of uterine fibroids were more likely to have greater symptom levels. These findings highlight the importance of demographic factors, health behaviours, and symptomatology in the diagnosis and perception of uterine fibroids among women of childbearing age in KwaZulu-Natal, South Africa.

Knowledge of uterine fibroids

To elicit participants' knowledge about uterine fibroids, open- and closed-ended questions were posed concerning awareness, causes, and definition of uterine fibroids. Table 3 shows that regarding awareness of uterine fibroids, most participants, 76% (n=276), indicated that they had never heard of uterine fibroids.

The statistical significance of this discovery was further supported by the findings of the follow-up binomial test, which demonstrated this trend. When asked about the causes of uterine fibroids, 65. 5% (n=237) did not respond, while an additional 7.7% (n=28) provided an invalid response. The remaining participants provided valid responses, giving different responses to this question, as 6.6% (n=24) indicated that hormone abnormalities are the cause of uterine fibroids; 8.3 % (n=30) cited lifestyle factors such as obesity, high stress levels and multiple sexual partners as a cause. A further 2.2% (n=8) cited hereditary factors, while 4.1% (n=15) stated that uterine fibroids result from the onset of early menarche. Another 0.8% (n=3) of the participants claimed that fibroids in the uterus are caused by evil spirits. To ascertain knowledge of uterine fibroids by definition, participants were

allowed to respond to an open-ended question, and the responses were divided into different subgroups. Only 14,9% of the participants (n=54) responded to the aforementioned question and defined uterine fibroids as a type of cancer.

Perceptions of uterine fibroids

To elicit responses of perceptions related to uterine fibroids, participants were questioned on the age range they believed to be typically impacted, the most appropriate or effective treatment modalities and, and perceptions regarding the origin of uterine fibroids.

Table 4 highlights participants' responses regarding the perceived age group that is normally affected by uterine fibroids, 24.9%(n=90) indicated that uterine fibroids occur in females of ten (10) years and older, whereas 8.3% (n=30) revealed that uterine fibroids affect any age group. The remaining participants, 62,7% (n=227), did not respond to this question.

Approximately 55% of participants (n = 200) felt that treatment for uterine fibroids was necessary, while 3.3% (n = 12) said that therapy was not necessary. Of the participants, 49.2% (n=178) indicated that spiritual treatment (prayer) is required to manage uterine fibroids, conversely, 42.3% (n=153) said that using herbal medicines was necessary to treat uterine fibroids. Merely 8.6% (n=31) of the participants thought that receiving medical attention was necessary.

Discussion

This study assessed the knowledge, attitudes and perceptions of childbearing women regarding uterine fibroids in KwaZulu-Natal, South Africa. The majority of study participants had never heard of uterine fibroids, according to the study's findings, suggesting that their knowledge was insufficient. This result is consistent with earlier research, which found that women, even those with somewhat acceptable levels of education, also had poor knowledge levels. There was a discernible lack of understanding of uterine fibroids because most participants said that these are cancerous growths and painful periods, while few participants displayed an awareness that these are non-cancerous. The reported misconceptions corroborate the study conducted by Saghir, Kamran, Khalid, Sohail, and Naveed[50], which indicated that participants incorrectly define uterine fibroids. In this study, the majority of participants perceived the common age occurrence of uterine fibroids to be in the range of 10 years and older and in any age range, which was not the expected response. This finding contradicts many studies, including that of Borah, Yao, Laughlin-Tommaso, Heien and Stewart[51], which indicated the common age occurrence as 18-54. However, Gao and Wang[52] suggested that the common age occurrence is over 35 years.

Although the aetiology of uterine fibroids remained elusive, there was an indication of knowledge of the predisposing factors to uterine fibroids.[53] Most of the individuals involved showed a correct knowledge of the predisposing factors, which included stress, obesity, heredity, early menarche, caffeine, smoking and hormones. This aligns with the research conducted by.[54-56] Some participants stated that the cause of uterine fibroids is by having multiple partners, although a study conducted by Azzahra, Gondodiputro and Amarullah[57] proved that there is no connection between uterine fibroids and this component. It was also observed that individuals claimed demonic spirits are the source of uterine fibroids. This supports the conclusions of the research conducted by Akpenpuun *et al*. (2019).[58] The reported misperceptions on the aetiology of uterine fibroids as reported by certain participants, implies that these women might not seek healthcare when experiencing symptoms associated with the condition. This thus necessitates tailored education programs to address myths about the origin of uterine fibroids to prevent morbidity associated with the condition.

While some individuals stated that uterine fibroids do not require treatment, the majority of people responded that they do. Similar results were found in Ciebiera, Ali's[59] investigation as well. Approximately two-fifths (2/5) of the respondents said that uterine fibroids are a spiritual problem and that prayer is used in treating this disease. The study conducted by Wu, Shao, Zhu, Huang, Wei, Zhang, Hu and Zhong[60] also indicated similar findings. However, these findings contradict the findings of Arisukwu, Nwogu and Asamu[61] in which celibate

women, despite their spiritual lifestyle, did not embrace praying and fasting as options for fibroid prevention. Two-fifths (2/5) of the participants said that treating uterine fibroids using herbal medicine is necessary. This is in line with the findings of Arisukwu, Nwogu,[61] who noted that women continue to choose to treat themselves with native herbs irrespective of their educational attainment. According to the remaining one-fifth (1/5) of participants, medical treatment is the best option for uterine fibroids, which is consistent with Millien and Manzi's findings.[62]

A study conducted by Ikechebelu, Okpala, Eleje, Nwachukwu, Nwajiaku and Nnoruka[63] indicated that women with uterine fibroids frequently experience multiple gynaecological pain symptoms and bleeding symptoms, compared to women with no uterine fibroids. Riggan, Stewart, Balls-Berry, Venable and Allyse[64] stated that most women lack knowledge of uterine fibroids symptoms. The strong correlation across the symptoms suggests that all of the symptoms are likely to be experienced by participants. These results align with those found in the investigation carried out by Tojieva, Khalimova and Zufarova[55] and that of Singh, Shinde and Shinde[65]

It was observed during the analysis that most of the individuals in this study reported having significant bleeding during menstrual periods. This is an important finding that demonstrates the need for tailored education programs to include information on the symptoms of uterine fibroids, particularly highlighting significant menstrual bleeding and its associated complications. This may improve health-seeking behaviours which has the potential to improve women's reproductive health. A study conducted by Naz, Memon, Bai, Habib and Maheshwari [66] indicated that women with uterine fibroids are two (2) to three (3) times more likely than those without to endure severe bleeding during their menstrual cycles. These findings corroborate the study conducted by Fuldeore and Soliman [18]Anaemia, which was moderate among the individuals and may be the result of excessive menstrual bleeding. As a result, heavy menstrual bleeding is one of the predicted hallmark symptoms of uterine fibroids.[64] The majority of study participants reported experiencing blood clots passing during their menstrual cycles. This aligns with the study conducted by Swain, Yadav, Kumari, Rani, Rongmei and Khurana [67] where blood clots were reported by women with uterine fibroids.

These findings suggest an association between blood clot passing and uterine fibroids, which is supported by the study of Salas, López, Reyes, Évora, de Oca, Báez, Delgado and Almeida[68]

Most research participants reported fluctuation in the duration of menstrual periods compared to previous cycles and is connected to uterine fibroids. This observation—that women with uterine fibroids had fluctuating menstrual periods in comparison to prior cycles—is supported by numerous research.[69,70] Most of the individuals involved indicated that they experienced fluctuation in the length of monthly cycles compared to previous cycles which is associated with uterine fibroids. This corroborates the study conducted by Tayebi, Izaddost and Akbarzadeh[71] which also observed fluctuation in the length of monthly cycles compared to previous cycles in uterine fibroids-afflicted females. Of the participants, over two-thirds (2/3) said they have encountered pressure in the pelvic area. This could be the reason why most of participants reported sexual dyspareunia (pain during sexual intercourse) since this is an issue brought on by pressure in the pelvic region.[72] These results corroborate what Xie *et al*. (2020)[73] found, which was that women with uterine fibroids reported pelvic pressure.

The results of this study suggest that the majority of individuals had issues with their urination. This implies that uterine fibroids might be the source of these issues. Similar results were also shown in the research by Laughlin-Tommaso, Lu,[74] where participants reported frequent urinating. One symptom linked to uterine fibroids is weariness, which was mentioned by the participants. Some of the individuals reported emotional issues, which might potentially be linked to fatigue.[75] These results support the observations made in the study conducted by Harmon.[76] Infertility was reported by a few participants in this study. It is believed that fibroids can result in infertility due to their location and size.[77] Numerous studies have suggested that nulliparous women are more likely to develop uterine fibroids;[57,78]

nonetheless, one research by Saghir, Kamran, Khalid, Sohail and Naveed [50] that multiparous women also experience uterine fibroids due to early pregnancy A few participants reported abortion as a problem, which is suggestive that this problem might be caused by uterine fibroids. Tran, Al Naber, Tambor and Myers[79] suggested that uterine fibroids may be a cause of experience spontaneous abortion according to the size and location of the fibroids. These results support the observations made in the study conducted by Fortin, Flyckt and Falcone (2018).[80]

Study limitations

The choice of a convenience sampling approach adopted for this study influenced the reliability of data in terms of the demographic characteristics of participants who were included. Moreover, the design only included questionnaire data on the knowledge and perceptions of uterine fibroids, which could not be confirmed with patient medical records, as the study only included self-reported data on participants' knowledge and perceptions regarding uterine fibroids. This thus poses limitations to the study in terms of face validity. Furthermore, the study only included women who were of reproductive age and excluded the opinions of medical professionals who could be in charge of treating or managing uterine fibroids. Additionally, the study ignored the availability of medical services for women at risk to approach should they experience symptoms of complications related to uterine fibroids. A significant proportion of women had low levels of education and had never heard of the condition and thus could not respond appropriately to all questions. Nonetheless, these findings provide baseline empirical data on the state of knowledge, awareness and perceptions on Uterine Fibroids among a population of South African women of reproductive age residing in a low to middle-income context. The study findings have implications for educational interventions around the prevention and treatment of this condition.

Conclusion

This research sought to determine the knowledge a nd perceptions of women of reproductive age regar ding uterine fibroids in KwaZulu-Natal, South Africa, to provide contextual awareness regarding existing knowledge and perceptions on this subject matter. The findings suggest that women of 18-40 years old in this study lack knowledge of uterine fibroids, hence they live chronically with symptoms, without seeking help. It appears that limited knowledge of uterine fibroids and normal menstruation can result in a skewed perception of what constitutes normality concerning uterine bleeding. The findings imply that further studies to investigate individualised and community-based education interventions related to uterine fibroids are necessary to promote self-preventive interventions, together with health-seeking behaviours among women. While there seems to be a position of more profound focus on other female health issues, such as cervical cancer and breast cancer, knowledge and awareness of uterine fibroids among communities at risk are also needed as this could help alleviate the related complications among reproductive-age women in KwaZulu-Natal. In this regard, more research is required to provide greater insights on the precise knowledge and awareness levels on uterine fibroids among women of reproductive age from varying socio-demographic contexts. Tailored messaging to support positive health-seeking behaviours should be based on these research findings and must address misconceptions about the aetiology of the condition and empower childbearing women to identify common symptoms so that they seek healthcare timely to prevent morbidity.

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Data availability

Data are available upon request from the first author due to privacy concerns.

Contribution of authors

Amanda Dlamini and Pavitra Pillay contributed to the design and implementation of the research and manuscript writing. Nomakhosi Mpofana and Michael Paulse assisted with data analysis and writing of the results section of the manuscript. Mokgadi Mokgabole and Celenkosini Nxumalo contributed to writing the discussion section of the manuscript and reviewing the final draft. All authors reviewed, commented on, and approved the final version of the manuscript and are equally accountable for all aspects of the work.

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