

# Systematic Review of Prevalence of Endometriosis among Indigenous Africans

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## Abstract

**Introduction:** Although the prevalence of endometriosis is to a certain extent documented in women living in high resource countries, its prevalence in black Africa is unknown. Since the current view is that endometriosis hardly affects indigenous Africans, we aim to provide a systematic review of prevalence of endometriosis among the indigenous Africans. **Objective:** To determine the prevalence and clinical presentation of endometriosis in the indigenous African women. **Methodology:** A systematic literature search was carried out for relevant articles on all citations on PubMed, based on the key words “Endometriosis” and “Africa”. An additional search was done on African journal Online. **Outcome Measures:** The primary outcome measure was the prevalence of endometriosis among indigenous Africans. **Results:** Out of 58 identified paper’s, only 4 were eligible for the systematic review. The prevalence of endometriosis was 4.3% (Osefo *et al.* [1]) and 8.2% (Ekwempu *et al.* [2]) in the laparotomy and hysterectomy specimen respectively. In the paper by Fawole *et al.* [3], where endometriosis was diagnosed on the basis of laparoscopic visualization alone without histological confirmation, the prevalence was 48.1%. Somigliana *et al.* [4] estimated endometriosis to be 0.2% based on clinical history, clinical examination and imaging, without surgical procedure to confirm this estimation. Due to differences in study populations, methodology and diagnostic criteria, it was not possible to have pooled prevalence of endometriosis. **Conclusion:** Although existing evidence suggests that the prevalence of endometriosis in indigenous Africans is 0.2% - 48.1%, the study analyzed had limitations. Prospective multi-centered studies with laparoscopic diagnosis and histological confirmation of endometriosis are required to establish the prevalence of endometriosis among the general population in the indigenous Africans. Endometriosis in Africa needs to receive more research attention. This paper is expected to stimulate and sensitize the clinicians and researchers in Africa about this condition.

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## Keywords

Endometriosis, Indigenous African, Prevalence, Laparoscopy

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### 1. Introduction

Endometriosis, described, as the presence of endometrial tissue outside the uterine cavity, is a perplexing disease with a protean clinical presentation and pathology, and is associated with chronic pelvic pain and infertility, with a significant influence on the quality of life and health cost financial implication [5]. The estimated prevalence of endometriosis among in the women of reproductive age is between 2% and 10% [6]. Chronic pelvic pain and dyspareunia are two clinical presentation of endometriosis with a major impact on physical and mental constituents of quality of life [7]. The onset of symptoms of the endometriosis and its surgical diagnosis has a diagnostic delay of 6.7 years [8]. Endometriosis is a true chronic disease with a significant impairment of quality of life due to endometriosis-associated symptoms (chronic pelvic pain, dysmenorrhoe, dyspareunia and infertility) even when the management of the disease is in a tertiary centre [7]. Endometriosis is connected to discomfort/pain, anxiety/depression and social dysfunction, which affect health related quality of life. Endometriosis treatments cost has an economic burden that is comparative to that of managing chronic disease such as rheumatoid arthritis, crohns disease and diabetes mellitus [9].

In women afflicted with endometriosis, the physical HRQoL is remarkably reduced when compared with women with no endometriosis with similar symptoms; due to reduced effectiveness in work there is a loss of 10.8 hrs per week in each of the women afflicted with endometriosis [8]. Poor yield in work was expressed into remarkable costs per woman/week from US \$4 in Nigeria to US \$456 in Italy [8].

There is limited literature on the prevalence of endometriosis among the Africans [10], probably because diagnostic laparoscopy, which is the gold standard for the diagnosis of endometriosis, is hardly executed in women with infertility and/or chronic pelvic pain. [11]. Documentation of an increased prevalence of endometriosis in Asian women in comparative to that of the Caucasian women reflects that racial predisposition may exist in the endometriosis presentation [12]. Genetic, environmental and/or the origin of endometriosis may contribute to racial differences Observed.

In the United States of America (USA), Shade *et al.* 2012 [13], in his literature review on the endometriosis, he found only 2 papers dedicated to the African American and the endometriosis; both papers were write by Chatman in 1975 & 1976. Chatman 1976 [14], in the African American women who underwent diagnostic laparoscopy, he found an incidence of endometriosis to be 22.7%. Chatman 1976 [14], postulated that the incidence of endometriosis was associated to the social economic status rather than the racial factor. Although, in

indigenous African woman endometriosis is considered to be rare [10], it is a frequent etiology of gynaecological morbidity and major surgery, related to long hospitalization among African-American women in the USA [15].

Paradoxically, in African American and Indigenous African the clinical presentation and anatomical location of endometriosis is marked by a more predilection for endometriosis attachment to the uterus and atypical endometriosis than in any other races, without a rationale explanation [10] [13]. Cervical endometriosis and endometrial related-ascites appears to be a more common manifestation of endometriosis in African women than in the Caucasian women [10] [16] [17]. Genetically, the African-America and Indigenous African women are not necessarily similar, given the known genetic admixture of the African American [18].

Epidemiological characteristics that insulate against the development of endometriosis like early age at first pregnancy, multiparity, prolonged breastfeeding and a high incidence of pelvic inflammatory disease associated with closure or dysfunction of the fallopian tubes could explain the presumed low prevalence of endometriosis in African women [10] [14] [19]. In that context, it can be expected that the incidence of endometriosis will increase in African with late age of first pregnancy, few children and hence less breastfeeding and therefore higher number of menstrual cycles with increase in the opportunity for retrograde menstruation when the Fallopian tubes are open. However, the true prevalence of endometriosis is unknown in Africa because of a lack of laparoscopic diagnostic facilities. Conclusive diagnosis of endometriosis can only made by laparoscopic visual inspection with a confirmation by histology, and these can classified as peritoneal disease, ovarian endometriotic cysts (endometriomas), or deep infiltrating endometriosis (DIE) or as combination of these features [20]. Inadequate laparoscopic facilities & infrastructure, gynecological training and lack of awareness of the disease among the African gynaecologists contribute to the underestimation of the prevalence of the endometriosis in Africa [10].

To the best of our knowledge, there has not been an effort to systematically assess the prevalence of endometriosis in indigenous Africans. The overall aim of this study is present systematic review of the prevalence of endometriosis indigenous Africans.

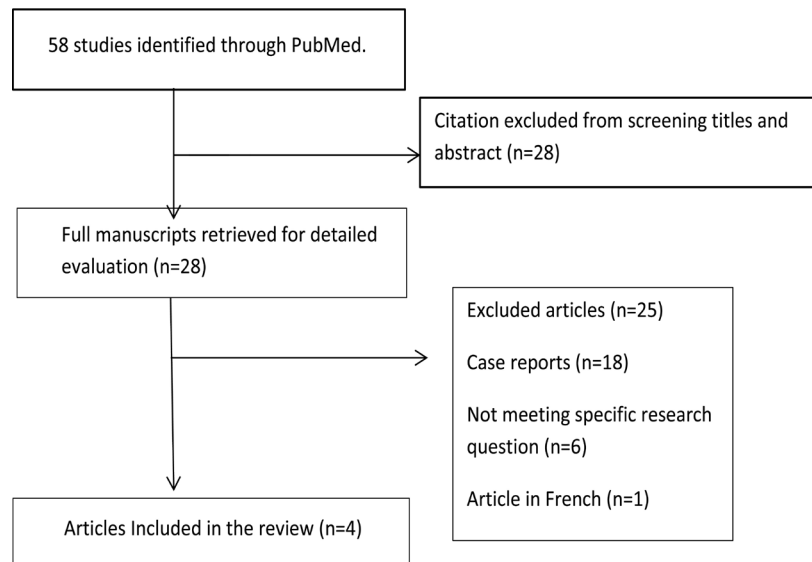
**Objective:** To determine the prevalence and clinical presentation of endometriosis in indigenous African women.

## 2. Methods

We performed a systematic literature search using the PubMed electronic database with the key words “endometriosis” and “Africa” in different combinations on 31 October 2014, without specified date or language restrictions. Further search was done in Africa Journal online. A pair of two authors (Gichuhi, Ndegwa) independently assessed every study selected. We primarily looked for papers that were published in full text and that addressed the research question at hand as primary outcome (*i.e.* the prevalence of endometriosis among indigenous Africans).

Therefore, we excluded manuscripts that did not contain empirical quantitative results, such as a letter to the editor, brief reports, case studies, quantitative design, opinion experts etc. In addition, we reviewed the reference lists of all selected articles in order to identify additional relevant papers. For each selected study, we extracted the following data: study location, patient selection, sample size, diagnostic method, and overall prevalence of endometriosis. Data extraction was performed independently for each article by two co-authors, as mentioned above.

### 3. Results



**Figure 1.** The process of literature identification for all citations.

As shown in **Figure 1**, only 4 out of 58 studies could be included in our review.

Include subjects were women ( $n = 2482$ ) with general gynecological conditions. The studies included were Ekwempu *et al.* 1978, Osefo *et al.* 1989, Fawole *et al.* 2015, Somiglina *et al.* 2012.

**Table 1.** Osefo *et al.* 1989 [1]: Types of operations and sites of endometriosis.

Total number of operations	5995
Minor operations	4416
Endometriosis ext. (Umbilicus)	6
(Abdominal Scar)	
Major operations	1382
Endometriosis	59
Adenomyosis	51
Endometriosis Externa	8
Pouch of Douglas	5
Ovary fallopian tube and uterine cornu	3
Total, external (14) and adenomyosis (51)	<u>65</u>

Osefo *et al.* found the prevalence of endometriosis in major surgery to be 4.3% (However, this was a combination of both endometriosis and adenomyosis) (**Table 1**).

**Table 2.** Ekwempu *et al.* [2]: Histological Finding of Endometriosis on Uterine Specimen after Hysterectomy.

Total number of Hysterectomy specimen	329
Histological confirmed Adenomyosis	20
Histological confirmed Endometriosis	5
Both Histological confirmed endometriosis and Adenomyosis	2

Prevalence of Endometriosis 8.2% (This was inclusive of both Adenomyosis and Endometriosis) (**Table 2**).

**Table 3.** Somigliana *et al.* 2012 [4]; Definite diagnoses in the non-pregnant women of reproductive with symptoms suggestive of endometriosis Age n = 351).

Diagnosis	Number (0%)
<b>Symptoms suggestive for endometriosis (n = 248)</b>	
Chronic pelvic Inflammatory disease (PID)	73 (21%)
Acute PID	11 (3%)
Dysfunctional metrorrhagia	23 (7%)
Unexplained infertility	22 (6%)
Fibroids	21 (6%)
Ovarian non-endometriotic cyst	7 (2%)
Genital malformation	3 (1%)
Polycystic Ovarian Syndrome (PCOS)	3 (1%)
Other gynecological disorders	3 (1%)
Normal genital organs (symptoms unexplained)	29 (8%)
Non-gynecological disorders	53 (15%)
<b>Other symptoms (n = 103)</b>	
Genital prolapse	26 (7%)
Vulvo-vaginitis	18 (5%)
Batholinitis	3 (1%)
Other gynecological disorders	7 (2%)
Normal genital organs (symptoms unexplained)	24 (7%)
Non-gynecological disorders	25 (7%)

Percentages refer to the total number of woman.

Endometriosis was only found in one case. However, Somigliana *et al.* did not use laparoscopy as a diagnostic tool (**Table 3**).

**Table 4.** Fawole.A.O. *et al.* [3]—Bivariate analysis of associations between endometriosis and participant characteristics.

Characteristic	Endometriosis present	Odds ratio (95% CI)	P value
<b>Early menarche</b>			
Yes (n = 85)	40 (47.1)	0.96 (0.55-1.69)	0.886
No (n = 152)	73 (48.0)	Ref.	-
<b>Previous spontaneous abortion</b>			
Yes (n = 42)	19 (45.2)	0.87 (0.42-1.78)	0.681
No (n = 197)	71 (53.0)	Ref.	-
<b>Previous induced abortion</b>			
Yes (n = 105)	44 (41.9)	0.64(0.38-1.07)	0.089
No (n = 134)	71(53.0)	Ref.	-
<b>Menorrhagia</b>			
Yes (n = 47)	24 (51.1)	1.16 (1.07)	0.652
No (n = 192)	91 (47.4)	Ref.	-
<b>Dysmenorrhea</b>			
Yes (n = 171)	90 (52.6)	1.01 (1.07-3.04)	0.027
No (n = 68)	25 (36.8)	Ref.	-
<b>Analgesic prescription for Dysmenorrhea</b>			
Yes (n = 51)	34 (66.7)	2.29 (1.15-4.52)	0.017
No (n = 120)	56 (46.7)	Ref.	-
<b>Self Medication for dysmenorrhea</b>			
Yes (n = 73)	40 (54.8)	1.16 (0.63-2.14)	0.625
No (n = 98)	50 (51.0)	Ref	-
<b>Having had to limit activities because of dysmenorrhea</b>			
Yes (n = 52)	34 (65.4)	2.13 (1.08-4.18)	0.002
No (n = 119)	56 (47.1)	Ref.	-
<b>Having had to lie down because of dysmenorrhea</b>			
Yes (n = 86)	54 (62.8)	2.30 (1.24-4.24)	0.008
No (n = 85)	36 (42.4)	Ref.	-

Abbreviations: CI, confidence interval. <sup>a</sup>Values are given as number (percentage). <sup>b</sup>when aged < 13 years.

In this study by Fawole *et al.*, 48.1% of women undergoing laparoscopy for gynecological conditions had visually diagnosed endometriosis without histological confirmation. Women with endometriosis more commonly reported dysmenorrhea and pelvic pain.

The prevalence of endometriosis varied in different studies as indicated in **Table 4 & Table 5**. The intervention used to determine and diagnose endometriosis was different (Ekwempu *et al.*—Hysterectomy with histological confirmation, Osefo *et al.*—Laparotomy with histological confirmation, Somigliana *et al.* 2012-2012—clinical history/clinical findings and investigation, Fawole *et al.*—Laparoscopy visual evidence without histological confirmation). The overall

**Table 5.** Summary of the details of the studies (Authors, year of study, setting/country, population studied, intervention, and methodology and outcome measure.

Author	Period of study	Setting/Country	Population/Sample	Methodology	Outcome-Prevalence
Ekwempu CC	1978	Ahmadu Bello University Hospital, Nigeria	329 Africans	Retrospective	27/329 = 8.2% of histological confirmed specimen after laparotomy
Osefo NJ	1989	Enugu, University Hospital, Nigeria	1385 Africans	Retrospective	65/5995 = 4.3% of histological confirmed specimen after laparotomy
Somigliana	2012	Uganda	351 Africans	Prospective	1/351 = 0.003% Based on medical history and clinical findings
Fawole. A. O	2015	Ibadan Hospital, Nigeria.	239 Africans	Prospective	115/239 = 48.1% Laparoscopy visual evidence of endometriosis without histology confirmation

prevalence of endometriosis is indeterminable due to different study populations, methodology and diagnostic criteria.

#### 4. Discussion

The systematic review was limited to studies documenting prevalence of endometriosis in Indigenous African as the primary outcome variable. The systematic review had limitations, Firstly; only a restricted number of articles met the inclusion of criteria ( $n = 4$ ). Secondly, only one study had laparoscopic visualization of endometriosis as the diagnostic tool for endometriosis. Thirdly, in 2 of the 4 studies (Ekwempu *et al.* 1978 [2], Osefo *et al.* 1989 [1]), the data was collected retrospectively. Retrospective studies are prone to positive selection bias because of the risk of selecting the interesting cases, resulting in overestimation of the prevalence. Fourthly, taking different study populations, endometriosis diagnostic criteria and restricted number of articles that met the criteria, it was difficult to perform validated statistics

Only one study (Fawole *et al.* [3]) had laparoscopy as tool for visualization and diagnosis of endometriosis, but there was no histological confirmation of endometriosis. Visualization of endometriosis at surgery, mainly through laparoscopy, is still regarded as the Gold standard diagnostic test, confirming the existence of the lesion and has transformed its surgical treatment. [21] [22]. Better laparoscopic optics and video monitors, systematic evaluation of pelvic surfaces, and recognition of the variable appearance of endometriosis can improve the surgical detection of endometriosis, but the clinical appearance can mimic endosalpingiosis, cancer, or pelvic infection [23] [24] [25]. The positive predictive value, however, of a visual diagnosis may be as low as 45% [29]. The clinical diagnosis at surgery has important false-positive and false-negatives [26]. Laparoscopic visualization alone is likely to have positive bias especially with a hypothesis, endometriosis is more prevalent among African than earlier thought. It is therefore important to confirm the diagnosis of endometriosis by examination of biopsy samples stained with hematoxylin and eosin (H&E). Overall, this reflects

the limitations of this study. Histologically confirmation of endometriosis was only documented in 2 studies, Ekwempu *et al.* [2] 1978—hysterectomy specimen and Osefo *et al.* 1989 [1]—Laparotomy specimen.

All studies did not have classification of the endometriosis. The type of endometriosis lesions observed were not described and the classification was not done in any of the studies. While Somigliana *et al.* 2012 [4], had a prospective and a recent study, the criteria of the diagnosis of endometriosis was through clinical history, clinical finding and investigations. Somigliana *et al.* 2012 [4], neither had any surgical nor histological confirmation of endometriosis.

Only one study (Fawole *et al.* [3]) evaluated the correlation between endometriosis and the symptomatology (Chronic pelvic pain, Dyspareunia, Dysmenorrhea, Infertility). Their findings were women with endometriosis more commonly reported dysmenorrhea and pelvic pain. Both Osefo *et al.* [1] and Ekwempu *et al.* [2] combined both endometriosis and adenomyosis as one clinical entity in their reporting of prevalence of endometriosis; therefore, leading to reporting of higher prevalence of endometriosis. There was further limitation to Ekwempu *et al.* [2] study as, he only reported on histological specimen of the uterus after hysterectomy. The studies by Ekwempu *et al.* 1978 [2], Osefo *et al.* 1989 [1], were performed over 25 years ago when recognition of subtle endometriotic lesions were limited and could have resulted in underestimation of endometriosis. The lower experience of endometriosis among the Gynecologists could lead to increase or decrease recognition and prevalence of endometriosis.

There are hardly any well-designed analytical epidemiological studies of endometriosis among the indigenous Africans, this may be explained by the perception that endometriosis is infrequent among the Africans. The lifestyle and the social economic status of the Indigenous-African is changing, leading to late marriage and fewer children. This, exposes the African to long duration of uninterrupted menstruation with retrograde menstruation and therefore, increasing the risk of endometriosis [27] [28]). The earlier school of thought that endometriosis does not exist in African may not hold water. Lack of awareness of endometriosis as a potentially healthy problem among indigenous Africans and poor access to the gold standard for diagnosis of this disease, the laparoscopy, may contribute to this meager epidemiological data encountered in this study. The significance of racial factor is probably limited, since the prevalence of endometriosis appears to be higher in African American than indigenous Africans. Diagnostic challenges—limited training to gynecologists and lack of diagnostic and therapeutic (laparoscopic) facilities may be a contributory factor to this limited data to endometriosis. Due to the above factors, it was not possible to have pooled prevalence of endometriosis.

## 5. Conclusion

The articles analyzed cannot conclusively state the prevalence of endometriosis among the indigenous Africans. There is a research gap in endometriosis among



the indigenous Africans. One area where research of endometriosis still needs to improve is the study of this disease in Indigenous African woman. Further prospective studies based on laparoscopic visualization and histological confirmation, are warranted to define more clearly the prevalence and clinical presentation of endometriosis among indigenous Africans. There is need to develop integrated and multidisciplinary endometriosis research programs in Africa.

## Financial Disclosure

The authors have no relevant financial interests and no conflict of interest.

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