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Understanding the Burden of Uterine Fibroids Among Women Seeking Infertility Care in Nigeria: A Systematic Review

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Abstract

Background

Uterine fibroids are the most common benign gynecological tumors and are frequently implicated in female infertility. Defining their burden and the distribution of primary and secondary infertility among infertile women is important for understanding infertility patterns and supporting evidence-based reproductive healthcare. This study determined the prevalence of uterine fibroids and the distribution of primary and secondary infertility among infertile women in Nigeria.

Methods

A systematic search was conducted in PubMed, Web of Science, AJOL, and the Cochrane Library up to May 2026 and registered with Prospero (ID: CRD420261414929). Eligible studies were observational in design and reported fibroid prevalence among infertile women in Nigeria, diagnosed through hysterosalpingography, hysteroscopy, or transvaginal sonography. Screening was performed independently by two reviewers in Rayyan, where duplicates were removed and records screened for eligibility; full-text articles were subsequently reviewed in Mendeley, with disagreements resolved through consensus. Data extraction included study characteristics, diagnostic methods, sample size, number of fibroid cases, and infertility type. Results were synthesized descriptively, with pooled prevalence calculated across studies. The methodological quality of included studies was further assessed using the STROBE checklist to ensure transparency and completeness of reporting.

Results

Eight studies comprising 1,877 infertile women were included in the review. Among the studies that reported uterine fibroid cases, 143 women were diagnosed with uterine fibroids, corresponding to an overall reported prevalence of 14.0%. Secondary infertility was commonly reported within 1,125 (59.9%) interfile women, whereas 700 (37.3%) were classified as having primary infertility.

Conclusion

Uterine fibroids remain an important contributor to infertility among Nigerian women, with secondary infertility being the predominant clinical presentation. Incorporating comprehensive uterine assessment into infertility evaluation may facilitate earlier diagnosis, more targeted management, and ultimately improve reproductive outcomes. Further multicenter studies using standardized diagnostic approaches are needed to better define the burden of uterine fibroids and clarify their relationship with infertility outcomes in Nigeria.

1.0 Introduction

Parenthood is undeniably one of the most universally desired goals in adulthood, and most people have life plans that include children [1]. Despite this desire, a substantial proportion of couples have difficulties in achieving pregnancy and require medical evaluation and treatment for underlying fertility problems [2]. Infertility is a disease of the male or female reproductive system defined by the failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse [3]. Infertility may occur in both male and female [4]. However, women account for a greater proportion of healthcare consultations and treatment seeking for infertility than men[5] The condition is a global problem and affects 8–12% of couples [6]. Nigeria bears a considerable share of this burden, with infertility accounting for a about fifty percent (50%) of gynecological consultations [7]. Hospital-based studies conducted in different regions of the Nigeria have reported infertility rates of 15.4% in Abakaliki [8], 23.9% in Bauchi [9], and 15.7% in Sokoto [10], underscoring the persistent magnitude of the problem across diverse populations. Female infertility results from a wide range of factors affecting ovulation, tubal patency, uterine integrity, and endometrial receptivity [1, 11]. Clinical infertility is broadly categorized into two types: primary and secondary [12]. Primary infertility is defined as the inability to achieve a pregnancy despite 12 months or more of regular, unprotected sexual intercourse, whereas secondary infertility refers to the inability to achieve a pregnancy after previously having conceived at least once [13, 14]. Fibroids may impair fertility through several mechanisms, including distortion of the uterine cavity, and disruption of sperm and embryo [15]. Studies indicate that at least 50–75% of fibroids are asymptomatic [16, 17]. However, if they become symptomatic, common symptoms are extensive blood loss during menstruation, pelvic pain, sexual dysfunction, and pressure complaints frequently leading to urological and/or gastrointestinal symptoms [18]. The prevalence of fibroids varies among different studies and countries (4.5%-68.6%) based on the type of investigation, method of diagnosis, and racial/ethnic demographics of the population studied [19]. Evidence from population-based studies has shown that fibroids can be detected in more than 80% of Black women by the age of 50 years, compared with approximately 70% of White women [20]. Fibroid-related symptoms are associated with the size, number, and location of the fibroids [21]. Uterine fibroids, also known as leiomyomas, are benign smooth muscle tumors arising from the myometrium and represent the most common pelvic neoplasm in women [22, 23]. Estrogen and progesterone stimulate the growth of uterine fibroids, and consequently, development usually starts after menarche [24]. The treatment options for uterine leiomyoma include medication, surgery, myolysis, and uterine artery embolization [25]. The relationship between uterine fibroids and infertility has been the subject of considerable investigation. Despite their recognized clinical importance, the burden of uterine fibroids among infertile women in Nigeria remains poorly defined, with reported prevalence varying considerably across studies because of differences in study populations, healthcare settings, and diagnostic approaches. Such variability makes it difficult to appreciate the true contribution of fibroids to infertility within the Nigerian context and complicates efforts to develop consistent approaches to infertility evaluation and management. Furthermore, although infertility is broadly classified into primary and secondary forms, the pattern of infertility among women with uterine fibroids has received comparatively little attention, despite its potential to provide insights into the underlying reproductive health profile of affected women and the relative contribution of acquired versus pre-existing reproductive disorders. A clearer understanding of both the burden of uterine fibroids and the distribution of infertility

types is essential for improving diagnostic pathways, facilitating timely and appropriate clinical management, informing patient counselling, and supporting reproductive health planning and resource allocation. Therefore, this systematic review aimed to determine the prevalence of uterine fibroids and evaluate the distribution of primary and secondary infertility among infertile women in Nigeria.

2.0 Method

2.1 Protocol and registration

This systematic review was carried out following Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines [26]. This systematic review was registered at PROSPERO (ID: CRD420261414929).

2.2 Data Sources and Search Strategy

We conducted comprehensive literature searches in PubMed, Web of Science, AJOL, and the Cochrane Library up to May 2026 to identify studies reporting uterine fibroids among women undergoing infertility evaluation in Nigeria. Search terms were applied individually and in combination using Boolean operators (“AND”, “OR”). Our search included the following Medical Subject Headings (MeSH) and keywords: (“uterine fibroids” OR “leiomyoma” OR “fibroid” OR “myoma”) AND (“infertility” OR “primary infertility” OR “secondary infertility” OR “reproductive outcomes” OR “subfertility”) AND (“Nigeria”). Only peer-reviewed articles published in English were considered.

2.3 Eligibility Criteria

Studies were eligible for inclusion if they reported data on uterine fibroids among infertile women in Nigeria attending gynecology or fertility clinics. Only observational studies in which uterine fibroids were diagnosed using recognized clinical, imaging, surgical, or histopathological methods were included. To qualify, studies had to report at least one relevant outcome, including the prevalence of uterine fibroids among infertile women or the distribution of primary and secondary infertility. Only peer-reviewed articles published in English up to May 2026 were considered. Studies conducted outside Nigeria, case reports, case series, reviews, editorials, conference abstracts, letters to the editor, dissertations, theses, and other grey literature were excluded. Studies that did not specify infertility status or did not report uterine fibroid outcomes separately for infertile women were also excluded.

2.4 Quality Assessment

The methodological quality of each observational study was evaluated using the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist [27, 28]. The checklist comprises 22 items covering title and abstract, background and objectives, study design, setting, participants, variables, data sources and measurement, bias, study size, quantitative variables, statistical methods, results reporting, discussion, and funding. Each item was scored as 1 for “Yes” and 0 for “No” or “Unclear,” yielding a maximum score of 22. Studies scoring 15–22 were considered high quality, 8–14 moderate quality, and 0–7 low (Supplementary Table 1).

2.5 Data Extraction

Following the literature search, all retrieved records were exported into a reference management software for data management and subsequently imported into Rayyan for duplicate removal and screening. Titles and abstracts were screened independently by two reviewers according to the predefined eligibility criteria. Full-text articles considered potentially relevant were retrieved and independently assessed for inclusion. Any disagreements at either stage were resolved through discussion, with a third reviewer consulted when consensus could not be reached. Rayyan was used to facilitate the screening process and manage reviewer decisions.

Eligible studies were reviewed in full by the same two reviewers, who independently extracted data using a standardized Microsoft Excel data extraction form. Full-text articles were accessed and reviewed in Mendeley (version 2.218) throughout the extraction process. Extracted information included study characteristics, diagnostic methods, sample size, uterine fibroid cases, and the distribution of primary and secondary infertility. Following extraction, all data were compared to the original studies to ensure completeness and accuracy, and any discrepancies were resolved through discussion and consensus.

In studies where uterine fibroids were reported according to anatomical location or morphological subtype (e.g., submucosal, intramural, subserosal, or cervical fibroids) rather than as an overall uterine fibroid diagnosis, all reported categories were combined and treated as uterine fibroid cases for the purposes of this review. Prior to analysis, the final dataset underwent an additional verification step to ensure agreement between the extracted data and the corresponding values reported in the original studies.

2.6 Data Analysis

Extracted data were summarized in structured tables according to study characteristics, diagnostic methods, and reported outcomes. The prevalence of uterine fibroids amongst infertile women was calculated by dividing the number of women diagnosed with uterine fibroids by the total number of infertile women included. The proportions of primary and secondary infertility were then calculated by dividing the respective number of cases by the total number of infertile women included in the review and expressing the results as percentages. Findings were presented as percentages rounded to one decimal place for consistency. Owing to differences in study design, study populations, and diagnostic methods, a meta-analysis was not performed, and findings were synthesized descriptively.

3.0 Results

3.1 Study Selection

The electronic data sources and study selection processes are presented in Fig. 1. Initially, a total of 113 records were identified from PubMed, Web of Science, AJOL, and Cochrane databases. After removing 17 duplicate records, the remaining 96 studies were screened based on their titles and abstracts. Of these,

62 were excluded because they involved the wrong population, were review articles, were published in languages other than English, or were conducted outside Nigeria. The remaining 34 full-text articles were retrieved for detailed assessment. During full-text review, 26 studies were excluded for the following reasons: 12 did not report fibroid prevalence among infertile women, 10 focused solely on infertility without assessing fibroids, and 4 examine gynecological conditions other than fibroids. Ultimately, 8 studies meet the eligibility criteria and were included in the qualitative and quantitative syntheses.

3.2 Characteristics of Included Studies

A total of eight studies met the inclusion criteria and were included in the review. The studies employed diverse methodological designs, comprising retrospective (n = 4, 50.0%), prospective (n = 3, 37.5%), retrospective cross-sectional (n = 1, 12.5%), and descriptive cross-sectional (n = 1, 12.5%) approaches. Uterine fibroids were assessed using different diagnostic modalities across the studies, including hysterosalpingography (n = 4, 50.0%), hysteroscopy (n = 2, 25.0%), transvaginal ultrasonography (n = 1, 12.5%), and abdominal ultrasonography (n = 1, 12.5%). The sample sizes of the included studies ranged from 75 to 446 infertile women (Table 1).

Table 1
Characteristics of Included Studies.

Study	Study design	Infertile women (n)	Diagnostic method	Uterine fibroid cases n (%)	Primary infertility n (%)	Secondary infertility n (%)
Olatunji et al. [29]	Retrospective	124	Hysterosalpingography	13 (10.5)	25 (20.2)	64 (51.6)
Ray-Offor et al.[30]	Retrospective cross-sectional	75	Hysteroscopy	25 (31.3)	15 (20)	60 (80)
Kolade-Yunusa et al. [31]	Descriptive cross-sectional	203	Transvaginal ultrasonography	38 (18.7)	85 (41.9)	118 (58.1)
Ugboaja et al. [32]	Prospective	159	Hysteroscopy	19 (11.9)	69 (43.4)	90 (56.6)
Panti et al. [10]	Prospective	198	Abdominal ultrasonography	17 (8.6)	65 (32.8)	133 (67.2)
Dattijo et al. [9]	Prospective	406	Hysterosalpingography	Not reported	155 (38.2)	251 (61.8)
Udobi et al. [33]	Retrospective	446	Hysterosalpingography	Not reported	250 (56.1)	195 (43.9)
Makwe at al. [34]	Retrospective	266	Hysterosalpingography	31 (11.7)	52 (19.5)	214 (80.5)

3.4 Prevalence of Uterine Fibroids Among Infertile Women in Nigeria

Six studies conducted in Nigeria reported the prevalence of uterine fibroids among women undergoing infertility evaluation, comprising a total of 1025 participants. Across these studies, 143 women were diagnosed with uterine fibroids, corresponding to an overall prevalence of 14.0%. Prevalence estimates varied substantially between studies, ranging from 11.9% to 31.3%. Hysterosalpingography reported the highest prevalence, while hysteroscopy and transvaginal and abdominal ultrasonography yielded lower estimates (Table 2).

Table 2
Prevalence of Fibroids Among Infertile Women in Nigeria

Study	Diagnostic method	Infertile women (n)	Uterine Fibroid cases n (%)
Olatunji et al.[29]	Hysterosalpingography	124	13 (10.5)
Ray-Offor et al.[30]	Hysteroscopy	75	25 (31.3)
Kolade-Yunusa et al. [31]	Transvaginal ultrasonography	203	38 (18.7)
Ugboaja et al. [32]	Hysteroscopy	159	19 (11.9)
Panti et al. [10]	Abdominal ultrasonography	198	17 (8.6)
Makwe at al. [34]	Hysterosalpingography	266	31 (11.7)
Overall		1025	143 (14.0)

3.5 Distribution of Infertility Type Among Infertile Women in Nigeria

The distribution of infertility type was reported across all eight studies, comprising 1,877 infertile women. Across the included studies, secondary infertility was more commonly reported than primary infertility, with 1,125 women (59.9%) classified as having secondary infertility and 700 women (37.3%) as having primary infertility. The proportion of women with primary infertility varied across studies, ranging from 19.5% to 56.1%, whereas secondary infertility ranged from 43.9% to 80.5% (Table 3).

Table 3
Distribution of Primary and Secondary Infertility Among Infertile Women in Nigeria

Study	Diagnostic method	Infertile women	Primary infertility n (%)	Secondary infertility n (%)
Olatunji et al.[29]	Hysterosalpingography	124	25 (20.2)	64 (51.6)
Ray-Offor et al.[30]	Hysteroscopy	75	15 (20)	60 (80)
Ugboaja et al. [32]	Hysteroscopy	159	69 (43.4)	90 (56.6)
Panti et al. [10]	Abdominal ultrasonography	198	65 (32.8)	133 (67.2)
Dattijo et al. [9]	Hysterosalpingography	406	155 (38.2)	251 (61.8)
Udobi et al. [33]	Hysterosalpingography	446	250 (56.1)	195 (43.9)
Makwe at al. [34]	Hysterosalpingography	266	52 (19.5)	214 (80.5)
Kolade-Yunusa et al. [31]	Transvaginal ultrasonography	203	85 (41.9)	118 (58.1)
Overall		1877	700 (37.3)	1,125 (59.9)

4.0 Discussion

This systematic review demonstrates that uterine fibroids constitute a substantial burden among infertile women in Nigeria, with an overall prevalence of 14.0%. The prevalence observed in the present review is comparable to estimates reported in other Nigerian studies [29, 32], but lower than that reported in a systematic review from the United States, where fibroids were identified in approximately 27% of women undergoing fertility evaluation [35]. Despite differences in prevalence across populations, these findings reaffirm the importance of uterine fibroids as a clinically relevant condition among women undergoing infertility evaluation. The burden observed in the present review may also be influenced by contextual factors that affect healthcare-seeking behavior in Nigeria. A Study in Nigeria by Panti et al. [10] reported that misconceptions surrounding uterine fibroids continue to shape treatment choices, with many women initially relying on herbal remedies and other non-orthodox interventions. Similarly, Adegbesan-Omilabu et al. [36] also found that nearly 69% of women believed uterine fibroids were of spiritual origin, often preferring spiritual or traditional remedies before seeking medical care. These beliefs may postpone appropriate clinical evaluation, allowing fibroids to enlarge and become increasingly symptomatic before women present to infertility services. Financial constraints further limit access to specialist consultations, diagnostic investigations, and treatment, as infertility care in Nigeria is largely financed through out-of-pocket expenditure [9]. Fear of surgery also remains an important barrier, with concerns about operative complications and misinformation from family members discouraging many women from accepting recommended surgical treatment [37, 38]. Collectively, these sociocultural, economic, and treatment-

related barriers may increase the likelihood that women present to infertility clinics with established uterine fibroids, thereby contributing to the burden observed in this review. Considerable variation in fibroid prevalence was observed across the included studies, ranging from 8.6% to 31.3%. This heterogeneity is likely related to differences in diagnostic modalities, study designs, and the characteristics of the study populations.

Secondary infertility, defined as the inability to conceive following a previous pregnancy despite 12 months of regular unprotected intercourse [13], was the predominant infertility pattern among women included in this review, accounting for 59.9% of cases. This finding is consistent with previous hospital-based studies conducted in Nigeria, which reported that secondary infertility constituted 64.7% and 80.0% of infertility cases, respectively [39, 40]. It also corroborates observations by the World Health Organization (WHO), which has consistently identified secondary infertility as the predominant form of infertility across many countries in sub-Saharan Africa [3]. We also suggest that women who have previously conceived may be more likely to recognize infertility when subsequent pregnancies fail to occur and therefore seek early medical evaluation. As a result, secondary infertility may be highly reported among women presenting for infertility evaluation, partly explaining its predominance in the present review.

Primary infertility was comparatively less prevalent, accounting for 37.3% of infertile women included in this review. This lower prevalence may reflect the limited availability of specialized diagnostic investigations required to identify several underlying causes of primary infertility [41]. Conditions such as endocrine disorders, diminished ovarian reserve, and genetic abnormalities often require specialized diagnostic investigations that remain inaccessible or unaffordable in many low-resource settings within Nigeria [42]. Consequently, some causes of primary infertility may remain undiagnosed or incompletely characterized, potentially contributing to the lower prevalence of primary infertility reported in facility-based studies. Although uterine fibroids were frequently observed among infertile women in this review, their clinical significance should be interpreted within the broader context of infertility evaluation. Fibroids may coexist with other reproductive abnormalities that independently contribute to impaired fertility [15]. Therefore, attributing infertility solely to the presence of fibroids without comprehensive clinical assessment may overlook other important underlying factors requiring targeted management.

Importantly, the findings of this review further suggest the need for a transition from descriptive infertility research toward mechanistic infertility research. Despite decades of investigation, uncertainty remains regarding the pathways through which uterine fibroids contribute to reproductive impairment, partly because existing studies are predominantly designed to quantify occurrence rather than interrogate biological mechanisms. Future investigations integrating imaging, reproductive endocrinology, molecular pathology, and fertility outcomes may provide a more comprehensive understanding of the heterogeneity of fibroid-associated infertility. Progress in this direction may ultimately permit the development of biologically stratified approaches to infertility management rather than the continued reliance on broadly applied diagnostic and therapeutic paradigms.

5.0 Limitations

The included studies were conducted in hospital or specialist fertility settings, which may limit the representativeness of the findings at the population level and may introduce selection bias toward women seeking infertility evaluation. Additionally, the relatively small number of eligible studies and the geographical concentration of available evidence may limit the generalizability of the findings across Nigeria.

6.0 Conclusion

This systematic review demonstrates that uterine fibroids represent a substantial burden among infertile women in Nigeria, with approximately one in seven women undergoing infertility evaluation affected by the condition. The review also shows that secondary infertility remains the predominant pattern of infertility among Nigerian women seeking care. Together, these findings highlight the importance of considering uterine fibroids within infertility assessment while recognizing the broader reproductive health challenges reflected by the predominance of secondary infertility. The evidence synthesized in this review provides an important foundation for strengthening infertility care and informing future research on reproductive health outcomes among Nigerian women.

Declarations

Supplementary material:

Supplementary Table 1: STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist for observational Studies.

Ethics approval and consent to participate:

Not applicable

Consent for publication:

Not applicable

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Author Contribution:

EKA and OPA conceived and designed the study, developed the protocol, conducted the literature search, screened studies, extracted and analyzed the data, interpreted the findings, drafted the manuscript, and coordinated all stages of the review. EAL, DNW, APAA-Y, and SAA contributed to study screening, data verification, critical review of the manuscript, and interpretation of the findings. All authors reviewed, revised, and approved the final manuscript.

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Data Availability:

All data generated or analyzed during this study are included in this published article and its additional files.

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Figures

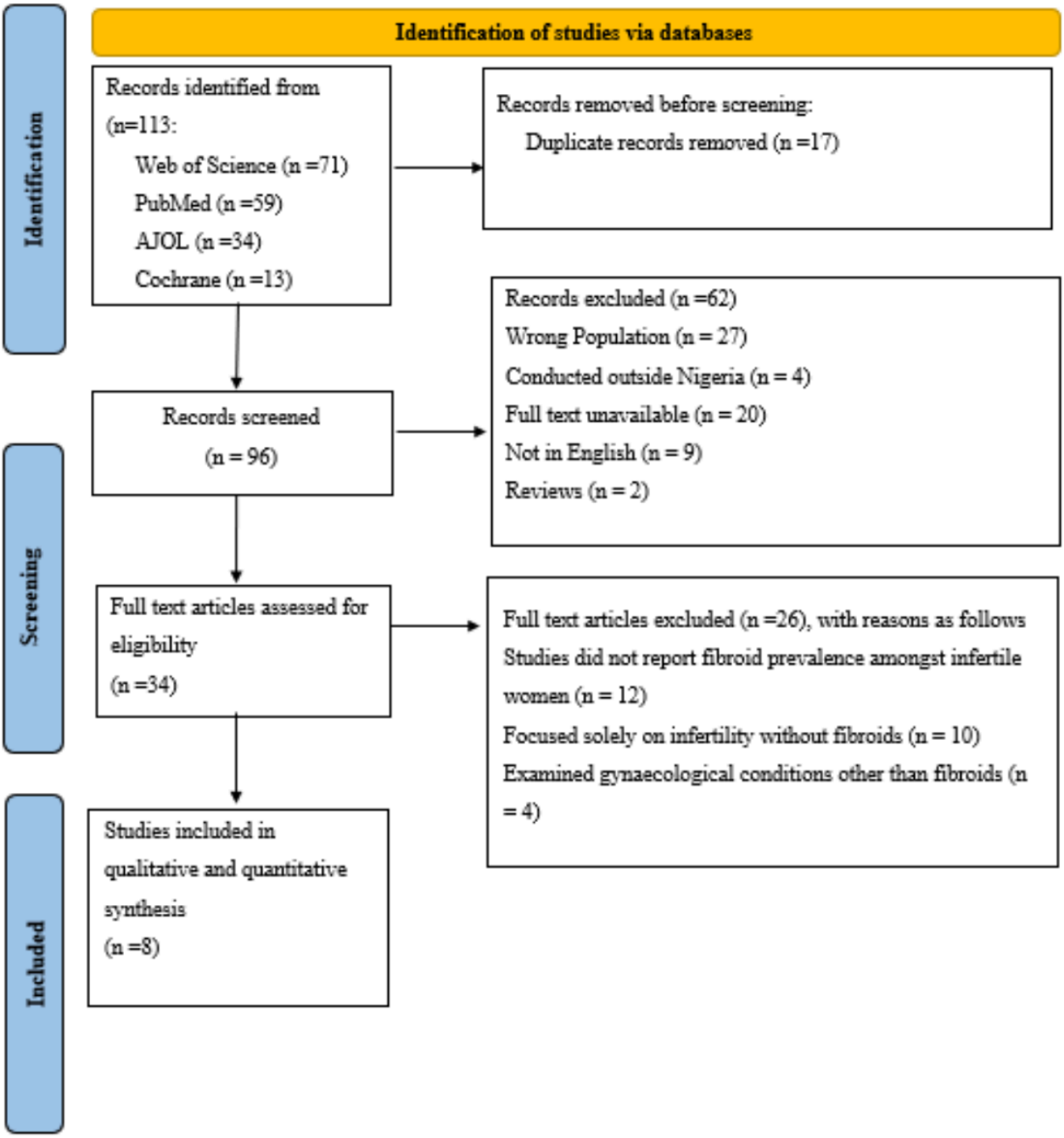


Figure 1

Flow diagram showing studies selection process implemented for this analysis.

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