

Knowledge, Attitude and Beliefs of Gravid Women in Routine Obstetric Ultrasonography in Lagos, Nigeria

Original Article

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Submitted: 28 December 2025,

Final Revision: 14 May 2026,

Accepted: 29 May 2026

ABSTRACT

Background: Obstetric ultrasonography plays a pivotal role in modern antenatal care, offering real-time imaging for assessing fetal development, placental location, amniotic fluid adequacy, and congenital anomalies. In resource-poor setting such as Nigeria, limited access to information, low health literacy, cultural beliefs, pervasiveness of traditional birth attendants, and infrastructural constraints have contributed to a complex relationship between patients and ultrasound services.

Aim: This study aims to assess the level of knowledge, prevailing attitudes, and actual beliefs of pregnant women in routine obstetric ultrasonography in selected public and private healthcare facilities in Lagos, Nigeria.

Methods: A prospective cross-sectional design was employed across four purposively selected healthcare facilities. A total of 210 gravid women aged 18 years and above were recruited through stratified convenience sampling. Data were collected using a structured, pretested, interviewer-administered questionnaire. Responses were analysed using descriptive statistics and cross-tabulations in SPSS v26.0. Statistical significance was set at $p < 0.05$.

Results: Most respondents were aged 26–35 years, had secondary education, and were in their second trimester. While 91% had previously undergone obstetric scans and 90.5% had received some explanation about its function, only 41.9% were aware that ultrasound is non-ionizing. Although 94.3% recognized its role in fetal wellbeing monitoring, misconceptions regarding safety and preventive value persisted. Notably, 76.7% expressed anxiety about ultrasound, and 38.1% believed it might harm the fetus. Nonetheless, overall attitudes were positive, with 87.1% reporting routine use and 82.9% expressing willingness to access ultrasound in private facilities.

Conclusion: Despite high utilization, significant knowledge gaps and emotional concerns persist. Improved antenatal counselling and targeted health education are recommended to ensure informed, safe, and evidence-based use of obstetric ultrasonography in urban Nigerian Cities.

Key words: Obstetric ultrasonography, antenatal care, knowledge, attitude.

Online access: <https://sjhrs.com.ng>

DOI: <https://doi.org/10.60787/sjhrs.vol1no1.9>

How to cite: Umar et. al. Knowledge, attitude and beliefs of gravid women in routine obstetric ultrasonography. The Sub-Saharan Journal of Health & Radiation Sciences, 2026;1(1): 55 - 61.

Introduction

Obstetric ultrasonography is a vital diagnostic tool in modern antenatal care, it uses a non-ionizing form of radiation in providing real-time imaging for the assessment of fetal growth, placental location, amniotic fluid volume, and detection of congenital anomalies. It supports both clinical decision-making and patient reassurance, and when properly integrated into antenatal services, can significantly improve perinatal outcomes [1]. The World Health Organization recommends at least one ultrasound scan before 24 weeks of gestation for all pregnant women, ideally between 18 and 22 weeks, as part of routine antenatal care [2]. Despite the widespread use and clinical endorsement of obstetric ultrasonography, knowledge, attitudes, and practices (KAP) among pregnant women concerning its use remain inconsistent across different populations and healthcare settings [3,4].

In low- and middle-income countries (LMICs), factors such as limited access to information, low health literacy, cultural beliefs, and infrastructural constraints have contributed to a complex relationship between patients and ultrasound services [3]. In some communities, pregnant women view sonographic scans with suspicion, believing they may expose the fetus to harmful radiation or cause miscarriage [5]. Others, conversely, request frequent scans for reassurance or non-clinical reasons such as gender determination, sometimes placing strain on under-resourced facilities [6]. These patterns point to the presence of both misconceptions and underutilization, shaped by socio-cultural and systemic factors.

In Nigeria, the integration of obstetric ultrasonography into routine antenatal care is progressing steadily, especially in urban centres like Lagos, where both public and private facilities offer scanning services. Yet, national-level data reveal considerable variation in utilization, influenced by maternal education, parity, socioeconomic status, and prior experience with obstetric complications [7]. Even in urban settings where sonographic equipment is available, uptake may be limited if women lack appropriate knowledge or harbour concerns about its safety and necessity. On the other hand, the overuse of ultrasound in private hospitals, often driven by commercial incentives or patient

pressure, raises questions about the quality and clinical justification of such practices [8].

Several Nigerian studies have documented gaps in pregnant women's understanding of the purpose and limitations of obstetric ultrasonography. Eze et al. [9] found that while most pregnant women were aware of ultrasound, a significant proportion misunderstood its diagnostic capabilities or assumed it could treat fetal problems. Similarly, Obajimi et al. [10] reported that although women generally had a favourable attitude toward ultrasound scanning, many lacked information about when and why it should be done. Furthermore, concerns about cost, safety, and inadequate communication from healthcare providers have been recurrent barriers to effective use [11].

Given the expanding role of ultrasound in antenatal care, particularly in densely populated urban environments like Lagos, there is a need to assess how pregnant women perceive and engage with this technology. Lagos presents a unique context, with its blend of public tertiary hospitals, general hospitals, and private maternity centres catering to diverse socioeconomic groups. Understanding the knowledge, attitudes, and practices of pregnant women in such a setting can inform strategies to improve patient education, optimize ultrasound scan utilization, and align service provision with evidence-based protocols.

This study therefore seeks to evaluate the level of knowledge, prevailing attitudes, and observable practices among pregnant women toward routine obstetric ultrasonography in selected health facilities in Lagos, Nigeria. The findings aim to inform health education programs, provider - patient communication strategies, and policy efforts aimed at improving maternal health outcomes through better integration of ultrasound services into routine antenatal care.

Materials and Methods

This study employed a prospective cross-sectional design to assess the knowledge, attitude, and participation (KAP) of pregnant women toward routine obstetric ultrasonography. It was conducted in Lagos State, Nigeria. Four health facilities were purposively selected to reflect this diversity:

Lagos University Teaching Hospital (LUTH), Idi-Araba; Somolu General Hospital; Perez Medcare Hospital, Lekki; and Solace Hospital, Mushin. The study population consisted of pregnant women attending antenatal clinics at these institutions. Inclusion criteria required participants to be at least 18 years of age, at any stage of gestation, currently receiving antenatal care at one of the selected sites, and capable of providing informed consent. A total of 210 respondents were recruited using a stratified convenience sampling technique, with each hospital serving as a stratum. Eligible participants were selected consecutively during antenatal clinic hours.

Data were collected using a structured, pretested, interviewer-administered questionnaire developed for the study. The instrument included four domains: demographic information (age, education, gestational age, parity, congenital abnormality history); knowledge (awareness and understanding of ultrasound use, safety, and limitations); attitude (beliefs, trust, and willingness to undergo scans); and practice (number and timing of scans and previous experiences). The questionnaire's content validity was reviewed by experts in obstetric ultrasonography and maternal health, and a pilot test was conducted on 20 women outside the study setting. Trained research assistants administered the questionnaire in English, Yoruba, and Nigerian Pidgin, based on participant preference, in private consultation rooms. Written and verbal informed consent was obtained from each participant, and each interview lasted approximately 20 to 25 minutes.

Data were coded, entered Microsoft Excel, and analysed using IBM SPSS Statistics version 26.0. Descriptive statistics (frequencies, percentages, and means) were used to summarize respondent characteristics and responses related to knowledge, attitude, and practice. Knowledge was assessed through aggregated correct responses, attitude was evaluated based on self-reported beliefs and acceptance, and practice was measured by prior and current ultrasound use. Cross-tabulations and Chi-square tests were used to explore associations between demographic variables and KAP indicators, with statistical significance set at $p < 0.05$. Ethical approval was obtained from the Health Research

Ethics Committee of Lagos University Teaching Hospital, and administrative permission was granted by all participating facilities. Participants were assured of confidentiality and anonymity, and no personally identifying information was collected or stored.

Results

Among 210 pregnant women surveyed across four hospitals in Lagos, most were aged 26–35 years, had secondary-level education, and were in their second trimester. While nearly all had undergone fetal scans before, and over 90% had been informed about the function of prenatal ultrasound, knowledge about its non-radiating nature was limited. Most participants correctly believed ultrasound helps monitor fetal wellbeing and viewed repeated scans as safe. Routine ultrasound use was common, with high acceptance for private hospital services, though fewer had received additional scans. Despite this widespread use, many expressed anxieties, and over a third feared harm to the fetus. Misconceptions about safety and uncertainty about its role in preventing miscarriage persisted among a notable minority. Table 1 – 4 show the result in detail.

Table 1: Demographic Characteristics of Respondents

Variable	Category	Freq	(%)
Age Group	18 – 25	49	23.3
	26 – 35	107	51.0
	36 – 45	54	25.7
Education Level	Primary School	96	45.7
	Secondary School	71	33.8
	Post-Secondary Education	33	15.7
	No Formal Education	10	4.8
Gestational Week	12 Weeks	25	11.9
	13 – 26 Weeks	106	50.5
	27 – 40 Weeks	79	37.6
Previous Congenital Condition	Yes	78	37.1
	No	132	62.9

Table 2: Knowledge of Obstetric Ultrasound Among Pregnant Women

Knowledge Indicator	Response	Frequency	Percentage (%)
Any fetal exam previously performed	Yes	191	91.0
	No	19	9.0
Knowledge of prenatal ultrasound	Yes	157	74.8
	No	53	25.2
Doctor explained ultrasound function	Yes	190	90.5
	No	15	7.1
	I don't know	5	2.4
Knows ultrasound is non-radiating	Yes	88	41.9
	No	80	38.1
	Idon't know	42	20.0
Knows ultrasound shows child's wellbeing	Yes	198	94.3
	No	12	5.7
Believes multiple ultrasounds are harmless	Yes	185	88.1
	No	21	10.0
	I don't know	4	1.9
Believes ultrasound detects congenital abnormalities	Yes	115	54.8
	No	57	27.1
	I don't know	38	18.1

Table 3: Attitudes Toward Obstetric Ultrasound Scan

Attitudinal Indicator	Response	Frequency	Percentage (%)
Has had first ultrasound	Yes	180	85.7
	No	30	14.3
Has undergone routine prenatal ultrasound	Yes	183	87.1
	No	27	12.9
Has undergone additional ultrasound scans	Yes	60	28.6
	No	150	71.4
Has done ultrasound in a previous pregnancy	Yes	201	95.7
	No	9	4.3
Willing to do ultrasound in private hospital	Yes	174	82.9
	No	36	17.1

Table 4: Beliefs Regarding Obstetric Ultrasound

Practice or Belief	Response	Frequency	Percentage (%)
Feels anxious or afraid of ultrasound	Yes	161	76.7
	No	49	23.3
Experienced pain/discomfort during ultrasound	Yes	13	6.2
	No	197	93.8
Believes ultrasound may harm the unborn child	Yes	80	38.1
	No	130	61.9
Believes ultrasound may harm her own health	Yes	46	21.9
	No	164	78.1
Believes ultrasound could prevent miscarriage	Yes	89	42.4
	No	79	37.6
	I don't know	42	20.0

Discussion

The results of this study highlight a high level of exposure to obstetric ultrasonography among

pregnant women in Lagos, with 91% having undergone at least one Obstetric scan and 90.5% reporting that their doctor explained the purpose of

the examination. This is consistent with findings from similar urban-based studies in Nigeria and other sub-Saharan African countries, where routine ultrasonography is increasingly integrated into antenatal care, particularly in secondary and tertiary facilities [12,13].

In a study conducted in Ibadan, over 85% of antenatal attendees had previously undergone ultrasound scans, though fewer understood its diagnostic capabilities [14]. Despite widespread use, knowledge gaps remain. Only 41.9% of respondents knew that ultrasound is a non-ionizing imaging modality, while 38.1% believed it involved harmful radiation, and 20% were unsure. This indicates persistent misconceptions, as observed in previous studies where limited health literacy and absence of formal counselling contributed to misunderstandings of ultrasound safety [15,16]. In contrast, respondents showed high awareness of ultrasound's role in monitoring foetal wellbeing (94.3%) and detecting congenital abnormalities (54.8%), reflecting a partial but functionally important understanding of its clinical benefits.

The positive attitude observed among most participants (87.1%) had undergone routine antenatal ultrasound and 82.9% were willing to use private facilities; suggests a strong cultural acceptance of obstetric ultrasound, especially among urban women with secondary or tertiary education. Similar patterns were found in studies from Lagos and Port Harcourt, where affordability and accessibility influenced decisions to seek repeat scans in private settings [17,18]. However, only 28.6% reported receiving additional scans beyond the routine, suggesting potential economic or systemic constraints, such as out-of-pocket payment and limited scan slots.

While practice patterns reflect routine utilization, anxiety remains a significant concern, with 76.7% reporting fear or discomfort regarding ultrasound. About 38.1% believed ultrasound could harm the foetus, and 21.9% expressed fear for their own health. These figures are notable and may reflect deeply rooted cultural beliefs or mistrust in medical technology, as documented in similar qualitative studies in Nigerian communities [19]. These findings call attention to the need for structured antenatal counselling that not only promotes ultrasound use but also addresses emotional and informational gaps.

The belief that ultrasound could prevent miscarriage was shared by only 42.4% of respondents, while 20% were unsure. This indicates a moderate level of

misinformation, as Obstetrics ultrasound is primarily diagnostic and not preventive nor curative. Previous research has also shown that such misunderstandings persist when there is inadequate provider communication or when women rely heavily on peer information [20].

Limitations of the Study

1. The cross-sectional design nature of the research, which prevents the establishment of causal relationships, and by the use of convenience sampling, which may introduce selection bias and limit the representativeness of the findings.
2. The restriction to four health facilities in Lagos further reduces the generalizability of the results to other regions.
3. Reliance on self-reported, interviewer-administered questionnaires may lead to recall and social desirability biases, as well as potential interviewer influence.

Conclusion: Pregnant women in Lagos show high acceptance and use of routine obstetric ultrasound, yet significant knowledge gaps and misconceptions persist. While most understand its role in monitoring fetal health, many lack accurate safety knowledge, specifically that ultrasound uses non-ionizing radiation, and harbour unfounded fears. This reveals a disconnect between utilization and understanding. Current patient education and communication strategies are insufficient to address these cultural and informational gaps.

Conflict of interest: Nil

Funding: Nil

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