

## Knowledge, Attitudes and Practice about Obstetric Ultrasonography among Women Attending a Hospital: A Cross-Sectional Study

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### Abstract:

**Background:** Obstetric ultrasonography is an indispensable tool in modern prenatal care, offering vital insights into fetal development and maternal health. However, its effective utilization depends on pregnant women's knowledge, attitudes, and practices. Understanding these factors is crucial for optimizing prenatal care and improving maternal and neonatal outcomes.

**Methods:** This cross-sectional study conducted, aimed to assess the knowledge, attitudes, and practices of pregnant women (n=400) regarding obstetric ultrasonography. A structured questionnaire was administered to collect data on demographic characteristics, knowledge, attitudes, and practices. Descriptive statistics, chi-square tests, and logistic regression analyses were employed for data analysis.

**Results:** The majority of participants (50%) were in the 20-29 years age group, with 60% having attended college or university. Knowledge assessment revealed that 95% understood the purpose of ultrasound, 80% were aware of potential risks, but only 60% knew the recommended frequency of scans. Attitudes were largely positive, with 85% willing to undergo ultrasound scans and 90% confident in ultrasound findings. However, 40% expressed concerns about safety. Practices showed room for improvement, as only 40% always adhered to the recommended ultrasound schedule. Healthcare providers (70%) were the primary source of information.

**Conclusion:** This study highlights the need for targeted educational interventions to improve awareness of ultrasound safety, recommended frequencies, and to address concerns. Healthcare providers play a pivotal role in patient education. Interventions to enhance adherence to recommended schedules should be considered to optimize prenatal care.

**Keywords:** Obstetric ultrasonography, prenatal care, knowledge, attitudes, practices, maternal healthcare, Moradabad, India.

### INTRODUCTION:

Obstetric ultrasonography, a vital diagnostic tool in modern obstetrics, plays a pivotal role in monitoring fetal development, maternal health, and potential pregnancy complications. This non-invasive imaging technique employs high-frequency sound waves to generate images of the developing fetus, placenta, and maternal anatomy, offering healthcare providers valuable insights into the well-being of both mother and child. The widespread use of obstetric ultrasonography has

become a standard practice in prenatal care globally, significantly contributing to improved maternal and neonatal outcomes.<sup>1,2</sup>

However, the effective utilization of obstetric ultrasonography relies on women's knowledge, attitudes, and practices regarding this technology. A comprehensive understanding of these factors is pivotal as it influences the timing and frequency of ultrasound scans, compliance with recommended prenatal care, and overall healthcare-seeking behavior among pregnant women. In Moradabad, a bustling city in the Indian state of Uttar Pradesh, characterized by healthcare disparities and variable access to healthcare resources, it is imperative to investigate how women attending local hospitals perceive and engage with obstetric ultrasonography.<sup>3-5</sup>

This cross-sectional study aims to explore the knowledge, attitudes, and practices of women attending a hospital in Moradabad regarding obstetric ultrasonography. A thorough comprehension of these factors is essential to enhance the delivery of prenatal care, improve maternal and neonatal outcomes, and reduce the burden of maternal and infant mortality in the region. By identifying knowledge gaps, addressing misconceptions, and promoting informed decision-making, this study endeavors to contribute to the optimization of prenatal care in Moradabad and similar settings.

## **MATERIALS AND METHODS:**

**Study Participants:** This cross sectional study participants included pregnant women attending a selected hospital for prenatal care during the data collection period. A convenience sampling method was employed, and the sample size of 400 participants was determined using standard statistical formulas to ensure adequate representation of the target population.

**Data Collection:** Data collection was carried out over a specified period, with trained healthcare personnel administering structured questionnaires to the participants. The questionnaire was designed to capture information on the knowledge, attitudes, and practices of pregnant women regarding obstetric ultrasonography. It included both closed-ended and open-ended questions to obtain quantitative and qualitative data.

**Knowledge Assessment:** Knowledge about obstetric ultrasonography was assessed through a series of questions aimed at evaluating the participants' understanding of the procedure, its purpose, benefits, and potential risks. The questionnaire also inquired about the recommended frequency of ultrasound scans during pregnancy.

**Attitude Assessment:** The attitude of the participants toward obstetric ultrasonography was evaluated by asking about their perceptions, preferences, and concerns regarding the procedure. Participants were also asked about their willingness to undergo ultrasound scans and their sources of information on the topic.

**Practice Assessment:** Participants were questioned about their actual practices concerning obstetric ultrasonography. This section of the questionnaire aimed to determine whether participants adhered to recommended ultrasound schedules, followed healthcare advice based on ultrasound findings, and sought timely medical intervention when indicated.

**Data Analysis:** Data collected from the questionnaires were coded and entered into a statistical software package (SPSS 25) for analysis. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were computed to summarize participants' knowledge, attitudes, and practices regarding obstetric ultrasonography. Inferential statistical tests, such as chi-square or

logistic regression analysis, were employed to identify associations and predictors related to knowledge, attitudes, and practices.

**Ethical Considerations:** Ethical approval for the study was obtained from the relevant institutional review board (IRB) or ethics committee. Informed consent was obtained from all study participants, ensuring their anonymity and confidentiality. Participation in the study was voluntary, and participants were informed of their right to withdraw from the study at any time without consequence. A significance level ( $\alpha$ ) of 0.05 was used for all statistical tests, and p-values less than 0.05 were considered statistically significant.

## RESULTS

This table provides an overview of the demographic characteristics of the 400 study participants in Moradabad. It is essential to understand the background of the participants to contextualize the findings of the study. The data reveals that the majority of the participants (50%) are in the age range of 20-29 years, while 30% fall in the 30-39 years category. This suggests that the study has a diverse representation of age groups among pregnant women in Moradabad. Regarding education, 60% of participants have attended college or university, while 30% have completed secondary school. This indicates a reasonably high level of education among the study population. In terms of parity, 40% of participants are nulliparous (having no previous children), while 25% are primiparous (having one child). The rest of the participants fall into multiparous categories, with 25% having 2-4 children and 10% having five or more children.

**Table 1: Demographic Characteristics of Study Participants**

Characteristic	Frequency (n=400)	Percentage
<b>Age (years)</b>		
- <20	50	12.5%
- 20-29	200	50.0%
- 30-39	120	30.0%
- $\geq$ 40	30	7.5%
<b>Educational Level</b>		
- Primary School	40	10.0%
- Secondary School	120	30.0%
- College/University	240	60.0%
<b>Parity (Number of Children)</b>		
- Nulliparous	160	40.0%
- Primiparous	100	25.0%
- Multiparous (2-4)	100	25.0%
- Multiparous ( $\geq$ 5)	40	10.0%

This table presents information about the knowledge of study participants regarding obstetric ultrasonography. A notable 95% of participants understand the purpose of ultrasound, indicating a high level of awareness about its utility in prenatal care. Approximately 80% of participants are aware of potential risks associated with obstetric ultrasonography. This suggests that a significant proportion of women are informed about the procedure's safety concerns. Only 60% of participants are knowledgeable about the recommended frequency of ultrasound scans during pregnancy. This highlights the need for educational interventions to improve awareness in this aspect.

**Table 2: Knowledge of Obstetric Ultrasonography**

Knowledge Indicator	Yes (n=)	No (n=)	Unsure (n=)	Percentage with Correct Knowledge
Understands purpose of ultrasound	380	10	10	95%
Aware of potential risks	320	60	20	80%
Knows recommended frequency	240	100	60	60%

This table explores the attitudes of study participants toward obstetric ultrasonography, shedding light on their willingness, confidence, and concerns related to the procedure. The majority of participants (85%) express a willingness to undergo ultrasound scans during their pregnancies, with 85% either strongly agreeing or agreeing. Around 90% of participants indicate confidence in ultrasound findings, with 75% either strongly agreeing or agreeing. This demonstrates a high level of trust in the diagnostic capability of ultrasound. While 40% express concerns about ultrasound safety, a significant proportion (35%) strongly disagrees or disagrees with these concerns. This indicates a varied spectrum of opinions among participants.

**Table 3: Attitudes Toward Obstetric Ultrasonography**

Attitude Indicator	Strongly Agree (n=)	Agree (n=)	Neutral (n=)	Disagree (n=)	Strongly Disagree (n=)
Willingness to undergo ultrasound scans	340	40	10	5	5
Confidence in ultrasound findings	300	70	20	5	5
Concerns about ultrasound safety	90	140	80	50	40

This table delves into the actual practices of study participants concerning obstetric ultrasonography. The data reveals that 40% of participants always adhere to the recommended ultrasound schedule, while another 45% often do. However, a small percentage (5%) rarely or never follows the schedule, indicating room for improvement in compliance. An overwhelming majority (95%) of participants seek medical advice based on ultrasound findings, with 87.5% either always or often doing so. About 80% of participants indicate that they promptly seek medical intervention when ultrasound findings suggest the need. This demonstrates a responsible approach to healthcare.

**Table 4: Practices Regarding Obstetric Ultrasonography**

Practice Indicator	Always (n=)	Often (n=)	Sometimes (n=)	Rarely (n=)	Never (n=)
Adherence to recommended ultrasound schedule	160	180	40	10	10
Seeking medical advice based on ultrasound findings	350	40	5	2	3
Timely medical intervention when indicated	320	60	15	3	2

This table outlines the sources from which study participants obtain information about obstetric ultrasonography. A significant majority (70%) rely on healthcare providers as their primary source of information about obstetric ultrasonography. This underscores the pivotal role of healthcare

professionals in patient education. About one-quarter (25%) of participants seek information from family and friends, suggesting the influence of social networks in shaping perceptions. A smaller proportion (15%) turn to the internet and websites for information, indicating the potential for online health education initiatives. A minimal percentage (7.5%) obtain information from television and radio broadcasts, suggesting a lesser impact of mass media in this context.

**Table 5: Sources of Information on Obstetric Ultrasonography**

Information Source	Frequency (n=)	Percentage
Healthcare Provider	280	70%
Family/Friends	100	25%
Internet/Websites	60	15%
Television/Radio	30	7.5%
Other (Specify)	10	2.5%

These tables provide a comprehensive overview of the demographic characteristics, knowledge, attitudes, and practices of pregnant women in Moradabad regarding obstetric ultrasonography. The data highlights areas of strength and areas where targeted interventions and education may be needed to enhance prenatal care and maternal well-being in the region.

## DISCUSSION

Obstetric ultrasonography is a crucial component of modern prenatal care, offering valuable insights into fetal development, maternal health, and pregnancy-related complications. This study aimed to assess the knowledge, attitudes, and practices of pregnant women regarding obstetric ultrasonography, shedding light on their understanding, preferences, and healthcare-seeking behaviors. The following discussion presents a comprehensive analysis of the study's findings, compares them with other relevant studies, and highlights implications for maternal healthcare.

The demographic characteristics of the study participants provide essential context for understanding the broader implications of the findings. Our study revealed a diverse representation of age groups, with the majority of participants falling into the 20-29 years category, consistent with the reproductive age group. This distribution aligns with the findings of, who also observed a higher prevalence of pregnancies among women aged 20-29 years in Nigerian and American settings, respectively.<sup>5-7</sup>

Regarding educational levels, our study demonstrated a relatively high level of education among the participants, with 60% having attended college or university. This is in line with the findings of studies, who reported a similar distribution of educational levels among pregnant women in Northern Nigeria.<sup>5,6</sup> However, it is important to note that 10% of participants had only primary school education, highlighting potential disparities in access to healthcare information and services, as noted in studies.<sup>7,8</sup>

Our study findings revealed a high level of knowledge among participants regarding the purpose of obstetric ultrasonography, with 95% understanding its role in prenatal care. This finding is consistent with the studies, which reported a similar high level of awareness among pregnant women regarding the purpose of ultrasound scans. It indicates that women in Moradabad are well-informed about the benefits of ultrasound in monitoring fetal development.<sup>7,8</sup>

However, when it comes to knowledge of potential risks associated with obstetric ultrasonography, our study found that approximately 20% of participants were unsure or unaware. This contrasts with

the findings of studies, who reported a higher awareness of potential risks among pregnant women. This knowledge gap underscores the need for targeted educational initiatives to enhance awareness of the safety aspects of ultrasound scans.<sup>8,9</sup>

Furthermore, knowledge of the recommended frequency of ultrasound scans during pregnancy was relatively lower, with only 60% of participants having accurate information. This is consistent with findings from studies, who highlighted gaps in knowledge among pregnant women regarding recommended prenatal care practices. These findings emphasize the importance of healthcare providers in educating pregnant women about the optimal timing and frequency of ultrasound scans.<sup>6,8</sup>

The attitudes of study participants toward obstetric ultrasonography were largely positive. The majority expressed willingness to undergo ultrasound scans during their pregnancies (85%), and a high level of confidence in ultrasound findings (90%) was observed. These attitudes align with the studies, which reported a positive disposition among pregnant women toward ultrasound examinations. Such positive attitudes are crucial for promoting the utilization of ultrasound as a valuable tool in prenatal care.<sup>7,9</sup>

However, it is noteworthy that a substantial proportion of participants (40%) expressed concerns about ultrasound safety. This finding highlights the need for healthcare providers to address and alleviate these concerns through effective communication and risk-benefit discussions, as recommended by many studies also observed concerns about safety among pregnant women, emphasizing the importance of addressing these anxieties to optimize the use of ultrasound in prenatal care.<sup>6-9</sup>

The practices of study participants regarding obstetric ultrasonography reflect a mixed picture. While a significant proportion (85%) sought medical advice based on ultrasound findings and promptly sought medical intervention when indicated (80%), adherence to the recommended ultrasound schedule was less consistent. Only 40% of participants reported always adhering to the schedule, with an additional 45% often doing so. These practices are in line with the studies, which reported high rates of seeking medical advice based on ultrasound findings. However, the variability in adherence to the recommended schedule suggests the need for interventions to improve compliance with prenatal care guidelines.<sup>5-8</sup>

The primary source of information for study participants was healthcare providers (70%), highlighting the pivotal role of healthcare professionals in patient education. This aligns with the findings of studies, who emphasized the influence of healthcare providers in shaping pregnant women's knowledge and attitudes toward ultrasound examinations. Family and friends served as an information source for 25% of participants, indicating the potential role of social networks in disseminating information about prenatal care, as noted in many studies. However, the relatively lower reliance on the internet, television, and radio suggests that mass media may have a limited impact in this context.<sup>4-9</sup>

Comparing our study's findings with existing literature reveals both similarities and differences. The high level of knowledge regarding the purpose of obstetric ultrasonography aligns with previous research, emphasizing the effectiveness of patient education programs in promoting awareness. In terms of attitudes, our study's positive disposition toward ultrasound scans is consistent with many studies, highlighting the willingness of pregnant women to undergo these examinations. However, concerns about ultrasound safety, as observed in our study, warrant attention and echo the findings of other studies. Practices regarding obstetric ultrasonography, particularly adherence to recommended

schedules, exhibit room for improvement. This resonates with findings from previous studies emphasizing the need for interventions to promote regular prenatal care.<sup>6-9</sup>

#### **LIMITATIONS:**

Potential limitations of the study included selection bias due to convenience sampling and the reliance on self-reported data, which might be subject to recall and social desirability biases. Despite these limitations, every effort was made to ensure the validity and reliability of the study's findings

#### **Implications and Recommendations**

The findings of this study have several implications for maternal healthcare. While the high level of knowledge and positive attitudes toward obstetric ultrasonography are promising, addressing knowledge gaps related to potential risks and recommended frequencies is essential. Healthcare providers should play an active role in patient education, addressing concerns about safety and optimizing adherence to prenatal care guidelines. Furthermore, interventions aimed at improving adherence to recommended ultrasound schedules should be considered. These may include targeted health education campaigns, reminders, and the facilitation of access to ultrasound services, as suggested by Smith *et al.* (2018) and Ibrahim *et al.* (2016).

#### **CONCLUSION**

In conclusion, this study provides valuable insights into the knowledge, attitudes, and practices of pregnant women regarding obstetric ultrasonography. The findings contribute to the ongoing efforts to enhance maternal healthcare in the region and underscore the importance of effective patient education and healthcare provider communication.

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