

Factors Influencing the Utilization of Epidural Analgesia among Obstetric Caregivers in Southeast Nigeria

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ABSTRACT

Background: Epidural analgesia is recognized as an effective method for labor pain management; however, its utilization remains low in Nigeria. This study examines the factors influencing the adoption of epidural analgesia among obstetric caregivers in Southeast Nigeria, encompassing knowledge, attitudes, practice, and accessibility.

Materials and Methods: This descriptive cross-sectional study was conducted across selected healthcare facilities in Southeast Nigeria, including tertiary, secondary, and primary care centers. A multistage sampling technique recruited 265 obstetric caregivers (obstetricians, anesthetists, midwives, and nurses) with at least one year of experience. Data were collected via a structured, self-administered questionnaire, validated through expert review and pilot testing (Cronbach's alpha: 0.7). Descriptive statistics summarized demographics, knowledge, attitudes, and practice.

Results: Of the participants, 63.02% were female, with 40% having 11–15 years of experience. Although 100% of caregivers were aware of epidural analgesia, 29.81% had not received formal training. While 73.21% of facilities offered epidural analgesia, frequent use was limited by barriers such as high cost (42.96%), lack of

trained personnel (26.30%), and limited equipment (9.81%). Positive attitudes towards epidural use were prevalent, yet only 18.49% reported adequate staff training.

Conclusion: The utilization of epidural analgesia in Southeast Nigeria is influenced by caregiver training, resource availability, and cultural beliefs. Improving training, funding, and patient education could enhance utilization rates.

Keywords: Epidural analgesia, Obstetric caregivers, Labor pain management, Southeast Nigeria, Healthcare barriers, Caregiver attitudes, Maternal healthcare

INTRODUCTION

Epidural analgesia (EA) represents one of the most effective pain management techniques available in modern obstetrics, particularly during labor and delivery. EA offers numerous advantages, including significant pain relief, reduction in the maternal stress response, and preservation of maternal alertness during childbirth ^[1]. Despite its proven benefits and widespread acceptance in many high-income settings, the uptake of EA remains relatively low in certain parts of the world, particularly in sub-Saharan Africa. In Nigeria, the rate of EA utilization is low, with substantial regional variations attributed to sociocultural factors, caregiver knowledge and attitudes, and logistical issues within healthcare systems ^[2]. Examining the factors that influence the use of EA among obstetric caregivers in Southeast Nigeria is critical for understanding these regional disparities and for developing targeted interventions aimed at improving access to effective pain management for Nigerian women.

The use of EA as a method of pain management during labor is well-documented, and studies highlight its effectiveness and safety when administered by trained professionals ^[3]. EA provides consistent analgesia and, when appropriately managed, contributes to reduced labor stress and improved maternal satisfaction ^[5]. It has also been associated with positive maternal and neonatal outcomes, including lower levels of postpartum depression and better early maternal-infant bonding ^[6]. In addition, EA's role in preserving consciousness and responsiveness during labor makes it a preferred option for many women, as it enables active participation in the birthing process.

The adoption of EA varies widely across different global regions, with factors such as healthcare provider availability, cultural attitudes toward labor pain, and access to anesthetic resources playing significant roles ^[6]. In high-income countries like the United States and Canada, the utilization rate of EA is relatively high, reaching upwards of 70% in some regions. Conversely, in many low- and middle-income countries, including Nigeria, the use of EA remains significantly lower due to limitations in healthcare infrastructure, as well as gaps in professional training and equipment availability. In Nigeria, access to EA is particularly constrained in rural and underserved areas where anesthesiologists and necessary resources are less accessible ^[7].

Healthcare providers play a pivotal role in influencing the uptake of EA, as their knowledge, attitudes, and perceptions directly impact the options presented to expectant mothers ^[8]. Studies have shown that a substantial number of healthcare providers in Nigeria hold reservations about the safety and efficacy of EA, often stemming from a lack of adequate information and training. For instance, a study by ^[9] in Southeast Nigeria found that

limited exposure to anesthesia techniques and concerns about potential side effects were prevalent among caregivers, with many relying on traditional pain management methods. Additionally, provider hesitancy is often compounded by the influence of cultural and personal beliefs regarding labor pain and pain tolerance, which may affect the willingness of obstetric caregivers to recommend EA to patients.

The decision-making process surrounding labor analgesia is deeply influenced by cultural beliefs and societal attitudes toward childbirth. In many African cultures, enduring labor pain is perceived as a rite of passage, and EA is sometimes viewed as unnecessary or even unnatural ^[10]. For obstetric caregivers in Southeast Nigeria, such cultural factors can create internal conflicts between professional recommendations and respect for community norms. Furthermore, systemic barriers such as inadequate anesthetic supplies, limited financial resources, and lack of institutional support also contribute to low EA utilization rates. As ^[11] note, most hospitals in Southeast Nigeria lack the resources required to offer EA on a regular basis, which poses a significant barrier to access even when caregivers are inclined to provide it.

The availability and quality of professional training for anesthesiologists and obstetricians is another crucial factor in determining EA uptake. In many Nigerian medical institutions, the curriculum includes limited hands-on exposure to EA techniques, leaving some obstetric caregivers without the requisite skills or confidence to administer EA safely. Institutional policies and healthcare leadership also influence the availability of EA. For example, facilities that prioritize comprehensive pain management protocols for labor often have higher EA utilization rates. In contrast, in under-resourced hospitals, policy restrictions and budgetary limitations can prevent the routine provision of EA, even when caregivers are willing and able to administer it.

This study addresses a significant gap in understanding the specific barriers and facilitators to EA utilization among obstetric caregivers in Southeast Nigeria. While numerous studies have explored the perceptions of Nigerian women regarding labor pain and analgesia, limited research has focused on the perspective of obstetric caregivers who are responsible for recommending or administering EA. Given the impact of healthcare provider attitudes and institutional factors on patient care options, this research aims to identify and analyze the various influences on EA uptake in Southeast Nigeria. Findings from this study will contribute to the development of targeted educational programs, policy recommendations, and resource allocation strategies to improve access to safe and effective pain management during childbirth in this region.

MATERIALS AND METHODS

Study Design

This study utilized a descriptive cross-sectional design to investigate the factors influencing the utilization of epidural analgesia among obstetric caregivers in Southeast Nigeria. This design allowed for the collection of data from a representative sample of obstetric caregivers, providing a snapshot of the current utilization rates, perceptions, and influencing factors within the study population.

Study Area

The study was conducted in selected tertiary, secondary, and primary healthcare facilities across Southeast Nigeria. These include teaching hospitals, state general hospitals, primary health centres and private maternity

centers located in the urban and rural settings of the region. The selected locations provided a broad perspective on the knowledge and attitudes toward epidural analgesia across varying levels of healthcare delivery.

Study Population

The target population includes obstetric caregivers working in the selected healthcare facilities, including obstetricians, anesthetists, midwives, and nurses directly involved in maternity care. These professionals are key stakeholders in the decision-making process and implementation of epidural analgesia.

Inclusion and Exclusion Criteria

- **Inclusion Criteria:** Obstetric caregivers (obstetricians, anesthetists, midwives, and maternity nurses) with at least one year of experience in maternal healthcare.
- **Exclusion Criteria:** Caregivers with less than one year of experience, caregivers not directly involved in obstetric care, and those unwilling to participate in the study.

Sampling Technique

A multistage sampling technique was employed:

1. **Stage 1:** Stratified sampling was used to categorize healthcare facilities into public and private institutions within the five states of Southeast Nigeria.
2. **Stage 2:** In each state, a simple random sampling method was used to select one tertiary, one secondary and one primary healthcare facility from both urban and rural areas. This was to ensure diversity in socio-economic and cultural settings.
3. **Stage 3:** Five healthcare professionals in each health facility who met the criteria were recruited for the study via simple random sampling. This brought the sample size to 265 participants.

Ethical Consideration

The study adhered to the ethical principles of autonomy, beneficence, non-maleficence, and justice. Informed consent was obtained from each participant before data collection, and participants were assured of confidentiality and anonymity. Participation in the study was voluntary, and participants had the right to withdraw from the study at any time without any penalty.

Data Collection Instrument

A structured, self-administered questionnaire was developed based on literature and tailored to meet the specific objectives of the study. The questionnaire comprised five sections:

1. **Demographic Characteristics:** Age, gender, profession, years of experience, and type of healthcare facility.
2. **Knowledge of Epidural Analgesia:** Knowledge questions assessed awareness, indications, contraindications, potential complications, and benefits of epidural analgesia.

3. **Attitudes Toward Epidural Analgesia:** Likert-scale questions evaluated caregivers' attitudes toward the adoption of epidural analgesia in obstetric care.
4. **Practice and Accessibility:** Questions explored availability and accessibility of epidural analgesia in health facility.
5. **Factors Influencing Utilization:** Questions explored barriers to epidural analgesia usage, including perceived cost, availability of skilled personnel, institutional support, and cultural beliefs.

Data Collection Procedure

Data collection was conducted over a 4-month period by trained research assistants familiar with obstetric healthcare settings. Each participant was approached in their respective departments, provided with an information sheet explaining the study, and given a consent form. The questionnaire, which took approximately 10-15 minutes to complete, was filled out by the participants during work hours. Research assistants were available to clarify questions as needed.

Validity and Reliability

- **Content Validity:** The questionnaire was reviewed by experts in obstetrics, anesthesiology, and survey design to ensure its relevance and comprehensiveness.
- **Reliability:** A pilot test was conducted with 20 obstetric caregivers in a healthcare facility outside the study area to assess the internal consistency of the instrument. The Cronbach's alpha coefficient was calculated, and a coefficient of 0.7 was achieved.

Data Analysis

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics (frequencies and percentages) summarized demographic characteristics, knowledge, and attitudes.

RESULTS

The majority of respondents (41.13%) were aged 35–44, followed by those in the 45–54 age range (27.92%). Most participants were female (63.02%) and held at least a Bachelor's degree (35.47%), indicating a relatively high level of education. Nurses constituted the largest occupational group (35.09%), and a significant portion of participants had 11–15 years of experience in obstetric care (40%) (**Table 1**).

All respondents (100%) were aware of epidural analgesia, with 70.19% having received formal training. Familiarity with epidural administration varied, with 59.62% being "somewhat familiar" and 21.89% "very familiar." Knowledge of benefits was high, with most respondents rating it as "good" (66.04%) or "excellent" (24.91%). Additionally, 70.19% were aware of the risks involved, and 90.94% had experience administering or assisting with epidural procedures (**Table 2**).

Attitudes were generally positive, with 55.47% feeling "positive" and 32.45% "strongly positive" about epidural use in obstetrics. The majority (71.32%) "strongly agree" that epidural analgesia is effective for labor pain management, and 44.53% believe it is a safe option. Patient satisfaction was also deemed likely to improve with epidural availability (41.89% "strongly agree," 46.79% "agree"). However, cost was identified as a limiting factor, with 87.17% (37.36% "strongly agree" and 49.81% "agree") (**Table 3**).

Epidural analgesia was available in 73.21% of the facilities, yet frequency of administration varied, with 36.98% indicating occasional use. Anesthetists (53.58%) were the primary administrators, but delays in accessing an anesthetist were notable, with 38.49% reporting waits over one hour. When epidurals were unavailable, non-pharmacological pain relief methods (58.11%) were preferred (**Table 4**).

Barriers to epidural use included high costs (42.96%) and a lack of trained personnel (26.30%). Only 10.57% of respondents felt their facility had adequate anesthetist staffing. There was also a significant impact of cultural or religious beliefs, with 74.34% citing it as a deterrent. Improving usage would require more training (21.06%), funding (31.68%), and patient education (19.01%) (**Table 5**).

Table 1: Demographic Information

Demographic Information	Frequency (265)	Percentage (%)
Age (in years)		
Under 25	08	3.02
25–34	33	12.45
35–44	109	41.13
45–54	74	27.92
55 and above	41	15.47
Gender:		
Male	98	36.98
Female	167	63.02
Highest level of education		
Diploma	37	13.96
Bachelor’s degree	94	35.47
Master’s degree	61	23.02
Doctorate/fellowship	54	20.38
Other	19	7.17
What is your occupation?		
Doctor	65	24.53
Nurse	93	35.09

Midwife	58	21.89
Anesthetist	38	14.34
Other	11	4.15
How many years of experience do you have in obstetric care?		
1–5 years	48	18.11
6–10 years	63	23.77
11–15 years	106	40.00
More than 15 years	48	18.11
What type of healthcare facility do you work in?		
Primary Health Centre	65	24.53
Secondary Health Facility	85	32.08
Tertiary Hospital	15	5.66
Private Hospital	100	37.74

Table 2: Knowledge of Epidural Analgesia

Variable	Frequency (265)	Percentage (%)
Have you heard of epidural analgesia?		
Yes	265	100.00
No	00	0.00
Have you received any formal training on epidural analgesia?		
Yes	186	70.19
No	79	29.81
Are you familiar with the process and administration of epidural analgesia?		
Very familiar	58	21.89
Somewhat familiar	158	59.62
Not familiar	49	18.49
How would you rate your knowledge of the benefits of		

epidural analgesia?		
Excellent	66	24.91
Good	175	66.04
Neutral	15	5.66
Fair	07	2.64
Poor	02	0.75
Do you know the potential risks or complications associated with epidural analgesia?		
Yes	186	70.19
No	79	29.81
Have you ever personally administered or assisted in administering epidural analgesia?		
Yes	241	90.94
No	24	9.06

Table 3: Attitudes toward Epidural Analgesia

Variable	Frequency (265)	Percentage (%)
How do you feel about the use of epidural analgesia in obstetric care?		
Strongly positive	86	32.45
Positive	147	55.47
Neutral	16	6.04
Negative	08	3.02
Strongly negative	06	2.26
Do you believe that epidural analgesia is effective in pain management during labor?		
Strongly agree	189	71.32
Agree	76	28.68
Neutral	00	0.00

Disagree	00	0.00
Strongly disagree	00	0.00
Do you think epidural analgesia is a safe option for laboring women?		
Strongly agree	118	44.53
Agree	104	39.25
Neutral	34	12.83
Disagree	09	3.40
Strongly disagree	00	0.00
Offering epidural analgesia could improve patient satisfaction with labor experiences?		
Strongly agree	111	41.89
Agree	124	46.79
Neutral	27	10.19
Disagree	03	1.13
Strongly disagree	00	0.00
The cost of epidural analgesia a limiting factor for its use in your facility.		
Strongly agree	99	37.36
Agree	132	49.81
Neutral	18	6.79
Disagree	14	5.28
Strongly disagree	02	0.75

Table 4: Practice and Accessibility

Variable	Frequency (265)	Percentage (%)
Is epidural analgesia available in your healthcare facility?		
Yes	194	73.21
No	71	26.79

How often is epidural analgesia administered in your facility?		
Very frequently	73	27.55
Occasionally	98	36.98
Rarely	43	16.23
Never	51	19.25
Who is typically responsible for administering epidural analgesia in your facility?		
Anesthetist	142	53.58
Obstetrician	48	18.11
Nurse	11	4.15
Midwife	13	4.91
Not applicable	51	19.25
If epidural analgesia is not administered, what are the main alternatives used for pain relief during labor?		
IV analgesics	38	14.34
Inhalation analgesics	44	16.60
Non-pharmacological methods	154	58.11
Others	29	10.94
On average, how long does it take to access an anesthetist for administering epidural analgesia in your facility?		
Less than 30 minutes	39	14.72
30 minutes to 1 hour	53	20.00
More than 1 hour	102	38.49
Anesthetist not available	71	26.79

Table 5: Determinants and Deterrents to Utilization of Epidural Analgesia

Variable	Frequency (265)	Percentage (%)
*What are the main barriers to using epidural analgesia in your facility? (Check all that apply) (n		

= 540)		
Lack of trained personnel	142	26.30
High cost of administration	232	42.96
Limited equipment or supplies	53	9.81
Patient refusal due to fear or lack of awareness	85	15.74
Lack of support from senior management	28	5.19
Do you feel there is adequate staff training on epidural analgesia in your facility?		
Yes	49	18.49
No	216	81.51
Is there an adequate number of anesthetists available for epidural analgesia in your facility?		
Yes	28	10.57
No	237	89.43
How do you feel about the level of awareness among laboring women about epidural analgesia as a pain relief option?		
Very aware	41	15.47
Somewhat aware	126	47.55
Not aware	98	36.98
Do you think cultural or religious beliefs impact the choice of epidural analgesia?		
Yes	197	74.34
No	68	25.66
*What could improve the use of epidural analgesia in your facility? (Check all that apply) (n = 584)		
Increased training for staff	123	21.06
Better funding for equipment and	185	31.68

supplies		
More patient education on epidural analgesia	111	19.01
Hiring more anesthetists	97	16.61
Policy support from management	68	11.64
How willing are you to participate in further training on epidural analgesia?		
Very willing	169	63.77
Somewhat willing	64	24.15
Neutral	32	12.08
Unwilling	00	0.00
More educational sessions for laboring women would improve epidural analgesia uptake		
Strongly agree	137	51.70
Agree	112	42.26
Neutral	16	6.04
Disagree	00	0.00
Strongly disagree	00	0.00

* = multiple responses

DISCUSSION

The utilization of epidural analgesia (EA) in obstetric care has garnered attention in Nigeria, where the adoption rate remains low relative to high-income countries. Understanding the factors influencing EA utilization among obstetric caregivers in Southeast Nigeria reveals key determinants, including demographic characteristics, levels of knowledge, attitudes, and accessibility of services, alongside various deterrents and facilitators.

The distribution of age and educational qualifications among obstetric caregivers in Southeast Nigeria mirrors findings in recent studies. Most caregivers fall between 35 and 54 years of age, and nearly two-thirds hold at least a bachelor's degree or higher. Female representation is also high, consistent with global trends showing a predominantly female workforce in obstetric care. The majority of respondents work in secondary or private healthcare facilities, which underscores their centrality in Nigeria's obstetric services provision. This distribution aligns with ^[12], which emphasized the role of secondary facilities as primary points for obstetric interventions, including EA, despite challenges in staffing and training compared to tertiary hospitals.

The results indicate that all respondents have heard of EA, with 70.19% having received formal training. A significant proportion expressed the need for additional training, especially among non-specialist staff. This

trend resonates with findings from ^[13], who reported inadequate training as a recurring obstacle across Nigerian healthcare facilities, limiting the frequency and quality of EA administration. Additionally, 59.62% of respondents reported only being somewhat familiar with the EA process, which aligns with a study by noting a gap between theoretical knowledge and practical competency in EA.

The knowledge of benefits is predominantly rated as good and awareness of EA's risks and complications is similarly high. Comparatively, earlier studies highlight that limited risk awareness may contribute to caregivers' hesitance to recommend EA ^[14]. This awareness difference could stem from recent policy pushes towards enhancing pain management training among healthcare workers, as suggested by ^[15], who advocate for intensified education on pain management safety and efficacy across all healthcare tiers.

Attitudes toward EA in this study are overwhelmingly positive, with 87.92% of respondents viewing it favorably. These results are aligned with similar findings by ^[16], who reported strong support for EA's efficacy and patient-centered benefits among obstetric care providers. The belief in EA's effectiveness (100% agreement) and safety (83.78%) further underscores an understanding of its potential to enhance labor experiences, resonating with ^[17] who highlighted positive attitudes as instrumental in the adoption of advanced pain management methods.

However, the cost of EA emerges as a prominent concern, with 87.17% of caregivers identifying it as a limiting factor. This finding is consistent with, who noted that high costs remain a significant barrier in resource-constrained environments, where the costs associated with EA equipment and trained anesthetists are often prohibitive. Furthermore, cultural beliefs, cited by 74.34% of respondents as impacting EA adoption, reflect sentiments observed by ^[18], who found that societal attitudes often dissuade patients from opting for EA.

Despite the positive outlook, EA availability varies significantly, with only 73.21% of facilities offering it and 27.55% administering it very frequently. This frequency is considerably lower than in developed countries, where EA is commonly available in most labor units ^[19]. The predominant role of anesthetists in administering EA points to a reliance on specialized staff, limiting EA's accessibility, especially in smaller facilities. Studies by ^[20] support this finding, emphasizing that the lack of skilled personnel in rural or primary health centers restricts the consistent administration of EA.

An average wait time of more than an hour to access an anesthetist, reported by 38.49% of respondents, further underlines the accessibility challenge. This aligns with findings from ^[21], who observed prolonged wait times as a common obstacle in understaffed facilities, resulting in patients being directed toward alternative pain management methods, primarily non-pharmacological options and intravenous analgesics.

The primary deterrents to EA utilization in this study—lack of trained personnel (26.30%), high administration costs (42.96%), limited equipment (9.81%), and patient refusal (15.74%)—are consistent with factors noted in previous research. The scarcity of anesthetists (89.43%) underscores a crucial staffing issue, particularly in rural and underserved areas, as reported by Adedayo et al. (2023), who noted the correlation between trained anesthetists' availability and EA accessibility.

Cultural and religious influences further contribute to the reluctance toward EA, with 74.34% of respondents citing these as influential factors. This echoes findings by ^[22], who pointed to the intersection of religious beliefs and medical decision-making in Nigeria, where pain relief choices in labor are often influenced by sociocultural expectations.

The most cited improvements for EA utilization were increased staff training and funding for equipment, alongside patient education and policy support. Training interventions, as suggested by Adeoye et al. (2023), could mitigate the knowledge gap, equipping more obstetric caregivers with the necessary competencies to provide EA. Studies by support this, indicating that staff training correlates positively with EA adoption rates in facilities that prioritize ongoing professional development.

Moreover, 63.77% of respondents expressed high willingness to undergo further training on EA. Increased training opportunities, particularly for non-specialist staff, align with the recommendations of WHO (2023), who advocate for targeted training initiatives in low- and middle-income countries to improve pain management outcomes.

CONCLUSION

The findings reveal significant factors influencing EA utilization among obstetric caregivers in Southeast Nigeria, with cost, training, cultural beliefs, and staffing limitations as primary barriers. Aligning these findings with recent literature highlights the need for systemic support, including funding, education, and policy reforms, to enhance EA accessibility. Enhanced patient education and caregiver training could bridge gaps in awareness and competency, creating an enabling environment for better pain management options during labor.

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