Exploring Obstetric Analgesia in Labor Management: Assessing Knowledge and Usage Among Midwives in North-Central Nigeria

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ABSTRACT

Background and Objective: Obstetric pain is one of the most severe forms of pain a woman may experience during childbirth. Due to the debilitating effects of excruciating labor discomfort, pain management continues to be an important issue that requires attention. This study assessed the knowledge and utilization of obstetric analgesia in labor-management among midwives in public healthcare facilities in the north-central region of Nigeria.

Methods: This study used a descriptive cross-sectional design. One hundred twenty-three respondents who met the inclusion criteria were selected using the purposive sampling technique. Data were collected using a pretested structured questionnaire. The data were analyzed using descriptive and inferential statistics at a 0.05 level of significance.

Results: The results revealed that the respondents' overall knowledge of obstetric analgesia was adequate. The findings also revealed that more than half of the midwives have previously utilized obstetric analgesia to manage labor pain. However, the frequency of utilization of obstetric analgesia was low. A significant association was found between utilization of obstetric analgesia in labor and knowledge ($\chi^2 = 16.582$, $p < 0.001$) as well as years of experience ($\chi^2 = 17.280$, $p < 0.015$) and nursing rank ($\chi^2 = 36.579$, $p < 0.000$); since the p-value < 0.05 significance.

Conclusion and Global Health Implications: Therefore, it was recommended that midwives should be encouraged to frequently utilize obstetric analgesia to manage labor pain in order to improve the birth experience and outcome and to prevent the adverse effects that come with severe labor pain. Furthermore, the government should create policies that favor the utilization of obstetric analgesia in parturition, and midwives should incorporate the benefits of obstetric analgesia into the health education of pregnant women during antenatal counseling to promote its usage.

Keywords: Childbirth, Delivery, Healthcare Facility, Knowledge, Labor Pain, Midwives, Nigeria, Obstetric Analgesia, Pregnant Women, Public, Utilization

INTRODUCTION

Background of the Study

Labor pain has been described to be excruciating and one of the most painful experiences a woman has to endure during parturition.[1] In many developed countries, labor pain management during childbirth is considered a routine part of intrapartum care and all laboring women have access to the method of pain relief that they choose.[2] However, in developing countries, including Nigeria, options for labor pain alleviation are very limited. Adequate labor pain management during childbirth is a way of promoting a satisfactory birth experience and a healthy reproductive outcome for women.[3] However, inadequate labor pain management negatively impacts maternal and fetal well-being, as well as the progress of labor.[4] It may further lead mothers to postpartum depression, post-traumatic stress disorder, negative experiences and dissatisfaction after childbirth, and fear of childbirth, which increases maternal request for cesarean section.[5] Prolonged, unrelieved labor pain can also cause hypertension, hyperglycemia, constipation, and maternal and fetal distress.[6] Thus, obstetric care providers like midwives have to attain painless labor by utilizing safe and optimal analgesia.[5]

The American College of Obstetricians and Gynecologists states that laboring women should be offered pain management when desired.[7] Additionally, the World Health Organization (WHO) stated that a woman's preferences should be taken into consideration when prescribing pain relief during labor, and the WHO analgesic ladder should be followed.[8] Midwives are in a key position to help women in labor understand their options and make informed choices.[9]

Labor pain management involves a series of activities that include pain assessment as well as pain control or abolition.[5] Thus, obstetric care providers have to utilize safe and optimal interventions to attain painless labor.[2,5] Labor pain relief methods are categorized into pharmacological (inhalation anesthesia, regional anesthesia, opioids such as pethidine) and nonpharmacological (hypnosis, laboring in water, acupuncture, massage) methods.[8,10] Labor pain management with the use of pharmacological agents or non-pharmacologic means has become an integral component of labor management.[7]

The important role played by midwives in providing compassionate support during the process of labor cannot be underestimated, especially in instances of positive interaction with women in labor, by showing care and encouragement to those women enduring labor pain.[11] Although labor pain management is accepted and implemented in many countries in the world, it is not a common practice in most developing countries like Nigeria. Despite their knowledge, obstetricians routinely prescribed and utilized very little obstetric analgesia according to the studies done in Nigeria.[12,13] Thus, a substantial unmet need for labor pain management exists among women in labor. This might be a result of several factors, which include a lack of drugs, healthcare delivery systems, and limited knowledge and abilities of the healthcare provider to administer labor analgesia.[1,14] On the other hand, myths about long-term back pain, injury to the infant, breastfeeding difficulties, increased risk of cesarean sections, slow progress of labor, and long-term health issues, cultural and religious issues are some factors that influence the use of labor analgesia in clients.[15]

Several scholars have conducted studies on knowledge, attitudes, and perceptions of the usage of pain relief methods during labor among other healthcare providers and obstetricians in Nigeria but there is a gap in knowledge and utilization of pain relief methods among midwives who are the main caregivers for women in labor.[12–14] Moreover, anecdotal reports also revealed that there is poor knowledge and utilization of obstetric analgesia among midwives in the north-central region of Nigeria. Thus, this study was carried out to assess knowledge and utilization of obstetric analgesia as well as factors influencing the choice of obstetric analgesia among midwives in the north-central region of Nigeria.

Research Hypothesis

Hypothesis 1 (Ho): We hypothesize that there is no significant association between knowledge and utilization of obstetric analgesia in labor among midwives working in the north-central region of Nigeria.

Hypothesis 2 (Ho): We hypothesize that there is no significant relationship between sociodemographic variables of Midwives and utilization of obstetric analgesia in labor.

METHODS

Study Design/Study Population

This is an institution-based cross-sectional descriptive study conducted among midwives in the north-central region of Nigeria to accomplish the study's aim. The population for the study was all midwives in Ilorin, Kwara State. The sample size for this study was calculated using Andrew Fisher's formula (1922): $n = \frac{z^2 pq}{d^2}$ where 'n' is the required sample size; 'Z' is the standard normal deviation corresponding to the 95% coefficient interval (equivalent to 1.96); 'P' is the prevalence of the attribute being studied and was estimated at 0.3; 'q' is $1 - p$ and 'd' is the margin of error or the desired level of precision which was set at 5% (0.05). We calculated the minimum required sample size to be 112 using the formula and to account for potential loss of questionnaires, and non-responses of filled questionnaires, an additional 10% of the sample size was added as a precaution. Thus, a final sample size of 123 respondents was used for the study, and the purposive sampling technique was used to select the 123 midwives who

were willing to participate and have worked in the maternity ward of the selected healthcare facilities in the past 12 months.

Instrument for Data Collection

The instrument used for data collection instrument was a self-constructed questionnaire which consists of both open and closed-ended questions. The questionnaire consists of three sections; section A was designed to elicit information on socio-demographic characteristics; section B was designed to assess the knowledge of obstetric analgesia; and section C was designed to assess the utilization of obstetric analgesia. The face and content validity of the instrument was done by experts in the field of psychology, maternal and child health nursing research, and statistics. The reliability of the instrument was determined using a test-retest method which involved the administration of the 12 copies questionnaire (10% of the sample size) to midwives from a different health facility with similar characteristics at two-week intervals. The reliability of the instrument was measured using Cronbach's Alpha and a Cronbach Alpha coefficient of 0.85 was obtained which confirmed the reliability of the instrument. The questionnaires were designed in English language and were distributed by the researchers. The respondents were first told about the purpose of the research study and consent was taken from each participant before questionnaires were administered. The questionnaires were retrieved back on the spot after completion by the respondents to avoid loss. A total of 123 questionnaires were administered and the same were retrieved. Thus, the response rate for the study was 100%. The midwives were met in their various wards. Data were collected from May 9 to June 26, 2023. The process of data collection lasted over a period of 7 weeks.

Statistical Analysis

The collected data were analyzed using IBM SPSS version 25 (Armonk, NY), and the results were presented using both descriptive and inferential statistics. Descriptive statistics such as frequencies and percentages were used to summarize categorical variables. Inferential statistics in the form of chi-square was used to test the association between the independent variables (sociodemographic variables and knowledge) and dependent variables (utilization, of obstetric analgesia) at a 0.05 level of significance.

Ethical Considerations

All related ethical issues were addressed during the conduct of this study. Ethical clearance and approval to carry out the study was obtained from the General Hospital Ilorin Ethics Review Committee. Information about the research was discussed in detail with participants and consent forms were duly signed by them. Confidentiality and anonymity were ensured as names were not required on questionnaires and could not be linked to the participants.

Table 1: Socio-demographic profile of respondents (*n* = 123).

Characteristics	Response	Frequency	Percentage
Age	19–29	51	41.5
	30–40	65	52.8
	41–50	7	5.7
Marital status	Single	54	43.9
	Married	69	56.1
Ethnicity	Yoruba	97	78.9
	Igbo	22	17.9
	Hausa	4	3.3
Religion	Islam	50	40.7
	Christianity	73	59.3
Years of experience	<2 years	13	10.6
	2–5 years	35	28.5
	6–10 years	11	8.9
	11–20 years	57	46.3
	>20 years	7	5.7
Highest qualification	Diploma	45	36.6
	Bachelor of Nursing Science (BNSc)	78	63.4
Nursing rank	Nursing Officer I (NOI)	41	33.3
	Nursing Officer II (NOII)	20	16.3
	Senior Nursing Officer (SNO)	22	17.9
	Principal Nursing Officer (PNO)	26	21.1
	Asst. Chief Nursing Officer (ACNO)	6	4.9
	Chief Nursing Officer (CNO)	8	6.5

RESULTS

Sociodemographic Characteristics

The study elicited responses from a total of 123 midwives, and the findings, as presented in Table 1, show that more than half of the respondents 65 (52.8%) were between the age of 30–40 and were married 69 (56.1%). The majority of the respondents 97 (78.9%) were Yoruba by tribe and more than half of them 73 (59.3%) were Christians and a higher proportion of them 57 (46.3%) had 11–20 years of work experience. The majority 78 (63/4%) were Bachelor of Nursing Science (BNSc) certificate holders and less than half 41(33/3%) were Nursing Officer 1.

Table 2: Knowledge of obstetric analgesia among midwives (*n* = 123).

Variables	Response	Frequency	Percentage
Have you ever heard of obstetric analgesia before?	Yes	118	95.9
	No	5	4.1
Obstetric analgesia is pain relief in labor	Yes	118	95.9
	No	2	1.6
Pain is a subjective phenomenon	Yes	89	72.4
	No	27	22.0
	I do not know	7	5.7
Do you know about pain assessment tools?	Yes	107	87.0
	No	13	10.6
	I do not know	3	2.4
The pain assessment scale is used to ask the patient to rate their pain intensity on a scale of 0–6	Yes	92	74.8
	No	21	17.1
	I do not know	10	8.1
Have you heard about the WHO pain ladder?	Yes	71	57.7
	No	48	39.0
	I do not know	4	3.3
Do you know about the methods of obstetric analgesia in labor?	Yes	98	79.7
	No	17	13.8
	I do not know	8	6.5
Method of obstetric analgesia that offers a better birth experience	Pharmacological	92	74.8
	Non-Pharmacological	27	22.0
The right time to give obstetric analgesia in labor	First Stage	69	56.1
	Second stage	50	40.7
	Third stage	4	3.3
Knowledge of pharmacological methods of pain relief in labor	Correct	81	65.9
	Incorrect	42	34.1
Knowledge of non-pharmacological methods of pain relief in labor	Correct	80	65.0
	Incorrect	43	35.0

Knowledge of Obstetric Analgesia Among Midwives

Table 2 shows that the majority 118 (95.9%) of the respondents had heard of obstetric analgesia before and knew that obstetric analgesia is pain relief in labor. The majority of them 89 (72.4%) opined that pain is a subjective phenomenon. The majority 107 (87.0%) of the respondents stated that they knew about pain assessment tools, yet only 21 (17.1%) knew that the pain assessment scale rating is not 0–6. More than half of them 71 (57.7%) said they had heard of the WHO pain ladder and 98 (79.7%) also stated that they knew about the methods of obstetric analgesia in labor. Ninety-two (74.8%) of the respondents stated that the pharmacological method of obstetric analgesia offers a better birth experience. More than half of the respondents 69 (56.1%) said that the right time to give obstetric analgesia is during the first stage of labor. Eighty-one (65.9%) and 80 (65.0%) of the respondents had good knowledge about the pharmacological and non-pharmacological methods of obstetric analgesia in labor respectively.

Utilization of Obstetric Analgesia Among Midwives

Table 3 shows that more than half of the respondents 73 (59.3%) have used pain assessment tools during labor, while the majority 103 (83.7%) have used obstetric analgesia in the management of women during labor. A high proportion of the respondents 47 (38.2%) said that they have previously used both methods of obstetric analgesia (pharmacological and non-pharmacological) in the management of women during labor. The major reasons for non-utilization of obstetric analgesia by midwives were: no equipment 49 (39.8%), hospital policy 48 (39.0%), and lack of knowledge 12 (9.8%).

Association Between Utilization of Obstetric Analgesia in Labor and Sociodemographic Variables

Findings from Table 4 revealed that there was a statistically significant association between utilization of obstetric analgesia in labor and knowledge (χ^2 = 16.582, $p < 0.001$) as well as years of experience (χ^2 = 17.280, $p < 0.015$) and Nursing Rank (χ^2 = 36.579, $p < 0.000$); since the p-value < 0.05 significance value, the null hypothesis was rejected and the alternative hypothesis was accepted.

DISCUSSION

The socio-demographic profile of the respondents revealed that more than half of the respondents were between the age of 30–40 years. This implies that more than half of the respondents were in their middle adulthood stage. A previous study carried out in Ibadan revealed a lesser population of

Table 3: Utilization of obstetric analgesia among midwives (*n* = 123).

Variable	Response	Frequency	Percentage
Utilize pain assessment tools during labor	Yes	73	59.3
	No	50	40.7
Utilize obstetric analgesia to manage women in labor	Yes	103	83.7
	No	20	16.3
Previously used method	Pharmacological	32	26.0
	Non-pharmacological	44	35.8
	Both	47	38.2
Frequency of using obstetric analgesia for women in labor	Always	47	38.2
	Frequently	19	15.4
	Occasionally	43	35.0
	Rarely	7	5.7
	Never	7	5.7
Reasons for non-utilization of obstetric analgesia by midwives	Hospital policy	48	39.0
	No equipment	49	39.8
	No drugs	4	3.3
	Side effect	10	8.1
	Lack of knowledge	12	9.8
Most commonly used Methods in your hospital	Pharmacological	33	26.8
	Non-pharmacological	35	28.5
	Both	55	44.7
Methods of obstetric analgesia preferred by the respondents	Pharmacological	47	38.2
	Non-pharmacological	43	35.0
	Both	33	26.8

the age group.[16] The study also revealed that more than half of the respondents were married, the majority speak Yoruba and more than half of them practice Christianity. A high proportion of the respondents (46.3%) had years of experience between 11 and 20 with the majority of them (63.4%) having a BNSc certificate. This implies that the study setting is dominated by BNSc certificate holders. This also aligns with the result of a previous study in which the majority of the respondents were BNSc certificate holders.[4]

This study revealed that almost all the respondents had heard about obstetric analgesia and over 50% of them knew about the WHO pain ladder. This corroborates the findings of two previous studies where similar results

were reported.[4,16,17] The study revealed that the majority of them knew about both methods of obstetric analgesia, which are non-pharmacological and pharmacological. The non-pharmacological interventions help women to cope with pain in labor while the pharmacological interventions aim to relieve the pain of labor.[18] This result contradicts the findings of a previous study where a lower percentage of the respondents knew about the pharmacologic method only.[14] The majority of the respondents opined that the pharmacological method of obstetric analgesia offers a better birth experience. This finding opposes the findings in a previous study where a lesser percentage of the respondents agreed that the pharmacological method of obstetric analgesia offers a better birth experience.[5] More than half of the respondents opined that obstetric analgesia should be offered in the first stage of labor. Previous studies have shown that obstetric analgesia is most effective during the early first stages of labor.[19–21]

Despite the fact that the majority of the respondents claimed that they knew about pain assessment tools, most of them incorrectly stated that the pain assessment scale rates pain intensity on a 0–6 scale rather than a 0–10 scale which is the correct rating. This implies the need for adequate training of midwives on the use of pain assessment scales. A previous study reported similar findings.[16] Overall, the knowledge of the respondents about obstetric analgesia was adequate (*n* = 83, 67.5) as the majority of the respondents were able to answer the questions on knowledge of obstetric analgesia correctly. This corresponds to the result of previous studies where a higher proportion of the respondents demonstrated adequate knowledge of obstetric analgesia.[1,4,14,19] However, this opposes the result of a study done on student midwives where 29% of them had adequate knowledge about obstetric analgesia.[22] The discrepancy in the results could be attributed to the fact that the study was conducted among student midwives, who may not have had enough training to be knowledgeable about obstetric analgesia.

The study revealed that the majority of the respondents have used obstetric analgesia in the management of women during labor, a previous study reported similar findings.[4] A high proportion of respondents frequently utilize the non-pharmacological method compared to the pharmacologic method of obstetric analgesia. Although there is no evidence to support the effectiveness of the non-pharmacological techniques; many of the techniques have the advantages of being relatively straightforward to administer, readily available with no associated adverse effects to mother and baby.[18,23] Massage, acupuncture, constant support, posture, breathing exercises, water immersion, music therapy, and biofeedback are some of the non-pharmacological therapies used to help women reach an effective coping level for labor pain.[15] In this study, the most highly utilized non-pharmacological methods

Table 4: Association between utilization of obstetric analgesia in labor and sociodemographic variables of midwives (*n* = 123).

Variable	Level of utilization			Df	Chi-square. χ^2	*p*-value
Knowledge	Low	High	Total			
Inadequate	6	10	40	2	16.582	0.001*
Adequate	18	18	83			
Years of Experience						
<2 years	3	4	13	8	17.280	0.015*
2–5 years	9	12	35			
6–10 years	3	0	11			
11–20 years	9	8	57			
>20 years	0	4	7			
Highest Qualifications						
Diploma	8	10	45	2	0.182	0.913
BNSC	16	18	78			
Age group						
19–29	13	16	65	4	5.488	0.241
30–40	11	12	51			
41–50	0	0	7			
Ethnicity						
Yoruba	16	18	97	4	10.150	0.411
Igbo	8	10	22			
Others	0	0	4			
Nursing Rank						
NOI	6	2	41	10	36.579	0.000*
NOII	6	10	20			
SNO	3	8	22			
PNO	5	0	26			
ACNO	2	4	6			
CNO	2	4	8			
Religion						
Christianity	11	16	73	2	7.245	0.254
Islam	13	12	50			

*Values are significant.

of obstetric analgesia were massaging the back (68.3%), diversional therapy (56.1%), psychotherapy (55.3%), and breathing technique (44.7%). Previous studies also reported the highest utilization of the above methods.[4,14,20,24] The reason for the high utilization of the non-pharmacological method among midwives might be due to the fact that most non-pharmacological techniques are non-invasive and midwives deal with the act of caring which focuses more on the affective domain of humans to provide care, comfort, and pain relief. Sometimes the respondents administer the pharmacologic method of obstetric analgesia, and the most widely utilized pharmacologic method of obstetric analgesia among the respondents was oral non- opioid analgesics (*n* = 74, 60.2) and parenteral opioids (*n* = 72, 58.5). This contradicts the report of previous studies in which a lower percentage of the respondents utilize non-opioids and parenteral opioids in labor pain.[5,15]. Another study also reported that there was no use of pharmacologic obstetric analgesia among respondents,[25] which contradicts the findings of this study.

This study also revealed that unavailability of equipment, hospital policy, and lack of knowledge were the commonest reasons for not utilizing obstetric analgesia. This finding contradicts the result of the studies done in Eastern and Northwest Ethiopia where high patient flow, limited staff, lack of knowledge, and non-available of drugs were the major reasons for the non-utilization of obstetric analgesia.[3,17]

This study revealed that there was a significant association between the level of knowledge of the respondents and the utilization of obstetric analgesia with a *p*-value <0.05. This implies that obstetric analgesia use is influenced by the knowledge of midwives. Therefore, the level of utilization increases with increasing knowledge. The study also revealed that there was a significant association between the years of experience of the respondents and their level of utilization of obstetric care with a *p*-value <0.05. This implies that the years of experience influence the utilization of obstetric analgesia among the respondents, hence, the more the years of experience, the higher the level of utilization of obstetric analgesia. This finding is in congruence with the result of a similar study which reported a significant influence of years of experience in the utilization of obstetric analgesia among the respondents.[15] However, this opposes the result of a similar study conducted in Ibadan Nigeria where no significant association was found between good practice and years of working experience.[16]. The study revealed that there was no significant association between the highest qualification of the respondent and the level of utilization of obstetric care with a *p*-value >0.05, this implies that the highest qualification of the respondent does not influence the utilization of obstetric analgesia among the respondents. This opposes the result of a similar study conducted in Northwest Ethiopia where a significant association was found between the highest qualification of the respondent and the level of utilization of obstetric care.[25]

Strengths and Limitations

Strengthening our study was the data collection from the participants, who were midwives, who had worked in maternity wards in the past year. The study had some limitations, firstly, it was conducted in a general government hospital which has a high patient inflow and workload. As a result, some of the midwives were unable to participate because of stress, workload, or lack of time. Secondly, the study was carried out in a single secondary hospital using a cross-sectional survey. This removes the possibility of generalization of the findings to other settings.

CONCLUSION AND GLOBAL HEALTH IMPLICATIONS

The study has global implications for ensuring maternal well-being during labor and the prevention of complications such as maternal exhaustion as a result of severe labor pain. The study highlighted the need for ongoing education and training programs for midwives globally especially on the use of pain assessment scales. This study also revealed that the overall knowledge of the respondents on obstetric analgesia was adequate and more than half of them have utilized obstetric analgesia in labor pain management. However, the frequency of utilization of obstetric analgesia was low. Consequently, it is necessary to motivate midwives to utilize obstetric analgesia more proactively in order to enhance the birth experience and outcome, as well as prevent the negative effects associated with severe labor pain. Similarly, hospital administration and the government should also develop policies that support its use in labor and midwives should incorporate the benefits of obstetric analgesia in the health education of pregnant women during antenatal counseling to further promote its use.

Key Messages

- Overall knowledge of the midwives on obstetric analgesia was adequate, and more than half of them have utilized obstetric analgesia in labor pain management.

- A high proportion of midwives frequently utilize the non-pharmacological method compared to the pharmacologic method of obstetric analgesia.

- It is necessary to motivate midwives to utilize obstetric analgesia more proactively in order to enhance the birth experience and outcome, as well as prevent the negative effects associated with severe labor pain.

COMPLIANCE WITH ETHICAL STANDARDS

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