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ORIGINAL RESEARCH

Knowledge and Attitude concerning Maternal positions adopted in the Second stage of labour: A Cross-sectional study Of Midwives' in Jigawa state, Nigeria

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Abstract

Background: The positions adopted in the second stage of labour are generally grouped as either upright or horizontal.

Objectives: This study examined knowledge and attitudes regarding maternal positions during the second stage of labour, as well as the challenges midwives face when assisting women in the upright position.

Method: This was a cross-sectional study conducted online among 176 midwives working in Jigawa State, using a semi-structured, self-administered questionnaire on Google Forms. The information obtained was exported to IBM SPSS Statistics and analysed. Each respondent's knowledge was assessed by assigning 1 point for each correct response and 0 points for incorrect responses. Attitude was assessed using a 5-point Likert scale, and frequencies and percentages were used to summarize the challenges.

Result: Of the 176 participants, 115 (65.3%) had adequate knowledge of maternal positions used in the second stage of labour, and 61 (34.7%) had inadequate knowledge. Midwives' attitudes were generally neutral, with a mean total score of 2.85. Lack of local guidelines, fear of litigation, and uncertainty about the safety of adopting other positions were reported by 81.2% (143), 77.3% (136), and 67.0% (118) of midwives, respectively.

Conclusion: The midwives had adequate knowledge and a neutral attitude toward maternal positions adopted in the second stage of labour, while a lack of local guidelines, fear of litigation, and uncertainty about the safety of birthing in other positions were common challenges. Efforts should be made to train and retrain midwives in evidence-based practice and to provide relevant guidelines.

Keywords: Attitude, Birthing position, Horizontal position, Knowledge, Midwives, Second stage of labour, Upright position

Introduction

The second stage of labor is often considered the most demanding part of labor, particularly the expulsive phase, which requires intense effort to push the fetus through the vaginal outlet. To achieve this, women adopt various positions in this phase. These positions are generally grouped as either upright (kneeling, sitting, standing, or squatting) or horizontal (dorsal, lithotomy, or left lateral), or their modifications, and this may be dictated by convenience, intuition, or the accoucheur.[1] Traditionally, most women give birth in the squatting or kneeling position during the second stage; however, with the advent of modern medical practice, the horizontal position and its modifications have since gained prominence. [2, 3, 4] The horizontal position, or its variants, may provide easy access to the maternal abdomen for fetal monitoring during labor, and it is much easier for midwives/obstetricians to perform a spontaneous or assisted vaginal delivery in this position. These benefits include a shorter duration of labor, less perineal trauma, fewer episiotomies and instrumental deliveries, fewer abnormal fetal heart rate patterns, and higher maternal satisfaction among those who assume the upright position or its variant. [5,6] However, the horizontal position is associated with a higher risk of primary postpartum hemorrhage.[6]

Nevertheless, there is no convincing evidence that one position is superior to the other; hence, the World Health Organization (WHO) has advocated that women be encouraged and supported to adopt any position of their choice in the second stage of labor [7], but this is far from clinical practice in Nigeria. In Nigeria, an average of 43.3% of births take place at a health facility, while in Jigawa State, 21.4% take place at a health facility with a skilled provider.[8] The reasons for this are multifaceted; some relate to the hospital itself, while others are linked to the service providers in the hospital, such as disrespect, abuse, and a lack of support for different birthing positions, among others, which influence health-seeking behavior. [8, 9, 10] These are concerning, as they do not reflect the ethics, values, and knowledge of healthcare workers, especially a registered midwife in Nigeria. Midwives are not only expected to be knowledgeable; they are also presumed to have their understanding influence their attitudes and practices. However, it remains unclear whether midwives working in Jigawa State are knowledgeable about the maternal positions adopted in the second stage of labor, their benefits, and their attitudes toward these positions.

This study aimed to assess the knowledge, attitudes, and challenges faced by midwives when assisting women during the second stage of labor in hospitals in Jigawa State. The findings from this study will serve as the basis for educating midwives about the positions women can assume during the second stage of labor, based on evidence. This may help improve the level of care offered to women in labor and their childbirth experience, including respect and dignity, which may, in turn, improve hospital births in the state.

Methods

Study setting

Jigawa State is one of the seven states in northwest Nigeria, located between latitudes 11.00°N and 13.00°N and longitudes 8.00°E and 10.15°E. It borders the states of Kano, Katsina, Bauchi, and Yobe, and also shares an international border with the Republic of Niger. It has a total land area of approximately 22,410 square kilometers and an estimated population of 7.5 million, with 90% living in rural areas. Most residents are Muslims and belong to the Hausa/Fulani ethnic groups. They are primarily farmers and traders. The state comprises 27 local governments and has two tertiary hospitals, 17 secondary hospitals, and 281 primary health centers. According to records from the two tertiary hospitals and the state ministry of health, about 500 midwives work in Jigawa State, most of whom are employed by the ministry. [11] There are four colleges of nursing and midwifery in the state, three of which are state-owned. They are located in Birnin Kudu, Hadejia, and Babura, while the fourth, which is privately owned, is in Dutse, the state capital. Jigawa State has a maternal mortality ratio of 1012 per 100,000 live births [12] and a neonatal mortality of 53/1000 live births. [8] These rates are among the highest in the country.

*Study Design***:** This was a descriptive and cross-sectional study.

Study Population: The study population was midwives working in Jigawa State.

Inclusion and Exclusion criteria: All midwives registered with the Nursing and Midwifery Council of Nigeria and practicing in Jigawa State were included, while those not currently involved in clinical practice and those who did not consent to the study were excluded.

Sample size determination

The sample size for the study was calculated using an online statistical calculator, with z set at 1.96 (standard normal deviate), a 95% confidence level, and a tolerable error margin (d) of 5%, based on a 73% prevalence of midwives with adequate knowledge of positions in the second stage of labor. [13] Adjusting for a finite sample size of 500 midwives in the state and an anticipated 20% non-response rate yielded a minimum sample size of 236. [14]

Sampling technique

The sample size was selected using a non-probability technique from the estimated 500 midwives working in the state by repeatedly sharing a link to the questionnaire with all midwives registered with the Jigawa State chapter of the Nurses and Midwives Association and via each hospital's WhatsApp platform for 10 weeks.

Study Instrument and Data Collection

A well–designed, semi-structured, self-administered questionnaire was developed using Google Forms, with the study objectives in mind. The questionnaire was adapted from an existing questionnaire on

the subject. [13] It was divided into four sections; the first section captured socio-demographic information about the participant. This included age, gender, religion, marital status, ethnicity, qualifications other than the diploma in midwifery, duration of post-qualification practice, and place of practice. The second section assessed respondents' knowledge of maternal positions adopted in the second stage of labor and their merits. Questions included the best position to assume, who decides which position to assume, the risk of severe perineal trauma, the risk of injury to the fetal head, and changes in pelvic diameters in certain positions during the second stage. The third section addressed attitudes toward various maternal positions assumed in the second stage of labor. The fourth section addressed perceived challenges in assisting the second stage of labor in any upright position at the facility where they practiced. The questionnaire was pretested for comprehensibility, measurement error reduction, and internal validity among 25 midwives working in Kano State. The information obtained from the pretest was incorporated into the main study.

Ethical Consideration

The research protocol was reviewed and approved by the health research and ethics committee of the Federal Medical Center, Birnin Kudu, under reference FMC/HREC/APP/CLN/001/1/258.
Permission was obtained from the Nurses and Midwives Association before sharing the link to commence the study. Informed consent was obtained from all respondents, and the questionnaire was anonymized. Participation was voluntary, and respondents were free to withdraw at any time during the questionnaire if they were uncomfortable with any questions or to abstain from participating without coercion. They were reassured that the information provided and obtained would be kept confidential and that efforts would be made to safeguard the data.

Data Analysis

The information obtained from the questionnaire was linked to the corresponding author's Google email account, from which the Google Sheet was accessed and exported to Microsoft Excel. In Excel, the data were cleaned, and variable names were modified before being exported to the Statistical Package for the Social Sciences (SPSS) version 25 (IBM Corporation, Armonk, NY, USA) for analysis. A normality test was conducted. Continuous variables that were normally distributed were summarized using descriptive statistics (mean ± standard deviation), while qualitative variables were summarized using frequencies and percentages. Pearson's chi-square test was used to assess significant associations between maternal positions assumed in the second stage of labor and socio-demographic factors (age, ethnicity, type of hospital, religion, and number of years post-qualification). Statistical significance was considered achieved when p was < 0.05.

For the multivariate analysis, variables that were statistically significant in binary logistic regression were included in the

regression model to identify independent factors associated with maternal position in the second stage of labor during home birth. Outcome variables were dichotomized and coded as 1 or 0 for presence or absence, respectively. Independent variables that were statistically suggestive ($p < 0.1$) at the bivariate level or conceptually important were included in the regression model. Crude and adjusted odds ratios (ORs) with 95% confidence intervals were obtained. The significance level of the test was set at $p < 0.05$. Each respondent's knowledge was analyzed using a scoring system previously used in another study, [15] in which each correct response to a question received one point, and all other responses received zero points. There were ten questions, and for each, the respondent's score was summed and converted to a percentage, which was graded as <25 (very poor); 25-49 (poor); 50–74 (fair); ≥75 (good). Additionally, 0–49% is considered inadequate, while 50–100% is adequate.

A 5-point Likert scale was used to assess attitudes by presenting a statement and asking respondents to choose one of five response options, typically ranging from "strongly disagree" to "strongly agree." Each response is assigned a numerical value, allowing for analysis of overall attitude.[16] The mode, mean, and distribution of the responses were analyzed and interpreted. The scale for interpreting the mean responses for each statement is below:

1.00 – 1.79 is regarded as strongly disagree
1.80 – 2.59 is regarded as disagree
2.60 – 3.39 is regarded as neutral
3.40 – 4.19 is regarded as agree
4.20 – 5.00 is regarded as strongly agree

Results

Of the 240 potential participants approached via the survey link, only 176 responded and completed the survey, yielding a response rate of 73.3. The participants' ages ranged from 21 to 55 years, with a mean of 30.6±8.9 years. The mode was 23 years. The majority (108; 61.3%) were in the third decade of life. One hundred and two (58%) were married, 72 (40.9%) were single, and two (1.1%) were divorced. Most of the midwives (143, 81.2%) were of Hausa ethnicity, while six women (3.2%) were grouped as other, including two midwives from Idoma, two from Bajju, and one each from Eggon, Gandaa, and Moroa. See Table I. Most of the participants (90; 51.1%) were employed by the state government, of whom 46 (26.1%) and 44 (25.0%) worked at the Primary Health Centers and General Hospital, respectively, while 69 (39.2%) and 17 (9.7%) worked at the FMC Birnin Kudu and Rasheed Shekoni Federal Teaching Hospital, respectively.

Table I: Socio demographic characteristics of Respondents (N= 176)

Age group (years)	**n (%)**
<26	68 (38.6)
26 – 30	40 (22.7)
31 – 35	26 (14.8)
36 – 40	15 (8.5)
>40	27 (15.3)
Qualification(s) in addition to Diploma in Midwifery	
Diploma In Nursing	92 (52.3)
BSc Nursing	50 (28.4)
None	31 (17.6)
MSc	03 ((1.7)
PhD	0 (0)
Ethnicity	
Hausa	143 (81.2)
Igbo	10 (5.7)
Yoruba	09 (5.1)
Fulani	04 (2.3)
Kanuri	03 (1.7)
Others	06 (3.4)
Religion	
Islam	140 (79.5)
Christianity	36 (20.5)
Years Post Qualification (years)	
< 5	81 (46.0)
5- 9	43 (24.4)
10 -14	26 (14.8)
15 – 19	12 (6.8)
20 – 24	05 (2.8)
>25	09 (5.1)

Knowledge concerning maternal positions adopted in the second stage

Of the 176 participants, 115 (65.3%) had adequate knowledge of the maternal positions assumed during the second stage of labor, and 61 (34.7%) had inadequate knowledge. Further analysis of the scores showed that 18 (10.2%) had very poor knowledge, 43 (24.4%) had poor knowledge, 88 (50%) had fair knowledge, and 27 (15.3%) had good knowledge. Table II highlights the responses to the questions and statements.

Table II: Knowledge of Midwives concerning positions adopted in second stage of Labour

Serial Number	Questions/Statements	Responses		
		Yes n (%)	No n (%)	Uncertain n (%)
1	Can a primigravid woman in second stage of labour adopt an erect position?	83 (47.2)	67 (38.1)	26 (14.8)
2	The best position adopted in the second stage of labour is the one offered by the birth attendant	117 (66.5)	57 (32.4)	2 (1.1)
3	Is the duration of second stage of labour shorter in the squatting position compared to the horizontal position?	149 (84.7)	15 (8.5)	12 (6.8)
4	Adopting the horizontal position in the second stage may be associated with abnormal foetal heart rate patterns?	81 (46.1)	65 (36.9)	30 (17.1)
5	Are parturient at a higher risk of severe perineal trauma when they adopt the squatting position compared to the horizontal position?	110 (62.5)	45 (25.6)	21 (11.9)
6	Is labour less painful in the horizontal position compared to the erect position?	90 (51.1)	60 (34.1)	26 (14.8)
7	The squatting position is associated with damage to the foetal head compared to the horizontal position	101 (57.4)	66 (37.5)	09 (5.1)
8	Are the pelvic diameters increased in the second stage of labour when in the kneeling position?	104 (59.1)	45 (25.6)	26 (14.8)
9	The hands and knees position reduce the feeling of urge to push before full cervical dilatation	115 (65.3)	42 (23.9)	01(0.6)
10	The squatting position is associated with more effective pushing in the second stage compared to the horizontal position	148 (84.0)	13 (7.4)	15 (8.5)

Table III: Association between Socio demographic Characteristics and Knowledge concerning positions

Socio-demographic characteristic	Knowledge score		Total	Chi-squared test ($\chi 2$)	p-value
	Inadequate N (%)	Adequate N (%)	n		
Age group(years)				7.7	0.00
< 30	26 (26.0)	74 (74.0)	100 (100)		
≥ 30	35 (46.1)	41 (53.9)	76 (100)		
Ethnicity				1.6	0.21
Hausa	48 (32.7)	99 (67.3)	147 (100)		
Others	13 (44.8)	16 (55.2)	29 (100)		
Marital status				13.9	0.00
Married	47 (46.1)	55 (53.9)	102 (100)		
Unmarried	14 (18.9)	60 (81.1)	74 (100)		
Religion				0.42	0.84
Islam	48 (34.3)	92 (65.7)	140(100)		
Christianity	13 36.1)	23 (63.9)	36(100)		
Place of Practice				3.8	0.05
Tertiary Hospital	36 (41.9)	50 (58.1)	86(100)		
Others	25 (27.8)	65 (72.2)	90 (100)		
Years Post Qualification				1.6	0.21
< 10	40 (32.7)	84 (67.7)	124 (100)		
≥ 10	21 (40.4)	37 (59.6)	52 (100)		

Factors associated with Adequate Knowledge concerning maternal positions

At the bivariate level, the factors associated with adequate knowledge of maternal positions adopted in the second stage of labor were respondents' marital status and age ($p < 0.05$), as seen in Table III.

However, after controlling for confounders, only marital status remained an independent factor associated with adequate knowledge of maternal positions adopted in the second stage of labor, as shown in Table IV.

Table IV: Multivariable Logistic Regression Analysis of factors associated with Adequate Knowledge

Characteristics	**Crude Odds Ratio (95% CI)**	**Adjusted Odds Ratio (95 % CI)**	***P* value**
Place of Practice			
Tertiary Centre	Referent		
Others	1.87 (0.99 – 3.51)	0.79(0.36 – 1.71)	0.55
Age			
< 30	Referent		
≥ 30	0.41(0.22 – 0.78)	0.81 (0.34 – 1.91)	0.63
Marital status			
Married	Referent		
Unmarried	3.66 (1.82 – 7.38)	0.33 (0.15 – 0.73)	0.00

Attitude to assisting women adopting non-horizontal positions in the second stage

The responses to the statements concerning midwives' attitudes in Jigawa State toward maternal positions adopted in the second stage of labor, using the Likert scale and frequencies, are shown in Table V. The mean score for the statements ranged from 2.30 to 3.24, with an average of 2.85.

Challenges to assisting women adopting upright positions in the second stage

The common challenges to assisting women in upright positions include a lack of guidelines, noted by 143 (81.3%) respondents; concerns about litigation, reported by 136 (77.3%); and uncertainty about safety, reported by 118 (67.0%). Other challenges include unwillingness to accept the risk, reported by 116 (65.9%); inability to monitor the fetal heart rate, reported by 114 (64.8%); and insufficient understanding of the process, reported by 112 (63.6%).

Table V: Attitude of Midwives concerning positions adopted in second stage of Labour

Serial Number	Statements	Responses					
		Strongly Disagree n (%)	Disagree n (%)	Neutral n (%)	Agree n (%)	Strongly Agree n (%)	Mean score
1	Women who wish to assume the erect position in the second stage of labour should be supported	35(19.9)	31(17.6)	24(13.6)	27(15.3)	59(33.5)	3.24
2	The present facilities used for monitoring labour and assisting birth in the horizontal position will suffice for women assuming squatting position	32(18.2)	44(5.0)	43(24.4)	30(17.1)	27(15.3)	2.87
3	I would support women who choose to birth assuming the kneeling position at my facility	44(25.0)	23(13.1)	20(11.4)	40(22.7)	49(27.8)	3.14
4	I will not consider women with "head on perineum" to give birth assuming other positions except the horizontal position	60(34.1)	33(18.8)	21(11.9)	23(13.1)	39(22.2)	2.71
5	Giving birth in other positions apart from the horizontal should be discouraged at the hospital	80(45.5)	35(19.9)	16(9.0)	20(11.4)	25(14.2)	2.30
	Average score	2.85					

Discussion

Midwives play a major role in women's birthing experiences, and this role is influenced by their having adequate knowledge of the practice. This study evaluated the knowledge, attitudes, and challenges faced by midwives in assisting women during the second stage of labor at hospitals in Jigawa State. About two-thirds of midwives had adequate knowledge, while one-third had inadequate knowledge regarding maternal positions in the second stage of labor. Specifically, about a quarter of respondents had poor knowledge, and one in ten had very poor knowledge regarding maternal positions in the second stage of labor. The midwives' attitudes were generally neutral; precisely, all responses to the five statements were neutral except the last, where about two-thirds of respondents disagreed with the statement "giving birth in other positions apart from the horizontal should be discouraged." Common challenges to supporting women in other positions in the second stage of labor, apart from the horizontal position, include a lack of local guidelines and concerns about being sued for malpractice, which were noted by about 8 out of 10 respondents. Uncertainty about the safety of adopting upright positions, insufficient understanding of how to assist in upright positions, and unwillingness to accept the risk were identified by about two-thirds of respondents. The use of guidelines in the management of labor will ensure

standardization, uniformity, and improved quality of practice through evidence-based approaches, thus reducing errors and unnecessary risk. However, this is absent in all the health facilities in Jigawa State. Working under these circumstances makes midwives prone to litigation, especially when the outcome is unfavorable.

This study used the knowledge, attitude, and practice (KAP) model to understand existing knowledge gaps and barriers to behavior change. It posits that behavior change occurs in three sequential stages: acquiring knowledge, developing an attitude (belief), and forming a practice (behavior), with the latter being the goal of the process. [17] Although most respondents in this study had adequate knowledge of maternal positions in the second stage, this did not seem to influence their attitudes (since most of their responses were indecisive). This highlights a mismatch between their knowledge and attitudes, which may be explained by the absence of local guidelines in hospitals for the management of the second stage of labor. It may also explain why some respondents cited fear of being sued for malpractice and its consequences as a common challenge that may influence their decision to discourage women from giving birth in upright positions, as this differs from the 'standard' or what they were used to. It is not surprising that many were unwilling to accept the risk, given concerns about the process's safety in upright positions. However, it is crucial to highlight that most of these fears and concerns are unfounded and may be attributed to poor understanding, lack of skills, and clinical experience, as there is no evidence that one specific position is superior; hence, the woman's preference should be prioritized irrespective of the position she assumes in the second stage.[18,19,20] Actually, the National Institute for Health and Care Excellence (NICE) guidelines recommend avoiding lying on the back, whereas the German guidelines encourage women to adopt an upright position. [19, 20] However, because of the ease and convenience of assisting birth in the horizontal position, and because the birth attendants were trained using the horizontal position, it is logical for it to be considered the default position that all women are expected to adopt in the second stage of labor, particularly in Nigeria.[21]

Although a few studies have examined midwives' knowledge of birth positions, [13,22] they differed in methodology, especially in data acquisition and analysis, making comparisons with this study difficult. Nevertheless, the total adequate knowledge score of 65.3% was lower than the mean total knowledge score of 83.1% reported by Luo and colleagues in Guangdong province, China. [22] Also, the good knowledge score in this study, 15.3%, is much lower than the 45% reported by Mohammed and colleagues in Ethiopia. [23] In addition, the mean score for the attitude statements in this study was 2.85, lower than the 3.03 reported by Luo and colleagues. [22] These scores are interpreted as moderate or neutral, whereas 49.5% of the midwives in the Ethiopian study had a good attitude toward birth positions. [23]

The gap between knowledge and midwives' attitudes toward maternal positions during the second stage of labor in Jigawa State can

be addressed by involving the National Association of Nigerian Nurses and Midwives (NANNM) and hospital management staff to train and retrain midwives on the job in assisting childbirth in an upright position. Midwifery students should be taught with an emphasis on acquiring clinical skills for managing the second stage of labor in all positions. This is very important, since a lack of clinical skills and insufficient understanding of managing the second stage of labor in an upright position were notable challenges identified. For policymakers, it is necessary to ensure that the midwifery curriculum reflects contemporary practice and is evidence-based, and that clinical practice follows guidelines and is evidence-based.

Strength and Weakness: Although this was an online cross-sectional study among midwives, many respondents worked in primary, secondary, and tertiary health facilities in the state, making the sample representative of midwives statewide, though it is not without limitations. The response rate was 73.3%, which is considered excellent for an online survey, [24] but slightly over one-quarter of potential participants (64) did not participate. Those who participated may have experienced recall bias, while nonparticipants may differ from them. Because this was a cross-sectional study, it may be difficult to establish that respondents with adequate knowledge were the ones with an indecisive attitude toward maternal positions in the second stage, and the mismatch may not be related to their knowledge. Furthermore, the lack of randomization in selecting respondents may limit the generalizability of the findings to all midwives in the state, even though attempts were made to reach all midwives who were using WhatsApp. Nevertheless, this study yielded useful findings on midwives' knowledge and attitudes toward maternal positions adopted during the second stage.

Conclusion

The midwives had adequate knowledge and a neutral attitude toward maternal positions used in the second stage of labor, while a lack of local guidelines, fear of litigation, and uncertainty about the safety of birthing in other positions were common challenges. Effort should be made to train and retrain midwives in evidence-based practice while providing the relevant guidelines

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