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Awareness and willingness to use epidural analgesia during labor among pregnant women at King Faisal hospital Rwanda

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ABSTRACT

INTRODUCTION: Childbirth causes severe pain for women, making pain relief crucial during labor. In Rwanda, despite the potential advantages of epidural analgesia, its awareness, and acceptance among pregnant women remain understudied and inadequately understood. This study examined factors influencing awareness and willingness to use epidural analgesia at King Faisal Hospital in Rwanda.

METHODS: A cross-sectional study was conducted at King Faisal Hospital Rwanda among pregnant women attending antenatal care and delivery. Data were collected using pre-tested questionnaires and analyzed with Stata version 13. Chi-square test and logistic regression were used to examine relationships between outcomes and predictors, with statistical significance set at $p < 0.05$.

RESULTS: The median age was 31 years, with most participants from Kigali city (62.18%), married (97.41%), and university-educated (53.11%). Most had 1-3 children (65.54%), and 19.95% had prior anesthesia experience. About 45% were aware of labor pain relief, mainly through previous delivery experiences and friends/relatives. Epidural analgesia was perceived as most effective (36.27%). Approximately 52% knew about epidural analgesia, and 56% intended to request it. Significant predictors included gravidity, prior anesthesia, education, religion, and employment

CONCLUSION: The study's findings reveal that 52% of the surveyed participants were cognizant of the availability of epidural analgesia in the hospital, and 56% expressed an intention to utilize this pain relief method during labor in the future. These awareness and intention rates were found to be significantly influenced by variables including gravidity, prior anesthesia experience, education, religion, and employment.

Keywords: Labor, Epidural Analgesia, King Faisal Hospital, Awareness, Willingness, Rwanda.

INTRODUCTION

Childbirth is a normal life event that is considered to have the most severe pain faced by women in their lifetime [1]. Pain relief is an important issue in the management of pregnant women during childbirth [2]. Epidural analgesia is an extremely effective and popular treatment for labor pain

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[3]. In USA and Europe, epidural analgesia is systematically proposed to parturient here and more than 70% of women use this procedure to cope with labor pain [4]. Different methods have been developed to treat labor pain, such as pharmacological and non-pharmacological [5]. Among pharmacological, epidural analgesia is the preferred technique and gold standard as it carries the advantage of an awake mother who is able to participate in the delivery process, and fetal effects are minimal [6].

Epidural analgesia in labor involves insertion of a lumbar epidural catheter by a trained anesthesia provider and subsequent injection of an epidural mix to provide pain relief [3]. The mix typically is a combination of local anesthetic and opiate although there are many variations, which are in use depending on the center, the patient and the stage of labor [7].International human right law states that all countries are obligated to provide pain treatment as a part of individuals right to health and laboring mothers should be no exception to this right [8].

It is perceived that in low- and middle-income countries barriers exist to providing the basic health care to ensure safe delivery and maternal well-being [9]. Antenatal expectation of labor pain management is important in how pregnant women wish to manage their pain during labor [10]. Health care providers must be sensitized to integrate information on epidural analgesia for labor in education package [11]. There is a wide gap between the desire for labor analgesia and its availability [12].

Little is known in Africa about the use of epidural analgesia for labor [13,14]. In a study done in Nigeria on perception of epidural analgesia for labor pain among pregnant women in a tertiary hospital, the majority of respondents (79.5%) were not aware of epidural analgesia [15]. In Rwanda, despite the potential advantages of epidural analgesia, its awareness, and acceptance among pregnant women remain understudied and inadequately understood.

The problem at hand centers on the limited awareness and the varying intentions of pregnant women regarding the utilization of epidural analgesia during labor in Rwanda. This knowledge gap poses a substantial challenge to the provision of comprehensive and patient-centered maternal care. The factors influencing awareness and intention to use epidural analgesia in this context are complex and multifaceted, potentially involving demographic, socio-economic, cultural, and healthcare-related variables. The lack of a clear understanding of these factors impedes the development of targeted interventions and healthcare policies to improve maternal care and childbirth experiences in Rwanda.

This study seeks to address a critical knowledge gap by investigating the factors associated with awareness, the willingness, and the reasons pregnant women do not utilize epidural analgesia during labor among women attending antenatal clinics at King Faisal Hospital in Rwanda.

METHODS

Study Design and Setting

This was a cross-sectional study in gynecology and obstetrics department of King Faisal Hospital (KFH), Kigali in Rwanda.

Study Participants

The target population in this study was pregnant women who consulted for antenatal care follow up and delivery in the Department of Obstetrics and Gynecology. Sample size of 386 was calculated using the Fisher's formula used to estimate the prevalence from the population

Data Collection Procedures

The data collection procedure involved pre-testing the questionnaire with 30 patients, followed by modifications before formal data collection began. Systematic random sampling was used to select eligible pregnant women from the study population at King Faisal Hospital Rwanda, with the starting point for each interview determined by lottery method until the allocated sample size was achieved. Participants who met inclusion criteria and provided written informed consent were enrolled in the study. The Principal Investigator administered questionnaires face-to-face to participants after they received medical care, and was responsible for conducting and coordinating all study steps under the supervision of the thesis supervisor.

Data Analysis

Collected data were entered in Epidata 3.1 then exported to Stata. Data analysis was done using Stata version 13 (College Station, Texas 77845 USA). Descriptive data are presented as follow: categorical data are presented using frequencies and percentages in tables and charts and

continuous data are summarized by mean and median values depending on their distribution. Normality test for continuous variables was done using Shapiro-Wilk test. Chi-square test and logistic regression (both binary and multivariable logistic regression) were used to study the relationship between the outcomes and possible predictors/ risk factors. Statistical significance for associations was considered at the level $p < 0.05$.

Ethical Considerations

Participants were individually given a consent form by the principal investigator after clearly explaining to them the nature of the research project. The content of the consent was loudly read to each participant by the principal investigator in the language that the participant understands well between Kinyarwanda and English. Participants were recruited on day time from 8am to 5pm.

After satisfactory explanations by the later, those willing to participate in the study affixed their signature or fingerprint on the consent form. The study protocol was reviewed and approved by the Institutional Review Board of College of Medicine and Health Sciences, University of Rwanda (Approval Notice: No 314/CMHS IRB/2023) and by the Ethics committee of King Faisal Hospital Rwanda (Ref: KFH/2023/105/IRB) prior to data collection period

RESULTS

Sociodemographic, reproductive and obstetric characteristics of study participants

Table 1 presents characteristics of a surveyed population. The median age of the participants is 31 years (ranging from 21 to 44 years). In terms of place of residence, the majority reside in Kigali city at 62.18%, followed by South at 15.8%. Regarding marital status, most participants are married (97.41%), with a smaller percentage being single (1.04%) or divorced (1.55%). In terms of education, the majority have attended university (53.11%), followed by secondary school (41.71%), primary school (3.63%), and no formal education (1.55%). In terms of religion, the majority are Protestant (54.66%) or Catholic (39.12%), with smaller percentages identified as Muslim (4.15%) or having no religious affiliation (2.07%). Finally, for employment status, a significant portion are either state employees (38.08%) or businesswomen (33.16%), while a smaller percentage are engaged in agriculture and livestock (6.48%), and some are not employed (22.28%).

A significant proportion of respondents have had 1 to 3 previous pregnancies (64.77%), with a notable portion reporting no prior pregnancies (27.72%), while fewer participants indicated having four or more pregnancies (7.51%). In terms of term births, the majority fall within the 1 to 3 category (62.69%), with a substantial proportion reporting no term births (34.72%), and a minority having four or more term births (2.59%). Regarding adverse pregnancy outcomes, approximately 13.62% of participants reported a history of preterm delivery, and 12.69% reported a history of abortion. Furthermore, most respondents have 1 to 3 living children (65.54%), with a minority reporting no living children (32.38%) and a very small percentage having four or more living children (2.07%).

Table 2 showed significant proportion of respondents have a history of prior anesthesia (19.95%), with the majority having received local-regional anesthesia (67.07%) as opposed to general anesthesia (32.93%). In terms of being informed about labor pain relief, nearly half of the participants were informed (44.82%), with the primary sources of information being from previous delivery experiences (40.46%) and friends/ relatives (40.46%), while a smaller percentage cited education (6.94%) and media sources (12.14%). Past exposure to labor pain relief is reported by 21.76% of participants, mostly administered through injections (90.48%) rather than spinal/ epidural methods (9.52%). When asked about the effectiveness of pain control mechanisms, epidural analgesia is noted as the most effective by 36.27% of respondents, followed by intravenous injections (12.44%) and muscular injections (6.99%), while some expressed uncertainty (43.78%).

Prevalence of awareness of the use of epidural analgesia during labor among participants

Fifty two percent (52%) of the study participants were aware of the use of the epidural analgesia during labor while 48% of the participants were not aware of the use of epidural analgesia during labor. Fifty six percent (56%) of the study participants mentioned the intention to use the epidural analgesia during labor in the future while 44% of the participants are not intending to request epidural analgesia during labor in the future.

The reasons of not intending to request the

Table 1: Sociodemographic, reproductive and obstetric characteristics of study participants

		Frequencies	Percentages
Age in years	Median (Min-Max)	31 (21-44)	
Place of residence	Kigali city	240	62.18
	South	61	15.8
	Est	37	9.59
	West	30	7.77
	North	18	4.66
Marital status	Married	376	97.41
	Single	4	1.04
	Divorced	6	1.55
Level of education	No formal education	6	1.55
	Attended Primary school	14	3.63
	Attended Secondary school	161	41.71
	Attended University	205	53.11
Religion	Catholic	151	39.12
	Protestant	211	54.66
	Muslim	16	4.15
	None	8	2.07
Employment status	State employee	147	38.08
	Business woman	128	33.16
	Agriculture and livestock	25	6.48
	Not employed	86	22.28
Number of previous pregnancies	None	107	27.72
	1 to 3	250	64.77
	≥4	29	7.51
Number of term births	None	134	34.72
	1 to 3	242	62.69
	≥4	10	2.59
History of preterm delivery	Yes	38	13.62
	No	241	86.38
History of abortion	Yes	49	12.69
	No	337	87.31
Number of living children	None	125	32.38
	1 to 3	253	65.54
	4 and more	8	2.07

epidural labor analgesia in the future among study participants were worries about the complications of epidural labor analgesia in 30% of them, other 30% do not need pain control, 26.8% wish that

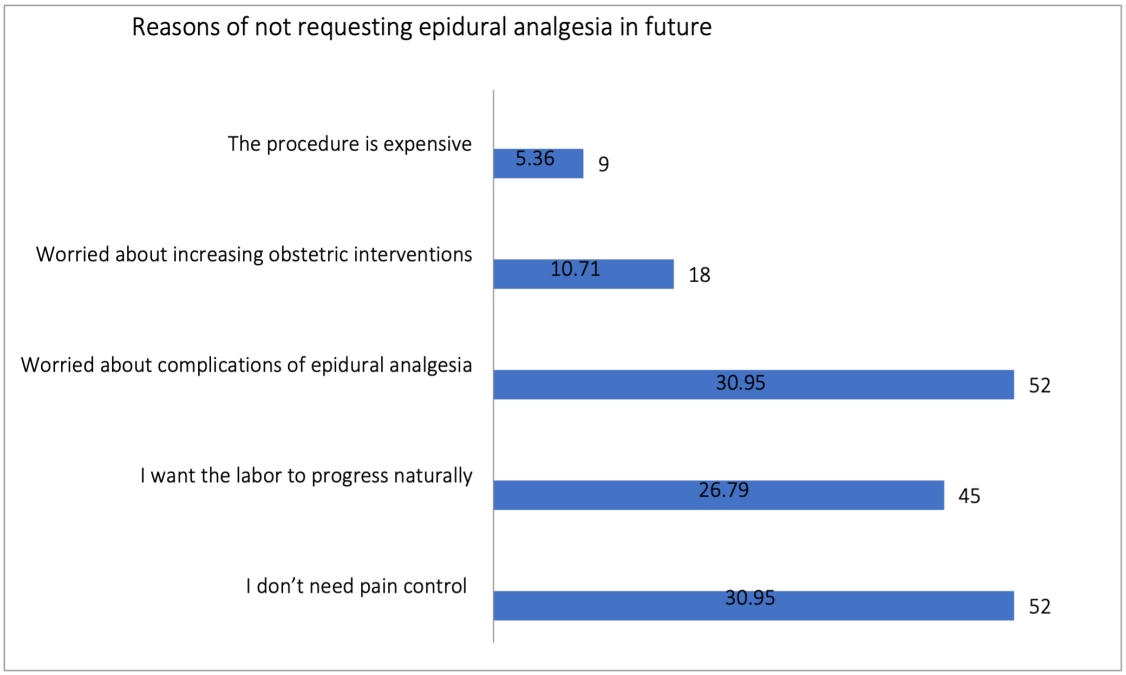

Figure 3: Reasons of not requesting epidural analgesia in future

the labor can progress naturally, 10% are worried about increasing the obstetric interventions while 5% think that the procedure is expensive (Figure 1).

Factors associated with awareness of the use of epidural analgesia during labor in the hospital

The binary logistic regression analysis examines the predictors associated with awareness of epidural analgesia among the surveyed population (Table 3). Several factors were considered, including marital status, education, religion, employment, gravidity, prior anesthesia provided, and history of exposure to labor pain. The results indicate that marital status, education, religion, and employment were not statistically significant predictors of awareness of epidural analgesia, as their p-values were all above 0.05. However, gravidity and prior anesthesia provided were significant predictors.

Multigravida women were approximately 2.28 times more likely to be aware of epidural analgesia compared to primigravida women ($p < 0.001$), and women with a history of prior anesthesia provided were 1.68 times more likely to be aware of epidural analgesia ($p = 0.045$).

Notably, a history of exposure to labor pain was highly associated with awareness, as women with no history of exposure to labor pain were significantly less likely to be aware of epidural analgesia ($p < 0.001$).

Factors associated with the willingness to use epidural analgesia during labor in the future.

The binary logistic regression analysis explored factors associated with the intention to request epidural analgesia in the future among the surveyed population (Table 4). The results reveal several noteworthy associations. Education level and religion significantly influenced the intention to request epidural analgesia, with women who attended secondary school being 1.69 times more likely to express this intention compared to those with lower education levels ($p = 0.015$), while Protestant women were less likely to express this intention than Catholics ($p = 0.003$) and those with no religious affiliation were significantly less likely to express this intention ($p = 0.037$).

Employment in agriculture and livestock also strongly correlated with the intention to request epidural analgesia, with an odds ratio of 4.52 ($p = 0.008$). Additionally, having a history of exposure to labor pain (OR = 3.39, $p < 0.001$) and being aware of the existence of epidural analgesia (OR = 2.75, $p < 0.001$) were significantly associated with a greater likelihood of intending to request

Table 2: Anesthesia and labor pain relief information and experiences among participants

Variables	Frequency	Percentage
History of prior anesthesia		
Yes	77	19.95
No	309	80.05
Type of anesthesia if prior anesthesia provided		
General anesthesia	27	32.93
Local-regional anesthesia	55	67.07
Informed of labor pain relief		
Yes	173	44.82
No	213	55.18
Source of information		
From an education	12	6.94
From experience in previous delivery	70	40.46
From media/TV/Radio	21	12.14
From Friends/relatives	70	40.46
Past exposure to labor pain relief		
Yes	84	21.76
No	302	78.24
Way of administration of the labor pain relief		
Injections	76	90.48
Spinal/epidural	8	9.52
Subjective effective pain control mechanism		
Epidural analgesia	140	36.27
Intravenous injections	48	12.44
Muscular injections	27	6.99
Gas inhalation	2	0.52
Don't know	169	43.78

epidural analgesia.

DISCUSSIONS

The presented study provides the first insight on awareness and willingness to use epidural analgesia during labor among pregnant women at King Faisal Hospital Rwanda.

Of the participants of the current study, 52% of them were aware of the use of the epidural analgesia during labor while 48% of the participants were not aware of the use of epidural analgesia during labor. The finding from our study is similar to the one reported by Mugambe et al. [16], who reported that 56.3% of their study participants indicated that they knew about pain relief. Our finding is different from the results from the study done by Tchounzou et al. [17], who reported that 80.0% of their study participants were aware of epidural analgesia. The proportion of participants with awareness of labor analgesia was high compared to the findings reported from the study done by Iliyasu et al. who reported that only 15% of the participants were aware of obstetric analgesia [18] the study done by Negash et al. who reported that 34.5% of participants in their study had information on labor analgesia [19] and the study by Olayemi et al. who reported that 27.1% of

Table 3: Factors associated with awareness of the use of epidural analgesia during labor among study

Predictors	Aware of epidural analgesia		AOR 95% CI	P value
	No	Yes		
Marital status				
Married	181 (48.14%)	195 (51.86%)		
Single	2 (50.00%)	2 (50.00%)	0.92 (0.13-6.66)	0.941
Divorced	2 (33.33%)	4 (66.67%)	1.86 (0.33-10.25)	0.478
Education				
No formal education	2 (33.33%)	4 (66.67%)	2.02 (0.36-11.27)	0.423
Attended primary school	6 (42.86%)	8 (57.14%)	1.34 (0.45-4.02)	0.594
Attended Secondary school	74 (45.96%)	87 (54.04%)	1.18 (0.78-1.79)	0.416
Attended University	103 (50.24%)	102 (49.76%)		
Religion				
Catholic	74 (49.01%)	77 (50.99%)		
Protestant	101 (47.87%)	110 (52.13%)	1.04 (0.69-1.59)	0.831
Muslim	8 (50.00%)	8 (50.00%)	0.96 (0.34-2.69)	0.94
None	2 (25.00%)	6 (75.00%)	2.88 (0.56-14.74)	0.203
Employment				
State employee	71 (48.30%)	76 (51.70%)		
Business woman	52 (40.63%)	76 (59.38%)	1.36 (0.84-2.20)	0.202
Agriculture and livestock	13 (52.00%)	12 (48.00%)	0.63 (0.26-1.49)	0.295
Not employed	49 (56.98%)	37 (43.02%)	0.52 (0.29-0.89	0.019
Gravidity				
Primigravida	67 (62.62%)	40 (37.38%)		
Multigravida	118 (42.29%)	161 (57.71%)	2.28 (1.44-3.61)	<0.001
Prior anesthesia provided				
Yes	29 (37.66%)	48 (62.34%)	1.68 (1.01-2.82)	0.045
No	156 (50.49%)	153 (49.51%)		
History of exposure to labor pain				
Yes	0 (0.00%)	84 (100%)	-	<0.001
No	185 (61.2%)	117 (38.7%)		

their participants were aware of the availability of pain relief in the facility [20].

In the current study, 56% of the participants mentioned the intention to use the epidural analgesia during labor in the future which still low compare to this research done in Norway by Laine et al. which showed that 65.9% of pregnant women had the desire to request labor analgesia for their next deliveries [21]. Another study done in Cameron also found 60.7% participants were willing to request epidural analgesia for labor in the future [17]. Iliyasu et al. from Nigeria also reported that 79.3% of their participants reported a desire to receive labor analgesia during labor/delivery [18]. The proportion of women who wish to request labor analgesia in the future was high compared findings from the study done by Negash et al. who reported that 40% of their study participants would like to request labor analgesia in their future deliveries [19].

The reasons of not intending to request the epidural labor analgesia in the future among our study participants were worries about the complications of epidural labor analgesia in 30% of

Table 4: Factors associated with the willingness to use epidural analgesia during labor in the future

Predictors	Intention to request epidural analgesia in future		AOR (95% CI)	P value
	No	Yes		
Marital status				
Married	162 (43.09%)	214 (56.91%)		
Single	2 (50.00%)	2 (50.00%)	0.75 (0.10-5.43)	0.782
Divorced	4 (66.67%)	2 (33.33%)	0.37 (0.36-0.8	0.265
Education				
No formal education	2 (33.33%)	4 (66.67%)	1.90 (0.34-10.63)	0.463
Attended primary school	8 (57.14%)	6 (42.86%)	0.71 (0.23-2.13)	0.546
Attended Secondary school	58 (36.02%)	103 (63.98%)	1.69 (1.11-2.58)	0.015
Attended University	100 (48.78%)	105 (51.22%)		
Religion				
Catholic	52 (34.44%)	99 (65.56%)		
Protestant	106 (50.24%)	105 (49.76%)	0.52 (0.34-0.80)	0.003
Muslim	4 (25.00%)	12 (75.00%)	1.57 (0.48-5.13)	0.45
None	6 (75.00%)	2 (25.00%)	0.17 (0.03-0.89)	0.037
Employment				
State employee	68 (46.26%)	79 (53.74%)		
Business woman	62 (48.44%)	66 (51.56%)	0.91 (0.57-1.47)	0.718
Agriculture and livestock	4 (16.00%)	21 (84.00%)	4.52 (1.47-13.8)	0.008
Not employed	34 (39.53%)	52 (60.47%)	1.31 (0.76-2.26)	0.319
Gravidity				
Primigravida	45 (42.06%)	62 (57.94%)	1.08 (0.69-1.70)	0.719
Multigravida	123 (44.09%)	156 (55.91%)		
Prior anesthesia provided				
Yes	40 (51.95%)	37 (48.05%)		
No	128 (41.42%)	181 (58.58%)	1.52 (0.92-2.52)	0.097
History of exposure to labor pain				
Yes	19 (22.62%)	65 (77.38%)	3.39 (1.94-5.94)	<0.001
No	149 (49.34%)	153 (50.66%)		
Aware of existence of epidural analgesia				
Yes	64 (31.84%)	137 (68.16%)	2.75 (1.81-4.16	<0.001
No	104 (56.22%)	81 (43.78%)		

them, other 30% do not need pain control, 26.8% wish that the labor can progress naturally while 5% think that the procedure is expensive and our results are comparable to the results from other study done which reported that 34.1% of women refused labor analgesia for future deliveries and the commonest reasons were that it was against the will of God (35%) or they wanted to experience natural child birth (27%) [18]. Our results are also similar to the findings from the study done by Tchounzou et al. [17], who reported that 39.2% of the participants refused epidural analgesia due to the fear of complications while 62.5% of the participants considered labor pain as normal. The findings from Mugambe et al. [16] also reported that the most common reason of not asking for

pain relief was not being aware of that pain can be relieved at 66.2% followed by a belief that labor pain is natural at 23.1%. Literature generally shows the pattern that African women have one of the lowest rates of usage of pharmacological pain relief methods during labor. Some women believe that crying from the pain is a sign of weakness and therefore seeking pharmacological relief would be showing that weakness which is linked to the cultural aspects pressure to experience normal labor and cost and also poor knowledge [21]. The same finding on the pain being natural during labor was also mentioned by Negash at al. [19] in their study where about 36% of their study participants believe that labor pain is natural and necessary for a good labor progress.

The logistic regression analyses further enhance our understanding by identifying predictors associated with awareness of epidural analgesia and intention to request it in the future. Notably, gravidity, prior anesthesia provided, education level, religious affiliation, and history of exposure to labor pain emerged as significant factors associated with awareness and intention to request labor analgesia in the future. Our findings are in accordance with the results reported from the study done by Negash et al. [19], who reported that education level was associated with positive attitude towards labor analgesia in the future. It is in congruent also to the cross sectional conducted in Ethiopia which showed that education level and previously vaginal delivery are associated with improved awareness [22].

This new knowledge emerged from our study serves as a valuable foundation for healthcare providers, researchers, and policymakers to tailor healthcare interventions and services to meet the specific needs and preferences of this population, particularly in the context of maternal and reproductive healthcare. Rwanda's 4x4 national strategy need to expand anesthesia provider and midwife training in obstetric pain management so that many women may beneficiate labor analgesia in many hospitals. Further research and analysis can build upon these insights to develop targeted strategies that enhance healthcare access, education, and decision-making within this demographic.

The study's primary limitations include single-site sampling restricted to King Faisal Hospital, limiting generalizability. Self-reported data from predominantly university-educated participants introduces selection bias. Additionally, the authors acknowledge potential confounding from unmeasured variables that may affect the validity and broader applicability.

CONCLUSION

The study's findings reveal that 52% of the surveyed participants were cognizant of the availability of epidural analgesia in the hospital, and 56% expressed an intention to utilize this pain relief method during labor in the future. These awareness and intention rates were found to be significantly influenced by variables including gravidity, prior anesthesia experience, education, religion, and employment. This empirical evidence underscores the importance of these factors in shaping healthcare choices within the context of maternal and reproductive health. Consequently, these insights carry substantial implications for healthcare planning and interventions, highlighting the necessity for tailored healthcare services and educational initiatives to cater to the distinct needs and preferences of this specific population.

REFERENCES

1. Karn, S.; Yu, H.; Karna, S.; Chen, L.; Qiao, D. Women's Awareness and Attitudes towards Labor Analgesia Influencing Practice between Developed and Developing Countries. Advances in Reproductive Sciences 2016, 04, 46–52, doi:10.4236/arsci.2016.42007.

2. Lally, J.E.; Thomson, R.G.; MacPhail, S.; Exley, C. Pain Relief in Labour: A Qualitative Study to Determine How to Support Women to Make Decisions about Pain Relief in Labour. BMC Pregnancy Childbirth 2014, 14, doi:10.1186/1471-2393-14-6.

3. Silva, M.; Halpern, S.H. Epidural Analgesia for Labor: Current Techniques. Local Reg. Anesth. 2010, 3, 143–153, doi:10.2147/LRA.S10237.

4. Robert, T.; Rakya, I.; Tatah, N.H.; Alphonse, N.; Estelle, K.D.; Bilkissou, M.D.; André Gaetan, S.W.; Adolphe, E.F.; Théophile, N.N.; Dominique, D.T.; et al. Awareness of Epidural Analgesia in Labour and Its Acceptability by Parturient in a Tertiary Hospital in Cameroon. PAMJ Clinical Medicine 2020, 3, doi:10.11604/pamj-cm.2020.3.175.23245.

5. Czech, I.; Fuchs, P.; Fuchs, A.; Lorek, M.; Tobolska-Lorek, D.; Drosdzol-Cop, A.; Sikora, J. Pharmacological and Non-Pharmacological

Methods of Labour Pain Relief—Establishment of Effectiveness and Comparison. Int. J. Environ. Res. Public Health 2018, 15, doi:10.3390/ijerph15122792.
6. Penuela, I.; Isasi-Nebreda, P.; Almeida, H.; López, M.; Gomez-Sanchez, E.; Tamayo, E. Epidural Analgesia and Its Implications in the Maternal Health in a Low Parity Comunity. BMC Pregnancy Childbirth 2019, 19, doi:10.1186/s12884-019-2191-0.
7. Kresimir Oremus; Zrinka Safaric The Role of Epidural Anesthesia and Analgesia in Surgical Practice. Ann. Surg. 2004, doi:10.1097/01.sla.0000138626.15285.97.
8. Brennan, F.; Lohman, D.; Gwyther, L. Access to Pain Management as a Human Right. Am. J. Public Health 2019, 109, 61–65, doi:10.2105/AJPH.2018.304743.
9. Dahab, R.; Sakellariou, D. Barriers to Accessing Maternal Care in Low Income Countries in Africa: A Systematic Review. Int. J. Environ. Res. Public Health 2020, 17, 1–17, doi:10.3390/ijerph17124292.
10. Aziato, L.; Acheampong, A.K.; Umoar, K.L. Labour Pain Experiences and Perceptions : A Qualitative Study among Post-Partum Women in Ghana. BMC Pregnancy Childbirth 2017, 1–9, doi:10.1186/s12884-017-1248-1.
11. The Faculty of Pain Medicine of the royal college of anaesthetist Best Practice in the Management of Epidural Analgesia in the Hospital Setting Available online: https://esraeurope.org/wp-content/uploads/2021/01/UK_Best_Practice_Management_Epidural_Analgesia_Hospital_Setting.pdf (accessed on 11 April 2026).
12. Nabukenya, M.T.; Kintu, A.; Wabule, A.; Muyingo, M.T.; Kwizera, A. Knowledge, Attitudes and Use of Labour Analgesia among Women at a Low-Income Country Antenatal Clinic. BMC Anesthesiol. 2015, 15, 1–6, doi:10.1186/s12871-015-0078-9.
13. Siri, Vangen;Camilla, Stoltenberg;Berit, S. Ethnicity and Use of Obstetrical Analgesia : Do Pakistani Women Receive Inadequate Pain Relief in Labour ? Ethn. Health 1996, 1, 37–41, doi:10.1080/13557858.1996.9961783.
14. Bakken, K.S.; Skjeldal, O.H.; Stray-pedersen, B. Immigrants from Conflict-Zone Countries : An Observational Comparison Study of Obstetric Outcomes in a Low-Risk Maternity Ward in Norway. BMC Pregnancy Childbirth 2015, 1–12, doi:10.1186/s12884-015-0603-3.
15. Okojie NQ; Isah EC PERCEPTION OF EPIDURAL ANALGESIA FOR LABOUR AMONG PREGNANT WOMEN IN A NIGERIAN TERTIARY HOSPITAL SETTING PERCEPTION DE TRAVAIL POUR ANALGESIE PERIDURALE CHEZ LES FEMMES ENCEINTES UN HOPITAL TERTIAIRE CADRE DU NIGERIA. J West Afr Coll Surg 2014, doi:PMC4866730.
16. Mugambe, J.M.; Nel, M.; Hiemstra, L.A.; Steinberg, W.J. Knowledge of and Attitude towards Pain Relief during Labour of Women Attending the Antenatal Clinic of Cecilia Makiwane Hospital, South Africa. South African Family Practice 2007, 49, 16, doi:10.1080/20786204.2007.10873535.
17. Robert, T.; Rakya, I.; Tatah, N.H.; Alphonse, N.; Estelle, K.D.; Bilkissou, M.D.; André Gaetan, S.W.; Adolphe, E.F.; Théophile, N.N.; Dominique, D.T.; et al. Awareness of Epidural Analgesia in Labour and Its Acceptability by Parturient in a Tertiary Hospital in Cameroon. PAMJ Clinical Medicine 2020, 3, doi:10.11604/pamj-cm.2020.3.175.23245.
18. Iliyasu, Z.; Galadanci, H.S.; Abubakar, I.S.; Isah, H.; Aliyu, M.H. DESIRE FOR OBSTETRIC ANALGESIA AMONG WOMEN IN NORTHERN NIGERIA Available online: https://scispace.com/pdf/desire-for-obstetric-analgesia-among-women-in-northern-g2lph7rsb1.pdf (accessed on 11 April 2026).
19. Negash, T.T.; Sewunet, A.; Ayele, T.T. Awareness, Attitude and Associated Factors of Labor Analgesia among Pregnant Women Attending Antenatal Care: A Cross Sectional Study. International Journal of Surgery Open 2021, 36, 100417, doi:10.1016/j.ijso.2021.100417.
20. Olayemi, O.; Aimakhu, C.O.; Udoh, E.S. Attitudes of Patients to Obstetric Analgesia at the University College Hospital, Ibadan, Nigeria. J. Obstet. Gynaecol. (Lahore). 2003, 23, 38–40, doi:10.1080/0144361021000043209.
21. Laine, K.; Räisänen, S. Effect of Maternal Country of Birth on Intrapartum Epidural Use – A Population-Based Register Study of 602 095 Deliveries. European Journal of Obstetrics and Gynecology and Reproductive Biology 2020, 250, 41–47, doi:10.1016/j.ejogrb.2020.04.013.
22. Negash, T.T.; Sewunet, A.; Ayele, T.T. Awareness, Attitude and Associated Factors of Labor Analgesia among Pregnant Women Attending Antenatal Care: A Cross Sectional Study. International Journal of Surgery Open 2021, 36, doi:10.1016/j.ijso.2021.100417.