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Labour Pain Perceptions and Experiences among Postpartum Mothers in Public Health Facilities in Rivers State: Mixed Method Study

Briggs, Daisy Amen [a*], Altraide, Basil Omieibi [b] and Ugege, E. Ososese [c]

[a] African Centre of Excellence in Public Health and Toxicological Research (ACE-PUTOR), Nigeria.
[b] Department of Obstetrics and Gynaecology, Rivers State University Teach Hospital, Nigeria.
[c] Department of Public Health, University of Port Harcourt, Nigeria.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Labour pain is regarded as the most intense pain experienced by women; yet, the degree of labour pain varies. The severity of labour pain is seldom assessed or addressed in low-resource settings.
Aim: To evaluate the perceptions and experiences of labour pain among postpartum mothers in public health facilities in Rivers State.
Study Design: A mixed method (convergent parallel) study design was used.
Methods: The qualitative and quantitative aspects involved 26 purposively and 194 consecutively selected postpartum mothers. The qualitative aspect (perception) involving in-depth interviews and thematic analysis was performed using Atlas.ti software version 23. The quantitative aspect

**Corresponding author: Email: daisybriggs6@gmail.com;*

(experience) employed an interviewer-administered semi-structured questionnaire and Visual Analogue Scale (VAS) pain tool to obtain sociodemographic information, antenatal data and assess labour pain experience. Labour pain VAS ≥6 was considered severe. The proportion with severe labour pain was determined and associated factors were uncovered using a Chi-square test. The significance level was p-value<0.05.

Results: Of the 26 postpartum mothers interviewed, two themes emerged: labour pain perception and pain relief. Of the 194 postpartum mothers recruited, 137(70.6%) experienced severe labour pains. Prelabour expectation of labour pain severity, mode of delivery, labour augmentation and pain relief modality significantly influenced labour pain experience.

Conclusion and Recommendation: Women perceived labour pain as severe during childbirth. Pain relief was strongly desired by postpartum mothers and influenced labour pain perception. Postpartum mothers' perceptions of labour pain were predominantly convergent with their experience. There is a need for a uniform labour pain relief policy and improved pain assessment and support for women in labour in Nigeria.

Keywords: Labour pain; perception; experience; mixed method; postpartum mothers.

1. INTRODUCTION

Labour pain is regarded to be the most intense pain among women of reproductive age, and the degree of pain experienced during labour affects labour progress as well as maternal and newborn well-being [1]. Although labour is a physiological process, the severity of labour pain varies among women. The perception of labour pain can range from being agonizing to enjoyable depending on the individual's perspective which may arise from an interplay of several factors which include previous experiences, antenatal education, religion, place of delivery, family and caregiver support, and sociocultural contexts [2]. Despite the intensity of labour pain, the memories and unpleasant experiences fade over time for the majority of women [3].

The World Health Organization (WHO) strongly recommends that during the intrapartum period, comprehensive healthcare be provided promptly, appropriately, and with regard to a woman's choice, culture, and requirements. Also, WHO considers pain treatment to be a quality-of-care criterion for all women throughout the postpartum period [4]. The intensity of labour pain, as well as its detrimental impact on maternal well-being during and after childbirth, has been widely documented, leading to the formation of health policies in resource-rich nations in favour of pain treatment during labour. However, in low-resource countries, pain relief options are largely non-pharmacological and solely depend on the attitude and understanding of the healthcare workers [5,6].

The awareness and management of labour pain may change if women recount their pain perception before labour and their real experience of pain shortly after labour. This will ensure that every woman in labour is given the required focus of attention and that her labour pain is promptly and adequately managed [7]. If women in labour are attended to by a skilled birth attendant, then the attendant has to ensure that women obtain a satisfactory birth experience since pain in labour is inevitable [8]. There is some evidence showing that the support women receive during labour can lessen the use of pharmacological pain relief, decrease the duration of labour and cut down on some medical interventions that could have been performed [9].

Midwives are predominantly the first-line of healthcare providers at health centres and are the lead service providers to women in labour. They are usually the first to observe worsening painful maternal distress and participate in the delivery process. Thus, making them the first likely initiators of labour pain management. However, several studies have reported that there is a general suboptimal level of knowledge of labour pain management among midwives/nurses, especially in low- and middle-income countries [5,10]. Assessing the severity of labour pain is largely undone as most see the labour process as natural and so are less likely to intervene [6].

Most studies in Nigeria, although few, which explored perceptions and or experiences of labour pain reported that between 50% to 85.3% of post-partum mothers described labour pain as severe. However, these were predominantly quantitative studies, some were subjective and all did not explore the actual views of the mothers themselves. Concerning is the fact that qualitative studies on this subject were very

scarcely conducted in Nigeria [11,12] and were limited by small sample sizes and prolonged duration between delivery and in-depth interview, which increased the possibility of recall bias. Despite this high prevalence of perceived severe labour pains, there is still no national policy on pain relief and most hospitals have no working protocols to assess labour pain severity and institute the desired pain management.

The theoretical framework of this research is propagated based on the Hard, Wolff and Goodell's Fourth Theory of Pain (1940) [13]. According to their theory, pain has two components: pain perception (afferent) and pain response (efferent). In contrast to pain perception, which was thought to be a more hardwired physiological process, pain response was assumed to be influenced by complicated psychologic and physiological processes that were influenced by prior experiences, culture, the environment, and emotional state [14]. The perception/ experience of labour pain is a reflective major lived experience that is intertwined in a complexity of factors that includes the woman's inherent pain threshold levels, her knowledge or understanding of the birth process and other external sources of influence like the birth environment and other socioeconomic, sociodemographic and antenatal factors. This framework was considered suitable for this research and informed the concepts used in this research which includes labour pain, pain perception, postpartum mothers, pain assessment.

This study, therefore, sought to bridge the knowledge gap by using a mixed method to address this very troubling yet, insufficiently addressed issue of labour pain perception and experiences among post-partum mothers and mitigate the methodological challenges inherent in existing studies in Nigeria that employed 'stand-alone' research methods. Findings from this study will create awareness by highlighting the unique perceptions (qualitative) and experiences (quantitative) of the post-partum mothers within the socio-cultural context of Nigeria, particularly Rivers State which would in turn provide evidence to inform the values, equity and acceptability components of obstetric interventions for labour pain in this setting and also add to the sparse body of literature, being the first of its kind in the West African subregion.

This study aimed to evaluate the perceptions and experiences of labour pain among postpartum mothers in two selected public health facilities in Port Harcourt, Rivers state, South-South Nigeria**,** with the following objectives: to explore how postpartum mothers perceived their labour pain (qualitative) and to determine how postpartum mothers experienced labour pain using a pain score (quantitative).

2. MATERIALS AND METHODS

Study Design: Cross-sectional mixed method (Convergent parallel design) and employed a phenomenological methodology for the qualitative aspect and an interviewer-administered semi-structured questionnaire for the quantitative aspect. This design was chosen because it enabled the researchers to collect quantitative and qualitative data concurrently and analyze them separately. Afterwards, results presented separately were compared to draw overall conclusions to obtain a complete understanding of the two distinct methods.

Duration of study: Conducted over two months from 2nd February to 2nd April 2023

Source Population for the Study: Post-partum mothers who presented in labour and were delivered at the labour wards of public health facilities in Rivers State, South-South, Nigeria.

Study facilities: Of the two tertiary and two secondary public health facilities in Port Harcourt, Rivers State, one each (Rivers State University Teach Hospital) and Obio Cottage Hospital (OCH) were randomly selected to be included in this study.

Study Area: This study was carried out in the Labour and Postnatal wards of the Department of Obstetrics and Gynaecology, Rivers State University Teaching Hospital and Obio Cottage Hospital, Rumuobiakani, Port Harcourt. The former is a 375 licensed bedded hospital owned by the Rivers State Government and serves as a referral centre to all 413 primary and secondary health centres in the State. The hospital has 1 main labour ward with cubicles and 2 delivery suites. The Hospital has about 125 deliveries per month and a caesarean section rate of 41.4% [15]. However, due to recent increases in cost and inflation, monthly birth rates had plummeted to 30 – 50 births per month. The latter is a community-based health centre which was initially a primary health centre but through collaborations with the Shell Petroleum Development Company (SPDC) had

incorporated an affordable Health Insurance Scheme, particularly for first-time pregnant women and had become a provider of both comprehensive primary and secondary healthcare, including aspects of specialists' services. The hospital has about 280 deliveries per month, largely due to the insurance package [16].

Inclusion criteria: All post-partum mothers either booked or unbooked who delivered in the labour wards of RSUTH and OCH. All post-partum mothers that delivered per vaginam or via C-section but experienced labour pain and all post-partum mothers who gave consent were included.

Exclusion criteria: All post-partum mothers who are too sick to give consent e.g., had eclampsia, and all post-partum mothers that were sedated/ never experienced labour pains were excluded.

Sample and Sampling Techniques:

Sample size and sampling technique for qualitative aspect: 26 post-partum mothers were purposively recruited.

The sample size for the quantitative component: The sample size calculation was based on the prevalence of severe labour pain from a previous study in Nigeria which was reported as 85.3% [17]. Hence, using the Cochran formula for observational studies [18].

$N = Z\alpha^2\ p(1\text{-}p) / e^2 = 1.96^2 \times 0.853\ (1 - 0.853) / (0.05)^2 = 193$ participants

Where; N= sample size, P= proportion of post-partum women with severe Labour pain in the previous study: 85.3%, e= acceptable sampling error = 5% = 0.05, Z= standard deviation of the population, if confidence is at 95%, z = 1.96. Hence, 194 postpartum mothers were consecutively recruited. Mothers were selected in each facility by proportionate allocation based on monthly birth rates from earlier studies [16] and [15]. In RSUTH, monthly births = 125, however (from ward records of births in the last year, 50 babies per month were used) and in OCH, monthly births = 286, hence, in RSUTH, 30 postpartum mothers and in OCH, 164 were recruited.

In this research, Perception is defined as the participant's view of labour pain – how the participant perceived labour pain in their words and Experience is defined as the participant's actual pain experience (severity) of labour pain as verified by a pain score. Socioeconomic status was classified based on the revised scoring scheme for the classification of Socio-economic Status in Nigeria [19]. Booking status is defined as mothers who were registered for antenatal care at the selected public health facilities. Referral status is defined as mothers who were referred (verbal or written) in labour to the selected public health facilities.

The study was conducted by the lead researcher and research assistants who had some training in quantitative and qualitative research methods after undergoing a Master's degree programme in Midwifery and Child Health, at the African Centre of Excellence for Public Health and Toxicological Research (ACEPUTOR), University of Port Harcourt, Rivers State, Nigeria.

Methods of data collection/ instrumentation:
For quantitative data collection: All necessary information was obtained using a semi-structured questionnaire that was modified from earlier studies [20,21] and was obtained from the case notes. The questionnaire was made up of two parts. The first part (Part A), had two sections. The first section: demographic data, comprised of the participants' age, occupation, husbands' occupation, booking status, religion, tribe, level of education, parity, gestational age at delivery, and referral status, the existence of chronic sickness were obtained from the case notes. Other information gathered included the blood pressure, time of labour onset, the use of any analgesics or epidural pain relief during active labour, the use of oxytocin for labour augmentation, the use of episiotomies, and the outcome of the baby.

In the second section, the visual analogue scale (VAS) was used to assess the perceived degree of labour pain. The VAS scale is a 10-centimetre scale with the terms "worst pain possible" and "no pain" at each end. Each participant was asked to select the scale point that best described her level of pain during labour. The VAS score was used to classify pain in accordance with the scale tool as No pain (0), mild intensity (1.0 - 3.0), moderate intensity (3.1 - 5.9), or severe intensity (6.0 - 10.0). The VAS was administered after the 3rd stage of labour due to the peculiarities of the cohort of participants within 6 - 12 hours of delivery.

For qualitative data collection: Personal in-depth interviews were used taking into

cognizance the peculiarities of the labour ward and transition in care to the postnatal wards. The Part B of the questionnaire contained the interviewer-guide questions and prompts utilized in data collection. The interview lasted 10- 20 minutes for each respondent to acquire a considerable amount of valuable data. When no new relevant knowledge was gathered from participants during the course of the rapport (i.e., data saturation), the in-depth interview was halted. Only one interview session with each selected participant was conducted and minimal interruptions after probing questions were asked, were ensured, to avoid influencing the rapport developed between the researcher and participant that could negatively impact the findings.

The method of recording the words of the participants was done using an audio recording application Samsung A10 ISO device to ensure transcription was more accurately reflective of the participants' views and to minimize erroneously transcribing an unintended meaning. This ensured that accuracy was maintained.

2.1 Data Validity and Reliability

Quantitative research rigour: Strategies to improve internal consistency (reliability) were performed on the questionnaire which was adapted from previous studies conducted in Nigeria and Cronbach alpha = 0.8. The Visual Analogue Scale used in this study to assess labour pain is a standardized tool for assessing pain severity and has been used in other obstetric settings [22] and had also been validated in earlier studies in Nigeria for evaluating labour pain among parturients [21,23].

Qualitative research rigour: Conducting the interviews within the confines of the postnatal wards, among postpartum mothers, and allowing the participants to express their views about the labour pain process during childbirth without interruptions and audio recording all their comments were helpful to promote the credibility of the study. Prolonged engagement with the postpartum mothers enabled the researchers to overcome any distortions due to their presence – Hawthorne Effect and to minimize social desirability bias. To ensure transferability, thick descriptions including the provision of adequate details of the study site, participants and methods used to collect data were detailed. Strategies to ensure dependability were the use of personal notes which also detailed impressions to enable the researchers to focus on and find conclusions grounded in the data rather than personal interests and biases. All these were employed to enhance the trustworthiness of the qualitative data.

2.2 Methods of Data Analysis

Data analysis for qualitative data: Data were analyzed using interpretative phenomenological thematic analysis (IPA)**.** After transcribing the data verbatim, the texts were read and re-read intensively, after achieving immersion, annotating was done closely (coding) for insights into the post-partum mothers' perception of labour pain. Line-by-line coding was used. The data was then catalogued into emerging codes and patterns identified as themes. Themes were queried, examined, and visualized before being synthesized in a framework matrix to allow for a more comprehensive and complicated explanation of the labour pain phenomena. The coding method was made apparent, including the selection of relevant sections from participant responses, as well as the derivation and selection of themes. Qualitative data were analyzed using the software packages Atlas.ti scientific software version 23 which aided with the coding of qualitative data.

Data analysis for quantitative analysis: For the quantitative part of the analysis, the IBM-SPSS Statistics for Windows version 25.0 was used. Continuous variables were summarized using descriptive statistics such as mean and standard deviation at a 95% confidence range. The intensity of labour pain experienced by postpartum mothers was classified as severe, moderate, or mild in accordance with the VAS classification. Frequencies, percentages, and figures were used to summarize categorical variables. A chi-square test was performed to determine the relationship between some participant variables and pain severity scores, after further dichotomizing the pain intensity scores to either 'severe' or 'not severe' labour pain.

3. RESULTS

3.1 Qualitative Research Findings

The characteristics of the participants are shown in Table 1. A total of 26 respondents participated in the in-depth interviews. All the respondents were married, with a mean age of 32.77 (4.3) years and aged ranged between 25 and 40

years. The proportion of respondents was higher among those in the age category of 30 – 34 years (46.2%). Thirteen of them worked as employees (50.0%). The participants were mostly Ijaw (53.8%). Most 25 (96.2%) of the postpartum mothers were Christians. Those in the middle socio-economic class were more (69.2%). Most of the study participants (46.2%) were Para 1 and 24 (92.3%) were booked before delivery.

Table 1. Sociodemographic characteristics of the study participants

Variables	Frequency	Percentage
Age category(years)		
25 – 29	5	19.2
30 – 34	12	46.2
35 – 39	7	26.9
≥40	2	7.7
Employment status		
Unemployed	2	7.7
Employee	13	50.0
Self-employed	11	42.3
Tribe		
Igbo	6	23.1
Yoruba/Hausa	3	11.5
Ijaw	14	53.8
Others	3	11.5
Religion		
Christianity	25	96.2
Islam	1	3.8
Socio-economic status		
Upper	4	15.4
Middle	18	69.2
Lower	4	15.4
Parity		
Para 1	12	46.2
Para 2	9	34.6
Para 3 – 4	5	19.2
Booking status		
Booked	24	92.3
Unbooked	2	7.7

Table 2. Thematic summary of the perception of labour pains from in-depth interviews with postpartum mothers

Themes	Main Sub-themes	Minor Sub-themes
Labour pain	• **Labour pain perception** ○ Positive perception ○ Negative perception	• Pain intensity – mild/moderate/severe • Tolerability • Faith
Pain relief	• Emotions • Attitude • Knowledge • Emotion • Pain relief method	• Positive – gratitude • Negative – fear • Positive – desired • Negative – undesired • Ignorant / unawareness • Negative – Frustration • Barriers/ hindrances • Non-pharmacological measures

3.2 Spectrum of Labour Pains during Delivery among Postpartum Mothers

The women's description of their perception of labour pain and the entire delivery process in answer to objective 1 (Table 2) were summarized into two themes; (a) labour pain perception, and (b) Pain relief. In addition, major and minor sub-themes also emerged which provided a more robust exploration of postpartum mothers' views of their overall labour pain perception.

3.3 Labour Pain Perception

The results demonstrated several subthemes that played a major role in shaping the labour pain perception and childbirth experience. For instance, their labour pain perception was mostly negative and the main reason being labour pain severity. All respondents experienced some level or form of pain during labour in varying intensities. In describing the pain, they felt, the mothers rated it as normal, mild or moderate at early labour (onset of contraction), emphasizing that the level of pain became intense or severe as dilation increased and labour progressed to full dilatation of cervix/crowning (pushing the baby out). However, most shared that the labour was very painful:

> *"Very very painful, it was not funny at all, it's very painful, I saw hell….."* – Respondent 40 (Para 2, 31 years)
>
> *"It was very painful o, that Sunday night I was feeling serious pain, I didn't even know that it was labour pain, it was around that 10 – 11 pm it became serious. I started pulling off my hair…"* – Respondent 12 (Para 1, 40 years)
>
> *"The pain was very severe; the doctors will only encourage you….."* – Respondent 8 (Para 1, 35 years)
>
> Yet others who were deemed to have had a positive perception of labour pain rated it to be less severe – being either of mild or moderate intensity but not beyond their tolerance, which also suggested that pain perception was closely related to tolerance levels.
>
> *"…..Not bad, I will not say out of this world but…….. but moderate……"* – Respondent 29 (Para 2, 29 years)
>
> *"I had mild pain; it was not something I could not bear……I could bear it because it was not persistent, it came and subsided off and on until delivery"* – Respondent 39 (Para 4, 39 years)

Some women during the active stage of labour pain yelled or screamed about it; others tolerated it (or sobbed internally); still, others showed no signs of discomfort.

> *"At first it was mild, then with time as the dilation progressed, the pain became unbearable. It wasn't funny…… then the doctor tried moving and I shouted where are you going, come back o! A student doctor tried to check for my baby's heartbeat, I pushed the machine away; then a nurse said I should hold on, not to let the baby come out until they make everything ready and I told her I can't control it…....."* – Respondent 11 (Para 2, 32 years)

Some of the women had never had labour or delivery before, while the majority had had two, three, or even four prior experiences. Nevertheless, some women also expressed having increased pain intensity when the labour was augmented as opposed to the natural spontaneous labour process in the previous delivery.

"Ehm… this one was a lot more intense because it was an induction, but I think it was faster and more painful than the natural labour for my first baby". Respondent 29 (Para 2, 29 years)

> Interestingly, quite a number of the women expressed varying emotions including fear, gratitude, exaggerations and expressions of faith.
>
> "*Well, what I went through, I went through pains, I was just praying …….to go and come back alive….."* Respondent 14 (Para 2, 32 years)
>
> *"The pain was ha ha ha painful, something out of this world. Anyway, it was really painful but I thank God anyway……"* – Respondent 33 (Para 1, 31 years)

The study emphasized the uniqueness and individuality of postpartum mothers' pain perception of labour and how vocalizations varied.

3.4 Pain Relief

Almost all of the women stated that labour and childbirth were associated with varying degrees of pain. One of the most important aspects related to pain perception was the use of pain

relief during labour as a form of support. One of the main goals of this study was to investigate postpartum mothers' perceptions of pain management during labour and whether they were aware of and given any form of pain relief. The analysis further highlighted this query under the following major and minor subthemes:

A. **Attitude:** Analysis revealed that most of the postpartum mothers had a positive attitude towards pain relief during labour. They expressed their desire for and wished to have had pain relief during childbirth.

"No o, no pain relief, I even requested but they did not give me" – Respondent 28 (Para 2, 36 years)

No o, no pain relief was given, the doctors will tell you that you need the pain, there is nothing like pain relief for labour" – Respondent 8 (Para 1, 37 years)

On the contrary, a few postpartum mothers expressed negative attitudes towards pain relief in the process of their childbirth as they believed that labour pain was natural and required no interventions.
"...I don't subscribe to any pain relief because if the level of pain I felt is what other women feel, I don't subscribe to pain relief" – Respondent 39 (Para 4, 41 years)

"..but anyway, at that moment of the pain, I don't expect any pain relief because the pain will help the baby to come out, so no need for pain relief " – Respondent 36 (Para 1, 27 years)

"No! I was not aware of pain relief during labour and even if there was, I don't think I need it" – Respondent 32 (Para 1, 34 years)

B. **Knowledge/ Awareness:** The analysis also revealed that all of the postpartum mothers were ignorant or lacked knowledge of pain relief during labour or its availability, including those who desired pain relief or did not want pain relief.

"No I was not aware of any pain relief, so I did not get any. If I knew, I would have asked because I saw Hell" – Respondent 40 (Para 2, 31 years)

"I didn't know about pain relief during labour o, because it's my first experience" Respondent 15 (Para 1, 27 years)

The study emphasized the general lack of knowledge/ awareness and the unfulfilled desire of women's expression for pain relief in labour and was linked to their overall perception of labour pain.

C. **Emotion:** Some postpartum mothers expressed their frustrations during the labour process as some health workers appeared to be insensitive to the degree of labour pain and their desire for pain relief.

"The pain became very severe and worse, I cannot scream because they asked me not to scream, no matter what and it got to a point where I literally ripped off anything no matter how hard it was because the pain was incomparable to anything in this world…" Respondent 41 (Para 2, 30 years)

"The pain was so bad that I was calling and calling and calling, no way. They were all there…It got to a time that I started to hit on the drawer that they should come and help me…I need help ooo…but they did not come" Respondent 28 (Para 2, 36 years)

D. **Pain management:** The data demonstrated that some women asked for access to pain relief treatment alternatives despite the dearth of accessible options, and they received a variety of responses.

Some women received non-pharmacological pain relief methods and had a combination of mainly back massages and breathing exercises.

"The nurse was coming to massage my back, giving me a breathing exercise, checking to know how far I have dilated and my contraction…." – Respondent 43 (Para 1, 34 years)

However, some women that received non-pharmacological pain relief methods which were altogether offered during the labour process were largely unaware these were being offered as pain relief options.

"We were never told anything about pain relief during labour, but the encouragement and breathing exercise from the midwife helped a lot…" Respondent 43 (Para 1, 34 years)

"The pain was unbearable; it wasn't funny and I was shaking the bed and the pole. One of the nurses came and she told me to

breathe in and out and try my best. But they did not give me anything to relieve my pain…" Respondent 11 (Para 2, 32 years)

It was found that some women failed to request pain management because they were unaware that it was a possibility – hence their ignorance was a barrier/hindrance:

"They were even telling me that it is how it is, that the baby was looking for a way to come out" Respondent 15 (Para 1, 27 years)

However, although some were unaware, expected pain relief to be offered, and even requested but were not given:

"I was not aware of any pain relief drugs; they didn't give me anything. I felt since I was in the hospital, if there was anything to help with the pain, they should have given me, but even when I requested, they didn't give…" Respondent 33 (Para 1, 31 years)

3.5 Quantitative Research Findings

Sociodemographic characteristics of postpartum mothers: The study involved 194 postpartum mothers with a mean age of 32.2 years and a standard deviation of 4.8 years. The Majority of the women were aged between 31 – 35 years (38.7%). Almost all participants (97.9%) were Christian and half of the postpartum mothers were women of Ijaw ethnic extraction. About 4 in every 5 women (85.6%) in the study had tertiary education. Fifty-eight (29.9%), of the women were civil. One hundred and seventeen women (60.3%) belonged to the lower socioeconomic class as seen in (Table 3).

3.6 Obstetric Care Features among Participants

As seen in Table 4, about 9 in every 10 participants (94.8%) booked at a standard government-approved hospital. However, about 10.8% of the study participants were referred in labour to the investigating hospital from primary healthcare centres (6.7%). The majority of women in the study were primiparous women (56.7%). One hundred and twenty-seven women (65.5%) delivered at term (gestational age ≥ 37 weeks).

3.7 The Severity of Labour Pain Experience as Verified by the VAS Pain Score

Overall, 137 **(70.6%)** postpartum mothers considered labour pain as **"severe",** while 57 postpartum mothers (29.4%) rated labour pain as "**Not severe".** However, the labour pain score assessment by postpartum mothers ranged from 2 points among 12 (6.2%) postpartum mothers to 10 points as rated by 35 (18.0%) postpartum mothers, as displayed in Fig. 1.

3.8 Postpartum Mothers' Expectation of Labour Pain Severity and Awareness of Access to Relief during Antenatal Care

Table 5 shows that before delivery, about half (51.3%) expected labour would of moderate pain severity. Only about one-third (32.0%) of the postpartum mothers were informed of pain relief during labour while receiving antenatal care. When asked about their desired goal with pain relief measures in labour, the majority (45.9%) of women in the study wanted analgesic agents just for reduction of pain in labour and interestingly, 26 (13.4%) desired for pain elimination in labour. On the contrary, 55 (28.4%) thought that no relief is needed for women in labour. About 9 out of 10 respondents (87.7%) had vaginal delivery; of which 108 (55.7%) had assisted vaginal delivery. A third (31.4%) of the postpartum mothers had their labour augmented. About 4 in every 5 (80.9%), thought that phase of uterine contraction was the most painful during labour.

3.9 Labour Pain Relief Modalities and Reason for A low Request for Pain Relief during Labour

Table 6 showed that only 73 (37.6%) of the postpartum mothers got one form of pain relief or the other in labour. The different forms of pain relief modalities that were instituted include non-pharmacologic methods [breathing exercises (21.1%), back massage (37.6%)] and pharmacologic methods [parenteral opioids (6.7%) and epidural analgesia (2.1%)].

Table 3. Sociodemographic characteristics of study participants

Characteristics	Frequency N = 194	Percent (%)
Age group (years)		
21 - 25	23	11.9
26 - 30	51	26.3
31 - 35	75	38.7
36 - 40	29	14.9
> 40	16	8.2
Religion		
Christian	190	97.9
Others	4	2.1
Tribe		
Ijaw	98	50.5
Igbo	73	37.6
Yoruba	7	3.6
Hausa	4	2.1
Others	12	6.2
Participants' occupation		
Civil servant	58	29.9
Trader	50	25.8
Unemployed	36	18.6
Professional	33	17.0
Artisan	17	8.8
Participants' level of education		
Secondary	29	14.9
Tertiary	165	85.1
Husband occupation		
Artisan	38	19.6
Trader	39	20.1
Civil servant	44	22.7
Professional	73	37.6
Husband education		
Secondary	28	14.4
Tertiary	166	85.6
Socioeconomic status		
Lower socioeconomic status	117	60.3
Middle socioeconomic status	52	26.8
Upper socioeconomic status	25	12.9

The most common reason why participants did not request analgesia in labour was that they were unaware of their right to demand pain relief in pregnancy (48.5%) (Fig. 2).

3.10 Relationship between Expected Severity of Labour Pain and the Experienced Labour Pain

The initial expectation of labour pain during antenatal care among postpartum mothers was seen to significantly influence (χ^2 = 32.70; p – 0.001) the experience of labour pain severity; while no women with mild expectation (0.0%) rated labour pain as severe, 80.5% of women who expected severe labour pain rated their experience as severe (Table 7). Other factors related to labour that affected the rating of labour pain severity included the duration of labour (χ^2 = 24.30; p – 0.001), augmentation of labour (χ^2 = 4.04; p – 0.044), and mode of delivery (χ^2 = 15.19; p – 0.001).

3.11 Relationship between Severity of Labour Pain and Labour Pain Relief Modalities

Table 8 showed that back massage was one of the non-pharmacological relief modalities given to postpartum mothers by nurses. Still, most postpartum mothers (89.0%) who had back massages still rated labour pain as severe

demonstrating back massage had a significant relationship to labour pain severity (χ^2 = 19.14; p – 0.001). However, epidural analgesia significantly improved the severity of labour pain (χ^2 = 9.77; p – 0.002). None of the women (0.0%) who had epidural analgesia considered labour pain to be severe.

Table 4. Obstetric care features among participants

Characteristics	Frequency N = 194	Percent (%)
Booking status		
Unbooked	10	5.2
Booked	184	94.8
Referral Status		
Not referred	173	89.2
Referred	21	10.8
Referring Institution		
Not referred	173	89.2
Referred from PHC	13	6.7
Referred from a Private hospital	8	4.1
Gestational Age at Birth		
< 37 weeks	67	34.5
≥ 37 weeks	127	65.5
Parity		
Primiparous	110	56.7
Multiparous	31	17.0
Grand multiparous	53	27.3

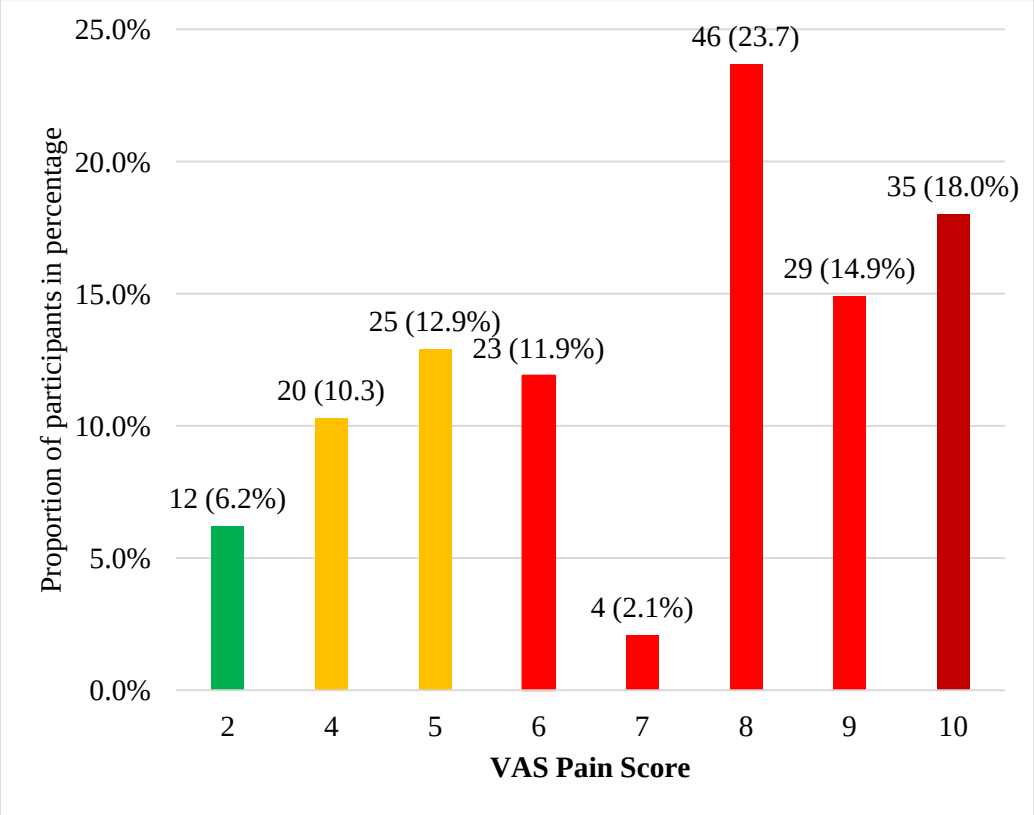

Fig. 1. The distribution of labour pain scores among postpartum mothers as assessed using the VA scale

Table 5. Postpartum mothers' expectation of labour pain severity and awareness of access to labour pain relief during ANC

Characteristics	Frequency N = 194	Percent (%)
Informed about pain relief in labour during ANC	62	32.0
Initial expectation of Labour pain during ANC		
Mild	12	6.2
Moderate	100	51.5
Severe	82	42.3
Mode of delivery		
Spontaneous vaginal delivery	62	32.0
Emergency Caesarean Section	24	12.4
Assisted vaginal delivery	108	55.7
Duration of active labour		
< 6 hours	76	39.2
6 – 12 hours	62	32.0
12 – 18 hours	12	6.2
> 18 hours	44	22.7
Participants with labour augmented	61	31.4
Most painful stage of labour		
During contraction	157	80.9
During bearing down	37	19.1
Perceived goal of pain relief in labour		
No relief is needed	55	28.4
Relief should reduce pain	89	45.9
Relief should eliminate pain	26	13.4
Unsure what relief should achieve	24	12.4

Table 6. Labour pain relief modalities among participants

Characteristics	Frequency N = 194	Percent (%)
Participants had relief given		
No	121	62.4
Yes	73	37.6
Non-pharmacologic method		
Breathing exercise		
No	153	78.9
Yes	41	21.1
Back massage		
No	121	62.4
Yes	73	37.6
Pharmacologic methods		
Parenteral injection – PCM		
No	181	93.3
Yes	13	6.7
Epidural anaesthesia		
No	190	97.9
Yes	4	2.1

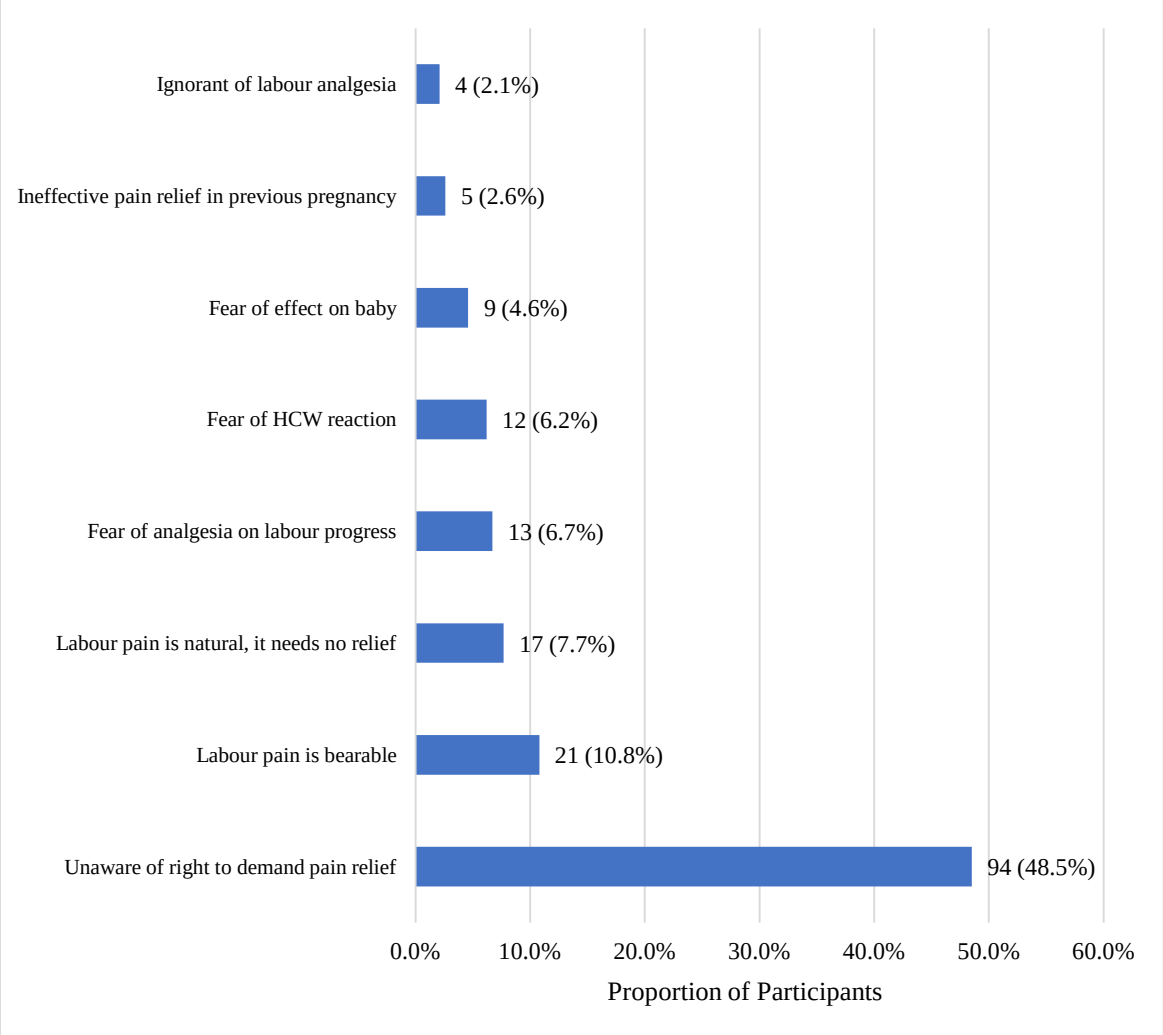

Fig. 2. Reasons participants did not request labour analgesia

Table 7. Relationship between expected severity of labour pain and experienced labour pain among participants

Characteristics		Level of Pain Severity experience		χ^2 (p-Value)
	Total N = 194	Severe N = 137 (%)	Not Severe N = 57 (%)	
Informed about pain relief in labour during ANC				
No	132	92 (69.7)	40 (30.3)	0.17
Yes	62	45 (72.6)	17 (27.4)	(0.681)
The initial expectation of Labour pain				
Mild	12	0 (0.0)	12 (100.0)	32.70
Moderate	100	71 (71.0)	29 (29.0)	(0.001*)
Severe	82	66 (80.5)	16 (19.5)	
Duration of active Labour				
< 6 hours	76	39 (51.3)	37 (48.7)	24.30
6 – 12 hours	62	50 (80.6)	12 (19.4)	(0.001*)
12 – 18 hours	12	12 (100.0)	0 (0.0)	
> 18 hours	44	36 (81.8)	8 (18.2)	

Characteristics		Level of Pain Severity experience		χ^2 (p-Value)
	Total N = 194	Severe N = 137 (%)	Not Severe N = 57 (%)	
Labour Augmentation				
No	133	88 (66.2)	45 (33.8)	4.04 (0.044*)
Yes	61	49 (80.3)	12 (19.7)	
Goal of pain relief in labour				
No relief is needed	55	31 (56.4)	24 (43.6)	16.46 (0.001*)
Relief should reduce pain	89	64 (71.9)	25 (28.1)	
Relief should eliminate pain	26	26 (100.0)	0 (0.0)	
Unsure what relief should achieve	24	16 (66.7)	8 (33.3)	
Most painful stage of labour				
During contraction	157	104 (66.2)	53 (33.8)	7.60 (0.006*)
During bearing down	37	33 (89.2)	4 (10.8)	
Mode of Delivery				
Spontaneous vaginal delivery	62	53 (85.5)	9 (14.5)	15.19 (0.001*)
Emergency Caesarean Section	24	20 (83.3)	4 (16.7)	
Assisted vaginal delivery	108	64 (59.3)	44 (40.7)	

**Statistically significant*

Table 8. Relationship between severity of labour pain and labour pain relief modalities

Characteristics		Level of Pain Severity experience		χ^2 (p-value)
	Total N = 194	Severe N = 137 (%)	Not Severe N = 57 (%)	
Non-pharmacological method				
Breathing exercise				
NO	153	108 (70.6)	45 (29.4)	0.00 (0.986)
YES	41	29 (70.7)	12 (29.3)	
Back massage				
NO	121	72 (59.5)	49 (40.5)	19.14 (0.001*)
YES	73	65 (89.0)	8 (11.0)	
Pharmacologic method				
Parenteral opioids				
NO	181	127 (70.2)	54 (29.8)	0.27 (0.605)
YES	13	10 (76.9)	3 (23.1)	
Epidural analgesia				
NO	190	137 (72.1)	53 (27.9)	9.77 (0.002*)
YES	4	0 (0.0)	4 (100.0)	

**Statistically significant*

3.12 A Schematic Diagram Showing a Joint Display of the Integration of Quantitative and Qualitative Findings

Fig. 3 demonstrates a joint integration and convergence of the quantitative and qualitative main data findings.

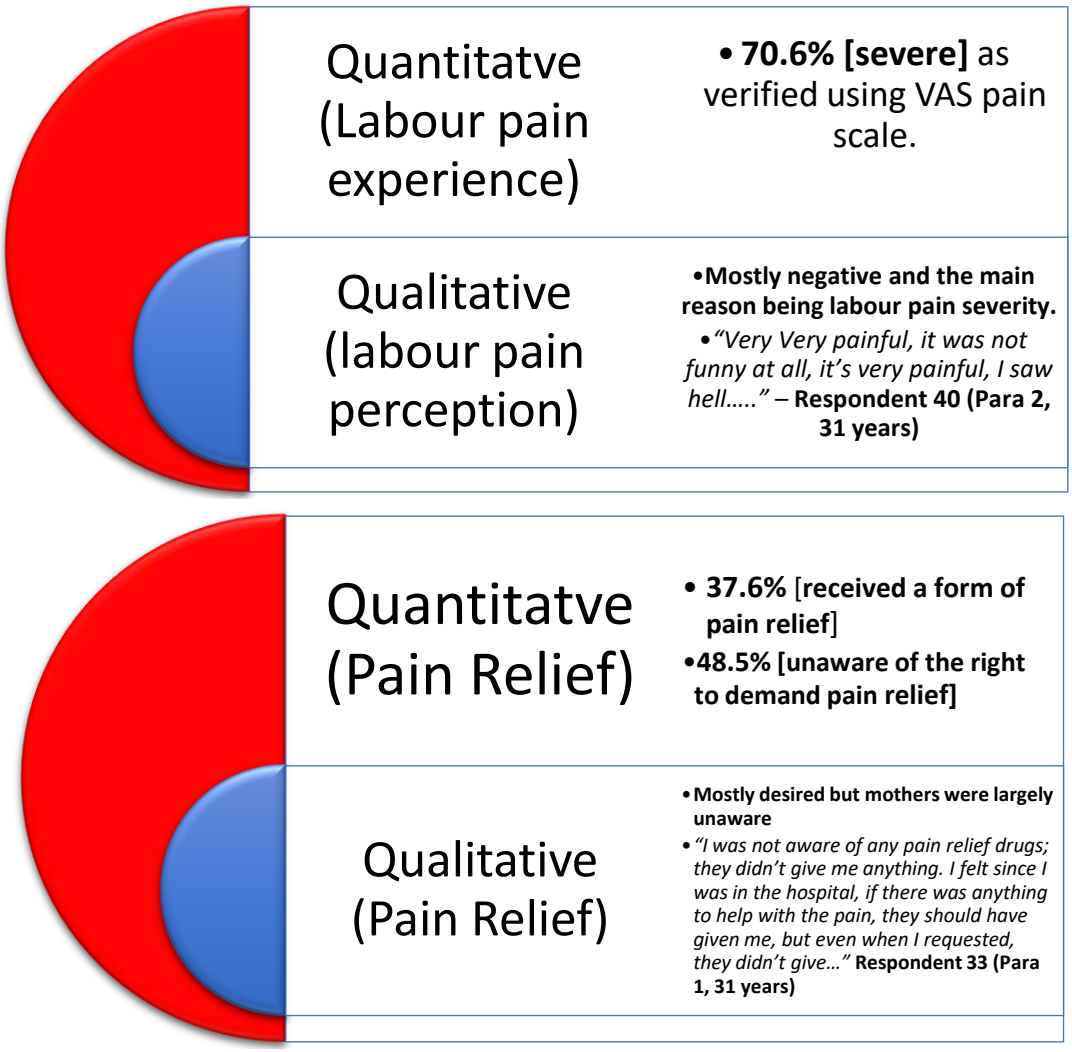

Fig. 3. A schematic diagram showing a joint display of integration of the main quantitative and qualitative findings

4. DISCUSSION

This study explored the perceptions of labour pain among postpartum mothers at the Obio Cottage Hospital and the Rivers State University Teaching Hospital in Port Harcourt. Conducting thematic analysis yielded interesting results that highlighted the individuality of pain perceptions among postpartum mothers. Whereas most of the postpartum mothers reported negative perceptions of labour pains which they described as being very severe, extremely painful, unbearable and agonizing, which is consistent with findings from other studies conducted by Onasoga et al [12] in Nigeria and Ampofo et al [7] in Ghana, a few of the postpartum mothers expressed positive perceptions of labour pains – describing pain as mild and tolerable. Expectations regarding labour pain may have also been influenced by prior knowledge of labour pain and individual labour experiences. The analysis also revealed that quite a number of the women expressed varying emotions including fear, gratitude and expressions of faith in the process of childbirth. This suggests that faith, as demonstrated through uttered prayers and gratitude to God, may have assisted the mothers in coping with their childbirth experience.

This study also surprisingly revealed that although almost all the mothers were duly booked in health facilities, they were unaware of labour pain relief methods, and were uninformed about labour pain methods available during pregnancy or their ability to request pain relief during labour. This was similar to reports in another study in Ethiopia [24]. More disturbing, was the inapparent recognition of the use of non-pharmacological pain relief methods

such as breathing exercises and massages administered by health workers as measures for pain relief management among those mothers who received such interventions. This was consistent with the reports by Onasoga et al. [12] in yet another study in Nigeria where although non-pharmacological methods for coping with labour pain were mostly employed, almost all of the participants affirmed they were not given any pain relievers. This highlights an obvious misinformation gap among pregnant mothers attending public health facilities in Nigeria. This, therefore, brings to the fore the need for effective education on methods for reducing labour pain during the antenatal period and this should be revisited frequently even until the time of delivery so that women are aware of the various pain relief methods available.

This study demonstrated that the overall majority (70.6%) of postpartum mothers experienced severe labour pains and was in keeping with the qualitative findings of this present study where most participants expressed negative perceptions of labour pain and the main reason being labour pain severity and was in tandem with findings from other qualitative studies [2,7,12]. The high estimate reported in this study was also similarly found among post-partum mothers in other quantitative studies that reported severe labour pains of 75.3% [23] in Port Harcourt, South-south Nigeria and 68.3% [25] in Ilesha and 75.2% [20] in Ado-Ekiti, both in Southwest Nigeria. The finding of this present study, however, contrasts findings of lower reports of severe labour pains of 50% [21] in Sagamu, Ondo state, Southwest Nigeria and 52% [26] in Ebonyi State, Southeast Nigeria. Also, much higher reports of 81.6% [27] in Northwest Nigeria and 85.3% [17] in Port Harcourt, South-south Nigeria were noted to be at variance with the findings in this present study. The variations in the reported prevalence of severe labour pain among post-partum mothers were likely due to differences in methods of pain assessment and timing post-delivery when the actual assessment was done. Variations in timing and use of different pain assessment tools were more likely to either overestimate or underestimate the reported prevalence. Also, some studies [20,27] did not employ the use of a pain scale but only relied on the recall of participants which could have overestimated the reported estimate by introducing recall bias. Similarly, findings from other authors outside Nigeria have also reported a wide range in the prevalence of severe labour pain among women ranging from 33% to 77% with over half of the studies reporting the desire for pain relief [1,28].

Furthermore, it was interesting to note that in this study, just over half of post-partum mothers reported having initially expected labour pain to be of moderate intensity during their antenatal period. This study, however, revealed that nearly three-quarters of these mothers in reality experienced severe labour pains. Of these, two-fifths reported labour pain to be very severe and about 2 in 10 mothers reported that their labour pain was the 'worst pain ever'. This finding was buttressed by the report in the study by Unamba and colleagues [23] where it was found that the mothers' perceived labour pain was lesser than their experienced labour pain but differed from the study by Aksoy and colleagues [29] in Turkey, where there was no significant difference between expected and experienced labour pains. The authors of the Turkey study concluded that the degree of pain experienced during labour was lower for expectant women if they had reduced expectations of pain before giving birth.

Yet another finding worth highlighting, is the finding that postpartum mothers were inadequately informed about pain relief during their antenatal care visits, despite being booked or supervised at both public healthcare facilities. This study demonstrated that only about a third were informed about pain relief in labour during their antenatal care visits. This suggests that there is a lack of such awareness among both mothers and plausibly the midwives who should usually be required to give such information during their routine health talks to registered pregnant women. This was also similarly reported in an earlier study by Unamba and colleagues [23] in Port Harcourt where only 32% of mothers reported having been counselled about pain relief during labour in the antenatal clinics. A study by Mugambe and colleagues [30] in South Africa that assessed women's knowledge and attitudes to pain relief during labour found that about two-thirds of their pregnant women were not told what to expect when in labour, rather most of them gained knowledge of pain relief from either friends/ relatives or past experiences. The quantitative findings were supported by the views of participants, for instance: *"No I was not aware of any pain relief, so I did not get any. If I knew, I would have asked because I saw Hell"* – R40 (Para 2, 31 years). This was also in keeping with findings from other qualitative studies in Nigeria

[12]. Our finding was consistent with what was reported in another qualitative study in Ghana [7].

This study also found that when faced with severe labour pains, almost two-thirds of postpartum mothers desired pain relief. The finding was consistent with the larger proportions of mothers' requests for pain relief which ranged from 67.6% to 86.4% found in other studies in Nigeria [21,26,27]. It is also worthy of note that despite the foregoing, about a third (29.4%) of the post-partum mothers in this study, experienced non-severe labour pains. Interestingly, while only 6.2% reported their initial perception of labour pain to be of mild intensity, 6.2% of postpartum mothers were also found to have experienced mild labour pains with a VAS score of 2. This was comparable to the finding of 8% of mothers reporting labour pain to be mild in severity in a study in Ebonyi State [26], Southeast Nigeria but higher than the reports of mild labour pains ranging from 1.3% to 1.7% reported in other studies and lower than the 27.5% reported by Audu and colleagues [27] in Northwest, Nigeria. The seemingly much higher prevalence of mild labour pain intensity in the study conducted in Northwest Nigeria could be explained by the fact that the assessment of pain was subjective and included predominantly mothers who were also being seen at the antenatal clinic and undelivered. The finding from this research suggests although a smaller proportion of mothers deem labour pain as mild, most of them however, experienced severe labour pains and should not be ignored.

As regards the modality of pain relief received, this study revealed that although both non-pharmacological and pharmacological methods were used among postpartum mothers in this study, a majority (63.2%) did not receive any form of pain relief during labour. This was consistent with what was previously documented in other studies where the proportion of mothers who did not receive pain relief in labour ranged from 64.2% to 77.9% in other states in Nigeria.

For those that received some form of obstetric pain relief, in this study, the non-pharmacologic modality was used predominantly and is similar to what was observed in another study by Bitew and colleagues [5] in Northwest Ethiopia where it was found that non-pharmacologic modalities were predominantly utilized. Similarly, non-pharmacological method of pain relief was also largely utilized in other studies in Nigeria [21,31]. This present study's findings, albeit, suggest that these non-pharmacologic modalities – back massage and breathing exercises were ineffective or insufficient in relieving labour pain severity among the study population. This could plausibly be because these non-pharmacological methods were usually given in suboptimal measures and were inconsistently done. This was also buttressed by the report from another study from Ethiopia [32] which showed that the practice of non-pharmacological labour pain management was poorly administered to women in labour. Hence, health worker training on the administration of non-pharmacological methods of labour pain relief, particularly for midwives ought to be strengthened in Nigerian healthcare facilities.

Less than a tenth of the mothers in this study received either parenteral opioid or epidural analgesia respectively. This was probably because there was no stipulated protocol for assessing labour pain severity or administering obstetric analgesia and the health workers mainly offered pain relief based on their clinical judgement. This was supported by the view of one of the mothers as follows: *No o, no pain relief was given, the doctors will tell you that you need the pain, there is nothing like pain relief for labour"* – Respondent 8 (Para 1, 37 years). When asked about the reasons for not requesting labour pain analgesia majority of them reported being unaware of the right to demand pain relief, even though 1 in 10 reported that labour pain is bearable. The findings were further substantiated by the views of mothers as follows: R39 (Para-4, 41 years): *"I'm not aware of any pain relief during labour and I don't subscribe to it either, because, if the level of pain I felt is what other mothers feel, then there is no need for pain relief". Whereas* R 28 (Para 2, 36 years) expressed the following *"No o, no pain relief, I even requested but they did not give me"*. This was also similarly reported in other qualitative studies in Nigeria [12] and Ghana [2].

In an earlier study conducted in Enugu, Southeast Nigeria by Chigbu et al,[31], it was reported that only 34.1% were aware of their right to labour pain relief. The findings of lack of knowledge of pain relief in labour were similarly reported in the study by Audu et al,[27] in Maiduguri, Northwest Nigeria. Moreover, this present study revealed very low utilization of pharmacologic pain relief interventions which contrasted findings from other studies in Nigeria where authors reported that as high as 35.3%,

68% and 92% received intramuscular pentazocine in Ekiti state, Rivers State and Ebonyi States respectively[23,31]. The reason for the much lower rates of use of pharmacologic modalities for managing labour pain in the centre surveyed in this study could be that there are no laid-out standard hospital policies on obstetric labour pain management. Also, it is plausible that the shortage of available midwives in the labour wards, who should be actively supervising the labour process to intervene and administer obstetric analgesia with progressing pain intensity are few compared to the number of women being cared for. Notwithstanding, the attitude of the midwife to objectively assessing the severity of labour pain is largely undone as most see the labour process as natural and so are less likely to intervene [6]. This study highlights the need for the institutionalizing of obstetric pain relief and re-emphasizes the need for midwives to actively administer obstetric analgesia if so desired by the mothers in labour.

Furthermore, this study found that the severity of labour pain experienced among postpartum mothers was significantly associated with the duration of active labour, mode of delivery and labour augmentation. Similarly, Olayemi and colleagues [33] in Ibadan, Southwest, Nigeria and Onah and colleagues [34] in Enugu, Southeast Nigeria reported that postpartum mothers in their series perceived labour pain as severe during spontaneous vaginal deliveries with significant association to assisted vaginal births following either induction or augmentation of labour. Also, it was found that the longer the duration of labour the more severe the labour pain experienced. This is consistent with what has been previously documented in the existing literature in other climes [35].

Overall, to put it more succinctly, the findings of this study demonstrate that postpartum mothers' perception of labour pain as being severe was consistent with their objective assessment of the severity of the pain experienced as verified by the VAS pain score, and hence the qualitative and quantitative aspects of the data were congruent. The findings of this study invariably suggest the need for more conscientious efforts to be made to improve the assessment of labour pain and the incorporation of a blend of both non-pharmacologic and pharmacologic pain relief protocols into the standard of care for labour pain management among health facilities in Rivers state.

In summary, this study contributes the following to the existing body of knowledge: The perceptions of labour pain of postpartum mothers were found to be largely consistent with the actual experiences of the mothers. Mothers attending antenatal clinics in Nigeria are largely unaware of pain relief options and the right to request pain relief in labour. Labour pain should be routinely assessed in health facilities using a validated pain score. Pain relief was desired by the majority of women and should be provided if requested. Health workers particularly midwives need to be trained on how to effectively administer non-pharmacological pain relief methods and also be abreast with recent advances in non-pharmacological pain methods. In Nigeria, a universal labour pain treatment strategy should be created to restrict the diverse personalized facility-based protocols that are primarily doctor-initiated and generally unimplemented.

5. CONCLUSION AND RECOMMENDA-TIONS

Postpartum mothers largely viewed labour pain as severe. Postpartum mothers had some form of labour pain relief in the form of back massages and breathing exercises while very few had pharmacological pain relief. This study found that 7 in 10 postpartum mothers experienced severe labour pains as verified using the VAS pain score. Hence, their perceptions of labour pain were largely congruent with their experience of labour pain.

It is therefore recommended that midwives should be sensitized on their duties to educate mothers on the types of pain relief available during antenatal visits. Labour pain assessment should be performed among parturients routinely in the labour wards of public health facilities including RSUTH and OCH, in Rivers State. Obstetric analgesia should be readily provided to mothers who desire labour pain relief. A working hospital policy on obstetric analgesia should be made available in the labour wards.

6. LIMITATIONS

The sampling technique employed in the quantitative aspect of the study was unavoidable due to the nature and context of the study participants, which somewhat impacts generalizability. Furthermore, concerning the qualitative aspect of the study, being a single interviewer-administered process, it may have been difficult to eliminate all of the researchers' personal biases. To limit these, however,

qualitative software, an interviewer guide and transcribing participants' words verbatim were utilized.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

The protocol of this study was approved by both the Uniport Research Ethics Committee (UPH/CEREMAD/REC/MM87/081) and the Rivers State University Teaching Hospital Research Ethical Committee (RSUTH/REC/ 2023286). Permission was also granted by the Chief Medical Officer of Obio Cottage Hospital after reviewing the ethical approvals from the aforementioned ethics review committees to conduct the study. Informed consent was obtained from respondents after an explanation of the aim of the study. Respondents were anonymized throughout the study and all collected data were used as approved.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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