

# Knowledge and willingness of prenatal women in Enugu Southeastern Nigeria to use in labour non-pharmacological pain reliefs

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## Abstract

**Background:** Nigerian parturients desire, but experience unsatisfactory pain relief as labour analgesia is underutilised and unpopular among skilled-birth attendants.

**Objectives:** To assess pregnant women's knowledge and willingness to use non-pharmacological labour pain reliefs.

**Methods:** Using a descriptive cross-sectional design, a pre-tested, structured questionnaire was interviewer administered to a convenient sample of 245 prenatal women at a specialist maternity hospital in Enugu.

**Results:** Majority (68.6%) of the women knew, but 31.4% were unaware that non-pharmacological labour pain reliefs exist in the study facility. Only 34.7% were able to identify at least four such methods, 21.2% could elicit two (each) advantages and disadvantages, and 0% to 28.3% had perceived self-efficacy of how to use each method. The leading four methods identified were breathing exercises (51.8%), massage (36.7), position changes (32.2%), and relaxation techniques (26.5%). Majority (59.6%) of the women expressed willingness to use non-pharmacological pain strategies in future labour, which is associated with increased knowledge of the methods, and parity ( $p < 0.001$ ).

**Conclusion:** Pregnant women had limited knowledge of, but majority expressed willingness to use in labour non-pharmacological pain reliefs. Nurses/midwives should give adequate childbirth information and preparation on labour pain reliefs to antenatal women to inform their choices and effective use during labour.

**Key words:** Knowledge, desire to use, non-pharmacological, labour pain reliefs, prenatal women.

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## Introduction

Vaginal delivery is the natural mode of childbirth, however it is accomplished through labour. For every pregnant woman, the thought of labour is usually associated with mixed feelings of excitement about giving birth to a child and fear of labour pains and her ability to cope with them.<sup>1</sup> Labour pain is an intermittent, regular, rhythmic pain occurring during the process of childbirth. Its associated anxiety, fear, and tension can lead to the release of stress hormones (e.g. catecholamines),<sup>2</sup>

which may worsen the pain and prolong labour. With effective labour pain control, parturients report a more satisfying labour experience.<sup>3,4</sup> Thus labour pain management is a major goal of intra-partum care.<sup>5</sup>

In Nigeria, researchers report increasing awareness and desire of parturients for satisfactory labour pain relief, but they do not experience it as drug methods are underutilised and unpopular among skilled birth attendants.<sup>2,4,6-9</sup> Parturients in Nigeria therefore have a large unmet need of labour pain relief.<sup>9</sup>

Basically, two methods of labour pain relief exist, the pharmacological and the non-pharmacological methods. The pharmacological methods involve the use of parenteral opiates, inhalational analgesia, and regional (epidural, or combined spinal epidural) analgesia.<sup>6,10</sup> The non-pharmacological strategies include the use of childbirth preparation education, relaxation techniques, breathing exercises, acupuncture, and acupressure massage, position changes, music and aromatherapy, as well as transcutaneous electrical stimulation (TENS).<sup>10</sup>

While the drugs aim at relieving the pain, the non-pharmacological therapies aim at enabling the women cope with the pain,<sup>10</sup> thus preventing suffering of the labouring woman.<sup>5</sup> Such non-pharmacological therapies help to break the fear-pain-tension cycle,<sup>11</sup> which may reduce the physical sensations of and emotional responses to pain, as well as the need and demand for drugs.<sup>5</sup>

Labour pain relief methods have varying advantages and disadvantages. Systematic reviews of studies report that non-pharmacological strategies are found to be inexpensive and easy to use, increase women's participation in making decisions about their care, and have few or no side effects.<sup>5,10</sup> Their major disadvantage has been the lack of established evidence of effectiveness for most of the methods in controlling labour pain.<sup>10,12</sup> Conversely, there is more empirical evidence that most pharmacological methods generally are more effective in relieving labour pain, but have side effects on the baby, and or the parturient, with greater chances of assisted vaginal delivery.<sup>10-12</sup> Amedee suggests that neuroaxial analgesia (epidural, combined analgesia) is costly and should be provided in settings equipped for assisted vaginal delivery and emergency caesarean section; while the use of non-pharmacological methods is recommended in under resourced settings and/or at first stage of labour.<sup>12</sup>

Researchers observe that there is no single universal method of labour pain management that fits all circumstances and meets all parturients' needs,<sup>8</sup> thus parturient preferences in the use of the two labour pain relief methods vary in different settings and cultures, from those preferring pharmacological methods, to those preferring non-pharmacological methods, and those who had no idea which method is useful, to those who would relinquish their autonomy of choice to their doctor.<sup>4,9,13,14</sup> It is recommended that the method used should be individualised to each woman's wishes, needs, and circumstances.<sup>10</sup> Furthermore, women should feel free to choose any pain management they feel would help them most during labour, and can switch from non-pharmacological to pharmacological choice,<sup>10</sup> or combine methods.<sup>12</sup>

Preferences and practices also vary among skilled birth attendants regarding the use of pharmacological and non-pharmacological methods. While, Roets, Moru and Nel<sup>15</sup> found that although Lesotho midwives said they were taught non-pharmacological methods of pain

management, they use these methods inadequately during the first stage of labour due to shortage of staff, lack of privacy and space, a high midwife-mother ratio, culture, and hospital policies. Tasnim<sup>16</sup> found that the majority of healthcare providers in Bangladesh report using non-pharmacological pain relief methods for women in labour. Only 6.2% of them thought women with labour pain should receive an analgesic drug.

In Nigeria, although skilled birth attendants (doctors, nurses, and midwives) report knowledge of both methods of labour pain reliefs, the use of pharmacological methods is unpopular, except parenteral opioids.<sup>8</sup> Reasons elicited for not giving labour analgesia include non-availability of most pharmacological methods, clients' inability to bear the cost and lack of skilled human resources, and equipment to administer the labour analgesia.<sup>8</sup> However, 54.5% caregivers were reported to have no reasons.<sup>8</sup> A more recent study reports that the routine prescription and utilization of obstetric analgesia by obstetricians in Nigeria is still low; only 49% of the study respondents offered obstetric analgesia.<sup>17</sup> Among users, only 13.3% offered obstetric analgesia routinely to parturients, 29.1% sometimes and 6.6% on clients' requests. The commonest analgesia was opioids (41.1%). Among non-users, the commonest reasons adduced were fear of respiratory distress (31.1%), cost (24.7%) and late presentation in labour (15.6%).<sup>17</sup>

However, reports from South-Eastern and South-Western Nigeria show that an appreciable number (18.3% to 52%) of parturients use some forms of non-pharmacological methods.<sup>6,9,18,19</sup> One wonders if the women's use of the non-pharmacological methods in labour was their preference or that of skilled birth attendants because of unpopular use of pharmacological methods. Furthermore, anecdotal reports from midwifery students suggest that some of the labouring women they observed were not responsive to the midwives' promptings to use the non-pharmacological labour pain relief methods, while those who did respond were not performing them correctly. The question that informed this study was: To what extent do pregnant women know and desire non-pharmacological methods to control labour pain? Lack of knowledge and ineffective use of non-pharmacological methods for labour pain control may not only lead to undesirable and unsatisfying results but may actually worsen the situation. There is dearth of empirical work from Nigeria relating directly to the level of knowledge and desire of prenatal women

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to use non-pharmacological methods of pain relief in labour and childbirth. This study assessed the knowledge of and willingness to use non-pharmacological methods of labour pain reliefs by pregnant women receiving antenatal care at a high volume, specialist maternity hospital in Enugu, South-Eastern Nigeria. This is a prelude to bridging any knowledge gap and increasing the women's usage of chosen strategies at the appropriate time.

### Methods

This is a descriptive cross-sectional study of a convenient sample of 245 women drawn from a population of 634 prenatal women registered and receiving care in a church-owned maternity hospital centrally located in Enugu municipality. The sample size was determined using Yamane's formula for calculating sample size for proportions at 95% confidence level and 0.05 level of precision;<sup>20</sup> The site was chosen due to its high volume of client patronage and nurse/midwife-led maternity care. Ethical review and clearance for the study was obtained from the research ethics committee of a federal teaching hospital in Enugu, because non-exists at the study centre. Administrative permit was obtained from the appropriate authorities in the maternity hospital. Informed consent of the respondents was obtained after full explanation of the research; anonymity and confidentiality of information were assured. A pre-tested, structured questionnaire developed by the researchers was used to elicit information about respondents' characteristics; awareness of labour pain relief methods; knowledge of specific non-pharmacological methods, advantages and disadvantages, and perceived self-efficacy of how each method is used; sources of their information; and their willingness to use the methods in future labour.

In this work, acceptable level of knowledge of non-pharmacological labour pain reliefs was operationally defined as the ability of a respondent to identify at least four non-pharmacological methods, elicit at least two (each) advantages and disadvantages of the methods, and express self efficacy of how to use each. In measuring their perceived self-efficacy of how each method is used, responses were scaled and scored as follows: have no idea (0), partial knowledge (1), and full knowledge of the use of the method (2) points, with a decision mean score of one. Respondents were considered to have perceived self-efficacy of how to use any non-pharmacological method if their weighted mean score for the method was above one. The instrument was interviewer (one of the researchers) administered to accommodate literate and illiterate respondents. The researcher attended the three antenatal clinic days/week, to recruit and administer the questionnaires All consenting pregnant women present at the clinic during the study period were interviewed. Data collection lasted from May to June 2013 when the sample size was attained. Data analysis using the Statistical Package of the Social Sciences (SPSS) version 17, were in proportions, percentages, and means; associations between variables were tested using X2 at statistical significance level of  $p < 0.05$ .

### Results

**Respondents' characteristics (Table 1):** The women were all married, predominantly Christians (99.6%), of Igbo tribe (98%), and within age range of 16 to 50 years (mean age is  $29.2 \pm 5.3$ ; median age = 29). Only two (0.8%) persons had no formal education, and 40% were primigravidae. The women were in varied occupations with the highest frequency being those employed on salaried jobs (33.1%).

**Table 1: Respondents' Characteristics (n=245)**

Variables	Sub-Units	Frequency	Percentage (%)	Cumulative (%)
<b>Age Groups</b>	<20	04	1.6	1.6
	20-29	131	53.9	55.5
	30-39	97	39.6	95.1
	40 & above	12	4.9	100.0
<b>Tribes</b>	Igbo	240	98.0	98.0
	Others	05	2.0	100.0
<b>Marital Status</b>	Married	245	100.0	100.0
<b>Educational Status</b>	No formal educ.	02	0.8	0.8
	Primary education	00	0.0	0.8
	Secondary educ.	91	37.2	38.0
	Tertiary education	152	62.0	100.0
<b>Occupation</b>	Housewife	49	20.0	20.0
	Trading	75	30.6	48.6
	Paid Job	81	33.1	83.7
	Others, e.g. stds	40	16.3	100.0
	Christians	244	99.6	99.6
<b>Religion</b>	Moslems	01	0.4	100.0
	Nil	98		
<b>Parity</b>	One	67		
	Two	33		
	Three and above	47		

**Women's knowledge about the various non-drug methods (Table 2):** Most (80.8%) respondents were aware that labour pain could be controlled. While 68.6% knew that there are non-pharmacological strategies for managing labour pain, an appreciable number (31.4%) were unaware that such strategies are available in the facility of study. Eighty-five (34.7%) respondents could identify at least four (4) non-pharmacological pain relief strategies decided 'a priori' as acceptable level of knowledge of the methods. Increasing educational lev-

el ( $X^2 = 15.905$ ;  $p < 0.001$ ) was associated with increasing knowledge of the pain relief strategies. The level of knowledge of the methods also increased significantly with parity but peaked at two ( $X^2 = 17.813$ ;  $p < 0.001$ ), and decreased at parity of three and above. The leading four elicited methods were breathing exercises (51.8%); massage (36.9%), position changes (32.2%) and relaxation techniques (26.2%). The least known methods were aromatherapy (4.5%), acupuncture (2.9%), sterile water injection and TENS (2.0% each).

**Table 2: Respondents' Knowledge of Specific Non-Pharmacological Labour Pain Relief Methods, Advantages and Disadvantages (n=245)**

Labour Pain relief methods	Has Knowledge		Has no knowledge	
	Yes/Freq	(%)	No/Freq	(%)
<b>Knowledge of Specific Methods</b>				
Breathing exercise	127	51.8	118	48.2
Massage	90	36.7	155	63.3
Position changes	79	32.2	166	67.8
Relaxation technique	65	26.5	180	73.5
Psychological support	60	24.5	185	75.5
Ejaculatory prayers	46	18.8	199	81.2
Music therapy	45	18.4	200	81.6
Hydrotherapy	25	10.2	220	89.8
Ice or heat pack	21	8.6	224	91.4
Aroma therapy	11	4.5	234	95.5
Sterile water injection	5	2.0	140	98.0
Acupuncture	7	2.9	238	97.1
TENS	5	2.0	240	98.0
<b>Knew at least 4 non-drug methods</b>	85	34.7	160	65.3
<b>Knowledge of Benefits &amp; Risks</b>				
Knew at least 2 advantages	92	37.6	153	62.4
Knew at least 2 disadvantages	53	21.6	192	78.4
Knew 2 advantages & 2 disadvantages	52	21.2	193	78.8

**Perceived self efficacy of how to use the various non-pharmacological methods (Table 3):** Among the respondents that knew about non-pharmacological methods, most expressed deficient (partial or total) knowledge of how to use the various methods. The weighted mean scores of their responses to each method ranged from 0.00 to 0.98, which were all below the significant decision mean of one. Breathing exercises, the most widely known non-pharmacological method

in this study, had a weighted mean score of 0.98; only 36 (28.3 %) women felt they knew very well how to use it, while 53 (41.7%) had little knowledge, and 38 (29.9) expressed no knowledge of how to do it. Massage had a weighted mean score of 0.71; only 17 (18.9%) women knew very well how massage can be used, 30 (33.3%) had little knowledge, and 43 (47.8) expressed total lack of knowledge. None of the respondents had knowledge related to the use of acupuncture, TENS, aromatherapy or sterile water injection.

**Table 3: Respondents' Perceived Self-efficacy of How to Use each Specific Non-Pharmacological Drug Method in Labour Pain Relief (n-245)**

Pain relief methods	n	No idea		Little knowledge		Knows well how method is used		Weighted mean scores
		F	(%)	F	(%)	F	(%)	
Breathing exercise	127	38	29.9	53	41.7	36	28.3	0.98
Massage	90	43	47.8	30	33.3	17	18.9	0.71
Position changes	79	43	54.4	25	31.6	11	13.9	0.59
Relaxation technique	65	39	60.0	19	29.2	07	10.8	0.51
Psychological support	60	31	51.6	19	31.7	10	16.7	0.65
Ejaculatory prayers	46	29	63.0	11	23.9	06	13.1	0.50
Music therapy	45	30	66.7	13	28.9	02	4.4	0.38
Hydrotherapy	25	14	56.0	09	36.0	02	8.0	0.52
Ice or heat pack	21	15	71.4	05	23.8	01	4.8	0.33
Aroma therapy	11	09	81.8	02	18.2	00	0.0	0.18
Acupuncture	07	06	85.7	01	14.3	00	0.0	0.14
TENS	05	03	60	02	40	00	0.0	0.40
Sterile water injection	05	05	100.	00	0.0	00	0.0	0.00

\*significant weighted mean score= 1

### Knowledge of advantages and disadvantages of non-pharmacological methods

Elicited views on the advantages of non-pharmacological labour pain strategies included, the methods are natural (58.8%); inexpensive (31.0%); had no associated serious side effects (25.3%); and a woman in labour is active while doing them (17.6%). Elicited views on disadvantages included, the inability of the methods to abolish pain totally (46.9%); the methods can stress the labouring woman while practicing (21.2%); and these methods are less effective than the drug methods (19.6%). Only 21.2% of the women were able to elicit two (each) advantages and disadvantages of non-pharmacological labour pain reliefs. The level of knowledge of advantages and disadvantages increased significantly with and peaked at parity of two ( $X^2 = 19.408$ ;

$p < 0.001$ ), but decreased at parity of three and above. The sources of the women's information about labour pain control were mainly healthcare providers (46.0%) and their previous labour experiences (42.9%), and less from friends and relations (26.8%), literature (19.2%), vicarious experience of others (8.6%), and from the media (7.1%).

### Willingness to use non-pharmacological methods in future childbirth

More than half (59.6%) of the respondents expressed willingness to utilize at least one type of non-pharmacological labour pain control strategies in the future, whereas 99 (40.4%) did not. The most popular choice was breathing exercises (54.3%). Less popular ones were massage (38.2%), psychological support (21.6%),

position changes (17.6%), ejaculatory prayers (15.5%), hydrotherapy (10.2%), relaxation techniques (8.2%), music therapy (4.5%), and cold or heat application (2.4%). None of the women indicated interest in using acupuncture, aromatherapy, TENS, or sterile water injection. Willingness to use the methods was positively associated with their knowledge of the types ( $X^2 = 51.932$ ,  $p = 0.001$ ), advantages and disadvantages ( $X^2 = 32.892$ ;  $p < 0.001$ ), and increasing parity ( $X^2 = 11.367$ ;  $p = 0.010$ ). Among the 59.6% respondents that showed willingness to utilize non-pharmacological labour pain reliefs in the future, 90.6% and 94.2% respectively, had good knowledge of the types, drawbacks, and benefits of the methods.

### Discussion

The high (80.8%) level of awareness of this study respondents, that labour pain can be controlled is far greater than earlier reports from South-Western Nigeria (38.9% & 27.1%),<sup>5,21</sup> but similar to that reported among urban Indian women (78%).<sup>13</sup> In the present study, 68.6% of the women were also aware that non-pharmacological labour pain reliefs exist, which is far more than the 18% awareness reported from Northern Nigeria.<sup>2</sup> Differences in educational background of the study populations may account for the variance, as those in the current study were more highly educated.

Deficiencies in all three assessed areas of knowledge exhibited by the majority of the respondents are worrisome. Since their main sources of information were healthcare providers, and previous labour experiences, it may be inferred that their limitations derive from what has been offered to them by their skilled birth attendants in pregnancy and in labour. Previous researchers in Nigeria found that few of their respondents reported that labour analgesia was taught at prenatal classes.<sup>6-7</sup> The fact that 31.4% of this study respondents said they were not aware that non-pharmacological methods of pain control exist in the hospital of study may imply that they were not part of the routine antenatal care discussion in the study centre or respondents have not attended such sessions. Furthermore, the finding that respondents' knowledge peaked at parity of two but decreased at parity of three and above seems to suggest a decreasing interest of multi-parous women to learn these methods. This may result from an assumption that they do not need pain reliefs having had previous

labour experiences. Ezeruigbo also found a significant reduction in the utilization of antenatal care services among childbearing women in Enugu state with increasing number of living children (three and above).<sup>22</sup>

Only 21.2% of the respondents in this study were able to identify two disadvantages of using non-pharmacological labour pain control methods. Deficient knowledge of the disadvantages may lead to dissatisfaction with the method when there is a gap between the women's expectations and their actual labour experiences. Such gaps were found on women's expectations and experiences of pain and pain relief during labour and their involvement in the decision-making process.<sup>22</sup>

Among the non-pharmacological methods, breathing exercise was the most widely known by these respondents (51.8%), followed by massage (36.9%), position changes (32.2%), and relaxation techniques (26.5%). These methods are among the group that may work and recommended to be used alone or combined in the first stage of labour to enable women cope with pain.<sup>5, 10,12</sup> Their use should be encouraged. As suggested by Amedee, the implementation of the interventions must be done together with improvements in antenatal childbirth education and health-care provider training.<sup>12</sup> The least known methods in this study include acupuncture, which needs credentialing to administer, TENS, sterile water injection and aromatherapy, which were reported to have insufficient evidence.<sup>10</sup> The cost-benefit of their use in low resource settings in Nigeria is questionable.

Among the respondents that showed willingness to utilize non-pharmacological labour pain control strategies in the future, 90.6% and 94.2% of them respectively had good knowledge of the types, advantages and disadvantages. These seem to confirm an observation that women desire to repeat non-pharmacological methods in a future labour even if their pain-relieving capability is modest or short-lived.<sup>5</sup> Although an appreciable number of study respondents (40.4%) did not express willingness to use non-pharmacological methods in future labour, most of them were among those with deficient knowledge of the methods. Their choice may be related to ignorance of the methods, but their needs must also be met to enable every parturient achieve satisfactory labour experience and pain relief as a right.

### Practice implications of the findings

Intermittent auditing and evaluation of the content and process of prenatal classes and childbirth preparation given by nurses/midwives may help to elicit and rectify client and healthcare provider deficiencies in knowledge, attitude, and behaviour. Nurses/midwives, as the prime users of the non-pharmacological methods,<sup>13</sup> should give adequate health education and childbirth preparation on labour pain reliefs to antenatal women. This should include explanation of the various methods, their advantages and disadvantages, as well as demonstrations and rehearsals of each technique. Thoroughness of teaching, along with the amount of time devoted to rehearsing these techniques and active participation of prenatal women will affect each individual's mastery of methods, preferences, and confidence in performance.

### Limitations of the study

Result should be interpreted with caution as we did not elicit respondents' gestational age at the time of booking and interview. These could affect their exposure to prenatal education classes, and level of knowledge, especially when up to 40% were primigravidae. The study was limited to pregnant women at only one facility. A larger population of women from other church owned hospitals in Enugu should have been included for wider generalisation of findings. The study was carried out in an urban setting; however, a better picture of women using non-pharmacological methods in relieving labour pain is more likely to be seen in rural communities.

### Conclusion

The unmet need of women for labour pain relief in Enugu, Nigeria is not only under-utilization and unpopular use of labour analgesia to relieve/abolish labour pain, but also deficient knowledge of the non-pharmacological methods to cope with the pain. Skilled birth attendants should give prenatal women adequate information and childbirth preparation on labour pain relief methods to inform their choice and ensure effective utilization in labour.

### Conflict of Interest

The authors have no conflicts-of-interest to declare.

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