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The role of ethnicity on pain perception in labor among parturients at the university college hospital Ibadan

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Abstract

Aims: In developing countries, the major mechanism by which parturients cope with labor pain is psychological. This study aims to assess the effect of ethnicity on the perception of pain by parturients in labor at the University College Hospital, Ibadan.

Materials and Methods: The study was conducted between the 1 November 2006 and the 30 March 2007 at the University College Hospital Ibadan. The main outcome measure was pain perception assessed by the Box Numerical Scale (BNS). Univariate analysis was by *t*-test for continuous variables and χ^2 test for categorical variables. The multiple linear regression method was utilized for multivariate analysis. The level of statistical significance was set at $P < 0.05$.

Results: The lowest adjusted mean BNS score was found in the Yoruba ethnic group: they had scores lower than the mean scores for the other ethnic groups (–0.636 [95% confidence interval (CI) –0.959, –0.313]). The presence of a doula also reduced the mean BNS scores significantly (–0.533 [95% CI –0.844, –0.222]. Increasing parity also reduced pain scores (–0.182 [95% CI –0.342, –0.022]). Increasing educational attainment increased pain scores in labor (0.189 [95% CI 0.017, 0.361]). The influence of increasing age was not statistically significant in this model.

In conclusion, ethnicity of the parturient relative to that of the predominant ethnicity in the place of birth has a significant effect on the perception of labor pain by the parturient. In our resource-challenged environment, trained doulas may help make labor less painful for the parturient.

Key words: analgesia, box numerical scale, doula, labor, pain, Yoruba.

Introduction

In all societies, especially in those where pain relief is offered routinely in labor, parturients have the choice of refusing these methods. The characteristics of those refusing analgesia in developed countries has been studied.[1] Ethnicity of the parturient's relative to that of the care givers in labor has been shown to influence this choice.[2] In Nigeria, pain relief methods are not widely available in labor and even where they are available, the awareness of parturients to these methods is generally low,[3] the major mechanism by which parturients cope with labor pain is therefore psychological.

Studies have identified factors such as age, parity and educational attainment as determinants of pain perception in labour.[1,3–5] These factors have also been identified as important in the demand for pain relief methods in places where these are readily available. The psychological mechanisms by which our parturients cope with pain in labor operate both within and outside the hospital environment. Within the health care system, the attitude of the health care provider is important in making labor pleasurable for the

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parturient. This is probably why parturients who share the care givers' ethnicity find the experience less painful. Social support from persons familiar to the parturient also appears to help and parturients in this centre would readily accept social support in labor.[6]

This study aims to assess the effect of ethnicity on the perception of pain by parturients in labor at the University College Hospital, Ibadan.

Materials and Methods

Patients

The study was conducted between the 1 November 2006 and the 30 March 2007, at the University College Hospital Ibadan. Ibadan is a town in the south-western part of Nigeria. Yoruba is the predominant ethnic group in this part of the country; other ethnic groups are Igbos and Hausas. However, there are other minority ethnic groups such as Efiks, Ibiobios and Igalas to mention a few.

The patients were originally recruited into a randomized control trial on the effect of social support on the outcome of pregnancy. For this study a doula is a lay person who acts as a companion, providing social support for the parturient. Women in the experimental group were informed to bring someone of their choice to the labor room who will act as their companion/doula. The doulas/companions were allowed to stay by the patient's side after an assessment of established labor was made till delivery. After labor was confirmed, the accompanying companions were provided with an information leaflet that spelled out their responsibility while at the side of the woman in labor.

After obtaining consent they were interviewed within 48 hours of delivery. A total of 584 patients were recruited into the study. Exposure information that was obtained by the interviews was verified by available medical records.

Measurements

The main outcome measure was pain perception which was assessed by the Box Numerical Scale (BNS). This measurement scale has been shown to be a reliable measure for pain perception in our environment and has been validated in previous studies.[3–5] The main explanatory variable was the ethnicity of the parturient, other measurements of interest were; presence or absence of social support during labor, the age of the parturient, the mode of delivery, the type of onset of labor, birthweight of the baby, educational attainment of the parturient and parity.

Exploratory and univariate analysis

Exploratory data analysis using Lowess plots were employed to check for non-linear relationships and to decide the categorization of continuous variables. Univariate analysis was done to determine central tendencies and dispersion of the BNS by the variable categories. The t-test was utilized in determining the statistical association for continuous variables while the χ^2 test was utilized for categorical variables. The Kernel plot and Shapiro–Wilk test were performed to establish normality for the BNS.

Multivariate analysis

Initial crude coefficients were obtained using the simple linear regression method; the significant factors in the univariate analyses were included as possible confounders in the multivariate model to obtain the adjusted coefficients. The level of statistical significance was set at $P < 0.05$.

Results

A total of 584 women were recruited for this study, 408 of them (75.3%) belonged to the Yoruba tribe, 68 (11.6%) were Igbos, 46 (7.8%) were Hausas, and the others were minority tribes such as Efiks and Ibiobios (12.3%). The mean BNS score for the study population was 6.6 (95% confidence interval [CI] 6.45–6.75). Husbands were the most common companions (65.2%), followed by sisters (16.5%), mothers (10.8%), friends (3.5%) and others (4.1%, neighbors and uncles' wives).

Univariate analysis

The mean age for the Yoruba parturients was 29.3 (95% CI 28.9–29.7), while the mean age for the other ethnic groups was 29.1 (95% CI 28.4–29.8). Table 1 shows the socio-demographic characteristics of the parturients. The Yoruba ethnic group showed better educational attainment. There were fewer parturients with less than a primary education in the Yoruba group compared to the other ethnic groups (10.3% vs. 22.8%), however in the other ethnic groups there were more parturients with a tertiary education compared to the Yoruba group (67.8% vs. 63.7%). Overall the distribution of educational attainment was significantly different in the two groups. The Yoruba group also had significantly more parturients who had doulas in labor (54.7% vs. 39.2%).

In Table 2, the BNS scores for each category of covariates are shown. The lowest mean BNS score was

Table 1 Sociodemographic characteristics of parturients

Age (years)	Yoruba (%)	Others (%)	*P*-Value
<25	6.4	22.7	
25–29	47.1	29.5	<0.001
30–34	36.5	21.6	
35+	10.0	26.1	
Parity			
0	37.7	31.3	
1	37.5	47.2	0.090
2+	24.8	21.6	
Educational attainment of women			
None	6.4	4.7	
Primary	3.9	18.1	<0.001
Secondary	26.0	9.4	
Tertiary	63.7	67.8	
Doula			
Yes	54.7	39.2	0.001
No	45.3	60.8	

Table 2 Means of Box Numerical Scale (BNS) scores by the categories of covariates

Age (years)	BNS Scores	95% Confidence Interval
<25	6.97	6.57–7.43
25–29	6.58	6.38–6.82
30–34	6.34	6.03–6.57
35+	6.93	6.47–7.33
Parity		
0	7.00	6.78–7.22
1	6.47	6.26–6.74
2+	6.24	5.87–6.53
Educational attainment of women		
None	4.56	4.25–4.95
Primary	7.94	7.65–8.15
Secondary	6.93	6.59–7.21
Tertiary	6.48	6.31–6.69
Doula		
Yes	6.33	6.09–6.51
No	6.87	6.58–7.12
Ethnicity		
Yoruba	6.37	6.22–6.58
Others	7.13	6.85–7.35

shown in the parity group of 2 and above (6.24, 95%CI 5.87–6.53), the highest mean score was in the primary group of the educational attainment variable (7.94, 95%CI 7.65–8.15).

The Yoruba ethnic group had a significantly lower score (6.37, 95%CI 6.22–6.58) compared with the other ethnic groups (7.13, 95%CI 6.85–7.35). Those with doulas present in labor also had a significantly lower pain score (6.33, 95%CI 6.09–6.51) compared to those without a doula (6.87, 95%CI 6.58–7.12).

Multivariate analysis

Table 3 shows the multiple regression model built with BNS scores as the dependent variable and ethnicity, age, parity, educational attainment and presence of a doula as independent variables. Age was included in the model as a continuous variable, parity was ranked in the univariate analyses as ranging from 0 to 2, educational attainment was ranked from 0 to 4 using the ranks in the univariate analyses. Ethnicity and the presence of a

Table 3 Multivariate analysis by multiple linear regression with Box Numerical Scale (BNS) scores as the dependent variable

Variable	Coefficient	95% CI	*P*-value
Ethnicity	−0.636	−0.959 to −0.313	<0.001
Age	−0.012	−0.047 to −0.024	0.510
Parity	−0.182	−0.342 to −0.022	0.026
Education	0.189	0.017 to 0.361	0.032
Doula	−0.533	−0.844 to −0.222	0.001

CI, confidence interval.

doula were handled in the model as binomial variables with the Yoruba group as 1 and others as 0. The presence of a doula was 1 and absence was 0.

In the model, the lowest adjusted mean BNS score was found in the Yoruba ethnic group; they had scores lower than the mean scores for the other ethnic groups (−0.636 [95% CI −0.959, −0.313]). The presence of a doula also reduced the mean BNS scores significantly (−0.533 [95% CI −0.844, −0.222]. Increasing parity also reduced pain scores (−0.182 [95% CI −0.342, −0.022]). Increasing educational attainment increased pain scores in labor (0.189 [95% CI 0.017, 0.361]). The influence of increasing age was not statistically significant in this model.

Discussion

The findings of this study support the hypothesis that ethnicity is a strong factor in the psychological coping mechanism for pain in labor. Ethnicity has been recognized as being important in the parturient's experience in labor.[2,7–9] The importance of the ethnicity of the caregiver may be in the assessment of pain in the parturient and in responding appropriately to it. Studies have shown that the caregiver may underestimate or overestimate the pain perceived by the parturient if they are from different races or ethnic groups.[10,11] Greenwald[12] studying inter-ethnic differences in cancer pain perception found no ethnic differences in pain perception. However, Weisenberg[13] also studying subjects not in labor showed interethnic differences in pain perception. Lipton and Marbach in their conclusion wrote 'it appears that, in our study population, interethnic homogeneity is present for most aspects of the pain experience, while intraethnic heterogeneity exists for factors that may influence that experience'.[14]

In societies where labor analgesia is readily available, the caregiver may give less analgesia than required based on their perception of the parturient's' perceived pain. In our environment what is given in lower doses is the compassion required by the parturient. In support of this is the finding in this study that those who had doulas had lower pain scores than those without. The favorable influence of doulas on the outcome of labor has been shown in other studies.[15–17] In a systematic review, Hodnett[18] found the caregiver-patient interaction to be significant in the overall experience of the parturient. In this review, Hodnett also demonstrated that the influence of caregivers was the most important factor in the satisfactory experience of the parturients.

There are many ways that the caregiver influence may affect the overall experience in labor. The factors identified include communication, rapport and information.[18] All these factors are more likely to operate better when the parturients share the caregivers' ethnicity. In this study and similar to the findings of Hodnett,[18] the influence of the caregiver appears stronger than that of the doula in reducing pain as shown by the lower BNS score of the ethnicity variable compared to the doula variable. It could still be argued that there are other factors such as caregiver–patient interaction which could account for this difference. If it is accepted that this difference is not due to the interaction between caregivers and parturients, then the most likely factor responsible for the stronger influence is the training the caregivers have which the doulas in this study did not receive. Therefore use of trained doulas as advocated by some[15] could blunt this difference.

The influence of parity, age and educational attainment found in this study has been shown in other studies.[3–5] Ethnicity still appeared as an important independent factor after adjustment for these confounders. A very important confounding factor not measured in this study is the caregiver–patient interaction, however from clinical experience caregivers in this environment usually communicate with the parturients in the local language and there is more rapport when they speak in the native language. Yoruba language is usually spiced with specific greeting for almost all situations and prayers. This is why caregiver factor is considered very significant. Doulas have been shown to fill the gap in communication by providing the comfort and support not available from caregivers. In this study the patients were allowed to pick their own companions and the majority chose their husbands and close family members who are very likely to share their ethnicity. Another problem with the choice of doulas is that most parturients picked their husbands, which raises the question of the effectiveness

of male doulas compared to female doulas. This will require more studies, but the general belief is that female doulas are more effective. Notwithstanding, training of doulas (whether male or female) is likely to improve their effectiveness.

In conclusion, the ethnicity of the parturient relative to that of the predominant ethnicity in the place of birth has a significant effect on the pain they perceive in labor. In our resource-challenged environment, trained doulas may help make labor more pleasant for the parturient, especially those not sharing the ethnicity predominant among care givers.

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