Impact of Video Demonstration on Willingness of Pregnant Women to Receive Epidural Labor Analgesia in a Nigerian Hospital- An Open Label Trial

Abstract
Background: Labor pain is an inevitable experience for parturients with choice for labor analgesia depending on awareness, parturients’ education, availability, cost and adverse effects of the analgesic materials. Methods: All pregnant women attending booking clinics in the obstetric units of our hospital were recruited into an open-label randomized control trial for a period of 3 months into either intervention or control group. The pregnant women in the intervention group were shown a video demonstration on epidural labor analgesia in addition to distribution of epidural information leaflets with verbal explanation on pain management in labour. The control group had the same exposure except the video demonstration. An interviewer semi-structured questionnaire was used to collect information on biodata, knowledge of pain management in labor, previous labor pain experience, willingness to receive epidural labor analgesia in the current pregnancy and factors associated with willingness to receive epidural labor analgesia. Data were analyzed using descriptive and inferential statistics with P < 0.05 accepted as statistically significant. Results: Out of the 199 expectant mothers that participated in the study, 95 (47.7%) were in the intervention group and 104 (52.3%) in the control group with 18 (18.9%) and 5 (4.8%) patients had prior knowledge of epidural labor analgesia respectively. A higher proportion of 41 (43.2%) of participants in the intervention group were willing to receive epidural analgesia in the current pregnancy, when compared with 13 (12.5%) in the control group (P = 0.001). Conclusion: Addition of video demonstration to epidural leaflet information with verbal explanation in the intervention group increased the willingness of pregnant women to request for epidural pain relief in the current pregnancy compared to the control group.

Keywords: Epidural labor analgesia, labour pain management, pregnant women, video demonstration

Introduction
Labor pain has diverse physiological and psychosocial effects to the extent of most pregnant women in Brazil choosing cesarean section to normal vaginal delivery in order to avoid the rigors of labor pain. The trend is also increasing in Nigeria for the same reason according to a study by Okonkwo et al.[2] The choice for labor analgesia varies in women and depends on awareness, level of education of mothers, tradition, availability and the cost of materials for pain relief and fear of complications that may arise from any choice.

Epidural analgesia is the gold standard for pain relief in labor worldwide. However, it remains unpopular in our population. Other methods include traditional back massage, parenteral drugs, inhalational, aromatherapy, acupuncture, transcutaneous electrical nerve stimulation, breathing and relaxation but are either inadequate or have side effects. Kuti and Faponle[3] reported that 86.5% of mothers desired pain relief in labor out of which only 2.5% would prefer epidural. In a more recent study on pregnant women by Okojie and Isah,[4] 79.5% of their respondents were not aware of epidural analgesia. Effective communication system is essential between the healthcare givers and patients on the choice of labor analgesia. Amongst the few studies on epidural labor analgesia in Nigeria, Fyneface-Ogan et al.[5] reported that women who had epidural analgesia experienced better satisfaction score than those in parenteral group.

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Various traditional beliefs, unfamiliarity of the technique, inadequate information, limited resources in terms of manpower and facilities are factors working against epidural labor analgesia in our population. Mahomed et al.\textsuperscript{[6]} were of the opinion that varying methods of disseminating information to the pregnant mothers should involve the anesthetists early in the antenatal care programme. Besides, effectiveness of video demonstration with audio clip had been found to be better than verbal information in non-obstetric related clinical intervention study done.\textsuperscript{[7,8]}

In our institution, epidural labor analgesia is not often used because of inadequate information on the part of midwives and patients. We therefore designed an appropriate clinical intervention (video demonstration) that could improve patient’s awareness and knowledge on the subject matter, assess their willingness to receive epidural labor analgesia and to ascertain the factors responsible for the willingness in a Nigerian tertiary hospital.

Methods

This randomized, parallel-arm open label trial was conducted with ethical approval from our institutional Ethics and Research committee. The study was registered with Pan-African Controlled Trial Registry number PACTRY2017O2001933278. Inclusion criteria for the study were pregnancy confirmed by abdominal ultrasonography and willingness to participate in the study. Non-consenting patients, pregnant women planned for elective cesarean section, multiple gestations and patients with bleeding disorder were excluded from the study.

Sample size determination

The sample size was based on published tables for determining sample size for a known population.\textsuperscript{[9]} An average of 120 pregnant women booked in our antenatal clinics monthly with a total of 420 in three months. Therefore, a population of 400 to 450 subjects yielded a sample size ranged between 196 and 210. Hence, our sample size for the study was 199 which is considered a good representative sample for the study population.

All women attending antenatal booking clinic that fulfilled the inclusion criteria were recruited into the study weekly and randomized into intervention or control group using a computer generated table at booking. Booking clinics take care of confirmed pregnant women presenting for first antenatal consultation. The women were allocated into either intervention or control group in a concealed opaque envelope. The investigators used the epidural information leaflet as a focus for verbal explanation on epidural labor analgesia to both groups at the booking clinics. Epidural information card designed by Obstetric Anesthetists’ Association\textsuperscript{[10,11]} was used as a tool for the epidural leaflet which was made available in English and Yoruba (a Nigerian local dialect) versions translated by a Professor of Linguistics. Participants in the intervention group watched a 7-minute video demonstration of epidural procedure that had been previously recorded on a consented parturient from another hospital. The investigator also gave verbal explanation of the procedure to the audience (nurses and pregnant women) from positioning of the parturient through institution of epidural catheter to the application of adhesive plaster. A projector and screen were used under a fairly dark illumination for the demonstration. The instruments used in this study were validated by the authors after adequate literature review. Immediately after the video demonstration, these pregnant women in the intervention group were allowed to complete the filling of the semi-structured questionnaires.

Attitudinal questionnaires completed by the 2 groups with assistance from trained interviewers include socio-demographic information such as age, occupation, parity, ethnicity, level of education and health insurance. Other information included awareness about labor pain relief, information on epidural labor analgesia before the present booking and willingness to receive epidural analgesia for the current pregnancy. Each questionnaire was scrutinized for completion by the interviewers before collection from the respective respondents each day and handed over to the lead investigator.

Statistical analysis

Data were entered and analyzed using SPSS version 20 (SPSS Inc. Chicago IL). For the comparison of the 2 groups, categorical data were analyzed using the Pearson’s Chi-square or Fisher’s exact test accordingly. Means and standard deviation (SD) were calculated for continuous variables and the statistical differences between two independent groups were compared using Student’s \( t \) test. A value of \( P < 0.05 \) are accepted as statistically significant.

Results

A total number of 444 pregnant women registered at the booking clinics during the study period of 3 months. Out of this, 204 were excluded for refusal to participate and not meeting inclusion criteria. 95 patients in the intervention group and 104 in the control group completed the study protocol from the time of booking to final analysis of the questionnaires [Figure 1].

Table 1 shows the socio-demographic and obstetric characteristics of respondents. There were no statistically significant differences between the two groups in term of mean age, level of education, occupation, health insurance enrolment and parity. The proportion of women that had prior knowledge about pain relief in labor was significantly higher in the intervention group than the control group (\( P = 0.01 \)) and source of information was majorly from health workers.

Table 2 represents labor pain and relief in the last delivery among the parous respondents. Despite the fact that
majority of parous women in both groups had experienced moderate to severe pain in the last delivery, nothing was done to relieve the pain in 33 (62.3%) of intervention group and 64 (88.9%) of control group, respectively ($P < 0.05$).

Table 1: Socio-demographic, obstetric characteristics and awareness of respondents on labour analgesia

|                          | Group A ($n=95$) | Group B ($n=104$) | $P$ |
|--------------------------|------------------|-------------------|-----|
| Age, years               | 31.14±4.13       | 31.06±5.00        |     |
| Education                |                  |                   |     |
| Secondary and below      | 18 (9.0%)        | 24 (12.1%)        | 0.476 |
| Post-secondary           | 77 (38.7%)       | 80 (40.2%)        |     |
| Occupation               |                  |                   |     |
| Unemployed               | 22 (11.1%)       | 18 (9.0%)         | 0.011 |
| Civil servant            | 47 (23.6%)       | 36 (18.1%)        |     |
| Self employed            | 26 (13.1%)       | 50 (25.1%)        |     |
| National Health Insurance Scheme (NHIS) | 79 (39.7%)   | 83 (41.7%)        | 0.544 |
| Parity                   |                  |                   |     |
| Nullipara                | 42 (21.1%)       | 32 (16.1%)        | 0.05 |
| Parous women             | 53 (26.6%)       | 72 (36.2%)        |     |
| *Heard about pain relief in labour in the past* | 42 (21.1%)       | 28 (14.1%)        | 0.011 |
| Epidural                 | 18 (9.0%)        | 5 (2.5%)          | 0.002 |
| Back massage             | 27 (13.6%)       | 11 (5.5%)         | 0.001 |
| Breathing and relaxation | 10 (5.0%)        | 4 (2.0%)          | 0.066 |
| Injection (i.v/i.m)      | 17 (8.5%)        | 14 (7.0%)         | 0.389 |
| *Source(s) of information* |                  |                   |     |
| Friends                  | 8 (4.0%)         | 6 (3.0%)          |     |
| Health worker            | 15 (7.5%)        | 16 (8.0%)         |     |
| Books                    | 6 (3.0%)         | 3 (1.5%)          |     |
| Internet                 | 10 (5.0%)        | 2 (1.0%)          |     |
| Media                    | 2 (1.0%)         | 1 (0.5%)          |     |
| Not sure                 | 4 (2.0%)         | 1 (0.5%)          |     |

*Multiple responses. Data are presented as mean±SD, as number ($n$), percentage (%) and $P<0.05$ for group A versus group B*

Table 2: Labour pain and relief in the last delivery among the parous respondents

|                          | Group A ($n=53$) | Group B ($n=72$) | $P$ |
|--------------------------|------------------|------------------|-----|
| Labour pain experience in the last delivery |                  |                   |     |
| Mild                     | 15 (27.0%)       | 16 (22.2%)       | 0.718 |
| Moderate                 | 28 (42.4%)       | 40 (27.8%)       |     |
| Severe                   | 10 (15.5%)       | 16 (12.5%)       |     |
| Pain relief in the last delivery |                  |                   |     |
| Nothing was done         | 33 (62.3%)       | 64 (32.2%)       | 0.000 |
| Back massage             | 6 (3.0%)         | 2 (1.0%)         | 0.115 |
| Injection                | 17 (8.5%)        | 14 (2.8%)        | 0.389 |
| Intramuscular            | 2 (3.8%)         | 2 (2.8%)         |     |
| Breathing and relaxation | 10 (5.0%)        | 4 (2.0%)         | 0.07 |
| Epidural                 | 0 (0.0%)         | 0 (0.0%)         |     |

Data are presented as number ($n$), percentage (%) and $P<0.05$ for group A versus group B done to relief the pain in 33 (62.3%) of intervention group and 64 (88.9%) of control group, respectively ($P < 0.05$). No participant had ever received epidural labor analgesia in both groups.

The socio-demographic and obstetric characteristics in women who desired to receive epidural analgesia in the current pregnancy in both groups are summarized in Table 3. There were no significant differences between the two groups in term of formal education, occupation...
Table 3: Socio-demographic and obstetric characteristics in women who were willing to receive epidural analgesia when in labour this pregnancy

|                        | Group A (n=41) | Group B (n=91) | P     |
|------------------------|----------------|----------------|-------|
| Mean Age               | 30.80±3.63     | 30.23±4.98     | 0.516 |
| Education              |                |                |       |
| Secondary and below    | 6 (11.1%)      | 1 (1.9%)       | 0.516 |
| Post-secondary         | 35 (64.8%)     | 12 (22.2%)     |       |
| Occupation             |                |                |       |
| Housewife/unemployed   | 10 (18.5%)     | 4 (7.4%)       | 0.24  |
| Civil servant          | 20 (37.0%)     | 3 (5.6%)       |       |
| Self employed          | 11 (20.4%)     | 6 (11.1%)      |       |
| National Health Insurance Scheme (NHIS) | 36 (66.7%) | 12 (22.2%) | 0.653 |
| Parity                 |                |                |       |
| Nullipara              | 16 (29.6%)     | 6 (11.1%)      | 0.648 |
| Multigravida           | 25 (46.3%)     | 7 (13.0%)      |       |
| Data are presented as mean±SD, as number (n), percentage (%) and P<0.05 for group A versus group B.

Table 4: Reason for not willing to receive epidural labour analgesia in the respondents

|                        | Group A (n=54) | Group B (n=91) |     |
|------------------------|----------------|----------------|-----|
| No reason              | 30 (55.6%)     | 61 (67.0%)     |     |
| Delivery should be without intervention | 9 (16.7%)     | 19 (20.9%)     |     |
| Safety and survival of baby | 4 (7.4%)     | 7 (7.7%)       |     |
| Maternal safety        | 6 (11.1%)      | 1 (1.1%)       |     |
| Husband’s decision     | 3 (5.6%)       | 0              |     |
| No adequate information on epidural | 1 (1.9%)       | 2 (2.2%)       |     |
| Fear of additional cost| 1 (1.9%)       | 1 (1.1%)       |     |
| Data are presented as number (n) and percentage (%)|

and parity (P > 0.05). In Figure 2, 43 (21.6%) participants in the intervention group and 13 (6.5%) in the control group showed willingness to receive epidural analgesia in the current pregnancy while 1 (0.5%) would agree to doctor’s discretion and the difference was statistically significant (P = 0.000).

Table 4 shows the reason for not willing to receive epidural labor analgesia. 145 (73%) women did not desire to receive epidural analgesia with a larger proportion in those that did not watch video demonstration. The majority of 91 (62.8%) in both groups had no specific reason, this is followed by those who believed that delivery should be natural 28 (30.8%) and the least group were people with fear of cost 2 (2.2%).

Discussion

The use of epidural card information with verbal explanation is a recognized method of increasing pregnant women knowledge in labor analgesia. In addition to this, our open label randomized control trial have demonstrated that difference in the willingness to receive epidural labor analgesia was more statistically significant (P = 0.001) in the group that watched the video demonstration compared to the control group. More so, it was observed that a higher proportion of pregnant women in the intervention group had prior knowledge about pain relief in labor and of epidural method than in the control group which had likely affected the choice of labor analgesia. The study by Kuti and Faponle which was done more than a decade ago in our institution had earlier reported that 2.5% of the patients' next delivery.

The improvement could be attributed to diverse sources of information on epidural labor analgesia that have emerged with time. However, this has not translated to actual request and receiving of epidural labour analgesia by mothers in our institution because of the belief that it is natural for a woman to experience labor pain. In another questionnaire survey in Nigeria, 15.8% of respondents would want epidural analgesia for their next labor. Ogboli and colleague recorded a higher percentage of 92.9% probably because a reasonable proportion (75.4%) of their respondents had prior knowledge of epidural labor pain relief.

It is an established fact that adequate information about any procedure improves patient’s awareness, knowledge and attitude. In an audit carried out by White et al. written information with verbal explanation on the advantages and adverse effects associated with epidural labor analgesia significantly improved mother’s knowledge compared to verbal explanation only. Munro et al. in a similar study looked into the effect of provision of information pamphlet on epidural labor analgesia to pregnant mothers and found that this effort improved women’s knowledge, but did not alter their preference for choice of labor analgesia. In our study, additional information with the use of video demonstration likewise has power to increase women’s knowledge and willingness to receive epidural analgesia in the patients’ next delivery.
Lack of awareness and in-depth knowledge are amongst the reasons why epidural labor analgesia is not popular. Only 18.9% in the intervention group and 4.8% in the control group were aware of this pain relief before booking in the present pregnancy. These values are far from 66% awareness obtained from Karachi Community in Pakistan. In a related study carried out by Okojie and Isah, the level of education and previous labor experiences were significantly associated with awareness and willingness to receive epidural analgesia. Also, in a Nigerian study, higher education was the only predictor of the willingness of mothers to receive epidural analgesia in their next labor. These findings were contrary to our finding as higher education in both groups had no significant effect on awareness and willingness to receive epidural labor analgesia. One would expect that this category of women to have accesses to various form of information because of their high level of literacy. Occupation status, parity and previous labor pain experience also had no significant effect in the 2 groups.

Cost of epidural materials was also found not to have significant effect between the 2 groups. It is a common perception that the cost of epidural labor analgesia is more expensive than that of natural delivery. The cost of epidural materials, drugs, medical service and financial implications in managing complications arising from epidural analgesia procedure may be responsible for this. Marcario et al. in their study reported that patients that had epidural paid more than those that used intravenous labor analgesia. It was observed that the value of improved pain relief from epidural labor analgesia could not match its relative increased cost. In another Nigerian study, 70% of participants had not used epidural analgesia in labor because of low acceptability and increased overall cost. Fear of additional cost was the least reason for not willing to receive epidural analgesia when in labor because of low acceptability and increased overall cost. Fear of additional cost was the least reason for not willing to receive epidural analgesia when in labor as majority of our patients (83.1% in the intervention group and 79.8% in the control group) were on National Health Insurance Scheme (NHIS) which covers epidural labor analgesia procedure and partly provision of materials. The remaining patients that were not enrolled on health insurance at the time of antenatal booking were of the hope that they would enroll to the insurance scheme within the next few antenatal visits long before delivery dates.

Risk to baby, risk to mothers and traditional belief in natural delivery are other reasons given by respondents for their unwillingness to receive epidural analgesia. Although majority of mothers in a study conducted by Minhas and colleagues were aware of epidural analgesia, a large proportion (66%) gave no reason for not willing to receive epidural analgesia irrespective of their higher education. This finding is similar to our study in the control group with 67%. This could explain why we had a larger proportion in the control group that believed in natural delivery without non-pharmacological or pharmacological method of labor analgesia compared to the intervention group. A 5.6% proportion of those who were unwilling to receive epidural labor analgesia in intervention group of our study would prefer a final decision from their husbands. In the on-going initiatives to fulfill the 5th Millennium Development Goal (MDG), husbands have been encouraged to be part of antenatal care to delivery. Even though they may be busy with other family issues, women could get online video clips and epidural information leaflets to be discussed with their husbands at home.

A follow-up study may be needed to see if the willingness of our pregnant mothers to receive epidural analgesia would translate into actual request and usage of epidural analgesia at delivery.

**Conclusion**

The addition of video demonstration to epidural leaflet and verbal explanation significantly increased the willingness of our pregnant mothers to receive epidural analgesia when next in labor. Although, awareness of labor pain relief is below average and epidural method is generally low in the two groups. A prior knowledge of epidural analgesia which was more in the intervention group than the control group may have affected the choice of labor analgesia. Health workers have vital roles to play during antenatal visits by disseminating information on epidural labor pain relief through leaflet, verbal explanation and video demonstration.

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**Conflicts of interest**

There are no conflicts of interest.

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