

DOI: 10.21767/2254-609X.100029

Utilization of Obstetric Analgesia in Labor Pain Management and associated Factors among Obstetric Care Givers in Amhara Regional State Referral Hospitals, Northwest Ethiopia: A Hospital based Cross Sectional Study

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Rec Date: Jan 29, 2016; Acc Date: April 12, 2016; Pub Date: April 18, 2016

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Citation: Bitew A, Workie A, Seyum T, et al. Utilization of obstetric analgesia in labor pain management and associated factors among obstetric care givers in Amhara Regional State Referral Hospitals, Northwest Ethiopia. A Hospital based cross sectional study. J Biomedical Sci. 2016, 5:2.

Abstract

Back ground: Labor pain is the most severe form of pain in women' life and it was considered as a punishment given by God. Developed countries use obstetric analgesia routinely but in developing countries including Ethiopia it is not a common practice. The aim of this study was to assess utilization of obstetric analgesia in labor pain management and associated factors among obstetric care givers in Amhara Regional State Referral Hospitals, North West Ethiopia.

Method: Institution based cross sectional study was conducted from July 1-15/2014. The study was conducted on all obstetric care givers in Amhara Regional State Referral Hospitals. Self-administered, pre-tested and structured questionnaires was used to collect the data. Data consistency was checked and entered into EpiInfo then exported to SPSS for further analysis. Descriptive analysis done, logistic regression analyses were also used to see the association of dependent and independent variables. Finally Odds ratio and 95% Confidence interval were computed to determine the strength of association.

Result: The overall utilization of obstetric analgesia in labour pain management was 40.1% which showed only non-pharmacologic methods. The utilization of pharmacologic obstetric analgesia methods was zero. Multivariate logistic regression showed that professionals with low level qualification (AOR=2.69, 95%CI: 1.13, 6.41) and inadequate knowledge (AOR=2.57, 95%CI: 1.42, 4.65) were statistically associated with utilization of obstetric analgesia.

Conclusion: Proportion of obstetric analgesia utilization was very low; highest qualification and inadequate knowledge were significantly associated with obstetric analgesia utilization. Providers need to help labouring mother with

analgesia; update and make themselves familiar with obstetric analgesia. The quality and associated factors of obstetric analgesia utilization need to be investigated.

Keywords: Pain management; Analgesia; Obstetric care giver; utilization; Ethiopia

List of Abbreviations and Acronyms:

ACOG: American College of Obstetricians and Gynecologists; AOR: Adjusted Odds Ratio; ARSRH: Amhara Regional State Referral Hospitals; BSc: Bachelor of Science; CI: Confidence Interval; EA: Epidural Anesthesia; OR: Odds Ratio; SD: Standard Deviation; SPSS: Statistical Package for Social Sciences

Background Information

Labour pain is a physiological phenomenon and its evolution is associated with ischemia of uterus; during contraction, dilation of cervix, stretching of vagina, perineum and pelvic structures [1]. Historically and culturally women have been supported and attended by other women during labour and childbirth. But, since the middle of the 20th century, majority of mothers gave institutional delivery and continuous support during labour become missed practice [2]. Labour pain relief with pharmacologic analgesia is also full of myths and controversies; the concept of painless delivery was existed in the early 19th and mid-20th century by Edward and Hugson [3].

Labour pain was regarded as punishment given by God from Eve's sin and asking for relief was considered as against God [4] for this belief in 1591, Eufane Ayane of Edinburgh was buried alive into a pit [5]. The American College of Obstetricians and Gynecologists (ACOG) states that "there are no other circumstances; considered as severe as labour pain and study in United Kingdom and Finland indicated 93.5% and 80% of

labouring women described the pain as very severe and intolerable [6]. Childbirth is a traumatic event for 34% of mothers, 1.9% posttraumatic stress disorder [7] and 10.9% develop severe acute postpartum pain in 36 hours, 9.8% persistent pain and 11.2% depression at 8 week [8].

Maternal physiological responses to labour pain may affect maternal and fetal wellbeing and progress of labour [9]. The International Association for the Study of Pain declared 2007 to 2008 the global year against pain in women, with the slogan "real women real pain" [10]. ACOG and American College of Nurse-Midwives' recommends pain relief [6] and say "women should have access to variety of measures to assist them in labour [11] and in the absence of medical contraindication, maternal request is enough for pain relief" [12]. Many pharmacologic and non-pharmacologic treatments have been used to alleviate labor pain including systemic opioids, epidural analgesia, combined spinal-epidural analgesia, transcutaneous electrical nerve stimulation, massage and breathing technique. The effectiveness of these methods varies but epidural analgesia (EA) remains the gold standard [13]. When women are offered analgesia, they report greater birth satisfaction [14]. Epidural analgesia is widely used and provides almost complete labour pain relief (90-95%) and patients who received EA have more favorable (85%) birth experience than who are without (26%) [15]. Women who had continuous intrapartum support were more likely to have shorter labour, spontaneous vaginal birth, birth satisfaction and less likely to have intrapartum pharmacologic analgesia [2].

In developed world number of women receiving pharmacologic analgesia in 2008 was more than 60% [16] and in 27 states vital statistics report, the percentage of women receiving epidural/spinal anesthesia ranges from 22-78% [17]. In developing countries including Ethiopia use of obstetric analgesia for labour pain relieve is not a common practice. This may be as a result of several factors including unavailability of equipment, health care delivery systems, knowledge, perception, setting of hospital and managerial problems [18]. It may also be due to misconceptions including result of long-term backache, harm to baby, breast feeding problem, increased caesarean section, slow labour progress and permanent medical problems for the mother and newborn [12].

Effective labour pain management results greater birth satisfaction, safe and comfortable birth experience for the mother and the baby. According to Ethiopian demographic health survey finding in 2014, about 57.2% of pregnant Ethiopian women attended at least one antenatal care visit but only 14.5% of deliveries are in health care facilities. In this case effective labour pain management may be a critical intervention for increasing institutional deliveries. Nowadays labor pain management is routine practice in many countries of the world; but in Ethiopia it is not common to manage labour pain. To date there is no published data on the prevalence, determinants and severity of labour pain in Ethiopia. Therefore the current study was carried with the purpose of exploring factors and utilization of obstetric analgesia in labour pain management among obstetric care givers in Amhara regional state referral hospitals. The result of this study may help policy makers, stakeholders

and obstetric care givers to design appropriate interventions in giving safe and comfortable delivery service as well as baseline for further research.

Methods

Institution based cross sectional study was conducted in Amhara Regional State Referral Hospitals) from July 1-15, /2014. Amhara region is one of the nine regional states in Ethiopia which is found between 11° 30' 00" N latitude & 38° 30' 00" E longitude on the Northwestern part of Ethiopia. The region has a population of 17,221,976 of whom about 8,580,396 are women; the urban inhabitants were 2,112,595(12.27%) of the population. It is placed on an estimated area of 159,173.66 square kilometers and estimated density of 108.2 people per square kilometer [19]. The region has 19 hospitals, 220 health centers and 2941 health posts and 46 gynecologists, 109 general practitioners, 670 health officers, 4902 Nurses and 294 Midwives working in the institutions. In addition, there are 5 referral hospitals including University of Gondar Referral Hospital, Felege Hiwot Referral Hospital, Dessie Referral Hospital, Debreworkos Referral Hospital and Debrebirhan Referral Hospital each of them assumed to serve 5 million peoples. The hospitals had a total of 220 professionals giving maternal and neonatal care services. It has 100-200 beds and 2000-3000 deliveries per year and 5-8 deliveries per day.

The study participants were all obstetric care givers in Amhara Regional State Referral Hospitals (ARSRH) and skilled health professionals who were giving maternal care service in Delivery Room were included in the study. Since there were small number of source population in the study area all obstetric care givers available during the study period were included in the study. The variables studied were; socio-demographic factors, individual factors and institutional factors.

Structured pre-tested self-administered questionnaire was prepared by adapting from different studies considering the local situation of the study area and purpose of the study. It was developed in English language to be understood by every respondent.

The questionnaire had four essential components related to obstetric analgesia utilization in labour pain management including providers' socio-demographic characteristics, knowledge, attitude and utilization related questions with their reason not to use pharmacologic and non-pharmacologic analgesia methods. The socio-demographic characteristics of the respondents were assessed by seven questions, the level of their knowledge by four questions and attitude towards the utilization of obstetric analgesia were also assessed by seven questions. The attitude of respondents were categorized into positive and negative, their knowledge also divided into adequate and inadequate. Finally questions which were used to determine obstetric analgesia utilization among obstetric care givers and associated factors were also identified by their response to nine questions related to their utilization.

The questionnaire was pretested on 11 individual from Suhul General Hospital, Shire Inda Silasie, Ethiopia to check the consistency and necessary adjustment was done prior to the

actual data collection. Five BSc(Bachelor of Science) female (one in each hospital) midwife graduating class students were employed as data collectors and trained for one day regarding the technique of data collection, timely collection and reorganization of the collected data. Self-administered structured questionnaire was delivered to each obstetric care givers in the delivery room during the data collection time and requested to fill the data honestly and sincerely.

Data were checked, coded and entered to EPI Info version 3.5.3 then it was exported to Statistical Package for Social Sciences (SPSS) version 20 for analysis. Descriptive statistics like percentage, mean and standard deviation were used for the presentation of demographic data and utilization of obstetric analgesia. Tables and figures were also used for data presentation.

Binary logistic regression was used to identify factors associated with utilization of obstetric analgesia among obstetric care givers on the basis of OR, 95% CI and p-value of less than 0.2. Multiple logistic regression model was fitted to control the possible effect of confounders and finally the variables which had independent association with utilization of obstetric analgesia were identified on the basis of AOR, with 95%CI and p-value less than 0.05. The variables were entered to the multivariate model using the Backward Stepwise (Likelihood Ratio) regression method.

The data collection was carried out after getting approval for the project from the Ethical review committee of Gondar University, College of Medicine and Health Sciences. In addition official letter of cooperation was submitted to all referral hospitals. Informed verbal consent was obtained from each study participant prior to starting the data collection process and confidentiality was assured.

Results

Socio-demographic characteristics

A total of 220 obstetric care givers from five referral hospitals were included in the study and 212 of them returned the questionnaire, making a response rate of 99%. The mean age of the respondents was 29.4(\pm SD=6.6) years. Two third 141(66.5%) of professionals were in the age group of 20-29 years. About 136(64.2%) of the respondents were males and one hundred sixty eight professionals (79.2%) were orthodox Christians. Out of the total respondents, 100(47.2%) were midwives in profession followed by 41(19.3%), 33(15.6%) of medical Doctors and Nurses respectively. Nearly two third 143(67.5%) of respondents had experience of less than 5 years, 5-10 years 40(18.9%) and more than 10 years 29(13.6%).

Table 1 Professionals socio-demographic characteristic in ARSRH, Northwest Ethiopia, July 1-15, 2014 (n = 212).

Characteristics	Frequency (n)	Percent (%)
Age(in years)		

20–29	141	66.5
30–39	52	24.5
>=40	19	9
Sex		
Male	136	64.2
Female	76	35.8
Religion		
Orthodox	168	79.2
Muslim	26	12.3
Others	18	8.5
Profession		
Midwife	100	47.2
Medical Doctor	41	19.3
Nurse	33	15.6
Health Officer	24	11.3
Anesthesiologist	14	6.6
Highest qualification		
BSc	83	39.2
Diploma	57	26.9
Masters	31	14.6
General practitioner	17	8
Intern	11	5.2
Resident	9	4.2
Gynecologist	4	1.9
Years of experience		
<=5	143	67.5
9-Jun	40	18.9
>=10	29	13.6
Current position		
Staff member	206	97.2
Others®	6	2.8
®= medical director, mentor and hospital manager.		

About 83(39.2%) of respondents had highest qualification of BSc degree, fifty seven (26.9%) had diploma and 31(14.6%) had MSc degree. Almost all respondents (97.2%) were staff members (**Table 1**).

Utilization of obstetrics analgesia

The overall utilization of obstetrics analgesia for labour pain management in ARSRH was 40.1 %. All professionals used non-pharmacologic methods while the utilization of pharmacologic obstetric analgesia methods were found to be zero.

Psychotherapy 75(88.2%) was the most used method followed by breathing technique 61(71.9%) and massage 54(63.51%).

Table 2 Regression table of obstetric analgesia utilization in ARSRH, July 1-15, 2014 (n= 212).

Characteristics	Obstetric analgesia Utilization		COR(95% CI)	AOR(95%CI)
	Yes	No		
	Frequency(n)	Frequency(n)		
Attitude				
Negative	57	99	0.58(0.31-1.08)	0.66(0.32, 1.35)
Positive	28	28	1	1
Qualification				
Lower level	27	30	2.15(0.94-4.92)	2.69(1.13-6.41)
Medium level	45	66	1.63(0.77-3.44)	1.75(0.8,13.78)
Higher level	13	31	1	1
Age				
20-29	51	90	0.78(0.29-2.06)	0.71(0.26, 1.95)
30-39	26	26	1.38(0.48-3.97)	1.39(0.47, 4.14)
>40	8	11	1	1
Knowledge				
Adequate	42	38	1	1
Inadequate	43	89	2.29(1.29-4.05)	2.57(1.42-4.65)

®=Lower level: Diploma and below, Medium level: BSc, General Practitioner and Intern, Higher level: MSc, obstetrician and Resident.

Factors associated with utilization of obstetric analgesia

In the bivariate analysis, professional's age, their highest qualification, knowledge and attitude were found independently associated with utilization of obstetric analgesia in labour pain management. With a cut point of P-value 0.2 those variables which showed independent association with obstetric analgesia utilization were transferred to multivariate logistic regression; professional's qualification and knowledge were found statistically associated with utilization of obstetric analgesia.

Professionals who had highest qualification of diploma were 2.69 times more likely to use obstetric analgesia than who had second degree and higher qualification (AOR= 2.69, 95% CI = (1.13-6.41). Statistical association was also depicted that professionals knowledge had significant association with obstetric analgesia, where professionals who had inadequate knowledge were 2.57 times more likely to use obstetric analgesia than who had adequate knowledge (AOR: 2.57,95% CI: 1.42, 4.65) (Table 2).

Discussion

The present study revealed that the overall utilization of obstetric analgesia for labour pain management in Amhara

regional state referral hospitals was found to be 40.1%. This proportion showed only utilization of non-pharmacologic obstetric analgesia methods. The finding is in line with utilization of non-pharmacologic obstetric analgesia methods in Bangladesh (40%); specifically to psychotherapy analgesia methods but lower than labour exercise and allowing companionship in labour pain relief(84.5% and 77.3% respectively) which were 21% and 19.3% in this study [5]. This finding is lower than the non-pharmacologic obstetric analgesia utilization in Nigeria (56.8%) [20].

The utilization of pharmacologic analgesia methods were found to be zero. Even though the utilization was zero in this study, it is a common practice in many countries of the world. The result is not comparable with others like epidural analgesia use in France (75%), Sweden (71%), Bangladesh (58.5%), Colombia (31.5%) and South Africa (21%). It is also not comparable with sterile water use in Australia (42.5%), America (26%), butyl bromide (58.6%) and butaban tablet (60.9%) use in Bangladesh [5,21-23]. In Nigeria 49% of obstetricians offered obstetric analgesia of which the commonest analgesia was opioids (41.1%) [24] and 27% of mothers in Canada received the commonest (92.6%) IM Pentazocine Hydrochloride pain relief [25]. In other study about (22.1% - 33.5%) and (48%) in Nigeria, (18%) in Kenya and 55% in Durban, South Africa received pharmacologic obstetric analgesia [26,27]. Pharmacologic

analgesia particularly Pethidine was mentioned by professionals being used for only when they want to rule out false labour.

The lower obstetric analgesia utilization for labour pain management in this study might be due to the high patient flow in referral hospitals and negative attitudes of professionals about labour pain management. It may also due to lack of attention for labour pain and setting of the hospital. The other possible explanation for this might be absence of strategies and policies prepared by Ethiopian ministry of health regarding obstetric analgesia utilization in labour pain management.

In the present study the reason for not using obstetric analgesia in labour pain management were; the setting of the hospitals, lack of skilled professionals, unavailability of analgesic materials, unavailability of drugs, misconceptions regarding labour pain and with unknown reasons. The finding is consistent with a study done in Nigeria and Lesotho [20,28].

The study also found that those obstetric care givers who had inadequate knowledge were 2.57 times more likely to use obstetric analgesia than professionals who had adequate knowledge. Similar study in Australia [29-32] also found that knowledge as significant factor for obstetric analgesia utilization. Since this study concerns on both the pharmacologic and non-pharmacologic methods, adequate knowledge of professionals found to be protective for obstetric analgesia utilization in labour pain management. The possible explanation for these may be because of; level of knowledge in this study is the average of all obstetric analgesia methods. But the low level qualified professionals may not know pharmacologic methods which are more likely known by higher level qualifications. In addition the utilized method is only non-pharmacologic one. So this implication is reflected by their utilization what they know (non-pharmacologic). This is supported by study done in Australia showing that more midwives prefer non-pharmacologic while obstetricians prefer pharmacologic methods for labour pain relief [33].

Obstetric care givers' highest qualification was statistically significant with utilization of obstetric analgesia in labour pain management. Obstetric care givers who had diploma (low level qualification) were 2.69 times more likely to use obstetric analgesia methods than professionals who had second degree and above. This finding is similar with study done in Australia on preference of analgesia between midwives and obstetricians showing more midwives use non-pharmacologic methods while obstetrician more practices pharmacologic analgesics [33]. It is also in agreement with utilization of obstetric analgesia in Bangladesh showing primary health care providers favors supportive care(non-pharmacologic methods) during labour [5]. The result in this study showed that the utilization of obstetric analgesia in labour pain management is only the non-pharmacologic methods. Higher utilization of non-pharmacologic method by low level qualified professionals may be due to high patient contact (in normal labour) than those higher level qualified professionals (assigned at high risk mothers or abnormal labour).

However this study does have some limitations. Though variables like attitude, cultural belief and utilization can best

assessed qualitatively; they were studied quantitatively in this study.

Conclusion

The study revealed that the proportion of obstetric analgesia utilization in labour pain management was very low in Amhara regional state referral hospitals. Professionals' highest qualification and inadequate knowledge were found significantly associated with obstetric analgesia utilization.

Ministry of Health and Amhara Regional State Health Bureau are responsible to establish a health program which focuses on giving safe and comfortable delivery services with low cost of obstetric analgesia and increase investment in health system, human resources and medical equipment's. Obstetric care givers need to update and make themselves familiar with obstetric analgesia and use simple analgesia like systemic opioids, Pethidine, companionship and other support measures to help mothers during labour and childbirth. Finally a qualitative study needs to be done to investigate severity of labour pain, need of mothers for labour pain relief and factors associated with utilization of obstetric analgesia in labour pain management to supplement the findings from this study.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

AW wrote the proposal, collected all data, analyzed the data and drafted the manuscript. TS, TD and AB approved the proposal with some revisions, participated in data analysis and revised subsequent drafts of the paper. Finally all authors read and approved the final manuscript.

Acknowledgement

We are very grateful to the University of Gondar for financial support. We would like to thank referral hospitals management for permission to conduct the study, all obstetric care givers who participated in this study for their commitment in responding to our interviews. Our gratitude also goes to the data collectors and the staff at the hospitals.

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