

Utilization of Non-Pharmacological Labor Pain Management Methods and Associated Factors Among Women gave Birth at Jimma Medical Center, Jimma, Southwest Ethiopia

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ABSTRACT

Background: Labor pain is the most severe form of pain experienced by women and varies greatly; from feeling little pain to extremely distressing pain. Even though most women suffer significant pain during labor, utilization of labor pain management methods among women was not well documented. Thus, this study was significant to determine utilization level of labor pain management methods and associated factors among women gave birth at study area.

Objective: To assess utilization of non-pharmacological labor pain management methods and associated factors among women gave birth at Jimma medical center, Jimma, southwest Ethiopia.

Methods: A facility based cross section study design using mixed quantitative and qualitative approach was conducted from March to June 2020. Sample size for quantitative study was 393 and systematic sampling technique was used. Sample size for qualitative study was 12 key informants selected purposively. For quantitative study, after coded and entered into Epi data version 3.1 software; data was exported to SPSS version 25.0 software and analyzed. Variables with $p < 0.05$ were declared as a significant association and the strength of statistical association was measured by AOR and 95% CI. Finally, the result was summarized and presented in text, tables, and graph. Analysis of qualitative data was conducted after transcribed and translated by coding, super coding until formation of the main theme and was analyzed by using Indeductive thematic data analysis method.

Results: A total of 389 participants were included in the study with response rate of 98.98% from which 24.9% had utilized labor pain management methods. Multiple variable logistic regression analysis revealed that maternal age (AOR=2.19, 95%CI:1.13-4.25, P.021), occupational status(AOR=0.13, 95%CI: 0.02-0.67, P.0.015), previous history of pregnant loss (AOR=.35, 95%CI:.13-.99, P.049), knowledge level (AOR=4.94, 95%CI: 1.78-13.72, P.002), request of labor pain management methods (AOR=9.65, 95%CI:1.77-52.53, P.009), parity (AOR=0.49, 95%CI: 0.27-0.85, P.0.016) and intention to utilize (AOR=0.48, 95%CI:0.28-0.85, P.011) were significantly associated with utilization of non-pharmacological labor pain management methods. Qualitative finding also revealed that unavailability of medication, scarcity of facility infrastructures, no involvement anesthetists in labor pain management methods, absence of labor pain management guideline were identified as barrier for utilizing labor pain management.

Conclusion and recommendation: This study found that low utilization of non-pharmacological labor pain management methods among women gave birth at study area. Unavailability of medication, scarcity of facility infrastructures, no involvement anesthetists in labor pain management methods, absence of non-pharmacological labor pain management guideline were identified as barrier for utilizing labor pain management among obstetric care providers. Therefore, Jimma university institute of health and Jimma medical center administration body should give emphasis on means availing labor pain management medication.

Keywords: Non-pharmacological; Labor pain management; Women; Jimma Medical Center

INTRODUCTION

Labor is one of the most painful events that most of the mothers' experiences in their life. It imposes severe pain, yet women

experience its intensity differently. Labor pain is the most severe form of pain experienced by laboring women and varies greatly; from feeling little pain to extremely distressing pain. It

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Received: October 08, 2021; **Accepted:** October 22, 2021; **Published:** October 29, 2021

Citation: Haso TK, Horeto A, Abdu S, Neme A (2021) Utilization of non-pharmacological labor pain management methods and associated factors among women gave birth at Jimma medical center, Jimma, southwest Ethiopia. Clinics Mother Child Health. S10:003.

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is a physiological phenomenon that varies in intensity among women and subjected to many social and cultural modifiers [1-3]. Non-pharmacological method includes; walking around, relatives' support, breathing exercises, massage, water birth, acupunctures, position change and Transcutaneous Electrical Nerve Stimulation (TENS) [4,5].

Despite the availability different types of labor pain management methods, still women suffer from the intense pain during labor due to lack of knowledge about its availability and methods of painless childbirth [6]. Nowadays, labor pain management methods are utilized routinely in most developed country. However, in developing countries, labor pain management is not a well-established service. Poor utilization of labor pain management methods in low-income countries including Ethiopia results unmeasured suffering among women gave birth during labor [7]. Even though most women suffer significant pain during labor, utilization level of labor pain management methods and associated factors among women gave birth was not well documented [8].

Statement of problem

Labor pain is the result of a complex and subjective interaction of multiple physiologic and psychosocial factors. The nature of labor pain is consisted of two sub-concepts; "severity and type of the pain". Women's experience of severity and type of labor pain was described as, "labor pain is really hard to endure and not similar to other pains. Thus, accurate measurement and appropriate management of labor pain is a significant problem [9,10]. Non-pharmacological Labor pain management is not only a crucial concern for women but also a great challenge in modern medicine [11,12].

Utilization of non-pharmacological labor pain management methods around the world is scarce, with frequencies ranging from 1.4 to 60% in different settings. Even in developed countries the use of epidural analgesia during labor does not exceed 60% of singleton term deliveries [13]. Africa is the region with less non-pharmacological labor pain management utilization among women gave birth vaginally (0.3%) while Latin America utilized more analgesia for management of labor pain among women gave birth with 12.5% of women receiving it [14].

Globally the percentage of women that are offered epidural analgesia for labor pain management varies from country to country and relatively more utilized in developed country than developing country. For instance, in developed countries such as France (75%); in Sweden (71%) and Colombia 31.5%. In developing countries such as South Africa, only 21% of women utilized [15].

Unmanaged labor pain may have negative effect on the lives of mothers to such an extent that her baby and family may also be affected [16]. Thus, poorly managed labor pain resulted in negative or traumatic childbirth experiences [17]. Study showed that unrelieved labor pain ends up with a traumatic event among 34% of mothers, posttraumatic stress disorder among 1.9% mother, severe acute postpartum pain in 36 hours 10.9%, persistent pain 9.8% and depression at 8 weeks 11.2% [18].

In the United States, childbearing women experience multiple medical and obstetric interventions during labor and childbirth that result in increased cost of maternity care and potential for iatrogenic complications as unintended consequences. Thus, the incidence of parenteral administration of opioids ranges from 30% in hospitals with more than 1500 deliveries annually

to 56% in hospitals with 500-1500 annual birth [19]. Non-pharmacological method of labor pain management was utilized predominantly and high patient flow was identified as factors affecting utilization [18,20].

In providing of obstetrics care services nothing is more than the delivery of the newborn into the arms of conscious and pain-free mother. Although effective labor pain management results in greater satisfaction, safe and comfortable birth experience for the women and the infant, support of women during labor and childbirth were missed practice in maternal care delivery services [21].

Although labor pain is distressing and produces undue side effects to both woman and fetus, in low-income countries like Ethiopia, utilization of labor pain management methods were often neglected [22]. Some study had been done on utilization of labor pain management methods and associated factors quantitatively as well as qualitatively in both developed and developing country from health care providers perspective but to the best of my knowledge and literatures searching skill no study done on this topic at national and local level (study area). Therefore, the main objective of this study is to assess utilization level of labor pain management methods and associated factors among women gave birth by using both quantitatively and qualitative approach and fill the research gap identified.

Significance of the study

Assessing utilization level of labor pain management methods is yardstick to identify barriers that affect utilization with view of making recommendation for improvement. Therefore, this study was significance to determine utilization level of labor pain management methods and associated factor among women gave birth at Jimma medical center. In addition, this study was also explored barriers of utilizing labor pain management methods from obstetric care provider perspective by using qualitative approach. The findings of this study would benefit the study hospital, patients and general public as a whole in the study area by identifying the existing gap and providing suggestion on existing gaps. This study finding also helps different profession working at study unit to improve their role in providing labor pain management methods. Furthermore, finding of this study would serve as source of secondary data for further study in the same area and expect to fill research gaps and add to the existing body of knowledge.

OBJECTIVE OF THE STUDY

General objective

To assess utilization of non-pharmacological labor pain management and associated factors among women gave birth at Jimma medical center, Jimma, Southwest Ethiopia, 2020.

Specific objectives

To determine utilization level non-pharmacological labor pain management among women gave birth at Jimma medical center, Jimma, Southwest Ethiopia, 2020.

To identify factors associated with utilization non-pharmacological labor pain management among women gave birth at Jimma medical center, Jimma, Southwest Ethiopia, 2020.

MATERIALS AND METHODS

Study area and study period

This study was done at Jimma Medical Center (JMC) from March

to June 2020. Jimma medical center is one of public hospital found in Jimma town which is located 352 km from Addis Ababa in Southwest Ethiopia. The hospitals provide inpatient, out-patient, emergence and delivery service. JMC established in 1930, is one of the oldest public hospitals in the country and it is the only referral hospital in the South western part of the country providing service for average of 15-20 million people with catchment area of 17,500 km². Data get from HMIS reports of the hospital shows the average three years trend of women gave birth at this study hospital in the month of March and June was around 1181. Data get from each department showed that around 121 obstetric care providers (midwifery, obstetrician and anesthetist) were supposed to attend delivery.

Study design

A facility based cross-sectional study using mixed quantitative and qualitative approach was used.

Population

Source population:

For quantitative study: All women who gave birth at JMC).

For qualitative study: All obstetric care providers who supposed to be involved in labor and delivery at JMC).

Study population:

For quantitative study: All sampled women who gave birth at JMC during the study period.

For qualitative study: Obstetric care provider who supposed to be involved in labor and delivery at JMC and supposed to be rich in information (midwifery, obstetrician and anesthetist).

Sample size determination and sampling technique

Sample size determination:

Quantitative study: The sample size of the study participants was determined by single proportion population formula assuming 5% marginal error and confidence interval of 95%, 37.0% of proportion of utilization of obstetric analgesia among women in Kenya.

$$ni = \frac{n \left(\frac{z\alpha}{2} \right)^2 \cdot p(1-p)}{d^2}$$

Where, n= Minimum sample size required

$Z\alpha/2$ =Standard deviation corresponding to 95% confidence interval=1.96

P= Proportion of obstetric analgesia utilization (0.37) from study done in Kenya [23].

D=Degree of accuracy required=0.05

$$ni = \frac{(1.96)^2 (0.37)(1-0.63)}{d^2}$$

$ni = 358$

By adding 10% non-response rate total sample size was come (358+35) =393

Qualitative study: The sample size was 12 key informants (four midwifery, four anesthetists and four obstetrician) whom selected till the saturation of data for in-depth interview.

Sampling technique:

Quantitative study: Systematic random sampling technique was utilized and the K interval was 1181/393=3. The study participants were selected by K interval. I.e. the first study participants were selected by lottery method among the first three women gave birth and the other was selected by every third of the first selected women.

Qualitative study: Purposive sampling technique was employed for selection of key informant for in-depth interview by considering seniority, juniority, and information richness, i.e. head midwifery, senior midwifery, junior midwifery, anesthesia department head, senior anesthetist, junior anesthetist, obstetrics and gynecology department head, senior obstetrician, and junior obstetrician of the hospital.

Eligibility criteria

Inclusion criteria:

- Mother who came to labor and delivery wards for labor follow up and gave birth at study area.
- Obstetric care providers who served for more than six months.

Exclusion criteria:

- Mother who are critically ill postpartum.
- Mother who came by referral for C/s and directly undergone cesarean section without follow up at labor and delivery ward.
- Obstetric care provider who was not available during the study period.

Study variables

Independent variables:

- **Socio-demographic factors:** Maternal age, residence, religion, ethnicity, occupational status, educational status, income.
- **Institutional factors:** Attitude of health care provider, scarcity of facility infra-structures, unavailability of medication.
- **Maternal related factors:** Attitude, knowledge, fear of maternal adverse effect. Fear of neonatal adverse effect, past obstetric history, duration of labor, parity, gestational age, birth weight, maternal request of pain relief, maternal intention to utilize labor pain management in the next pregnancy, source of information.

Dependent variable: Utilization of labor pain management methods.

Data collection tools and data collection procedure

Data collection tools:

Quantitative study: Data collection tools was adapted after review of different relevant literatures with modification and contextualized into local setting. The questionnaire was prepared in English language and translated to local language Afaan Oromo and Amharic and then transcribed back to English language for checking consistence. The questions and statement were grouped and arranged according to the particular objectives that they can address. The questionnaires had five part; socio-demographic characteristic including age, residence, occupational status, educational status and income. Maternal obstetric assessing item like ANC follow up, parity, gestational age, birth weight, duration of labor, previous c/s history, pregnancy loss history, etc. knowledge assessing item including knowledge of women on labor pain management, method known by women, sources of information. Attitude assessing items using five Likert scale (strongly agree, agree, neutral, disagree, strongly disagree and utilization assessing items [23-25].

Qualitative study: Semi-structured interviewer guide questionnaires was adapted after review of different literatures and have three part; like key informant experiences of utilizing labor pain management method and barrier to utilizing labor pain management methods [26,27].

Data collection procedures:

Quantitative study: Data was collected by data collector through

face to face interview method by using structured questionnaire. The supervisor was closely supervising the process of data collection. The number of data collector were two BSc midwifery having at least one data collection experience and supervisor was one and holder of master of public health.

Qualitative study: Semi-structured interview guidelines were used for in-depth interview and the data was collected by data collector by using audio recording, notebook and pen. Data collector was two including principle investigators and training was given for two hours on the objective of the study and its contents. Data collector was recruited from MSc holder.

Quality control:

Quantitative study: First, the questionnaire was checked manually for completion and any misfiled questions after data collection. Data collectors were trained for one day about objectives of the study and content of questionnaires. Before the go to data collection pretest was conducted by 5% (20 women who gave birth) at Seka hospital for five days and based on the pretest the questionnaire was modified. The questionnaires’ was also reviewed by two experts (senior oby/gyn specialist) in order to check validity and revised based on their comment. The principal investigator was supervising and observes the working during data collection. Every night the collected data was cross-checked. Data was double entered into Epi-data before export to SPSS and prior to analysis Cronbach’s alpha was carried out to check for internal consistency and were 0.73 for main domain (utilization labor pain management methods assessing items).

Qualitative study: The quality of audio recording was checked before starting in-depth interview. The interviewer was trained on objective of this in- depth interview and how to probe the question before go to actual data interview session. The note was taken simultaneously with audio recording for checking the consistence of data. The recorded audio was transcribed and compared with note taken during interview and translated to English language within one week of interview date. Trustworthness of the data was maintained showing the recorded audio to the advisor and validiating response by asking the key informant for unclear idea.

Data processing, analysis and presentation

Quantitative study: The collected data was checked for completeness, cleaned and coded before entry. Then data was entered into Epi data version 3.5 software and then exported to SPSS version 25.0 software for analysis. Descriptive statistics was computed to determine frequencies and summary statistics (mean, standard deviation, and percentage) to describe the study population in relation to socio-demographic and other relevant variables. Variables with p-value <0.25 on bivariate logistic regression analysis were candidate for multiple variable logistic regression analyses. Model fitness was checked using Hosmer and Lemeshow goodness of fit test ($\chi^2=3.842$, p-value=0.871). Multiple variable logistic regression with backward like hood ratio was utilized to get final fitted model and variables which had independent association with utilization of labor pain management were identified on the basis of AOR, with 95%CI and p-value less than 0.05. Finally, the data was presented by table, graphic and figures.

Qualitative study: The recorded audio was carefully transcribed by carefully listening and translated into English language. Indeductive thematic data analysis method was used. First data was conceptualized and categorized through line-by-line coding. Secondly, super/focused coding was involved grouping coded

text into larger segments which comprised smaller segment and finally family and super family was grouped which was made up two main themes; included Experiences of utilizing labor pain management methods and barrier to utilize labor pain management methods. Finally, the finding of this was triangulated with quantitative finding.

Ethical consideration

Ethical clearance was obtained from ethical review broad of Jimma University institute of health after it is approved by Institute review board and official letter was written to Jimma medical center and permission letter was obtained from hospital administrative body prior to data collection. Informed (verbal) consent was obtained from a respondent who was participated in the study. The participation in this study is voluntary; they can also withdraw at any time from the study if they feel uncomfortable. Refusal to participate was not affected their work or care they shall seek at any of the health facilities in any way. Confidentiality was maintained by omitting their name and personal identification of participation.

Dissemination plan

The findings of this study will be submitted to Jimma University, Institute of Health, and faculty of health science, School of Nursing and midwifery. Following submission, the results will be defended in the University. After the approval of the findings by the school of nursing and midwifery, copies of thesis will be given for Jimma medical center, for nursing and midwifery school and Jimma university registrar and library. After all it will be presented on national conferences and after approved by journal reviewer, it will be published.

RESULTS

Socio-demographic characteristic

A total of 389 participants were included in the study with response rate of 98.98%. The mean age of the study participants was 25.44 (SD ± 4.329) years with minimum age of 18 and maximum age of 40 years and majority of them were founded at age group of 20-24 which accounts 152(39.1%). More than two third of 262(67.4%) of study participants were urban in residence. More than half of study participants were Muslim by religion and Oromo by ethnicity which accounts 227(58.4%) and 250 (64.3%) respectively. Regarding occupational status and educational status less than half of study participants were housewife and no primary education which accounts 165(42.4%) and 173(44.5%) respectively. Majority 341(87.7%) of the study participants were get ≤ 2500-birr monthly income with median of 1200 birr (Table 1).

Table 1: Distribution of women gave birth at Jimma medical center by their socio-demographic characteristics Jimma, Southwest Ethiopia, March to June, 2020.

Socio-demographic characteristic	Categories	Frequency (N=389)	Percent
Maternal age	15-19	20	5.1
	20-24	152	39.1
	25-29	144	37
	30-34	60	15.4
	≥35	13	3.4
Residence	Urban	262	67.40%
	Rural	127	32.60%

Religion	Muslim	227	58.4
	Orthodox	89	22.9
	Protestant	52	13.4
	Catholic	17	4.3
	Other	4	1
Ethnicity	Oromo	250	64.3
	Amhara	53	13.6
	Tigre	13	3.4
	Gurage	30	7.7
	Dawuro	25	6.4
	Other	18	4.6
Occupational status	Employed	39	10
	Merchant	95	24.4
	Farmer	61	15.7
	Housewife	165	42.4
	Daily labor	29	7.5
Educational status	No formal education	173	44.50%
	Primary school	97	24.90%
	Secondary school	73	18.80%
	Higher education	46	11.80%
Household monthly income	≤ 2500 birr	341	87.7
	>2500 birr	48	12.3

Characteristics of In-depth interview participants: Supposed obstetric care providers included in this in-depth interview were four midwifery, four obstetrician and four anesthetists (Table 2). Using Indeductive thematic data analysis two main themes were extracted which includes; experiences of utilizing labor pain management methods and barrier to utilize labor pain management methods. For the first main thematic i.e. experiences of labor pain management methods utilization two sub-theme were identified; experiences of obstetric care providers on utilizing pharmacological methods and experiences

of obstetric care providers on utilizing non-pharmacological methods. For the second main theme i.e. barrier for utilization of labor pain management methods three sub-themes identified; facility related barrier, maternal related barrier and care provider related barrier.

Obstetric and gynecological history

Regarding obstetric and gynecological history more than two third 286(73.5%) of study participants were multiparous by parity. Only 6.1% of study participants had history of previous caesarean section while 11.8% of study participant had history of pregnant loss (Tables 3 and 4).

Source of information

Among study participants who had knowledge of labor pain management 61.2% had got information from health care provider, 65.5% from book, internet, 38.2% from friend/relative. The least source of information was media like TV and radio (Table 5).

Attitude of respondent

Regarding attitude of study participant on labor pain management method the overall attitude level were negative attitude which accounts 234 (60.2%).

Utilization of labor pain management methods

The overall utilization level of non-pharmacological labor pain management method among study participants were 24.9%.

Decision making on utilization of labor pain management method

Among study participants who were utilized labor pain management; Majority of the respondents (46.00%) responded it was decided by health care provider followed by they decided together with health care provider which accounts 37.90% (Figure 1).

Table 2: Characteristic of in-depth interview participant among obstetric care provider at Jimma medical center, Jimma, southwest Ethiopia, 2020.

List of participants	Profession	Age	Sex	Experience in year	Educational level
KI 1	Midwifery	29	Male	7	BSc in midwifery
KI 2	Midwifery	25	Female	6	BSc in midwifery
KI 3	Midwifery	41	Male	11	BSc in midwifery
KI 4	Obstetrician	30	Male	2	Obs/gyn resident II
KI 5	Anesthetist	32	Male	8	MSc in anesthesia
KI 6	Obstetrician	41	Male	8	Obs/gyn specialist
KI 7	Anesthetist	24	Male	1	BSc in anesthesia
KI 8	Obstetrician	36	Male	6	Obs/gyn specialist
KI 9	Midwifery	26	Male	2	BSc in midwifery
KI 10	Obstetrician	32	Male	4	Obs/gyn senior resident IV
KI 11	Anesthetist	32	Male	6	MSc in anesthesia
KI 12	Anesthetist	31	Male	3	BSc in anesthesia

Table 3: Distribution of women gave birth at Jimma medical center by their obstetric and gynaecological history Jimma, Southwest Ethiopia, March to June, 2020.

Variables	Categories	No	Percentage (%)
Parity (N=389)	Primiparous	103	26.5
	Multiparous	286	73.5
Previous caesarean section history (N=286)	Yes	17	5.9
	No	269	94.1
Previous history of pregnant loss (N=389)	Yes	46	11.8
	No	343	88.2
ANC follow up (N=389)	Yes	373	95.9
	No	16	4.1

Gestational age at delivery (N=389)	Preterm	19	4.9
	Term	343	88.2
	Post-term	27	6.9
Duration of labor (N=389)	<12 hours	154	39.6
	≥ 12 hours	235	60.4
Birth weight of neonate at birth (N=389)	<1500 g	6	1.5
	1500-2499 g	105	27
	2500-3999 g	223	57.4
	≥ 4000 g	55	14.1

Table 4: Distribution of women gave birth at Jimma Medical Center by their knowledge on non-pharmacological labor pain management methods and sources of information Jimma, Southwest Ethiopia, March to June, 2020.

Variables	Category	Number	Percentage (%)
Non-pharmacological methods (N=91)	Massaging	83	91.2
	Diversion therapy like listening music, masmur, Quran	25	27.5
	Position	41	45.1
	Walking around	68	74.7
	Breathing technique exercise	10	11

Table 5: Distribution of women gave birth at Jimma Medical Center by their source of information about labor pain management methods Jimma, Southwest Ethiopia, March to June, 2020 (N=165).

Source of information	N=165	
	Frequency	Percentage (%)
Health care provider	101	61
Books, internet	108	66
Relative/friend	63	38
Media like TV, radio	28	17

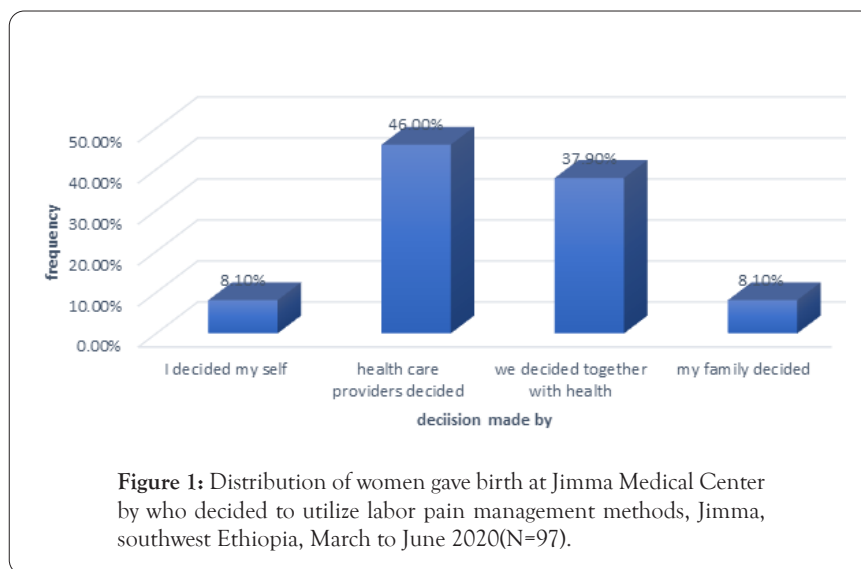


Figure 1: Distribution of women gave birth at Jimma Medical Center by who decided to utilize labor pain management methods, Jimma, southwest Ethiopia, March to June 2020(N=97).

Reason for not utilizing labor pain management method

From a total 265 (68.12%) study participant were not utilized labor pain management methods. The reason for not utilizing labor pain management were includes; it may led to instrumental/C/s delivery 28 (10.6%), against the will of god 27 (10.2%), delay labor progress 40 (15.1%), may harmful to the baby 69 (26.0), methods was not available 93 (35.1%), care provider were not volunteer to offer 116 (43.8%) (Table 6). This finding was supported by qualitative study among obstetric care provider which revealed that majority of key informants were

described that unavailability of medication, scarcity of human resources, attitude of patients/women, attitudes of care provider, patient overflow, facility infrastructures problem, no involvement of anesthetist in labor pain management methods and absence of labor pain management guideline were identified barrier of utilizing labor pain management methods. For instance, one of the key informants said. “As you see we admit the mother on the floor due to insufficient bed. It is difficult to allow the attendant to provide this method because of privacy, even to put privacy screen we don’t have space” (Key informant 1, 29 years old, Male and BSc. Midwifery).

Table 6: Socio-demographic characteristics of respondents on Knowledge on family planning method.

Variables	Frequency (N=265)	Percentage (%)
May lead to instrumental or c/s delivery	28	10.6
Against the will of God	27	10.2
Delay labor progress	40	15.1
May harmful to the baby	69	26
Method do not work	39	14.7
Method was not available	93	35.1
Care provider was not volunteer to offer me	116	43.8

Another key informant was expressed his concern by saying “Thus, utilization of opioid analgesia in labor ward for labor pain management is almost zero by anesthetist. In our hospital there is no system or protocols that invite us to manage labor pain and even they existing system is not suitable for us to manage labor pain management” (Key informant 5, 32 years old, male, and anesthetist).

And also, another key informant II described some mother did not has willingness to use labor pain management methods even when they provided for them, they think as they are prolonging their labor.

“Sometimes women attitude towards labor pain management affect utilization, which means when we provide labor pain management method to minimize pain, some of the patients think as we are prolong labor” (Key informant 2, 25 years old, female and BSc midwifery).

Factors associated with utilization of labor pain management method

In order to identify factors associated with utilization of labor

pain management method bivariate and multiple variable logistic regression were utilized. Bivariate logistic regression analysis showed that variable like maternal age, occupational status, educational status, monthly household income, parity, previous history of pregnant loss, gestational age at birth, neonatal birth weight, knowledge level, request for utilizing labor pain management, decision maker for utilizing labor pain management methods and intention to utilize in next pregnancy were candidate for multiple variable analysis at p-values less than 0.25. Thus, in the multiple variable logistic regression analysis, maternal age (AOR=2.19, 95%CI:1.13-4.25, P=.016), occupational status (AOR=0.13, 95%CI:0.02-0.67, P=0.015), previous history of pregnant loss (AOR=.35, 95%CI:.13-.99, P=0.049), knowledge level (AOR=4.94, 95%CI: 1.78-13.72, P=.002), parity (AOR=0.49, 95%CI: 0.27-0.85, P=0.016), request of labor pain management methods (AOR=9.65, 95%CI:1.77-52.53, P=.009) and intention to utilize (AOR=0.48, 95%CI:.28-0.67, P=0.011) were significantly associated with utilization of labor pain management methods.

Study participants who had previous history of pregnant loss were 65% less likely utilized labor pain management methods than those who hadn't previous history of pregnant loss (AOR=.35, 95%CI:.13-.99, P=.049). Concerning knowledge level study participants who had adequate knowledge were 4.94 times utilized labor pain management methods than those who had inadequate knowledge (AOR=4.94, 95%CI: 1.78-13.72, P=.002). Study participants who were requested labor pain management methods during labor were 9.65 times utilized than those who were not requested (AOR=9.65, 95%CI:1.77-52.53, P=.009). Study participants who had no intention to utilize labor pain management methods in the next pregnancy were 52% less likely utilized compared to counterpart (AOR=2.40, 95%CI:1.06-5.43, P=.035) (Table 7).

Table 7: Distribution of women gave birth at Jimma medical center by factors associated with utilization of labor pain management methods Jimma, southwest Ethiopia, March to June, 2020 (N=389).

Variable	Categories	Utilization		COR (95%CI)	AOR (95%CI)	p-value
		Utilized	Not utilized			
Maternal age	15-19	4	16	1.02(0.32, 3.26)	3.24(2.42,6.44)	0.978
	20-24	30	122	1	1	0.175
	25-29	38	106	1.46(0.45, 4.56)	2.19(1.13, 4.25)	0.021
	30-34	21	39	2.19(0.64, 7.28)	1.81(0.52, 6.27)	0.351
	≥ 35	4	9	1.81(0.36, 8.88)	5.57(0.28, 11.56)	0.2
Occupational status	Employed	20	19	3.29(1.60, 6.77)	1.19(0.29, 4.87)	0.802
	Merchant	20	75	0.83(0.45, 1.53)	0.63(0.18, 2.18)	0.463
	Farmer	10	51	0.61(0.29, 1.32)	0.13(0.02, 0.67)	0.015
	Housewife	40	125	1	1	
	Daily labor	7	22	0.99(0.39, 2.50)	0.95(0.21, 4.24)	0.948
Educational status	No formal education	36	134	1	1	0.321
	Primary school	22	71	1.15(0.63, 2.11)	0.38(0.13, 1.10)	0.074
	Secondary school	14	58	0.90(0.45, 1.79)	0.54(0.19, 1.57)	0.261
	Higher education	25	29	3.21(1.68, 6.14)	0.63(0.16, 2.49)	0.511
Monthly income	≤ 2500 birr	73	268	1	1	
	>2500 birr	24	24	3.67(1.97, 6.84)	2.24(0.78, 6.45)	0.136
Parity	Primiparous	17	86	0.509(0.29, 0.91)	0.49(0.27, 0.85)	0.016
	Multiparous	80	206	1	1	
Hx of pregnant loss	No	73	166	1	1	
	Yes	6	40	0.34(0.14, 0.84)	0.35(0.13, 0.99)	0.049

Gestational age at delivery	Preterm	8	11	2.35(0.91, 6.05)	2.14(0.29, 15.89)	0.456
	Term	81	262	1	1	
	Post term	8	19	1.34(0.575, 3.23)	3.02(0.507, 17.98)	0.225
Knowledge level	Inadequate	66	284	1	1	
	Adequate	31	8	16.67(7.33, 37.94)	4.94(1.78, 13.72)	0.002
Request of labor pain mgt	No	6	228	1	1	
	Yes	91	64	54.03(22.61, 129.15)	9.65(1.77, 52.53)	0.009
Decision making to utilize	My self	2	8	0.64(0.12, 3.35)	0.65(0.121, 3.54)	0.622
	Health care providers	16	41	1	1	
	We decide together with health provider	34	13	6.702(2.83, 15.86)	8.94(3.23, 24.78)	0.062
	My family	0	10	0	0	0.999
Intention to utilize	No	19	95	0.51(0.29, 0.88)	0.48(0.28, 0.85)	0.011
	Yes	78	197	1	1	

DISCUSSION

This study revealed that utilization of non-pharmacological methods of labor pain management among women gave birth was 20.8%. It is lower than study done in public provincial Hospital of Jan Boy in Poland that the utilization of non-pharmacological labor pain management method among study participants was 66.1% among mother gave birth [28]. This great difference might be due to difference of study subject in terms of educational status and also occupational status. This indicates that study subject in this study less educated and less employed compared to later study. This implies that those study subject who were better educated and better employment had better information access. Even study subject in this study might not consider non-pharmacological methods of labor pain management as pain management method.

This study showed that majority of study participants were utilized walking around (86.4%) followed by massage (84.0%), position (21.0%), breathing exercise technique (13.6%) and diversion therapy (like listening music, meizmur, Quran) (3.7%). This finding was supported by qualitative finding which revealed that key informants mentioned that they had experience of providing non-pharmacological methods of labor pain management like message, reassure, advising to be strong and as god was with her, ambulation, family support and verbal care like telling her story. Its inconsistency with study done in Abhay Maternity Hospital Saudi Arabia which showed movement and changes in position (66.0%), breathing exercise (82.5%), touch and massage (2.2%), bathing (2.0%), thermal regulation (0.8%), noise minimization (30.0%) and relaxation (35.0%)(8). This difference might be due differ in sociocultural which implies the this study utilized majorly massage as it might be practiced by traditional birth attendants and most of study subject might have this concept in their mind currently in this study area while the later utilized majorly breathing exercise as it might be practiced in that study area commonly. This study showed that on multiple variable logistic regression analysis maternal age, occupational status, knowledge level, request of labor pain management methods, parity, prvious history of pregnancy loss and intention to utilize were significantly associated with utilization of labor pain management methods. It was congruent with study done in Abhay Maternity Hospital, Saudi Arabia and in Leku primary hospital, southern Ethiopia by maternal age and congruent with study done in Leku primary hospital by history of pregnancy loss. And also congruent with

study done at King Abdul-Aziz Medical City in Riyadh Saudi Arabia by maternal request for utilizing labor pain management methods. But another variable; knowledge level and intention to utilize were no found to be significant in other study [8,29,30].

In this study, women who were in age group 25 to 29 had 2.19 times higher odd to utilize labor pain management methods compared to age group 20 to 24. This study also showed that study participants who were primiparous were negatively associated with utilization of labor pain management methods i.e. study participants who were primiparous were 51% less likely utilized labor pain management methods compared to multiparous. It was consistent with study done in Leku primary hospital southern Ethiopia which showed that positive association between maternal age and control of labor pain and inconsistency in respect to occupational status as in this study being farmer was negatively associated while in later study it was positively associated. it was also inline with this study by parity as the later study also showed negative association between primiparous and labor pain control [31-35].

This study finding revealed that women who had previous history of pregnant loss were 65% less likely utilized labor pain management methods than those who hadn't previous history of pregnant loss. This finding was supported by qualitative finding which showed; some key informants described some mother did not has willingness to use labor pain management methods even when they provided for them, they think as they are prolonging their labor. If labor prolonged, they might think to lose their child due to previous psychological trauma. This finding was also supported by study done in southern Ethiopia, Leku primary hospital which showed history of pregnancy loss were negatively associated with labor pain control [36-43].

Strength and Limitation of the study

Strength: Use of mixed quantitative and qualitative approach.

Limitation: The cross-sectional design of the study fails to assess women utilization experience behaviors over time, and although this approach is helpful to investigate associations between variables, it cannot attribute cause and effect. This study was done in one facility, even though Jimma medical center is the only referral hospital for southwestern part of the Ethiopia, it was better if it done at different facility. COVID 19 was also another limitation we overcome by using WHO recommendation i.e. using facemask, frequent hand washing and keeping 2-meter distance during data collection.

CONCLUSION

This study found that low utilization level of labor pain management methods among women gave birth at study area. Main reason for not utilizing labor pain management among study participants were; may harmful to the baby, care provider was not volunteer to offer, delay labor progress, led to instrumental/caesarian section delivery and against the will of god. Qualitative study among obstetric care provider also revealed that majority of key informants were described that unavailability of medication, scarcity of human resources, attitude of patients/women, attitudes of care provider, patient overflow, facility infrastructures problem, no involvement of anesthetist in labor pain management methods and absence of labor pain management guideline were identified barrier of utilizing labor pain management methods.

This study identified that maternal age, occupational status, previous history of pregnant loss, knowledge level study participants, maternal request of labor pain management methods, parity and intention to utilize were significantly associated with utilization of labor pain management methods.

RECOMMENDATION

Based on the above quantitative and qualitative finding the following recommendation was forwarded:

- Jimma University institute of health and Jimma medical center administration body should give emphasis on means availing labor pain management medication like injectable analgesia and initiate epidural analgesia utilization in labor pain management by avail all needed materials like epidural kit, catheter, medication and increasing number of trained anesthetists in this area.
- Jimma medical center administration body collaboration with FMOH and Non-government organization should solve facility infrastructure problem like scarcity of room for labor and delivery and privacy.
- Jimma University institute of health, Jimma medical center administration body, FMOH and concerned obstetric care provide should give attention on avail labor pain management guideline.
- Jimma medical center obstetric care provider should improve knowledge level of women on labor pain management methods by educating women on option of labor pain management during ANC follow up.
- Jimma University Institute of health, Jimma medical center administration body and anesthesia department should give emphasis on involvement of anesthetist in labor pain management.
- Researchers should be done further large-scale to come up with cause-effect relationship between the predictor variables and utilization of labor pain management methods.

ACKNOWLEDGEMENTS

Next to this we would like to thank Jimma University, school of Nursing and serbo Keble administration. Lastly we would like to thank my friends and Jimma libraries for their corporation improvising us necessary references and literatures.

AUTHOR'S CONTRIBUTION

Haso TK conceptualized the paper, searched literature, trained field researchers for data collection and wrote the results and

discussion sections. He also wrote the manuscript. Horeto A, Abdu S, and Neme A contributed to the design of the study and provided advice as regards methods, data interpretation and Horeto A also analyzed the data. He also critically Reviewed and edited the manuscript. All authors read and approved the final manuscript and there is no conflict of interest regarding to this article.

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