Attitude and Utilization of Non-Pharmacological Labor Pain Management among Obstetrics Care Providers in Harari Regional State Health Facilities, Ethiopia.

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Abstract

Background: In a woman's life, labor pain is the most severe pain that they have ever face. In Ethiopia, the provision of pain relief in labor is often neglected. Furthermore, evidence strongly urged that further research is needed on non-pharmacological labor pain management. Therefore, healthcare providers' attitudes and utilization of non-pharmacological labor pain management need to be assessed.

Method: A facility-based cross-sectional study was conducted from May 20 to June 10, 2021, in Harari regional state health facilities, Ethiopia. All obstetric caregivers in Harari regional state health facilities were included in the study. A structured questionnaire adapted from the previous studies was used to collect data. The data was entered into Epi-data version 3.1 statistical software. Statistical analysis was carried out by using SPSS for windows version 22. Multivariate linear regression analysis was employed to determine the association between independent variables and the outcome variable.

Result: The overall utilization of non-pharmacological labor pain relief methods was 59.3% [(95% CI (53.9,63.4)]. Three hundred five (65.5%) of the study participants had unfavorable attitudes. Females compared to males ($\beta = -0.420$; 95% CI: -0.667, -0.173), clinical experience ($\beta = -0.201$; 95% CI: -0.268, -0.134), knowledge sum score ($\beta = 0.227$; 95% CI: 0.18, 0.247), and attitude sum score ($\beta = 0.376$; 95% CI: 0.283, 0.47) were showed significantly association with utilization of non-pharmacological labor pain management.

Conclusion: The overall utilization of non-pharmacological labor pain relief methods was relatively good compared to other studies done in Ethiopia but all women's need for labor relief methods should not be ignored. In this study sex of the respondents, clinical experience, individual preference, attitude and knowledge were factors associated with utilization of non-pharmacological labor pain management. All stake holds need to work together to improve the attitude of health providers and to increase utilization of non-pharmacologic labor pain management.

Plain English Summary

Labor pain is an intense, demanding, overwhelming, and difficult pain the women ever face. Evidence suggests that there is an abundant number of women in Ethiopia failed to have access to pain relief methods. This poor utilization of pain relief methods associated with obstetrics care providers attitude and knowledge. We surveyed all obstetrics care providers from all health facilities of the Harari regional state on their attitude towards labor pain, their personal preferences, and utilization of non-pharmacologic labor pain management methods. Among 464 obstetrics providers, two third of the care providers had unfavorable attitude which denied the right of the women to access the pain relief methods. Nearly two-third of the study participants are utilized non-pharmacological labor pain management. The main barriers for patients receiving pain relief included high patient flow, the limited number of staff, lack of knowledge and skill. In this study sex of the respondents, clinical experience, individual preference, attitude and knowledge were factors associated with the utilization of non-

pharmacological labor pain management. All stakeholders need to work together to improve the attitude of health providers and to increase utilization of non-pharmacologic labor pain management.

Introduction

Labor is characterized by regular, painful uterine contractions that increase in frequency and intensity in three stages of labor. The extent to which a woman feels in control of pain during labor is an indicator of maternal emotional wellbeing in childbirth [1]. Labor pain management is generally categorized into two, pharmacologic and non-pharmacologic labor pain management. Nonpharmacological options include emotional support, directed breathing and relaxation techniques, massage, laboring in water, and the use of transcutaneous electrical nerve stimulation (TENS) [2].

In a woman's life, labor pain is the most severe pain that they have ever face. It is an intense, demanding, overwhelming, and difficult pain [3]. The pain a woman experiences during labor and birth is individualized and caused by several factors [4]. Mother with intense labor pain affected by emotional distress, depression, and anxiety. Fear and anxiety are significant influences on pain experiences which is one reason why mothers are accompanied by another person during childbirth. Psychosocial factors have been implicated in the pain experienced during childbirth, which can have both short and long-term consequences on the mother's health and her relationship with her infant [5]. Therefore, pain control during labor is needed to reduce such consequences.

Evidence indicated that most women signified that they were able to cope with labor pain through non-pharmacological management and they were highly satisfied with non-pharmacological management [6, 7]. Similar evidence also showed that utilization of non-pharmacologic labor pain management averts the adverse effect of pharmacologic pain relief methods [8]. In Africa, Health Care Providers (HCPs) had to lack knowledge about non-pharmacological pain management and, a lot of barriers are preventing them to utilize some of the known non-pharmacologic labor pain management [9, 10]. The most common barriers to utilize non-pharmacologic labor pain management were lack of time, regulatory issues, lack of knowledge, patient unwillingness, and strong beliefs in analgesia [6, 9].

In Ethiopia, the overall utilization of non-pharmacologic labor pain management was between 37.9% and 46.8% [11–13]. Inadequate knowledge, negative attitudes, lack of trained personnel, and absence of protocols were barriers to utilize pain relief methods [13, 14]. There were significant associations between respondents' educational level and rubbing of back/ massage, position change, cold/warm bath, relaxation, and social support [15].

Even though Ethiopia draft Ethiopian Emergency Obstetric and Newborn Care (EmONC) assessment standards to enhance appropriate management of labor pain and management of complications during labor and delivery [16]. There is no specific protocol that aids HCPs to update themselves and equip with the necessary knowledge and attitude.

The provision of pain relief in labor is often neglected. Most women in Ethiopia do not receive adequate pain relief. Healthcare providers (HCPs) have an important role in providing pain relief options during labor. Factors for poor management of labor pain are associated with health professional's attitude, knowledge, and qualification. In the major of health care providers, the pharmacological pain relief method is favored as the only method known to us. Lack of emotional support and excessive medical intervention for laboring women result in increased intensity of pain. Furthermore, evidence strongly urged that further research is needed on non-pharmacological labor pain management [17]. Therefore, healthcare providers' attitudes and utilization of non-pharmacological labor pain management need to be assessed.

Method And Material

Study Design, Study Setting, and Period

A facility-based cross-sectional study was conducted from May 20 to June 10, 2021, in Harari regional state health facilities, Ethiopia. The region is found 526 km far from Addis Ababa, the capital city of Ethiopia. The region is circled by Oromia regional state. The region is divided into nine woredas with three of them are rural and six are urban. The urban districts are subdivided into 19 kebeles (the lowest administrative division in the country), and the rural districts are subdivided into 17 peasant associations (which is equivalent to kebeles in urban cases). The total population (2021 projection based on the 2007 Census, CSA) of the region is 270,000 from which 136,000 are males and 134,000 are females (1). 59,487 total households [18]. There are two public hospitals, two private hospitals and 2 governmental hospitals, eight public health centers, and 20 health posts in the region. Hiwot Fana specialized university hospital is one of the referral hospitals in Ethiopia. It serves 5.2 million people in the catchment area.

Study Population

All obstetric care providers in Harari regional state health facilities during the study period were the study population. Since there were small numbers of source population in the study area, all obstetric caregivers available during the study period were included. Obstetrics care providers not available during data collection due to illness, annual leave, and left for training were excluded from the study.

Sample Size Determination and Sampling Procedure

The study was conducted at those health facilities having maternal services. These include two public hospitals (HFSUH, and Jugol hospital), one private hospital (Harar General hospital), two private clinics, and nine health centers of the Harari regional state. Since the number of the source population (OCGs) in all health facilities is too small, all obstetrics caregivers (464) were included in the study.

Data Collection Methods and Data Quality Assurance

A structured pre-tested self-administered questionnaire was prepared by adapting from different studies considering the local situation of the study area [12, 13, 19]. The questionnaire had four essential

components including providers' socio-demographic characteristics, knowledge, attitude, and utilization-related questions.

The data was collected by well-trained five professional Nurses and supervised by two MSC holding Midwives. The quality of the data was guaranteed by pretesting using the 5% of the respondents who are not eligible for the study before actual data collection. The completeness of the data was checked daily. Double data entry was done by two data clerks and consistency of entered data is cross-checked by comparing two separately entered data on Epi-Data.

Measurement

Utilization of non-pharmacological labor pain management methods: OCGs who were practicing greater than or equal to the mean value of utilization related questions [12, 13].

Obstetric caregivers: Midwifery, Nurses, Health Officers, and residents.

Knowledge of non-pharmacological labor pain management methods was measured using 15 items. The questions were answered on yes, no or I do not know responses. During analysis, the correct answer was coded with "1" and the incorrect, or I do not know coded with "0". Then sum score was calculated (range 0–15) and categorized. Adequate knowledge: OCGs who answered greater than or equal to the mean values of knowledge-related labor pain relief method questions. Those OCGs who answered ≥ 6.65 from total knowledge-related questions were considered as OCGs who had adequate knowledge about labor pain relief methods [12].

Inadequate knowledge: OCGs who answered less than the mean values of knowledge-related labor pain relief method questions. Those OCGs who answered < 6.649 from total knowledge-related questions were considered as OCGs who had inadequate knowledge about labor pain relief methods [12].

Favorable attitude: OCGs who answered greater than or equal to the mean value of attitude-related labor pain relief method questions. Those OCGs who answered ≥ 7.5 from total attitude-related questions were considered as OCGs who had favorable attitudes about labor pain relief methods [11].

Unfavorable attitude: OCGs who answered less than the mean value of attitude-related labor pain relief method questions. Those OCGs who answered < 7.5 from total attitude-related questions were considered as OCGs who had an unfavorable attitude about labor pain relief methods [11].

Statistical Analysis

The data was coded, cleaned, edited, and entered into Epi data statistical software version 3.1 and then exported to SPSS window version 22 for analysis. Descriptive statistical analysis such as simple frequency was used to describe the characteristics of study participants such as socio-demographic, level of knowledge, and attitude of obstetrics care providers. Then the information was presented using frequencies, tables, and figures.

Linear regression analysis was done to identify factors associated with the utilization of non-pharmacological labor pain management by treating the cumulative score of the utilization of non-pharmacological labor pain management as a continuous variable. The variables were selected using bivariate analysis and dropped from further inclusion in the multivariate model if their p-values were greater than 0.25. Finally, the multivariable linear regression model was fitted using a backward stepwise elimination method, and variables with a p-value less than 0.05 in the final model were considered as significant predictors of utilization of non-pharmacological labor pain management. Standardized β with 95% CI was used to measure the amount by which the dependent variable changes if we change the independent variable by one unit keeping the other independent variables constant. The goodness of fit was checked by Hosmer-Lemeshow statistic and omnibus tests. The multi co-linearity test was carried out to see the correlation between independent variables by using the standard error and collinearity statistics (variance inflation factors > 10 and standard error > 2 was considered as suggestive of the existence of multi co-linearity). In this study, P-value < 0.05 was considered to declare a result statistically significant

Ethical Considerations

Ethical clearance to conduct this study was obtained from Haramaya University, College of Health and Medical Sciences, Institutional Health Research Ethics Review Committee (HU-IHRERC). Official letters to make a study was also obtained from health facilities as needed. The health facilities were informed about the purpose of the study and the risk and benefits of the study. Informed, voluntary, written, and signed consent was obtained from the health facilities administrators and study participants before the data collection.

Result

Socio-demographic Characteristics

A total of 464 health care professionals participated in this study. Among them 200 (43.1%) were males and 264 (56.9%) were females which is a 0.76 to 1 male to female ratio. More than half 233(53%) of the study participants were Midwives. More than half 284 (61.2%) of obstetric care providers were BSC in their level of education (Table 1).

Table 1
Socio-demographic characteristics of obstetric care providers at
Harari regional state public health facilities, 2021 (n = 464)

Variables	Categories	Frequency	Percentage
Sex	Male	200	43.1
	Female	264	56.9
Age	15–24	60	12.9
	25–54	404	87.1
Religion	Orthodox	220	47.4
	Muslim	176	37.9
	Protestant	52	11.2
	Others	16	3.4
Profession	Midwife	233	53
	Nurse	198	42.67
	Obstetrician	20	4.3
	Health officers	13	2.8
Level of education	Diploma	142	30.6
	BSC	284	61.2
	MSC	38	8.2
Clinical experience	< 2years	88	19
	≥ 2years	376	81
*others = Catholic and Adventist			

Knowledge of Obstetric Care Providers Regarding Non-Pharmacologic Labor Pain Management and Individual related factors

Almost all 444 (95.7%) health care providers know about labor pain. Among them, 56 (12.6%) know only non-pharmacological pain relief methods while 328 (73.9%) of obstetric care providers know both pharmacological and non-pharmacological pain relief methods. Among non-pharmacological methods, 240 (62.5%) of obstetric care providers know about psychotherapy while 156 (40.6%) of OCPs know about massaging back of the mothers. More than half 252 (54.3%) of obstetric care providers know about the WHO pain ladder (Table 2).

Table 2
knowledge of OCP about non-pharmacological pain relief methods and individual
factors at Harari regional state public health facilities, 2021 (n = 384)

Variable	Categories	Frequency	Percentage
Psychotherapy	Yes	240	62.5
	No	144	37.5
Allow the mother to ambulate	Yes	100	26
	No	284	74
Massage the back	Yes	156	40.6
	No	228	59.4
Allow vertical positioning	Yes	132	34.4
	No	252	65.6
Show how to bear down	Yes	48	12.5
	No	336	87.5
Allow her choice	Yes	80	20.8
	No	304	79.2
Hot compress	Yes	32	8.3
	No	352	91.7
Music therapy	Yes	96	24.7
	No	292	75.3
Individual preference	Non-pharmacologic	136	29.3
	Pharmacologic	52	11.2
	Both	276	59.5
WHO pain ladder	Yes	252	54.3
	No	212	45.7
Pain expectation	Mild	36	7.8
	Moderate/sever	428	92.2
Training	Yes	296	63.8
	No	168	36.2

The mean score of knowledge questions is 6.65(SD = 2.95) with minimum and maximum scores of 0 and 15 respectively. Almost half 230 (49.6%) of the respondent have adequate knowledge.

The Attitude of Obstetric Care Providers regarding Labor Pain Management

Most 392 (84.5%) obstetric care providers believe that labor pain management methods can alleviate or help the mother to cope with labor pain. Three hundred twenty (69%) of obstetric care providers thinks that mother during labor should be managed and 344 (74.1%) of obstetric care providers believe that even though labor pain is natural, mothers should not face it. More than half 280 (60.3%) of OCPs believe that analgesics are necessary to manage labor pain. More than two-thirds (84.5%) of OCPs believe that they have the responsibility and obligation to manage labor pain.

The mean score of the attitude is 4.06 (SD = 1.4) with minimum and maximum scores of 6 and 12 respectively. Three hundred five (65.5%) of the study participants have unfavorable attitudes.

Utilization Of Non-Pharmacologic Labor Pain Management

From the total of 464 obstetric care providers, 364 (78.4%) of obstetric care providers were asked to provide pain relief for laboring mothers. Three hundred forty-four (74.1%) of OCPs would provide labor pain relief methods if they had resources. The main barriers for patients receiving pain relief included high patient flow 172 (54.4%), the limited number of staff 164 (51.9%), lack of knowledge and skill 104 (32.9%). One hundred twenty-eight (27.6%) of OCPs provide only non-pharmacological pain relief methods while 204 (56%) of obstetric care providers provide non-pharmacological pain relief methods in the combination with other pain relief options. The most commonly provided methods were psychotherapy 260 (78.3%), massage the back 228 (68.7%), and allow the mother to ambulate 154 (55.4%) (Table 3).

Table 3
Non-pharmacologic labor pain relief methods provided at Harari regional
state public health facilities, 2021 (n = 464).

Variable	Categories	Frequency	Percentage
Psychotherapy	Yes	260	78.3
	No	72	21.7
Allow the mother to ambulate	Yes	184	55.4
	No	148	44.6
Massage the back	Yes	228	68.7
	No	104	31.3
Allow vertical positioning	Yes	40	12
	No	292	88
Show how to bear down	Yes	40	12
	No	292	88
Allow her choice	Yes	20	6
	No	312	94
Hot compress	Yes	24	7.2
	No	308	92.8
Music therapy	Yes	56	16.9
	No	276	83.1

The mean score of utilization non-pharmacological labor pain management was 2.61(SD = 1.64) with minimum and maximum scores of 0 and 9 respectively. About 275 (59.3%) of the study participants are utilized non-pharmacological labor pain management.

Factors Associated with Utilization of Non-Pharmacological Labor Pain Managements

Variables like age, sex, clinical experience, caregiver preferences, level of education, pain expectation of caregiver, availability of protocols, level of knowledge, and attitude of the respondents towards non-pharmacologic labor pain management were associated with simple linear regression analysis.

In the final multiple linear regression model sex of the respondents, clinical experience, pain expectation, individual preference, attitude, and knowledge of non-pharmacological labor pain management were significantly associated with utilization of non-pharmacological labor pain management (p-value < 0.05). As the clinical experience increase by one year, the utilization of non-pharmacological labor pain

management score will increase by -0.201 if the effects of other variables keep constant ($\beta = -0.201$; 95% CI: -0.268, -0.134). Females compared to males ($\beta = -0.420$; 95% CI: -0.667, -0.173) and respondents having severe pain expectation ($\beta = -0.367$; 95% CI: -0.539, -0.116) showed significantly association with utilization of non-pharmacological labor pain management. For a unit increase in the knowledge score, the utilization of non-pharmacological labor pain management will increase by 0.227 if the effects of other factors keep constant ($\beta = 0.227$; 95% CI: 0.18, 0.247). Furthermore, if the score of attitudes increased by one unit, the utilization of non-pharmacological labor pain management will increase by 0.376 keeping other factors constant ($\beta = 0.376$; 95% CI: 0.283, 0.47) (Table 4).

Table 4

Multiple linear regression analysis of factors associated with utilization of non-pharmacological labor pain management methods among obstetric caregivers at Harari regional state public health facilities, 2021 (n = 464).

Variables	Unstandardized Coefficients		Standardized Coefficients	Sig.	95% CI, B
	B	Std. Error	Beta		
Sex (Female Vs Male)	-0.420	0.126	-0.127	0.001	-0.667, -0.173
Age in years	0.022	0.024	0.051	0.357	-0.025, 0.68
Level of education (diploma Vs BSc and above)	0.230	0.139	0.066	0.098	-0.043, 0.504
Clinical experience in years	-0.201	0.034	-0.299	0.001	-0.268, -0.134
Pain Expectation (Severe Vs Mild/Moderate)	-0.327	0.107	-0.120	0.002	-0.539, -0.116
Training (yes Vs no)	-0.216	0.133	-0.063	0.105	-0.477, 0.45
Individual preference (non-pharmacologic Vs pharmacologic)	0.415	0.091	0.175	0.001	0.237, 0.593
Knowledge of non-pharmacological methods (sum score)	0.227	0.024	0.409	0.001	0.18, 0.247
Attitude towards non-pharmacological methods (sum score)	0.376	0.048	0.318	0.001	0.283, 0.47

Discussion

This study assessed OCPs' attitude and utilization of non-pharmacological labor pain management methods among OCPs in Harari regional state health facilities. Additionally, factors that affect the utilization of non-pharmacological labor pain management methods were isolated.

The overall utilization of non-pharmacological labor pain relief methods was 59.3% [(95% CI (53.9,63.4))]. The finding is higher than studies done in general hospitals of Tigray 43.3% [20], East Gojjam zone, Amhara region 30.4 % [19], Amhara region, Ethiopia 40.1% and 46.8% [12, 13]. Meanwhile, this study was lower than the study conducted in Ethiopia which was 66% [21], This discrepancy might be due to the sample size difference, study period difference, the health facility setups because some of the setups could be well-equipped, the presence of skilled man powers (who took training may provide pain relief to laboring mothers).

In this study, three hundred five 65.5% [(95% CI (60.9, 69.8))] of the study participants have unfavorable attitudes. This is higher than studies done in Benishangul Gumuz Regional State 53% [22] and Gondar Ethiopia 58.04% [23]. This discrepancy may be due to socio-cultural differences among study participants and a higher sample size of the current study than studies done in Gondar [23] and Benishangul Gumuz Regional State [22].

In this study, being female was associated with the utilization of non-pharmacological labor pain management. The possible justification is that females face the pain as they go through the childbirth process and knows the severity of pain and the need for pain relief methods then which increases the utilization of non-pharmacological labor pain management.

In this study, OCPs' pain expectations and individual preferences were associated with the utilization of non-pharmacological labor pain management. The possible justification is that those OCPs expecting labor pain as severe would understand the need for pain relief methods and can utilize non-pharmacologic pain relief methods. Similarly, those OCPs preferring non-pharmacologic labor pain management would utilize it.

In this study, clinical experience was associated with the utilization of non-pharmacological labor pain management. Evidence showed that OCPs with clinical experience influence their attitudes about and intent to provide labor pain management then which increases the utilization of non-pharmacological labor pain management [24]. The possible justification is that those study participants serving for many years had sufficient knowledge and skill which in turn increase the utilization of non-pharmacologic labor pain management.

In this study, if the score of attitudes increased by one unit, the utilization of non-pharmacological labor pain management will increase by 0.376 keeping other factors constant. Evidence showed that the attitude of OCPs was significantly associated with the utilization of pain relief methods and it is recommended to improve the attitude of OCPs to scale up utilization of pain relief methods [14].

Knowledge of obstetrics care providers was another factor associated with the utilization of non-pharmacologic labor pain management. In this study, for a unit increase in the knowledge score, the utilization of non-pharmacological labor pain management will increase by 0.227 if the effects of other factors were kept constant. This could be explained as an increase in knowledge and awareness level will make the obstetrics care providers utilize the pain relief method.

The limitation of this study was it might not indicate a cause-effect relationship because the study design was cross-sectional. Since the study is institution-based and didn't incorporate women in labor, the results might lack generalization to the entire population in the catchment area.

Conclusion

The overall utilization of non-pharmacological labor pain relief methods was relatively good compared to other studies done in Ethiopia but all women's need for labor relief methods should not be ignored. The study identified that nearly three fourth of the respondents had unfavorable attitudes. In this study sex of the respondents, clinical experience, individual preference, attitude and knowledge were factors associated with the utilization of non-pharmacological labor pain management. All stake holds need to work together to improve the attitude of health providers and to increase utilization of non-pharmacologic labor pain management.

Abbreviations

AOR: Adjusted Odds Ration; EmONC: Emergency Obstetric and Newborn Care; LMIC: Low Mid Income Country; OCG: Obstetrics Care Givers; OCP: Obstetrics Care Providers; WHO: World Health Organization.

Declarations

Ethics Approval and Consent to Participate

Ethical clearance was taken from the Institutional Health Research Ethics Review Committee (IHRERC) of the College of Health and Medical Sciences of Haramaya University. In addition, permission to proceed was obtained from all public hospitals. And also, informed voluntary written and signed consent was obtained from each participant.

Consent for Publication

Not applicable.

Availability of Data and Materials

All relevant data are included in this study. However, additional data will be available from the corresponding author on reasonable request.

Competing Interests

The authors declare that there is no competing interest in this work.

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The funder (Haramaya University) has no role in the design of the study, collection, analysis, and interpretation of data, and in writing the manuscript.

Author Contributions

Addis Eyeberu conceived the idea and had major roles in the data review, drafting, and writing the result. All co-authors contributed to data analysis, drafting, and manuscript preparation. Finally, all authors read and approved the final version of the manuscript to be published and agreed on all aspects of this work.

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