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**KNOWLEDGE, ATTITUDE, AND HEALTH SEEKING ACTION OF PREGNANT
WOMEN ABOUT OBSTETRIC DANGER SIGNS AND ASSOCIATED FACTORS AT
ANE DIMA HEALTH CENTER, BURAYU, OROMIA REGION, ETHIOPIA.**

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TITLE

KNOWLEDGE, ATTITUDE, AND HEALTH-SEEKING ACTION OF PREGNANT WOMEN ABOUT OBSTETRIC DANGER SIGNS AND ASSOCIATED FACTORS AT ANE DIMA HEALTH CENTER, BURAYU, OROMIA REGION, ETHIOPIA

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Abstract

Introduction The global maternal mortality rate in 2020 was 152/100000 live births from which complications of pregnancy and delivery account majority of the cases(1).In Africa especially in Sub-Saharan Region with of the figure is 546 maternal deaths in 100,000 live births(1).In Ethiopia the maternal mortality was very high,676 mothers died per 100,000 live births in 2011 currently declining to 401/100,00 live births in 2017.

Globally more than two third of the maternal deaths are caused by complications related with pregnancy(2). Complications related with obstetrics account for half of the maternal mortality rates in Ethiopia(3).This obstetric complications can be minimized by recognizing obstetric danger signs and taking appropriate measures and cares in institutions(4).

Ane Dima health center is one of the 16 catchment health centers of SPHMMC and currently it is serving the populations of Burayu town including emergency obstetric service by receiving referrals from Burayu,Gefersa Guje and Hacialuu Hundessa health centers. From the catchment health centers of SPHMMC, most obstetric complications are from referrals to this area and this study tried to identify the root cause of the problem for a better maternal care.

Objective - To assess the level of knowledge,attitude and health seeking actions about obstetric danger signs and associated factors among women attending antenatal care at Ane Dima H.C and to use it as the predictor for early identification and prevention of obstetric complications.

Methods-A cross sectional study was conducted among 409 pregnant mothers attending ANC care at Ane Dima H.C from April 1/2023 to June 30/2023.Every four mothers from their ANC care registration was selected by systematic random sampling for interview after identifying the first mother by random sampling method from the mothers who came in the first day of the study period. The data was sorted, organized and entered to SPSS version 23 for analysis.

Results-The level of knowledge in this study was 50%. The level of good attitude in this study was 91% and 88.3% of them had good health-seeking practices. Vaginal bleeding was the most frequently mentioned obstetric danger sign 64.1% and 61.2% in the antepartum, and intrapartum periods respectively, and foul smelly vaginal discharge in the post-partum period 51.2%.

Conclusion

This study showed that the level of knowledge about obstetric danger signs among pregnant mothers was low and more emphasis should be given to the quality of antenatal care counseling to improve the quality of care towards women in particular and maternal mortality at large.

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Abbreviations

ANC- Antenatal care

H.C-Health Center

IRB-institute of review board

JHPIEGO-Johns Hopkins program for international education in Gynecology and Obstetrics

Px-pregnancy

SPHMMC-Saint Paul's Hospital Millennium Medical College

SPSS-statistical software for social science

Tx-Trimester

G/A-gestational age

SD-standard deviation

COR-crudes odds ratio

AOR-adjusted odds ratio

Conflicts of Interest

There are no conflicts of interest.

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1. Introduction

1.1 Background

Maternal mortality is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes(5). The global maternal mortality rate in 2020 was 152/100000 live births from which complications of pregnancy and delivery account majority of the cases(1). Most of this maternal mortality occurs in Africa especially in Sub-Saharan region which reaches to the level of 546 maternal deaths in 100,000 live births(1).

In Ethiopia the maternal mortality was very high,676 mothers die per 100,000 live births in 2011 currently declining to 401/100,00 live births in 2017, the commonest causes being obstetric hemorrhage, obstructed labor followed by sepsis ,preeclampsia, eclampsia and unsafe abortion occurring during pregnancy, delivery or in the post-partum period(3)(6).

1.2 Statement of the problem

Obstetric danger signs are manifestations a women experiences during pregnancy, labor and post-partum period which usually are early markers for maternal and neonatal complication if they are not managed appropriately(3).Globally more than two thirds of the maternal deaths are caused by complications related with pregnancy(2). Complications related with obstetric danger signs accounts for half of the maternal mortality rates in Ethiopia(3).This obstetric complications can be minimized by recognizing obstetric danger signs and taking appropriate measures and care in institutions(4).

Vaginal bleeding, swollen hands/face and blurred vision are the key danger signs during pregnancy and vaginal bleeding, prolonged labor (>12 h), convulsions and retained placenta are the key danger signs during labor and delivery process. Whereas, vaginal bleeding, foul-smelling vaginal discharge and high fever are the key danger signs during the postpartum period(4).

Lack of awareness about obstetric danger signs contributes to delays in seeking and receiving skilled care(7).Therefore, women's knowledge of obstetric danger signs during antenatal, labor and post natal period facilitates her ability to decide and seek a better care and safe labor and delivery process. It is also the first step for planning an appropriate management(4).

Although knowledge of pregnant mother's about obstetric danger signs is important in averting obstetric complications, knowledge only is not enough. Attitude of the mother about the problems and her health seeking behaviors after identifying the danger signs has also paramount importance(7).

Although there are published studies which are done on the knowledge of danger signs of pregnancy in different parts of the world, there is no much study done about the attitude and health seeking behaviors of pregnant mothers especially in our country. Knowing the attitude, health seeking behavior and knowledge of danger signs of pregnancy by pregnant mothers will help us to know and measure the quality of antenatal care service. The attitude and health seeking behaviors are equally important to design appropriate health management plan and this study provides both insights in the study area. Attitude is a person's mental tendency, which affects the way he thinks or feels for someone or something, whereas, behavior is the actions, moves or function of an individual or group towards something or someone. Behavior is the reflection of one's attitude towards someone or something.

1.3 Significance of the study

Women's awareness about obstetric danger signs has substantial importance for improving maternal and child health. Therefore empowering women to understand obstetric danger signs and their complications is important to reduce maternal and neonatal mortality in our country. To achieve this, knowing the knowledge of obstetric danger signs, their attitude and health seeking behavior after facing obstetric danger signs will help us to know the magnitude of the problem and to implement an improvement plan. So this study tried to assess the magnitude of the problem in the study area so that it can be a baseline assessment tool.

2. Literature review

In cross sectional descriptive study of 1624 young married women in northern Nigeria about obstetric danger signs, the level of knowledge was strongly associated with perceptions of the need for antenatal care and delivery in a health facility(8).

In a community based, cross sectional survey conducted in primary health care centers in Riyadh, Saudi Arabia among 1397 women 21.1% of participants knew swollen hands and face during pregnancy,23.1% of them knew about prolonged labor(>12hr) during labor and 26.3% of them reported foul smelly vaginal discharge during post-partum(9).

A community based cross sectional study was conducted in 485 women in Tsegede district and vaginal bleeding was the most commonly mentioned danger sign of pregnancy (49.1%) and child birth (52.8%).Two hundred eighty five (58.8%) and 299 (61.6%) of respondents mentioned at least two danger signs of pregnancy and childbirth respectively. One hundred seventy (35.1%) and 154 (31.8%) of respondents didn't know any danger signs of pregnancy and childbirth respectively. Educational status of the mother, place of delivery and having functional radio were found to be independent predictors of knowledge of women about the danger signs of pregnancy and childbirth(10)

In a community based cross sectional study conducted in Erer district, Somali region among 666 pregnant women urban residence, being pregnant more than five, antenatal care utilization are associated with being knowledgeable about obstetric danger signs. From all the mothers interviewed about only 15.5% of them were found to be knowledgeable about obstetric danger signs in all time periods (pregnancy, child birth and post-partum)(11).

In a community based cross sectional study in Angolela district, northern Ethiopia from 563 pregnant women 56.1%,58.8% and 3.5% of the participants were knowledgeable about obstetric danger signs during pregnancy, child birth and post-partum respectively, the overall knowledge level being 37.5%.Attending formal education, urban residence, time taken <20 min to reach health facility,>2 history of pregnancies and receiving health education are found to be positively associated with knowledge of obstetric danger signs(12).

There was a cross sectional study done about knowledge of obstetric danger signs among pregnant women attending antenatal care in Bhutan referral hospital (422 mothers), Thimphu. Knowledge was tested using 13 multiple choice questions about danger signs. Those who answered $\geq 80\%$ has good knowledge, 60-79% has satisfactory knowledge and $< 60\%$ has poor knowledge. In this study 4.7% of them had good knowledge, 58.1% of them had satisfactory knowledge and 37.2% of them had poor knowledge(13).

In a community based study in Wolayta-Sodo town from 740 pregnant mothers 16.8% of them were knowledgeable about obstetric danger signs. Maternal age, average monthly income, maternal occupation, parity and gravidity markedly related with knowledge of obstetric danger signs(14)

Knowledge about obstetric danger signs in a hospital based cross sectional study was conducted on 410 postnatal mothers at Felege Hiwot Referral Hospital, Bahir Dar from June to September 2015 was 58%(3).

In a community-based cross sectional study done at Nekemte town from October 1 to November 30/2017 among 621 postnatal women, those who had good knowledge about obstetric danger signs, 98.2% of them had good practice seeking health facilities. The major reason mentioned by the respondents for not seeking health facility was poor knowledge of obstetric danger signs 92.3% followed by distance away from health facility, 23.1% and lack of transportation and lack of money 15.4%. The majority, 96.6% of the study respondents were agreed with the importance of knowing obstetric danger signs. The majority of the respondents, 96.2% agreed that obstetric danger sign complication is preventable. And 16.9% agreed that mothers who develop obstetric danger signs should seek help from traditional birth attendants(15).

3. Objectives

3.1 General

- ✓ To assess the level of knowledge, attitude and health seeking action about obstetric danger signs and associated factors among women attending antenatal care at Ane Dima H.C.

3.2 Specific

- ✓ To determine factors associated with level of knowledge about obstetric danger signs among women attending antenatal care at Ane Dima H.C.
- ✓ To assess the level of knowledge about obstetric danger sign in the antenatal, intra partum and post natal period among pregnant women attending antenatal care at Ane Dima H.C.
- ✓ To assess the attitude and health seeking behavior of pregnant mothers and associated factors attending ANC at Ane Dima H.C.

4. Methodology

4.1 Study setting and period

Ane Dima health center is one of the catchment health centers to SPHMMC. The health center is found in Burayu town, Oromia region which is found around 15 km west from SPHMMC on the road way to Nekemte town. The health center gives antenatal care service to around 400 pregnant mothers every month and it is one of the 16 catchment health centers to SPHMMC(16). It recently started giving cesarean section service since May/2021 in collaboration with Oromia Health Biro and St. Paul's hospital GYNOBS department and approximately 50-60 cesarean deliveries are done every month. This study, therefore, mainly targets pregnant mothers having antenatal care at this health centers. The study was conducted at Ane Dima health centers from April 1/2023 to June 30/2023 G.C.

4.2 Study design

A health institution based cross sectional study was conducted at Ane Dima health center, Burayu, Oromia Region, Ethiopia.

4.3 population

4.3.1 Study population

The study population of this study are pregnant mothers who have antenatal booking at Ane Dima Health Center, Burayu at the specified time period.

4.3.2 Study subjects

All pregnant mothers from the study population selected for this study by systematic random sampling.

4.4 Eligibility criteria

4.4.1 Inclusion criteria

All pregnant mothers who have antenatal visit in the study period and gave consent.

4.4.2 Exclusion criteria

Pregnant women who did not give consent in the study period.

4.5 Sample size and sampling technique

4.5.1 Sample size determination

The sample size will be calculated using the formula (z^2pq/r^2) for estimating single population proportion by considering a 59% of expected prevalence of good knowledge of mothers on obstetric danger signs(3), a 95% level of confidence, a 5% margin of error, and a 10% non-response rate. Thus, the final sample size of 409 women participated in the study.

$$\text{Sample size} = z^2pq/r^2 \quad z=1.96 \quad p=0.59 \quad q=0.41 \quad r=.05$$

$$=(1.96)^2 \times 0.59 \times 0.41 / (0.05)^2 =372$$

$$\text{Adding 10\% non-response rate} = 37 + 372 = 409 \text{ mothers}$$

$$\text{Total sample size} = 409 \text{ mothers}$$

4.5.2 Sampling technique and procedure

Mothers were selected from the antenatal clinic, using the systematic sampling technique based on their daily sequence of antenatal care registration, after identifying an initial starting mother by using a random number.

Random number was taken from clients seen on April 1/2023(the first day of the study period) and every 4 mother according to their ANC booking were selected. Those mothers already interviewed and appeared for ANC care for the second time within the study period were excluded and the client next to them were interviewed.

4.6 study variables

4.6.1 Dependent variables

- Knowledge of obstetric danger signs during pregnancy, delivery and postpartum.
- Attitude and health seeking actions of pregnant women towards obstetric danger signs.

4.6.2 Independent variables

- Socio demographic and obstetric characteristics of pregnant women.

Sociodemographic characteristics

- Age,Religion,Marital Status,Occupation,Educational Status, household income, distance from health facility, availability of transport.

Obstetric characteristics

- Gravidity, Parity, number of ANC visits, trimester at first visit, trimester during interview.

4.7 Data collection procedures

Data was collected with a face to face interview using a pre tested structured questionnaire to get the knowledge of obstetric danger signs, socio-demographic characteristics and obstetric characteristics of the participants. The questionnaires were adapted from the Maternal Neonatal Program of JHPIEGO. The questionnaires were prepared in English and translated to Amharic and Afaan Oromo and then re-translated to English for consistency. Three midwives collected the data while another senior midwife supervised them. A pre-test was conducted on 5% (20) of the sample size out of the study area.

4.8 Data quality control

An orientation was given to the data collectors about the objectives, confidentiality and technique of data collection. The investigator regularly monitored and checked data completeness and clarity.

4.9 Data processing and analysis

The data gathered through the structured questionnaire was compiled, cleaned coded and entered to SPSS VERSION 23 for analysis.

4.10 Operational definition

Pregnancy danger signs

Danger signs during pregnancy refers to alerts of obstetric-related complications that occur commonly in the middle and late pregnancy(17).

In accordance with JHPIEGO definitions, knowledge was categorized into two categories, good and poor knowledge. Good knowledge means if the mother could have mentioned at least nine key obstetric danger signs during the three periods (pregnancy, delivery, and postpartum); otherwise, she is considered as having poor knowledge, or answers 80% of the danger signs in the antepartum, intrapartum or postpartum periods respectively.

Health seeking action is a health action a women will take after knowing a danger sign during pregnancy, delivery and postpartum. This are doing nothing, consulting a friend, self-treatment, visiting traditional healer or visiting a health facility. It is appropriate if she visits a health facility and inappropriate in the rest of the actions(7).

Attitude is a settled way of thinking or feeling about something. Attitude towards Obstetric danger signs tries to identify a women's response to the importance of knowing obstetric danger signs. A women has good attitude towards obstetric danger signs if she believes that knowing obstetric danger signs are important and complications related with it are preventable and she has bad attitude if she believes that pregnant women should seek help from traditional birth attendant when they develop danger signs.

4.11 Ethical consideration

The proposal was submitted to the Ethical Review Committee of College of Medicine and Health sciences of SPHMMC. After it was approved by the IRB ,a support letter was taken to Ane Dima H.C .Verbal consents was obtained from the study subjects after explaining the study objectives and procedures and their right to refuse not to participate in the study any time they want was assured. For this purpose, a one page consent letter was attached to the cover page of each questionnaire stating about the general objective of the study and issues of confidentiality which were discussed by the data collectors before proceeding with the interview.

5. Results

5.1 Socio-demographic factors

There were a total of 409 pregnant women eligible for the study and hence study participants.

The majority of the respondents (89.3%) range from 21 to 30 years of age. From the religion of the respondents, protestant accounts for 38% of the respondents followed by Muslim which is 34.9%. 94.9% of them are married and 48.5% of them mentioned housewife as their occupation.

Table 1 Socio-demographic characteristics of study participants

Variable	Category	Frequency	Percent
Age	<20 yrs	12	2.9%
	21-30	366	89.3%
	31-35	28	6.8%
	>35	3	7%
Religion	Muslim	143	34.9%
	Orthodox	97	23.7%
	Protestant	156	38%
	Waqefata	13	3.2%
Marital status	Married	389	94.9%
	Divorced	10	2.4%
	Widowed	3	0.7%

	Unmarried	7	1.7%
Occupation	Housewife	199	48.5%
	Gov't Employee	84	20.5%
	Merchant	68	16.6%
	Daily laborer	50	12.2%
	Other	8	2%
Educational status	Illiterate	25	6.1%
	Read and write	34	8.3%
	Primary	101	24.6%
	Secondary	107	26.1%
	College and above	142	34.6%
Household income	<4000	183	44.6%
	4000-7000	118	28.8%
	>7000	108	26.4%
Distance from H.C	Near(<30 min)	253	61.7%
	Far (>30 min)	156	38%
Availability of transport	Yes	386	94.1%
	No	23	5.6%

5.2 Obstetric factors

From the total 409 study participants majority (29.3%) are G3P2 with a mean of 2.69 with a (SD of 1.232) and 1.68 with a (SD of 1.241) respectively. 18.5% of them had one ANC visit followed by 18.3% who had four ANC visits with mean of 3.56 and (SD of 1.859).47.3% of the women started ANC follow up after 14 weeks of GA and 64.6% of the respondents were in their last trimesters of pregnancy during the interview.

Table 2 Obstetric characteristics of study participants

Variable	Category	Frequency	Percent
Primi gravid	I	74	18%
Multi gravid	II	119	29%
	III	120	29.3%
	IV	57	13.9%
Grand multi gravid	V	33	8%
	VI	6	1.5%
Nuli parous	0	78	19%
Multiparous	I	115	28%
	II	120	29.3%
	III	57	13.9%
	IV	33	8%
Grand multiparous	V	6	1.5%

Number of ANC visit	I	76	18.5%
	II	61	14.9%
	III	63	15.4%
	IV	75	18.3%
	V	63	15.4%
	VI	45	11%
	VII	23	5.6%
	VIII	3	7%
G/A at 1 st ANC visit	<10 WEEKS	75	18.3%
	10-14 WEEKS	140	34.1%
	>14 WEEKS	194	47.3%
TX of PX currently	1ST	42	10.2%
	2ND	102	24.9%
	3RD	265	64.6%

5.3 knowledge, attitude, and health-seeking action of pregnant women about obstetric danger signs

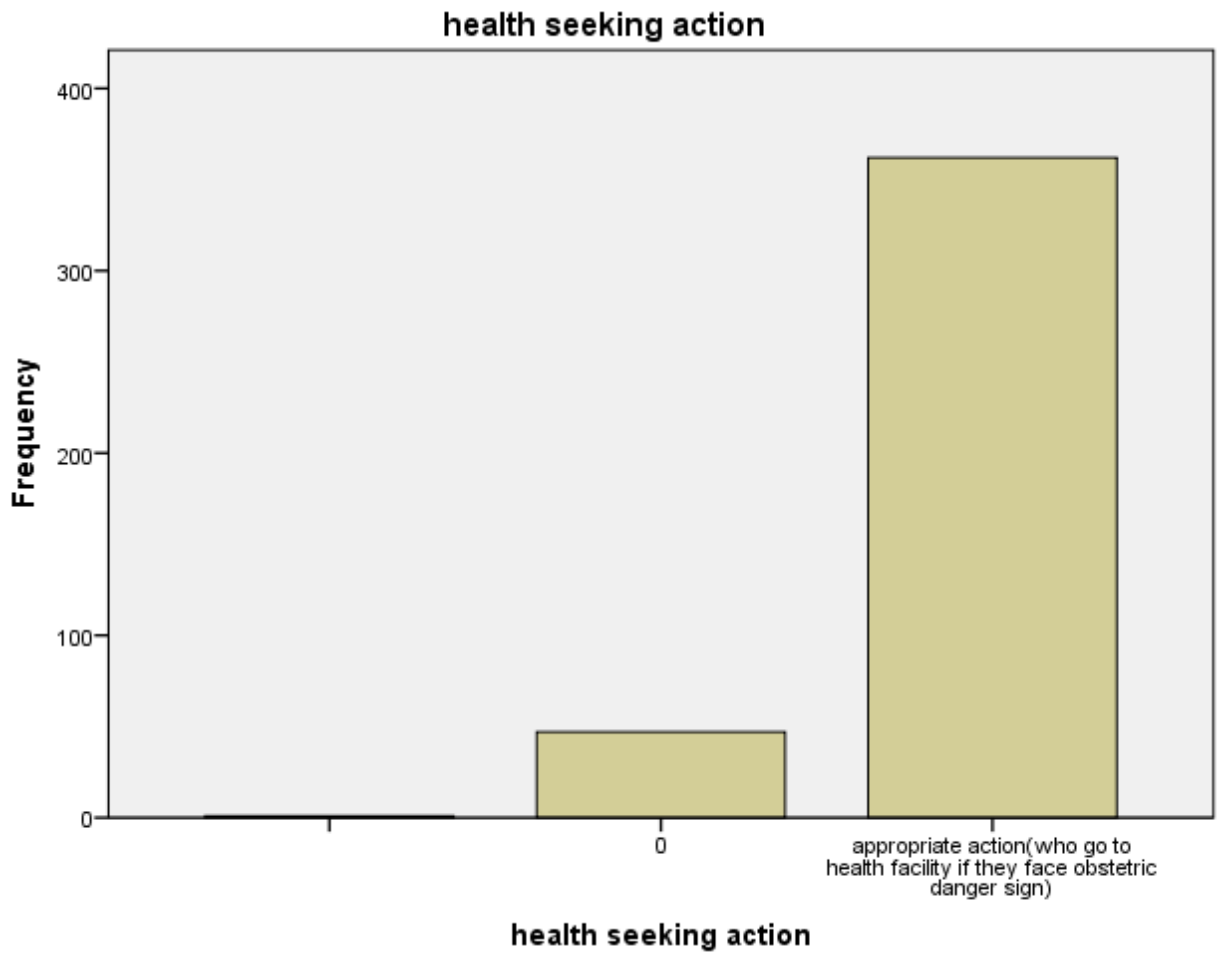
The level of knowledge was assessed using 15 questionnaires and a woman is labeled as having good knowledge if she listed 9 or above obstetric danger signs (in the antepartum ,intrapartum or postpartum period). Based on this, 205 of the respondents (50%) had good knowledge and 204(49.8%) had poor knowledge. Respondents had good knowledge of the antepartum (57.6%) followed by post-partum(45.9%) and then intrapartum which is 38.3%.

8.8% of the study participants had a bad attitude (i.e. believe visiting TBA is important and 91% of them have a good attitude towards knowing obstetric danger signs.

Of the total study participants, 88.3 % had good health-seeking actions when they face obstetric danger signs (i.e. visit a health facility) and 11.5% of them had inappropriate health-seeking actions.

Table 3 Knowledge, attitude, and health-seeking action of pregnant women about obstetric danger sign

Variable	Category	Frequency	Percent
Knowledge	Good knowledge	205	50%
	Poor knowledge	204	49.8%
Attitude	Bad attitude	36	8.8%
	Good attitude	373	91%
Health seeking action	Appropriate	362	88.3%
	Inappropriate	47	11.5%



Bar graph 1

Table 4 Knowledge in antepartum, intrapartum partum, and postpartum

Variable	Category	Frequency	Percent
Knowledge	Good antepartum	236	57.6%
	Poor antepartum	173	42.2%
	Good intrapartum	157	38.3%
	Poor intrapartum	252	61.5%
	Good postpartum	188	45.9%
	Poor postpartum	221	53.9%

5.4 Effect of socio-demographic Characteristics on Knowledge of Obstetric Danger Sign

Multivariate binary logistic regression analysis was done on the effect of socio-demographic characteristics on the level of knowledge among 409 study participants. Women coming from far distance from H.C(took more than 30 minute to reach to H.C affects their knowledge level 1.657 times than those coming from a near distance (AOR=1.657, with p=0.033 (at 95% confidence level 1.041-2.637)).

Table 5 Multivariate logistic regression analysis: Effect of socio-demographic characteristics on knowledge of obstetric danger signs

Variable	P value	Adjusted odds ratio(AOR)	95% confidence interval	
			Lower	Upper
Age	0.700	1.145	0.574	2.287
Religion	0.498			
Occupation	0.351	.450-.781	.033	8.007
Educational status	0.744	0.768-1.364	.387	4.242
Household income	0.298	1.178	.865	1.605
A far distance from H.C	0.033	1.657	1.041	2.637
No available transport	0.082	3.293	.861	12.592

5.5 Effect of obstetric characteristics on the level of knowledge

Both bivariate and multivariate binary logistic regression analysis was done among the study participants. In the bivariate analysis gravidity and parity affects the level of knowledge in the odds of 1.286 and 1.272(COR=1.286 &1.272 with a p-value of .002 and .003 at 95 confidence interval (1.093-1.513, 1.083-1.494) respectively. The number of ANC visits and current trimester of pregnancy are strongly associated with the level of knowledge with a crudes odds ratio of 1.396 and 1.676 with a P value of .000 and .001 at 95% CI (1.245-1.565,1.240-2.264) respectively.

Multivariate analysis showed gravidity and number of ANC visits are strongly associated with the level of knowledge about obstetric danger signs with (AOR=12.629, p value=.033, 95% CI (1.229-129.756) ,AOR=1.510, p value=.000 at 95% confidence interval (1.293-1.764) respectively.

Variable	P value	Crudes odds ratio (COR)	95 % confidence level	
			Lower	Upper
Gravidity	0.002	1.286	1.093	1.513
Parity	0.003	1.272	1.083	1.494
No ANC visit	.000	1.396	1.245	1.565
GA at first visit	.860	1.023	.792	1.322
Current TX of Px	0.001	1.676	1.240	2.264

Table 6 Bivariate binary logistic regression analysis: Effect of obstetric characteristics on knowledge of obstetric danger signs

**Table 7 Multivariate
binary logistic
regression: Effect of
obstetric
characteristics on
knowledge of
obstetric danger signs**

Variable	P value	Adjusted odds ratio (AOR)	95% confidence level	
			Lower	Upper
Gravidity	0.033	12.629	1.229	129.756
Parity	0.071	.120	0.012	1.199
Number of ANC visit	0.000	1.510	1.293	1.764
Current Tx of Px	.993	1.002	.656	1.531
GA at the first ANC visit	.472	.899	.672	1.202

5.6 Effect of socio-demographic characteristics on the health-seeking action of pregnant Women after facing obstetric danger sign

In a multivariate binary logistic regression analysis about the effect of socio-demographic characteristics on health-seeking action, **age, household income, and availability of transport** were strongly associated with (AOR=3.672, P value=.037, 95% CI (1.081-12.472); AOR=1.821, p value=.042, 95%CI (1.023-3.241); AOR=4.385, p value=.031, 95% CI (1.146-16.782) respectively.

Table 8 Multivariate binary logistic regression analysis: Effect of socio-demographic characteristics on the health-seeking action of pregnant women after facing obstetric danger sign

Variable	P value	Adjusted Odds ratio(AOR)	95% Confidence level	
			Lower	Upper
Age	0.037	3.672	1.081	12.472
Religion	0.120	.000		
Marital status	.141	.000		
Occupation	.960			
Educational status	.118			
Household income	.042	1.821	1.023	3.241
Distance from H.C	.901	1.055	.453	2.460
Availability of transport	.031	4.385	1.146	16.782

5.7 Effect of obstetric characteristics on health-seeking action of pregnant Women after facing obstetric danger signs

In a multivariate binary logistic regression about the effect of obstetric factors on health-seeking action both the number of ANC visits and GA at 1st ANC visit were significantly associated with the health-seeking actions with AOR=1.489, P value=.002, CI (1.164-1.904); AOR=.539, P value=.015 CI (0.327-0.888) at 95% confidence level) respectively.

.

Table 9 Multivariate binary logistic regression analyses: Effect of obstetric characteristics on health-seeking action of pregnant women after facing obstetric danger signs

Variable	P value	Adjusted odds ratio(AOR)	95% confidence level	
			Lower	Upper
Gravidity	.535	2.113	.198	22.503
Parity	.946	.922	.090	9.489
No ANC visit	.002	1.489	1.164	1.904
G/A at 1 st ANC visit	.015	.539	.327	.888
Current Tx OF Px	.491	.799	.422	1.513

Table 10 Multivariate binary logistic regression analysis: Effect of socio-demographic characteristics on the attitude of pregnant mothers towards obstetric danger signs

Variable	P value	Adjusted odds ratio (AOR)	95% confidence level	
			Lower	Upper
Age	.127	3.147	.722	13.718
Religion	.728	.000		
Marital status	.852			
Occupation	.378			
Educational status	.996			
Household income	.039	2.014	1.035	3.916
Distance from health center	.829	.909	.381	2.169
Availability of transport	.173	2.593	.659	10.202

House hold income of the family affected women's attitude with AOR=2.014 times with p value of .039 at 95% CI (1,035-3.916).

Variable	P value	Adjusted Odds ratio (AOR)	95% confidence level	
Gravidity	.999			
Parity	.999			
No ANC visit	.144	1.204		
GA at 1 st ANC visit	.994	1.274		
Current TX of PX	.999	1.002		

**Table 11 Multivariate
binary logistic regression:
Effect of obstetric
characteristics on the
attitude of pregnant women
towards obstetric danger
sign**

Table 11 Descriptive statistics of obstetric danger signs in ante partum, intra partum, and postpartum

Danger sign	Antepartum		Intrapartum		Postpartum	
	Yes	No	Yes	No	Yes	No
Vaginal bleeding	64.1%	35.6%	61.2%	37.8%	44.1%	55.6%
Leakage of liquor	60.1%	39.8%				
Severe headache	60%	39.8%				
Blurring of vision	48.8%	51%				
Excessive vomiting	52.2%	47.6%				
Swelling of hand and face	36.8%	62.9%				
Decreased fetal movement	54.1%	45.6%				
Prolonged labor			46.6%	53.2%		

onvulsion			43.2%	56.6%		
Retained placenta			41.2%	58.5%		
Loss of consciousness					44.1%	55.6%
Fever					49.8%	50%
Foul smelly vaginal discharge					51.2%	48.5%

6. Discussion

From multiple studies on the knowledge and attitudes of pregnant mothers about obstetric danger signs done in this country, vaginal bleeding was the most frequently mentioned obstetric danger sign (10,11,12,14). The level of knowledge was 58% in Bahir Dar at Felege Hiwot Hospital(3).

In a study in Nekemte, 96.6% of the respondents had a good attitude towards obstetric danger signs and 98.2% of them had good health-seeking activity (15). Maternal age, average monthly income, maternal occupation, parity, and gravidity were markedly related to the level of knowledge.

In this study, vaginal bleeding was the most frequently mentioned obstetric danger sign 64.1%, 61.2% in the antepartum, and intrapartum periods respectively, and foul smelly vaginal discharge in the post-partum period followed by leakage of liquor (60.1%), prolonged labor (46.6%) and fever (49.8%) in the antepartum, intrapartum and postpartum period respectively. These results of the study are consistent with the findings of the study mentioned above(Bahirdar,Nekemete(3,15)).

The level of good knowledge in this study is 50% which is near similar with the study done in Bahir Dar which was 58%. The level of good attitude in this study is 91% and 88.3% of them had good health-seeking practices which is quite near consistent with the study done in Nekemte which was 96.6% and 91.3% respectively.

A far distance from H.C (P=.033, AOR=1.657), gravidity (P=.033, AOR=12.629), and number of ANC visits (P=.000, AOR=1.510) were significantly related to the level of knowledge about obstetric danger signs. Those mothers coming from far distance from the health center(took more than 30 min to reach to the H,C) were 1.657 times more knowledgeable than those coming from near distance ,this may be because those coming from a far distance valued the counseling and health education more (because it cost them more time and money to reach to H.C) than those who came from near distance because those coming from near distance might think it is easy for them to access to those services in relation to transportation and time they spent to reach out to the health center easily .

Mothers who were multi gravid and having more antenatal visit had 12.629 and 1.510 times more knowledgeable than their counter parts respectively ,because having experience in the symptoms of pregnancy previously and getting access to the antenatal counseling with frequent follow up visits might contribute to their knowledge about obstetric danger signs. In this study unlike the previous studies, maternal age and income level are not related may be due to the difference in the study setting and socio economic situations of the study participants.

This study unlike the previous studies tried to look at factors affecting the attitude and health-seeking action of pregnant women and age ($p=.037$, AOR=3.672), household income ($P=.042$, AOR=1.821), and availability of transport ($P=.031$, AOR=4.385) are strongly associated. Mothers with advanced age, better house hold income and easily accessed transport had 3.672, 1.821 and 4.385 times better in their health seeking action (I.e to visit health care when they face obstetric danger sign) than those whose age is young, less house hold income and had not accessed easy transport facility to visit health facility respectively.

7. Study limitation

The limitation of this study was that it was a cross-sectional study and it didn't look at and compare the effect of interventions like health education. It requires respondents to remember information retrospectively and might predispose for recall bias. There were no much literatures about the attitude and health seeking practice supporting this study.

8. Conclusion and recommendation

This study shows the level of knowledge about obstetric danger signs among pregnant women is low ,which implies that the majority of mothers who lack awareness are likely to delay in deciding to seek health care. Therefore, both healthcare providers and institutions should work hard to improve strategies including the provision of targeted health education or provide information, education, and communication to pregnant mothers to increase their awareness and thus enable early recognition of serious health problems during pregnancy, labor, and postpartum.

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Annex I (Questionnaires with English version)

Consent

I understand that I am being asked to participate in a questionnaire activity that forms part of partial requirement for speciality in obstetrics and gynaecology for Dr Mohammed Gashaw Ali 4th year Gyn obs resident at SPHMMC.

I have been given some general information about this research and the type of questions I can expect to answer. I understand that the questionnaire will be conducted in person and my participation is completely voluntary and I am free to decline to participate, with out consequence, at any time prior to or at any point during the interview.

I understand that any information I provide will be kept confidential and will not be used in any way that can identify me. I am consenting to participate in this study as designed by the above mentioned student.

Agreed

1. Socio demographic characteristics

Age	<20	21-30	31-35	>35	
Religion	Muslim	orthodox	protestant	Waqefeta	
Marital status	Married	Divorced	widowed	Unmarried	
Occupation	House wife	Gov't employee	Merchant	Daily laborer	other
Educational status	Illiterate	Read and write	Primary	Secondary	College and above
Household income	<4000	4000-7000	>7000		
Distance from H.C	far	near			
Availability of transport	yes	no			

2. Obstetric characteristics

Gravida

Para

Number of ANC visit

GA at first visit

Trimester

3. Key danger sign during pregnancy

Danger sign	Yes	No
Vaginal bleeding		
Sudden gush of fluid before labor		
Severe headache		
Severe unusual abdominal pain		
Blurring of vision		
Excessive vomiting		
Swelling of hands and face		
Decreased fetal movement		
Premature onset of contraction		

4. Key danger sign during delivery

Danger sign	yes	no
Severe vaginal bleeding		
Prolonged labor		
Convulsion		
Retained placenta		

5. Key danger signs during postpartum

Danger sign	yes	No
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Severe vaginal bleeding
following birth

Loss of consciousness after
child birth

Fever

Foul smelly vaginal discharge

6. Attitude towards obstetric danger sign

Attitude	Agree	Disagree
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Knowing obstetric danger
signs is important

Obstetric danger sign
complication is preventable

Mothers who develop
obstetric danger sign should
seek help from traditional
birth attendant

7. Health seeking action after facing danger sign

Doing nothing

Consulting a friend/relative

Consulting traditional healer

Self-medication

Visiting health facility for care

Questionnaires with Afaan Oromo version

1. Amaloota Hawwaasumma (Amala Hawaasa Dimoograafii)

Umuri	<20	21-30	31-35	>35	
Amantii	Muslima	Orthodooksii	Protestantii	Waaqeffetaa	
Haala	Kan	Kan hiikte	Kan dhirsii	Kan hin	
fuudha fi	heerumte		du'ee	heerumne	
heeruma					
Hojii	Haadha	Hojjataa	Daldala	Hojjataa	Kan biro
	mana	mootummaa		guyyaa	
Sadarkaa	Kan hin	Barreessuu	Sadarkaa	Sadarkaa	Kolleejii fi
Barnoota	baranee	fi dubbisuu	1ffaa	2ffaa	isaa olii
Galii	<4000	4000-7000	>7000		
maatii					
Fageenya	Fagoo	Dihoo			
B.F iraa					
Geejiba	Jira	Hin jiru			
imalaaf					

2.Amaaloota Deessuu

Hanga ulfoofte

Hanga deese

Baay'na laalamuu da'uumsa

dura

Laalamuu jalqaba umurii ulfa

Ji'a sadii keessatti

3.Mallattoole dhukkubaa cima yeroo ulfa

Mallattoolee balafamoo

Jira

Hin jiru

Dhiigu qaama saala

Ciniinsuun dura tasa

dhangala'uu dhiigaa ykn

dhangala'uu biro

Boo'oo mataa cima

dhukkubbii garaa baratamaa

hin taanee

Rakkoo sirriiti argu

balaaqqemsiiisuu

Dhiitahuu fuula fi harka

Sochiin ulfa hir'achuu

ciniinsuu yeroo malee

Annex II (Deceleration)

I agree to accept responsibility for the scientific ethical and technical conduct of the research thesis and declared that all the resources and materials used in the thesis have been duly acknowledged.

Resident's Name: Dr. Mohammed Gashaw

Signature: _____

This thesis has been submitted for examination with my approval as an advisor.

Advisor Name: **Dr Ayalew Marye**

Signature _____