

The Level of Awareness on Danger Signs of Pregnancy and Associated Factors among ANC Attendant Pregnant Women in Debarq Town, North West Ethiopia, 2012

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Abstract

Background: Pregnancy related complications are among the greatest killers of women of reproductive age in developing countries. Many pregnant women may face the risk of sudden, unpredictable complications that could end in death or injury to herself or to her infant. Hence, it is necessary to employ strategies to overcome such problems as they arise. and in Ethiopia 676 per 100,000 women die from maternal causes.

Objectives: To assess the level of awareness on danger signs of pregnancy and associated factors among antenatal care attendant women in Debarq Town, North Gondar, Ethiopia 2012.

Methods: Institutional based cross-sectional study was conducted and a total of 385 pregnant mothers were included in the study. A systematic random sampling technique was used to select study participants. Bivariate and Multivariate logistic regression analysis was used to identify factors associated with awareness of danger signs of pregnancy.

Results: From all respondents 204 (53%) of them have poor awareness during pregnancy whereas, 209 (54.3%) of pregnant women have poor awareness during labor. The percentage of women who knew at least three or more danger signs during pregnancy and during delivery was 47% and 45.7% respectively. According to a multivariate logistic regression analysis women's having high school and above educational level are 3.46 (AOR= 3.46 and 95%CI: 1.77-6.77) times more likely to be aware on danger signs of pregnancy than those who don't read and write. And also women having high school and above are 5.78 times more likely to be aware on danger signs of pregnancy during labor than those women who don't not read and write (AOR=5.78 and 95%CI: 2.78-12.03)

Conclusions: From the result it can be concluded that mother's awareness on danger signs of pregnancy was poor and affected by educational status and the occupation. Therefore, it needs to increase the women's awareness through maternal and child health services by designing an appropriate strategies including provision of targeted information, education and communication.

Keywords: awareness, pregnancy, danger signs

INTRODUCTION

Pregnancy is a normal process that results in a series of both physiological and psychological changes in expectant mothers. However, normal pregnancy may be accompanied by some problems and complications which are potentially life threatening to the mother and / or the fetus (1). Pregnancy related complications are among the greatest killers of women of reproductive age in developing countries (2).

World Health Organization estimated that 529,000 women die annually from maternal causes. Ninety-nine percent of these deaths occur in the less developed countries. The situation is most severe for women in Sub-Saharan Africa, where one of every 16 women dies of pregnancy related causes during her lifetime, compared with only 1 in 2,800 women in developed regions (3).

According to the 2005 World Health Report, 20 million women each year will experience maternal disability, which can range from fever and depression to severe complications such as obstetric fistula and uterine prolapsed. Problems in pregnancy and childbirth remain the most likely cause of death for a teenage girl in sub-Saharan African above any other disease or accident (2).

Research indicates that the health of mother is closely linked with the health of their newborns and the well-being of entire societies. About 30–40% of neonatal and infant deaths result from inadequate care during pregnancy, delivery, and the critical immediate postpartum period (3)

After a woman dies, her family is less able to care for itself, and forfeits any paid/unpaid wages she contributed to the household. Her death increases the chances of her family facing poverty and malnutrition. Data suggest that the death of an adult woman has a

significant effect on household consumption in the poorest households for at least a year following her death (2, 3)

Health is a major challenge to Ethiopia's development. Half the population lack access to basic health services; health care delivery systems are weak, and the population is largely rural, spread across large regions that often lack roads (4).

Ethiopia, located in sub-Saharan Africa has an estimated one in ten births are assisted by a skilled provider, 28% are assisted by a traditional birth attendant, 57% of untrained relatives or friends and maternal mortality ratio ranging from 676 per 100,000 live-births (5). Many pregnant women may face the risk of sudden, unpredictable complications that could end in death or injury to herself or to her infant. Hence, it is necessary to employ strategies to overcome such problems as they arise. Lack of advance planning for use of a skilled birth attendant for normal births, and particularly inadequate preparation for rapid action in the event of obstetric complications, are well documented factors contributing to delays in receiving skilled obstetric care.

Maternal morbidity and mortality could be prevented significantly if women and their families recognize obstetric danger signs and promptly seek health care. The commonest danger signs during pregnancy include severe vaginal bleeding, swollen hands/face and blurred vision. Key danger signs during labor and childbirth include severe vaginal bleeding, pro-longed labor, convulsions, and retained placenta (1, 6).

Lack of awareness on the significance of symptoms of obstetric complications is one of the reasons of failure of women to identify and seek appropriate emergency care (7). Therefore, this study aims to assess awareness of danger signs of pregnancy and associated factors among ANC attendant women in

Debark Town, North Gondar, North West Ethiopia.

Objectives

General objective:

To assess the level of awareness on danger signs of pregnancy and associated factors among ANC attendant pregnant women in Debark Town, North Gondar Zone, North West Ethiopia from June to September, 2012.

Specific objectives:

To determine the level of awareness about danger signs of pregnancy.

To identify factors associated with awareness of danger signs of pregnancy.

METHODS

An institution based cross-sectional study was conducted from June to September 2012 in Debark Town, North Gondar Administrative Zone. There are three urban and five rural Kebeles in the Town. In this Town, there are five health posts, one health center and one rural hospital. The study includes 385 pregnant women who had attended ANC follow up at the health institutions during the time of the survey. And systematic random sampling technique was used to select study participants. Pregnant mother who are unable to hear and mentally ill and those, who had an emergency condition at the time of data collection were excluded.

Variables of the study:

Dependent variable: Awareness on danger signs of pregnancy

Independent variable: Socio- demographic variables(Age, Marital status, Occupational

status, Religion, Educational status, Family size) and Obstetric factor (Gravida, Parity, Number of ANC follow up and complication experience)

Operational definitions:

Danger signs:- are signs that occurred at the time of pregnancy which are life threatening such as vaginal bleeding, severe headache, or blurred vision, severe abdominal pain, swollen hand and face, fever, reduced fetal movement, weakness and difficulty of breathing

Good awareness on danger signs of pregnancy:- if a women can mention at least three key danger signs for pregnancy.

Key danger signs during pregnancy:- Vaginal bleeding, Swollen hands/face, blurred vision.

Good awareness on danger signs of labor/ childbirth:- if a women can mention at least three key danger signs for Labor/childbirth.

Key danger signs during labor/childbirth:- Severe vaginal bleeding, prolonged labor (> 12 hours), convulsions, retained placenta.

Instrument and quality control:

A structured pre tested questionnaires were utilized for data collection. The questionnaire was developed through a review of Ethiopian and international related literatures. The questionnaire was first prepared in English and then it was translated into Amharic version by language experts and then back to English in order to ensure its consistency. The qualities of data were assured through careful design, translation and retranslation of the questionnaires as well as pretesting on 5% of the sample for relevant amendment. Three day training relevant amendment. Three day training was given to the data collectors and closely followed the day to day data collection process and ensures completeness and consistency of the collected questionnaires.

Data collection procedures:

After necessary modification and changes was made based on the pre – test information then the final survey was conducted in the selected seven health institutions of Debarik Town. The data collection procedure of this study is briefly presented below: First the researcher asked permission from selected health institution administrators to collect data. In the second stage time and place for data collection were arranged in collaboration with institutional administrators. Then five health extension workers and two diploma nurses were assigned as data collectors on the selected sites and 4 nurse supervisor were selected and training on how to collect the data was given by the principal investigator. Then these respondents were informed about the purpose of the research. Finally the participants were asked to provide genuine responses and gratitude was presented at the end of data collection.

Data processing and analysis:

The data were entered, cleaned, and coded by EPI info software and analyzed through SPSS version 16 software. A quantitative data analysis techniques such as descriptive and summary statistics were used to present the finding. Association between dependent and independent variables was computed by using logistic regression model at 0.05 levels of significance and odds ratio to measure the strength of association with 95% CI.

RESULTS**Socio-demographic characteristic of the respondents**

From the selected seven health institutions a total of 385 women participated in the study,

giving a response rate of 100%. The mean age of the clients was 26 years (\pm 6.01 SD) and 21%, 35.6%, 21.6% and 21.8% were, less than or equal to 20 and between 21–25, 26 – 30 and above 30 years old age respectively. Nearly 93% of the clients were married and the rest were separated and single. Regarding the level of education only 19.7% of the study subjects had attained high school and above, 19% were able to read and write and 44.4% were not able to read and write. It is observed that the majority of the study subjects (79.5%) were housewives.

Respondents' obstetric characteristics

Table 2 describes respondents' obstetric history and antenatal care visit in the previous and current pregnancy. Two hundred fifty two (65.5%) and 88 (22.9%) pregnant women had two and three ANC follow up respectively and the rest 45 (11.6%) of the pregnant women had four and more ANC visit at the time of data collection. Among respondents 29(7.5%), 140 (36.4%) and 216 (56.1%) were in their first, second and third trimester during data collection respectively. And 128 (33.3%), 73 (19%), 72(18.7%), 112 (29.7%) of pregnant mothers had one, two, three, and more than three history of pregnancies during the time of data collection respectively. Among the respondents, 133(34.5%) women had not children and 76 (19.7 %) had one children, 68 (17.7%) had two children and the rest 45 (11.7%) and 63 (16.4%) pregnant mothers have three and more children respectively. Regarding their previous history of danger signs of pregnancy 80 (20.8%) of the respondent had previous history of danger signs of pregnancy but the rest 305 (79.2%) had no previous history of exposure to danger signs of pregnancy.

Table 1: Socio-demographic characteristics of the respondents in Debarik Town health

Baseline characteristics	Number	Percentage
Age		
<20	81	21.0
21 – 25	137	35.6
26 – 30	84	21.8
>30	83	21.6
Marital status		
Separated	27	7.0
Married	358	93.0
Religion		
Orthodox	363	94.3
Muslim	22	5.7
Educational level		
Not read and write	171	44.4
Read and write only	76	19.0
Elementary	62	16.1
High school/above	76	19.7
Occupation		
Housewife	306	79.5
Gov employ	39	10.1
Others	40	10.4
Family size		
<3	185	48.1
4-5	128	33.2
6-7	47	12.2
8+	25	6.0

institution, North Gondar Zone, Ethiopia, 2012 (N=385)

Variables	Frequencies	Percentage
Gravida		
One	128	33.3
Twice	73	19.0
Three times	72	18.7
More than 3 times	112	29.7
Parity		
None	133	34.5
One	76	19.7
Two	68	17.7
Three	45	11.7
>3	63	16.4
Previous risk of pregnancy		
Yes	80	20.8
No	305	79.2
Gestational age		
First trimester	29	7.5
Second trimester	140	36.4
Third trimester	216	56.1
Number of ANC visit		
Less than or equal two	252	65.5
Three	88	22.9
Four	45	11.6

Table 2: Respondents obstetric History, in Debarik Town, North East Ethiopia, from June to September, 2012

The percentage and number of danger signs during pregnancy

When asked to mention danger signs during pregnancy the most commonly mentioned danger signs were vaginal bleeding by 257 (66.8%), reducing fetal movement by 113 (29.4%) and edema of face and hand by 92 (23.9%). Other signs mentioned include blurred vision 71(18.4%), severe abdominal pain 68 (17.7%) and early rupture of membrane 50(13%) were additionally mentioned danger signs.

Danger sign of pregnancy	Frequency	Percentage
Vaginal Bleeding	257	66.8
Reduced fetal movement	113	29.4
Swollen hand and face	92	23.9
Blurred vision	71	18.4
Severe abdominal pain	68	17.7
Membrane rupture	50	13.0
Loss of consciousness	47	12.7
Difficulty of breathing	47	12.7
Fever	45	11.7
Weakness	24	11.2
Chill's	41	10.6

Table 3: The number and percentage of danger signs during pregnancy mentioned by ANC attendant women in Debarq Town, North Gondar Zone, Ethiopia from June to September, 2012

Table four shows the percentage of danger signs during labor. Among 385 respondents 291 (76.6%), 252 (65.5), 112 (29.1%) and 111 (28.8%) mentioned sever vaginal bleeding,

prolonged labor, retained placenta, loss of consciousness as a danger sign during labor. Other signs mentioned by respondents during labor were chills (23.4%), fever (22.9%) and sever head ache (17.7%).

Danger sign during labor	Frequency	Percentage
Sever vaginal bleeding	291	76.6
Prolonged labor	252	65.5
Retained placenta	112	29.1
Loss of consciousness	111	28.8
Chill's	90	23.4
Fever	88	22.9
Severe headache	68	17.7
Don't know	4	1.0

Table 4: Number and percentage of danger signs during labor mentioned by pregnant women in Debarq Town, North Gondar Zone, Ethiopia from June to September, 2012

Table 5 presents the distribution of the study subjects according their awareness on danger signs during pregnancy. It is found that among the respondents 47% of them during pregnancy and 45.7% during labor have good awareness about pregnancy danger signs. And also 53% and 54.3% had poor awareness about danger signs during pregnancy and labor respectively.

Table 6 presents the relationship between level of awareness of the study subjects with their socio demographic and clinical characteristics. Among the 385 respondents 181(47%) women have good awareness

whereas 204 (53%) of them have poor awareness on danger signs during pregnancy.

Awareness of danger signs of pregnancy	Before labor	During labor
Good awareness	181 (47.0)	176 (45.7)
Poor awareness	204 (53.0)	209 (54.3)

Table 5: Distribution of the study subjects according to their awareness on danger signs during pregnancy and labor in, Debarq Town, North West Ethiopia, 2012.

The association of factors with awareness of danger signs of pregnancy was assessed by bi-variate and multivariate analysis. Variables like marital status, parity, and family size, and gestational age, number of ANC care visit and previous history of risky pregnancy were not associated with awareness of danger signs of pregnancy in both bivariate and multivariate logistic regression analysis during pregnancy. But age, occupation and educational variables are associated with awareness of danger signs during pregnancy in the bi-variate analysis. However; the study finding shows educational status and occupation has statistically significant relationship between pregnant mothers' awareness on danger signs during pregnancy in both bi-variate and multivariate analysis (p-value<0.001). Pregnant mothers who attended high school and above were 3.46 times more likely to be aware on danger signs during pregnancy (AOR=3.46 and 95% CI: 1.77-6.77) than woman who are not able to read and write. And Pregnant women who are government employees are 3.92 times more likely to be aware on danger signs during pregnancy(AOR=3.92 and 95%CI: 1.48-10.36)

than those pregnant women who are housewives.

Table seven shows the association between socio demographic and obstetric characteristics of ANC attendant pregnant women on danger signs during labor. As the result shows, The independent variables such as, religion, family size, gestational age, previous risk exposure to danger sign of pregnancy and gravida were not associated.

Whereas, Bivariate analysis show that age of pregnant women, educational status, occupation and ANC visit were significantly associated with awareness on danger signs of pregnancy during labor. However multivariate analysis revealed that educational status of women, age, occupation and ANC visit were associated with awareness of danger signs of pregnancy during labor. Women who had high school and above educational status had 5.80 times more likely (AOR=5.78 and 95%CI: 2.78-12.03) to be aware on danger signs of pregnancy than those who can not read and write. Government employee pregnant women were 2.74 times more likely(AOR=2.74 and 95%CI: 1.23-6.08) to be aware on danger signs of pregnancy during labor than those who are housewives. The study also shows that Women who had four or more ANC visit are 3.22 times more likely to be aware on danger signs of pregnancy than (AOR=3.22 and CI: 1.57-6.59) those women who have two ANC visits.

DISCUSSION

This institutional based cross-sectional study assessed the level of awareness on danger signs during pregnancy and labor in Debarq town. The study finding shows poor awareness about danger signs of pregnancy among ANC attendant pregnant women in the town's health institutions.

Variable	Poor	Good	COR (95%)	AOR (95%)
Age				
≤ 20	46(56.8)	35(43.2)	1	1
21-25	58(42.3)	79(57.7)	1.79 (1.03-3.12)	1.56 (0.87-3.12)
26-30	47(50.5)	36(49.5)	1.02 (0.54-1.87)	0.98 (0.56-2.10)
≥ 30	53 (63.1)	31(36.9)	0.77 (0.41-1.43)	0.47 (0.23-1.87)
Marital status				
Single	18 (66.7)	9(33.3)	1	
Married	186(51.9)	172(48.1)	1.85(0 .81-4.2)	
Education				
Not read and write	116(67.8)	55(33.2)	1	1
Read and write only	34(54.8)	28(45.2)	1.74 (.96-3.15)	1.54 (0.84-2.87)
Elementary	33(43.4)	43(56.6)	2.75(1.58-4.79)	2.35 (1.33-4.16)
High school and above	21(27.6)	55(72.4)	5.52 (3.04-10.03)	3.46 (1.77-6.77)
Occupation				
House wife	181(59.1)	125(40.9)	1	1
Govt employee	6(15.4)	33(84.6)	7.96 (3.24-19.57)	3.92 (1.48-10.36)
Merchant and other	17(42.0)	23(58.0)	1.96 (1.00- 3.82)	1.40 (0.68-2.88)
Parity				
None	63(49.6)	67(50.4)	1	1
One	34(44.7)	42(55.3)	1.16 (0.87-2.45)	1.12 (0.64-1.85)
Two	32(47.1)	36(52.9)	1.06 (0.80-2.32)	0.76 (0.45-1.32)
Three	18(40.0)	27(60.0)	1.41 (1.12-3.34)	1.21 (0.88-2.34)
More than three	31(49.2)	32(50.8)	0.97 (0.54-1.79)	0.54 (0.14-1.19)
No of ANC follow up				
Less than or equal to two	132(52.4)	120(47.6)	1	
Three	51(57.9)	37(42.1)	0.80 (0.49-1.30)	
Four and above	21(46.7)	24(53.3)	1.26 (0.67-2.37)	

1.00= referent category, *statically significant association p-value <0.05

Table 6: The association between danger signs during pregnancy with social demographic and obstetric characteristics ANC attendant women in Debarq Town, North Gondar Zone, Ethiopia, 2012.

Variable	Poor	Good	COR 95%	AOR 95%
Age				
≤20	46(56.8)	35(43.2)	1	1
20-25	58(42.3)	79(57.7)	1.26 (0.72-2.18)	1.40(0.74-2.49)
26-30	53(63.1)	31(36.9)	1.45 (0.78-2.67)	2.21(1.12-4.42)
≥30	47(56.6)	36(43.4)	0.74 (0.40-1.40)	0.91(0.45-1.82)
Marital status				
Separated	11(40.7)	16(59.3)	1	
Married	198(55.3)	160(44.7)	1.800 (0.812-3.988)	
Education				
Note read and write	114(66.7)	57(33.3)	1	1
Read and write only	41(53.9)	35(46.1)	1.71(0.98-2.96)	1.94 (1.07-3.52)
Elementary	30(48.4)	32(51.6)	2.13(1.18-3.85)	2.25(1.16-4.39)
High school and above	24(31.6)	52(68.4)	4.33(2.43-7.73)	5.78 (2.78-12.03)
Occupation				
Housewife	179(58.5)	127(41.5)	1	1
Gov't employ	19(48.7)	20(51.3)	1.48 (0.76-2.89)	2.74 (1.23-6.08)
Others	11(27.5)	29(72.5)	3.72 (1.79-7.71)	0.64 (0.28-1.47)
No ANC care visit				
Two	143(56.7)	109(43.3)	1	1
Three	51(58.0)	37(42.0)	0.95 (0.58-1.55)	1.04 (0.61-1.77)
Four and above	15(33.3)	30(66.7)	2.62 (1.345-5.12)	3.22 (1.57-6.59)

1.00=Referent category, *spastically significant association p-value < 0.05

Table 7: Shows the association between awareness on danger signs of pregnancy during labor with socio demographic and obstetric characteristics of ANC attendant women in Debark Town health institution, North Gondar zone, Ethiopia, June to September 2012

The study result showed that among 385 pregnant women's 204(53%) and 209(54.3%) have poor awareness but 181(47%) and 176 (45.7 %) have good awareness about danger signs during pregnancy and labor respectively. in the town which is much higher than the study finding from Uganda, 18.7% have good awareness and the rest 81.3% poor awareness about danger signs of pregnancy (21).

The danger signs of pregnancy is the key parameter for assessing awareness of pregnancy complications. Accordingly, 66.8% mentioned vaginal bleeding, 29.4% reduced in fetal movement and 23.9% swollen hand/face during pregnancy. This finding is higher than reports from Rural Tanzania which revealed 45.9% vaginal bleeding, 1.2% reduced in fetal movement and Dabat that showed that 66.2%, 10.7% vaginal bleeding and swollen hand/face respectively (17,18,19).

Similarly, when we see awareness of danger sign during labor, 75.1% sever vaginal bleeding, and 59.5% prolonged labor, 21.8% retained placenta were mentioned by the pregnant women. Other studies show that 13.3% severe vaginal bleeding, 1.5% prolonged labor in Rural Tanzania and sever vaginal bleeding 55%, retained placenta 51.4% and prolonged labor 43.2% in Aleta Wondo (17,18). This might be due to methodology difference, socio-demographic characteristic difference and health intervention activities in the areas.

The result of this study revealed that awareness of women on danger signs during pregnancy is significantly influenced by educational level and occupation of women. Woman who had high school and above are 3.46 times more likely to be aware on danger signs during pregnancy (AOR=3.46 and 95% CI: 1.77-6.77) than woman who are not able to read and write. Pregnant women who are government employees 3.92 times more likely

to be aware on danger signs during pregnancy (AOR=3.92 and 95%CI: 1.48-10.36) than those pregnant women who are housewives.

Study done in rural Tanzania shows that there were no differences in the awareness of danger signs during pregnancy, during delivery as related to age, educational level, number and place of deliveries, number of antenatal care visits and woman informed of a risk/complication during antenatal care (17). Conversely the result of this study shows that awareness of pregnant women during labor influenced by age, educational status, occupation and number of ANC care visits.

Pregnant women who have high school and above are 5.80 times more likely (AOR=5.80 and 95%CI: 2.78-12.08) to be aware on danger signs of pregnancy during labor than those who are not able to read and write. Study done in Rural Tanzania show that having secondary education or higher increased the likely hood of awareness of obstetric danger signs six-fold (OR = 5.8; and 95% CI: 1.8-19) (17). Government employee pregnant women are 2.74 times more likely (AOR=2.74 and 95% CI: 1.23-6.08) to be aware on danger signs of pregnancy during labor than those who are housewives. Women who have four or more ANC visit are 3.22 times more likely to be aware on danger signs of pregnancy than (AOR=3.22 and CI: 1.57-6.59) those women who have two ANC visits.

And also independent variables; marital status, parity, family size, gravid and gestational age were not associated with danger sign of pregnancy in the bivariate logistic regression analysis. Similar results also shown by the assessment study done in DHS 2005 data of sub-Saharan countries; Ethiopia, Benin, Congo, Guinea, Namibia, and Uganda (4). A study done in Tanzania also similarly indicate that variables such as marital status

were not associated with danger signs of pregnancy in the bivariate logistic regression analysis (16). Almost the same proportion of the study subjects were unaware of pregnancy danger signs which reflects a poor awareness. This poor awareness may be due to poor counseling regarding to pregnancy danger signs among those who attended antenatal clinics. And also majority of the respondents were not able to read and write, so it may reduce the ability of clients to understand issues during counseling. On the other hand, majority of the respondents were housewives and farmers this may contribute to their poor exposure to media and community conversation that could have improved their awareness on danger signs of pregnancy.

CONCLUSIONS

Awareness on danger signs of pregnancy among women in Debarq town was poor. From this study finding it can be concluded that women awareness on danger signs during pregnancy is affected by their educational level and occupational status. In addition to this, women awareness on danger signs of pregnancy during labor was affected by educational level, age of women, occupation and number of ANC visit.

Based on the finding of the study we would like to recommend that the town's education office in collaboration with minister of education and other concerned stakeholders need to empower women through education. By which education facilities and services need to be accessible for every woman in a community. Similarly, The minister of health, the regional health office, Zonal administrative health office, the town health office and other responsible bodies should make efforts to provide more information about danger signs of pregnancy for women through community

agents. And they should have insured and encourage women to have ANC follow up and design rewarding mechanisms for women who got more ANC follow up during their gestation period.

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REFERENCES

1. World Health Organization (WHO). Mother-Baby Package: Implementing Safe Motherhood in Countries. Geneva, Switzerland: WHO; 1994
2. USAID. Working toward the goal of reducing maternal and child mortality: USAID programming and response to FY08 appropriations. 2008
3. World Health Organization (WHO). Pregnancy is special let's make it safe: World Health Day, Safe Motherhood. Geneva, Switzerland: WHO; 1998
4. World health organization. World health day making every mother and child count. Geneva, Switzerland: WHO; 2005
5. Agency ECS. Ethiopia Demographic and Health Survey. 2011
6. World Health Organization (WHO), United Nations Children's Fund (UNICEF), and United Nations Population Fund (UNFPA). Maternal mortality in 2000: estimates developed by WHO, UNICEF and UNFPA. WHO, Geneva; 2004
7. UNFPA. Safe Motherhood a review. Safe Motherhood, 2004

8. I. J. Hasan NN. Women's' Perceptions regarding Obstetric Complications and Care in a Poor Fishing Community in Karachi. Department of Community Health Sciences of Aga Khan University. 1999;JPMA 52
9. Kuo C-Y. Community awareness of maternal and prenatal danger signs in rural Haiti. University of Connecticut. 2002
10. Thomas. A. Why are there low institutional delivery rates in the gambia? Women's opinion. International Health University of Oslo. 2007:42-53.
11. Radhika. K. Assess the knowledge selected warning signs in pregnancy among primi-gravida women in kampavheluvabagneral hospital, Malleswaram, Bangalore. University of health science, karnataka. 2005.
12. Al-Hadithits. Antenatal care in Erbil city-Iraq: assessment of information, education and communication strategy. Duhok Medical Journal. 2011;5(1):31-40
13. Krista M. Perreira PEB, Elizabeth de Bocaletti, Elena Hurtado, Sandra Recinos de Villagr , and Jorge Matute. Increasing Awareness of Danger Signs in Pregnancy Through Community- and Clinic-Based Education in Guatemala. Maternal and Child Health Journal. 2002; 6(1):19-28.
14. Gyawali.K.DP. Knowledge and practice on maternal health care among mothers from rural areas of mid-western development region Nepal. Scientific society. 2013; 40(1):9-10..
15. Rahman SKM. Socio-economic determinants of low birth weight in Bangladesh. Institute of Epidemiology, Disease Control and Research. 2008;34(3):81-6.
16. Declare M, Rose M, Albrecht J. Knowledge about safe motherhood and HIV/AIDS among school pupils in a rural area in Tanzania. BMC Pregnancy and Childbirth. 2007;7(5).
17. Wafaa R, Rasha E. Women's Awareness of Danger Signs of Obstetrics Complications. Journal of American Science. 2010;6(10):1299 -- 306.
18. Mihret H, Mesganaw F. Birth Preparedness and Complication Readiness among women in Adigrat town, north Ethiopia. Ethiop J Health Dev. 2007;22 (1).
19. Jennin Larissa ASY, Jean Affo, Marthe Agbogbe. Antenatal counseling in maternal and newborn care: use of job aids to improve health worker performance and maternal understanding in Benin. BMC Pregnancy & Childbirth. 2010;13(10:75):9-13.
20. Mesay H, Abebe G, Fessahaye A. knowledge about obstetric danger signs among pregnant women in Aleta Wondo district, Sidama Zone, Southern Ethiopia, Ethiop J Health Sci. 2010;20 (1):25 - 32.
21. Jerome K, Per-Olof O, Eleanor T, Karen P. Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. Reproductive Health , 2011;8(33).
22. Kassyou H. Factors Affecting Antenatal Care Attendance in Maichew Town, Southern Tigray. Medical journal. 2008 9(12:18):32-4
23. Worku. AG .YA, Afework. MF. Maternal Complications and Women's Behavior in Seeking Care from Skilled Providers in North Gondar, Ethiopia. 2013;8(3):10-1137..
24. Mitch K. Awareness of Danger Signs & Symptoms of Pregnancy Complication among Women in Jordan. International Journal of Gynecology and Obstetrics. 2012;8
25. Horiuch. YAS. Factors influencing the use of antenatal care in rural West Sumatra, Indonesia. BMC Pregnancy & Childbirth 2012; 10(12:9):1471-2393.
26. Kijugu DO. Analysis of factors that contribute to high number of maternal death in Singida region of Tanzania. Biomed central 2009;9(73:110):25- 56..
27. Mutiso SM, Qureshi Z, Kinuthia J. Birth preparedness among antenatal clients. East African Medical Journal. 2008;85(6):275 - 182.
28. Iliyasu IZ, Abubakar S, Galadanci S, .Aliyu H. Birth Preparedness, Complication Readiness and Fathers' Participation in Maternity Care in a Northern Nigerian Community. African Journal of Reproductive Health 2010;14(1).