Original Research

Factors Affecting Prenatal Care Utilization in East Wollega Zone, Oromia Regional State, Ethiopia

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Abstract	Article Information
The objective of the study was to identify factors affecting utilization of prenatal care and skilled birth attendant in East Wollega zone. Prenatal care and skilled birth attendant are crucial factor which affects the health and wellbeing of the mother and newborn and help the women to access skilled assistance, drugs, equipment and referral linkages. Even though, antenatal care coverage was relatively high in Oromia region (31.3%), skilled birth attendant utilization was low (8%). A total of 320 respondents were included in the study and data were collected using structured questionnaires. Data were first checked manually for completeness and then coded and entered into Epi Info version 6.04 and analyzed using SPSS version 20.0. Bivariate analyses between dependent and independent variable was performed using binary logistic regression separately. To control the effect of confounding variables, multiple logistic regressions were done. Multivariable logistic regression was used to identify predictors' of prenatal care. Statistical significance was determined through a 95% confidence level. Women who attended secondary and above education were about fourteen times (AOR: 13.908, 95% CI: 1.177-164.311) more likely to utilize prenatal care. Partner's formal education was also associated with increased prenatal care (AOR: 1.915, 95% CI: 1.016-3.607). Partner occupation was also associated with prenatal care (AOR: 16.131, 95% CI: 1.482-175.564). The study highlight that housewives were less likely to receive prenatal care from skilled professionals (AOR: 0.368, 95% CI: 0.150-0.903). Another predictor of prenatal care was having functional communication materials (AOR: 2.145, 95% CI: 1.187-3.876). Longer waiting time at health institutions (AOR: 0.317, 95% CI: 0.122-0.825) was significantly associated with prenatal care. Reported skill of health care providers (AOR: 2.406, 95% CI: 1.051-5.509) were significantly associated with prenatal care.	 ***Corresponding Author:** **Tesfaye Regassa** **E-mail:** regassatesfaye@gmail.com

INTRODUCTION

Skilled health attendant is defined as an accredited health professional-such as a midwife, doctor or nurse-who has been educated and trained to proficiency in the skills needed to manage normal pregnancies, childbirth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns. This definition excludes traditional birth attendants whether trained or not (WHO, 2006).

Skilled birth attendance serves as an indicator of progress towards improving maternal health (Baral *et al.*, 2010). Skilled birth attendant is a crucial factor which affects the health and wellbeing of the mother and the newborn. It's usually a joyful event when women give birth to a baby she wants. However, birth is a critical time for the health of the mother and baby. Problems may arise during labour and delivery not treated properly and effectively can lead to ill health and even death of one or both of them (Sohail and Thomas, 2011; Ronsmans *et al.*, 2003).

Reduction of maternal mortality is a global agenda. The maternal mortality ratio of Ethiopia was 676 deaths per 100,000 live births by 2011 compared to 673 deaths per 100,000 live births by 2005. Skilled birth attendance is correlated with lower MMR. All countries should continue their efforts so that globally, by 2005 at least 80% of all births should be assisted by skilled attendants, by 2010, 85%, and by 2015, 90% (WHO 2000). However, the proportion of births with a skilled attendant is 8.1% in Oromia regional state. Therefore identifying the factors affecting prenatal care and skilled attendance for delivery is a priority area for interventions (EDHS, 2011; Sohail and Thomas, 2011; Ronsmans, *et al.*, 2003; Prata *et al.*, 2011).

The global consensus is that to improve maternal health and to reduce maternal mortality, pregnant women should be assisted by a competent health care professional who has the required equipment, drugs, supplies and an adequate referral system in place. Majority of mothers go through the process of unattended

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child birth and lack of prenatal care (Sohail and Thomas, 2011).

This agreement, signed by 179 country representatives, set a goal of 40% of all births to be assisted by a skilled attendant by 2005, with 50% coverage by 2010 and 60% by 2015 among the countries with very high maternal mortality. However, trends documenting the change in the proportion of births accompanied by prenatal care and skilled attendant over the last 15-20 years offer no indication that adequate change is imminent. To improve maternal health rapidly in regions where births in the home without skilled birth attendants are common, governments and community-based organizations could implement a cost-effective strategy (Prata *et al.* 2011; Adegoke *et al.*, 2012).

Child birth is a risk producing event. Timely and adequate medical care for women who experience obstetric complication is an option for mitigating the risk. Women are encouraged to deliver their babies in health facilities (Lamina, 2011; Elizabeth *et al.*, 2009; Laurel *et al.*, 2007; Carolyn *et al.*, 2007; Assfaw, 2010).

Significant improvement in maternal health could be achieved if skilled attendance is available to, and used by all women. To accomplish such a goal, targeting factors which affect prenatal care is essential. However, factors affecting prenatal care and skilled birth attendant were not well understood in East Wollega zone. Thus, the objective of study was to assess factors affecting prenatal care in East Wollega zone.

METHODS AND MATERIALS

Study Area and Period
The study was conducted in five districts (Sire, Jimma Arjo, Leqa Dullacha, Arjo Gudatu and Guto Gida) and Nekemte town of East Wollega Zone, Oromia regional state, Ethiopia from September to October 2013. East Wollega zone is one of the 17 zones of Oromia regional state with a population of 1,230,402; 615,641 females. Eighty six percent of the populations live in rural areas (1,061,120) (FDRE, 2008).

Study Design and Study Population
Cross sectional study was conducted in East Wollega Zone. Source population was all women aged 15-49 years. Study population was women in five districts and Nekemte town, in East Wollega Zone.

Sample Size
Sample size was calculated using EPI info software; by using antenatal care (ANC) coverage in Oromia region (31.3%), with 95% confidence level and 5% marginal error. The calculated sample size was 320.

Data Collection Methods
Structured questionnaire was initially prepared in English, translated to Afan Oromo, and back to English by different health professionals to check its consistency. It was then pre-tested on 5% sample in an area that is not included in the study. Some skip patterns were then corrected and questions difficult to ask were rephrased.

Data Collectors
Bachelor degree holder nurse/midwife data collectors and master's holder supervisors were recruited. Two days training was given for data collectors and supervisors on

objective, informed consent and techniques of interview. The structured questionnaire was discussed in detail going through every question and clarification was provided. All filled questionnaire was checked on spot for completeness, accuracy, clarity and consistency by the supervisors and the principal investigators and necessary corrections and changes was made.

Data Analysis
Data were first checked manually for completeness and then entered into Epi-Info version 6.04. After data entry and cleaning, the data were transferred to SPSS version 20.0 for analysis. Completeness and consistency of variables during data entry was checked using frequency distributions and cross tabulations. Percentages were calculated. Bivariate analysis between dependent and independent variables was performed separately using binary logistic regression. Multivariate analysis was used to remove effect of confounding variables. Statistical significance was determined through 95% confidence interval.

Ethical Clearance
Ethical approval was obtained from Ethical Review Board Committee, Wollega University. The purpose of the study was clearly explained for study participants and verbal consent was ensured.

RESULTS
Socio-demographic Characteristics of Study Participants
A total of 320 women were interviewed between September and October 2013 in East Wollega Zone. The mean age of the study participant was 26.12 years. Majority of the study subjects were Protestant Christians (52.2%), Oromo by ethnicity (89.7%) and currently married (95%). About 58% of the respondents were farmers. Majority of the study participants had no formal education (195(60.9%)). About 35% of the respondents interviewed were from urban. The median monthly family income was 800 ETB. Concerning family size, majority of the study participants had 4-5 family size 142(44.4%)) (Table 1).

Prenatal Care Utilizations
Majority of study participants had heard of ANC (88.4%). About a quarter of them (24.7%) had no antenatal care visit. About 17% reported pregnancy related complication (Table 2). The major complications during pregnancy were hemorrhage 24(7.5%) followed by hypertensive disorder of pregnancy (8(2.6%)) and abnormal vaginal discharge (8(2.6%)) (Figure 1). It is indicated by figure that significant number of decisions to go for skilled birth attendant was made by husband and wife together but some other was made only by the husband (figure 2). The major types of non-skilled attendant in the study area were elderly women from neighbor (37%), mother/mother in-law (35%), traditional birth attendant (19%). The main reasons for non-skilled birth attendant was labour were urgent to reach health facilities 90(28.1%) followed by lack of transport during labour 52(16.3%) (Figure 4).

Predictors of Prenatal Care
Women who attended secondary and above education were about fourteen times (AOR: 13.908, 95% CI: 1.177-164.311) more likely to utilize prenatal care. Partner's with

Table 1: Socio-demographic characteristics of study participants, East Wollega Zone, West Ethiopia (n=320).

Characteristics		Number (%)
Age	15-19	19(5.9)
	20-24	102(31.9)
	25-29	111(34.7)
	30-34	50(15.6)
	35-49	38(11.9)
Mean age(in years) (+SD)		26.12(+ 5.69)
Educational status	no formal education	195(60.9)
	Primary (1-8)	93(29.1)
	Secondary and above	32(10.0)
Educational status of husband	no formal education	106(33.1)
	primary (1-8)	165(51.6)
	Secondary and above	49(15.3)
Marital status	Married	305(95.3)
	never married /widowed/ divorce	15 (4.7)
Religion	Orthodox	100(31.3)
	Muslim	48(15.0)
	Protestant	167(52.2)
	Catholic	5(1.6)
Ethnicity	Oromo	287(89.7)
	Others*	33(10.3)
Occupation	Farmer	184(57.5)
	Housewife	71(22.2)
	Employed (skilled)	25(7.8)
	Others**	40(12.5)
Monthly income quintile	Lowest	61(19.1)
	Second	65(20.3)
	Middle	64(20.0)
	Fourth	58(18.1)
	Highest	72(22.5)
Median family income (ETB)		800
Residence	Urban	111(34.7)
	Rural	209 (65.3)
Family size	1-3	72(22.5)
	4-5	142(44.4)
	6 and above	106(33.1)

*Amhara, Gurage, Tigire ** House maid, private self-employment, merchant, daily laborer

Table 2: Prenatal care and obstetrics related factors of study participants, East Wollega zone, West Ethiopia

Characteristics		Number (%)
Heard ANC		**n=320**
	Yes	283(88.4)
	No	37(11.6)
Number of ANC received		**n=320**
	No ANC received	79(24.7)
	1-2	48(15.0)
	3 and above	193(60.3)
Pregnancy related complications		**n=320**
	Yes	53(16.6)
	No	267(83.4)
Pregnancy complications		**n=53**
	Hemorrhage	24(7.5)
	Hypertensive disorder of pregnancy	8(2.6)
	Abnormal vaginal discharge	8(2.6)
	Others*	13(4.1)
Final decisions to go for skilled attendance		**n=80**
	Together	48(15.0)
	husband	20(6.3)
	Self	10(3.1)
	Others**	2(.6)
Reasons for non-skilled birth attendant		n=240
	Labour was urgent to reach health facilities	90(28.1)
	Lack of transport during labour	52(16.3)
	All my previous deliveries were at home	43(13.4)
	Home delivery is easy and convenient	37(11.6)
	Worries about cost in the hospital	13(4.1)
	Others **	15(4.7)

* Headache, vomiting; ****** Mother, mother in-law, aunt, father and *******resistance from husband, no access to road
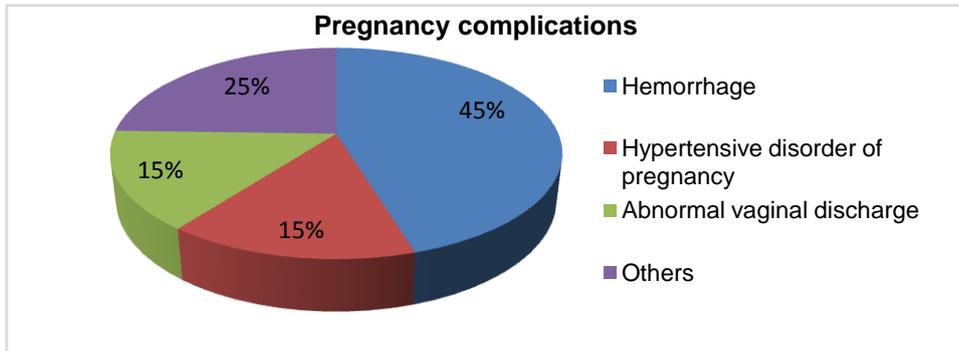
Figure 1: Pregnancy related complications among reproductive age women, East Wollega zone, West Ethiopia
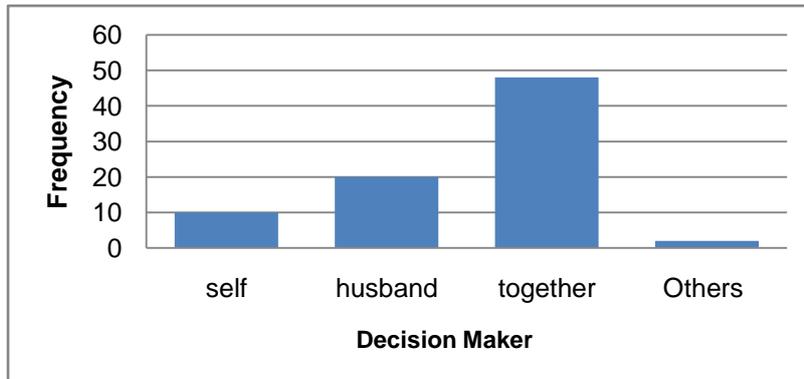
Figure 2: Final decision to go for skilled birth attendant among reproductive age women, East Wollega zone, West Ethiopia
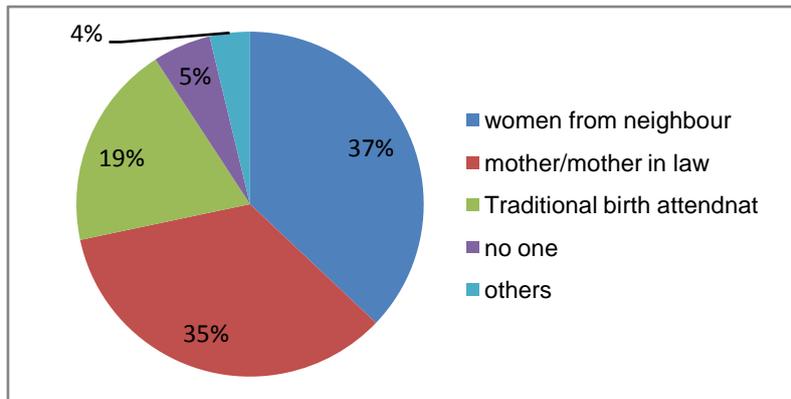
Figure 3: Types of non-skilled birth attendant in East Wollega zone, West Ethiopia.
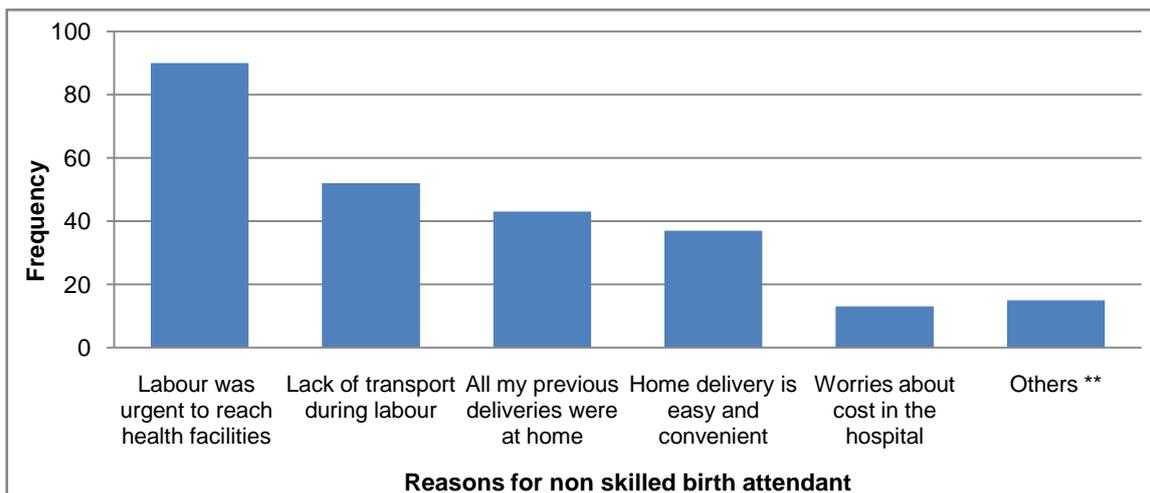
Figure 3: Reasons for non-skilled birth attendant in East Wollega zone, West Ethiopia.

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formal education was also associated with increased prenatal care (AOR: 1.915, 95% CI: 1.016-3.607). Partner occupation was also associated with prenatal care (AOR: 16.131, 95% CI: 1.482-175.564). The study highlight that housewives were less likely to receive prenatal care from skilled professionals (AOR: 0.368, 95% CI: 0.150-0.903). Another predictor of prenatal care was having functional communication materials (AOR: 2.145, 95% CI: 1.187-3.876). Longer waiting time at health institutions (AOR: 0.317, 95% CI: 0.122-0.825) was significantly associated with prenatal care. Reported skill of health care providers (AOR: 2.406, 95% CI: 1.051-5.509) were significantly associated with prenatal care (Table 3).

Table 3: Unadjusted and adjusted odds ratios (OR) and 95% confidence intervals (CI) of prenatal care utilization in East Wollega zone, West Ethiopia, September to October 2013.

Variables	Categories	Antenatal care utilization		OR(95% CI)	
		Yes (%)	No (%)	Crude	Adjusted
Education level	No formal education	130(53.9)	65(82.3)	1	1
	Primary education	80(33.2)	13(16.5)	3.077(1.594-5.938)	2.747(1.206-6.258)
	Secondary and above education	31(12.9)	1(1.3)	15.500(2.070-116.083)	13.908(1.177-164.311)
Education status of partner	No formal education	66(27.4)	40(50.6)	1	1
	Primary education	132(54.8)	33(41.8)	2.424 (1.402-4.191)	1.915(1.016-3.607)
	Secondary and above	43(17.8)	6(7.6)	4.343(1.696-11.120)	0.306(.067-1.389)
Occupation	Farmer	127(52.7)	57(72.2)	1	1
	Housewife	53(22.0)	18(22.8)	1.322(0.711-2.455)	0.368(0.150-0.903)
	Skilled employee	24(10.0)	1(1.3)	10.772(1.422-81.578)	1.355(0.131-14.047)
	Others *	37(15.4)	3(3.8)	5.535(1.639-18.700)	2.047(0.488-8.583)
Occupation of the partner	Farmer	142(58.9)	67(84.8)	1	1
	Skilled employee	39(16.2)	1(1.3)	18.401 (2.475-136.798)	16.131(1.482-175.564)
	Merchant	26(10.8)	5(6.3)	2.454 (.902-6.671)	1.132(0.303-4.224)
	Others**	34(14.1)	6(7.6)	2.674(1.071-6.677)	1.754(0.590-5.211)
Monthly income quintile	Lowest	39(16.2)	22(27.8)	1	
	Second	47(19.5)	18(22.8)	1.473 (0.693-3.130)	
	Middle	50(20.7)	14(17.7)	2.015(0.914-4.440)	
	Fourth	48(19.9)	10(12.7)	2.708 (1.147-6.390)	
	Highest	57(23.7)	15(19.0)	2.144 (0.990-4.641)	
Residence	Urban	97(40.2)	14(17.7)	3.127(1.662-5.886)	
	Rural	144(59.8)	65(82.3)	1	
Possessing Radio and/or TV	Yes	166(68.9)	33(41.8)	3.085(1.827-5.209)	2.145(1.187-3.876)
	No	75(31.1)	46(58.2)	1	1
Birth order	1	83(34.4)	20(25.3)	1	
	2-3	100(41.5)	30(38.0)	0.803(0.425-1.518)	
	4 and more	58(24.1)	29(36.7)	0.482(0.249-0.933)	
Walking time to reach health institution	<30 minutes	123(51.0)	21(26.6)	1	
	31-60	60(24.9)	18(22.8)	0.569(0.282-1.147)	
	61-120	38(15.8)	21(26.6)	0.309(0.153-0.626)	
	121 and above minutes	20(8.3)	19(24.1)	0.180(0.082-0.392)	
Waiting time at health institution	1-15	103(42.7)	25(31.6)	1	1
	16-30	72(29.9)	19(24.1)	0.920(0.472-1.794)	0.760(0.353-1.635)
	31-60	41(17.0)	17(21.5)	0.585(0.286-1.196)	0.427(0.184-0.993)
	> 60 minutes	25(10.4)	18(22.8)	0.337(0.160-0.712)	0.317(0.122-0.825)
Number of health care providers	Don't know	66(27.4)	34(43.0)	1	
	1-2	135(56.0)	39(49.4)	1.783 (1.033-3.079)	
	Greater than two	40(16.6)	6(7.6)	3.434 (1.325-8.903)	
Skill of health care providers	High	135(56.0)	33(41.8)	2.799(1.495-5.242)	2.406(1.051-5.509)
	Medium	68(28.2)	20(25.3)	2.326(1.149-4.709)	2.109(0.915-4.859)
	Poor	38(15.8)	26(32.9)	1	1

*House maid, private self-employment, merchant, daily laborer and **Unemployed, Daily Laborer, Student

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DISCUSSION

The proportion of women who delivered with the assistance of a skilled birth attendant and prenatal care is one of the indicators in meeting the fifth MDG (UNFPA). There was agreement, signed by 179 country representatives, set a goal of 40% of all births to be assisted by a skilled attendant by 2005, with 50% coverage by 2010 and 60% by 2015 among countries with very high maternal mortality. However Oromia, skilled health professionals attend very few births (Mehari, 2013; Adegoke and Broek, 2009; Crowe *et al.* 2012; Adegoke *et al.*, 2012).

In Ethiopia, it may be difficult to achieve the ICPD+5 target of 62% coverage with skilled attendance at birth by 2015 especially considering the current average of 10%. However identifying the main predictors and challenges in the implementation of this strategy which if addressed will help progress towards the achievement (Adegoke, *et al.*, 2012).

Education is a key factor in improving prenatal care, but it is challenge for study area where more than half of the women (60.9%) had no formal education (EDHS 2011). Education is likely to enhance confidence and capabilities to make decisions regarding their own health.

Education of women had been found to influence the use of prenatal care. Women who attended secondary and above education were about fourteen times more likely to utilize prenatal care. The effect was more significant among women with at least secondary school education. The data is consistent with studies from Ghana (Arthur, 2012), migrants in Western (Boerleider, *et al.*, 2013), Brazil (Coimbra *et al.*, 2007), Nigeria (Iyaniwura and Yussuf, 2009), Nepal (Joshi *et al.*, 2014), Ethiopia (Tekelab and Berhanu, 2014). Thus, improving the education of mothers will contribute greatly to the use of maternal and prenatal services by women and thus help in reducing maternal and child mortality. Specifically, women should be encouraged to pursue education beyond the primary level as the study has found that women with higher levels of education tend to make adequate use of prenatal care.

Partner's education and occupation was also associated with increased prenatal care. Educational levels of the husbands also showed a similar effect on the receipt of ANC visits (Joshi *et al.*, 2014; Tekelab and Berhanu, 2014). The study indicated that educating women and their husbands together resulted in women retaining more maternal health knowledge than if they attended alone, that educational strategies become more effective when men are incorporated.

The study highlight that housewives were less likely to receive prenatal care from skilled professionals. A well-educated and skilled woman may have a good job and earn more money, which improves economic access and reinforces the effect of adequate information.

Another predictor of prenatal care was functional communication materials like TV and/or radio. It may be possible that the less educated are not adequately informed about the services being offered freely and also about the adequate utilization for each pregnancy, hence it may be necessary to intensify the education on the use of maternal health care services probably through the mass media (radio, television) and the community announcements, especially in the rural centers where the use of mass media were not adequate.

Waiting longer time at health institutions was significantly associated with prenatal care. Clients conceived skill of health care providers was significantly associated with prenatal care. Health extension workers can support women groups through an action-learning cycle in which they can identify local prenatal problems and improve antenatal care utilization.

However, Ethiopian demographic and health survey indicated that in Oromia regional state 31% of women received ANC care but skilled birth attendant was 8% (EDHS, 2011). It implies that in Ethiopia there are opportunities to improve skilled birth attendant including issues related to prenatal care. Limitation of the study was cross sectional studies are not able to establish temporal relationships.

CONCLUSIONS

The study identified predictors of prenatal care that are related to social factors such as respondents education, partner's education, occupation of partner; having access to functional communication materials. Therefore, improving women's education and partner education is very important to improve prenatal care utilization.

We recommended that there should be progress toward a health education program that enables more women to utilize prenatal care by targeting uneducated women, uneducated partner, housewife, communication materials, waiting time at health institutions. Transportation service for pregnant women at delivery has to be considered to increase low level of skilled birth attendant utilization.

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