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Determinants of Postnatal Care Service Utilization, Amigna District, Arsi Zone, Southeast Ethiopia: A Case-Control Study

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Abstract

Background: Postnatal Care (PNC) service is important for both mother and child not only to treat complications arising from the delivery, but also to provide the women with important information on how to care for themselves and their child.

Objective: Identifying determinants of postnatal care service utilization among mothers who delivered during the past one year preceding the study.

Methods: Unmatched case control study was conducted in Amigna district, Arsi zone from May to June, 2016. Data were collected from 116 cases and 234 controls selected by multistage random sampling. Data were collected by face-to-face interview using structured questionnaire, entered into EpiData and analyzed using SPSS. Bivariate and multivariable logistic regressions were performed to identify determinants of postnatal care service utilization.

Results: Mother who attended at least secondary school utilized postnatal care over 3 times higher (95% CI: 1.4-7.3) than mother who didn't attend formal education. Mother whose husband attended at least secondary school utilized postnatal care 3 times higher (95% CI: 1.3-6.7) than mother whose husband didn't attend formal education. Mother who had good and moderate knowledge of postnatal care utilized it over 4 times (95% CI: 2.0-10.0) and over 3 times higher (95% CI: 1.4-7.3) respectively than mother who had poor knowledge of postnatal care. Mother who visited antenatal care at least once utilized postnatal care over 3 times higher (95% CI: 1.5-7.3) than mother who didn't visit antenatal care. Mother who delivered at health institution utilized postnatal care nearly 4 times higher (95% CI: 2.0-7.2) than mother who delivered at home. Mother who traveled at most one hour to reach nearest health institution utilized postnatal care over 3 times higher (95% CI: 1.9-6.2) compared to mother who traveled more than one hour.

Conclusion: Educational status, knowledge of postnatal care, antenatal care utilization, place of delivery and distance from health institution should be considered for intervention to improve postnatal care service utilization.

Keywords: Postnatal care; Utilization; Pregnancy; Hemorrhage; Family planning

Background

Globally, there were an estimated 289,000 maternal deaths in 2013 and developing countries account for 99% of the global maternal deaths [1]. The Sub-Saharan Africa region alone accounted for 62% of global deaths. Obstetric causes, notably, hemorrhage (27%), hypertensive diseases of pregnancy (14%), and sepsis (11%) account for a large proportion of maternal deaths [1]. An estimated 2.8 million neonates died worldwide in 2013; 1 million of these occurred on the first day [1-3]. Complications from preterm birth (35%), intra partum-related causes (24%) and severe infections (15%) are the leading direct causes of neonatal deaths. Inappropriate feeding and cultural practices following delivery may pose further risks to the life of the new born. Majority of the neonatal deaths also occur in developing countries, with the highest rate in sub-Saharan Africa (39% of global neonatal deaths) [1,2].

Ethiopia like many other sub-Saharan African countries still had high maternal and child mortality. The 2011 Ethiopian Demographic and Health survey (EDHS) showed that the country experienced maternal, neonatal and infant mortality of 767 per 100,000 live births and 37 and 59 per 1000 live births respectively [4]. Most of maternal and neonatal deaths occur during childbirth and the postpartum period; almost half of these occur within the first 24 hours and 66% occur during the first week [1,3]. These maternal and neonatal problems could be reduced if women receive appropriate postnatal care service. Postnatal Care (PNC) service refers to health care services provided to the mother and new born for the period of 6 weeks from the time of delivery using the World Health Organization (WHO) standards contact times-within one hour of birth to 24 hours, 2-3 days, 6-7 days, at 6 weeks and extra contacts of two or three visits for low birth weight baby or baby whose mother's live with HIV [3]. Postnatal care is important for both the mother and the child not only to treat complications arising from the delivery, but also to provide the women with important information on how to care for their child and themselves. It is an opportunity for mothers and newborns to establish and maintain contact with a number of Maternal and Child Health

(MCH) services and to promote healthy behaviors such as getting proper nutrition during breastfeeding and using family planning [3].

Regardless of the fact that most of maternal deaths and disabilities occur during postnatal period; post-partum care remains the most neglected phase of obstetric services [3]. Most mothers and newborns babies do not receive postnatal care services from a skilled health care provider during the critical first few days after delivery [5]. Globally, only 48% of the mothers receive the postnatal care services within 2 days of birth [6]. In Africa, 41% of the mothers were receiving the postnatal care services within 2 days of birth [7]. Analysis of Demographic and Health Survey data from 23 sub-Saharan African countries found that only 13% of women who delivered at home received postnatal care within 2 days of birth [6]. EDHS 2011 also showed that only 7% of mothers received postnatal care check up with in the first two days of birth [4].

The low coverage of postnatal care service, most likely, results in high maternal and new born morbidity and mortality. The fact that institutional delivery is low also poses challenge for planning and implementing of PNC. Many opportunities are missed with low PNC coverage including exclusive breastfeeding, Prevention of Mother-to-Child Transmission (PMTCT), providing of family planning and maternal and new born care [8]. High maternal deaths affects the family, new born even old children survival and increase number of orphans, decrease productivity of the households [9]. Even though PNC service utilization plays a critical role in reducing maternal and new born child mortality, evidences are not adequate about its determinants especially in Ethiopia. Thus, understanding the determinants of PNC service utilization is critical for countries like Ethiopia with high maternal mortality.

In the study area, we could not come across published findings on determinants of post natal care service utilization though the 2015 report of Amigna District Health Office showed only 34% postnatal care service coverage which was very low when compared with other maternal health services. Reports from health facilities of the district showed that most mothers practice early initiation of complementary feeding which could be related to the low utilization of post natal care service [10]. This study, therefore, aims to identify determinants of postnatal service utilization among mothers who gave birth in the past one year before this study in Amigna district, Arsi zone, Southeast Ethiopia (Figure 1).

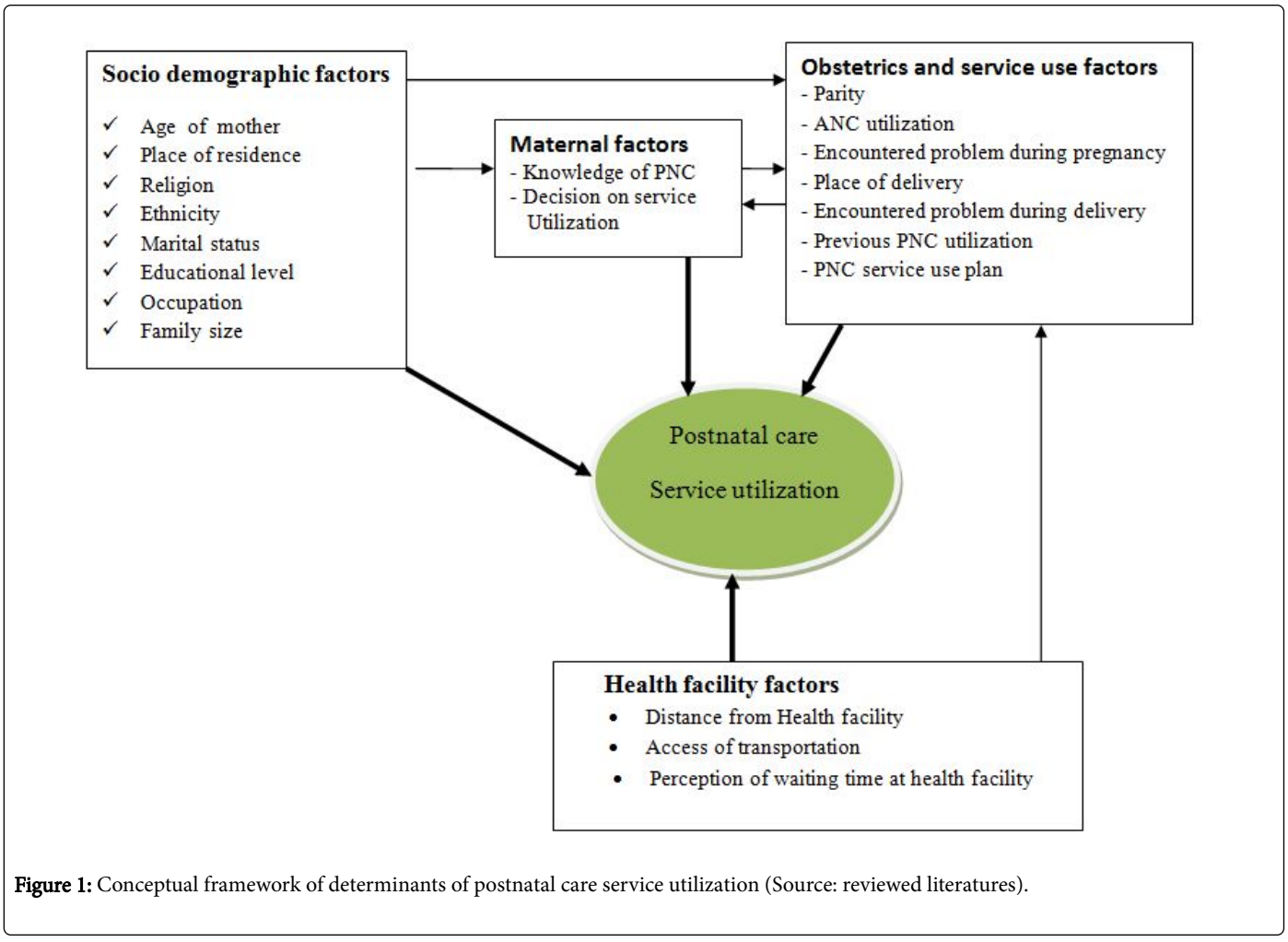

Figure 1: Conceptual framework of determinants of postnatal care service utilization (Source: reviewed literatures).

Materials and Methods

Study area and period

The study was conducted from May to June, 2016 in Amigna district, one of the 25 districts in Arsi zone, Southeast Ethiopia. It is located at 260 km from Addis Ababa in the Southeast direction. Amigna district is administratively structured into 19 rural and one urban kebeles (the smallest administrative unit). The district had 3 health centers and 18 functional health posts. All health centers provide postnatal care services. Health extension workers also provide postnatal care services at health post level.

Study design

Community based unmatched case control study design was employed.

Population

Source population: All women who were between 6 weeks to 12 months after they gave birth.

Study population: All women of selected kebeles who were between 6 weeks to 12 months after they gave birth and who fulfill inclusion criteria.

Cases were women who were between 6 weeks to 12 months after they gave birth and utilized postnatal care service for their recent delivery. Controls were women who were between 6 weeks to 12 months after they gave birth and didn't utilize postnatal care service for their recent delivery.

Inclusion criteria: Mothers who resided in selected kebeles at least for 6 months.

Sample size determination

Sample size was calculated by Epi-info7 using two population proportion formula for unmatched case control study with the assumptions of 95% confidence level and 80% power. Among factors considered Antenatal Care (ANC), distance [11], maternal education [12], and knowledge of postpartum danger signs [13], maternal education (secondary education) gave the largest sample size. Thus, taking 16.24% [12] level of exposure (secondary education) in the control group, 2.7 odds ratio, 2:1 ratio of controls to cases, 10% non-response rate and design effect of 1.5, the total sample size was 360 recently delivered mothers (120 cases and 240 controls).

Sampling techniques

The study used multistage random sampling technique. Six kebeles (5 rural and 1 urban) which cover 30% of the total population of Amigna district were selected by lottery method. The selected kebeles were namely Malekicho, Madefo Gora, Tedecha, M/Welabu and M/Asindabo and Adele (only urban kebele). Prior to data collection, a census was conducted in selected kebeles by health extension workers and all households with eligible women were identified and coded. Thus, 804 households (291 for cases and 513 for controls) were identified. A sample frame was prepared separately for both groups. The sample size was proportionally allocated to each kebele and finally study participants were selected using computer generated random numbers.

Data collection procedures

Data were collected by face-to-face interview using a structured and translated questionnaire. Six diploma nurse data collectors, who were fluent in Afan Oromo and familiar with the local customs, collected the data and two public health graduates supervised the data collection activities.

Study variables

Dependent variables: Postnatal care service utilization

Independent variables:

- Socio-demographic variables: age of the mother, place of residence, religion, ethnicity, educational level of mother, educational level her husband, occupation of mother, occupation of her husband and family size.
- Obstetric and health service use factors: parity, ANC service utilization, iron consumption during pregnancy, need for the last child, encountered problem during pregnancy, place of delivery, encountered problem during delivery, plan to utilize PNC, previous PNC utilization.
- Maternal factor: knowledge of mother on PNC, decision for service utilization.
- Health facility related factors: distance from health institution, access of transportation, perception of waiting time in health facility.

Operational definitions

Postnatal care utilization: In this study, a mother who had at least one post natal check-up for the recent delivery by health workers or health extension workers within six weeks after delivery was considered as utilized postnatal care service.

Knowledge:

- Good knowledge: Score of greater than 7 out of 10 knowledge question on postnatal care services and danger signs of postpartum period.
- Fair knowledge: Score of 5-7 out of 10 knowledge question on postnatal care services and danger signs of postpartum period.
- Poor knowledge: score of less than 5 out of 10 knowledge question on postnatal care services and danger signs of postpartum period.

Danger signs: Signs/symptoms that suggest obstetric complication and easily identified by non-clinical personnel (e.g. a mother).

Data quality management

The questionnaire was prepared in English and translated to local language (Afan Oromo) and back translated to English to check for consistency of translation. Translated questionnaire was also pre-tested on 5% of eligible mothers living in adjacent kebele and necessary adjustments were made before actual data collection. Training was given for data collectors and supervisors by principal investigator. Each data collector checked the completeness of filled questionnaires before winding up their visit to each study participant. Supervisors were giving necessary support and checking completeness, clarity and consistency of filled questionnaires daily and during data collection process. During data processing, the data was also checked, coded and entered into EpiData 3.1.

Data processing and analysis

Data were exported to SPSS 20, cleaned for missing and extreme values or outliers. Data were summarized by descriptive statistics such as mean, standard deviation, frequencies and percentages. Bivariate and multivariable binary logistic regressions were performed to identify determinants of postnatal care utilization.

All variables having a p-value<0.25 in the bivariate logistic regression analysis were considered as candidate for multivariate logistic regression model. Multicollinearity between independent variables was checked using Variance Inflation Factors (VIF)>5 was considered as suggestive of existence of collinearity and none was detected. Multivariable logistic regression was performed with backward stepwise method. Interaction was checked while running multivariable analysis and none was detected.

A p-value<0.05 was considered to declare statistical significance. Odd Ratio (OR) with their 95% CI was used to measure strength of association between predictor and outcome variables. Hosmer and Lemeshow test was used to check fitness of final model (p-value=0.72).

Results

Socio-demographic characteristics

A total of 116 (96.7%) cases and 234 (97.5%) controls were included in the study. Nearly half (55, 47.4%) of cases and more than a third (89, 38%) of controls were in the age group 20-29 years. The mean (standard deviation) age of the cases was 30 (5.4) years and that of controls was 31 (5.8) years.

About three-fourth of both cases (86, 74.1%) and controls (179, 76.5%) were from rural community. Oromo was the predominant ethnic group in both cases (114, 98.3%) and controls (228, 97.4%). Regarding their religion, (70, 60.3%) cases and (153, 65.4%) controls were Muslim. Most of the cases (114, 98.3%) and controls (226, 96.6%) were married. About one in five (24, 20.7%) of cases and nearly half of controls (113, 48.3%) did not attend formal education. Most of cases (111, 95.7%) and controls (225, 96.2%) were housewives; and farming was the major occupation of husbands of cases (83, 72.8%) and controls (187, 82.7%).

Nearly one-fifth (23, 20.2%) of husbands of cases and (102, 45.1%) of husbands of control did not attend any formal education. About two-third (77, 66.3%) of cases and more than half (126, 53.8%) of controls had four to six family size (Table 1).

Variables	Category	PNC utilization	
		Cases: No. (%)	Controls: No. (%)
Age of the mothers	20-29	55 (47.4)	89 (38)
	30-39	51 (44.0)	121 (51.7)
	>39	10 (8.6)	24 (10.3)
Place of residence	Rural	86 (74.1)	179 (76.5)
	Urban	30 (25.9)	55 (23.5)
Ethnicity	Oromo	114 (98.3)	228 (97.4)
	Amhara	2 (1.7)	6 (2.6)
Religion	Muslim	70 (60.3)	153 (65.4)
	Orthodox	46 (19.7)	81 (34.6)
Marital status	Married	114 (98.3)	226 (96.6)
	Others*	2 (1.7)	8 (3.4)
Educational level of mother	No formal education	24 (20.7)	113 (48.3)
	Grade (1-8)	55 (47.4)	96 (41)
	Grade (≥ 9)	37 (31.9)	25 (10.7)
Occupation of mother	House wives	111 (95.7)	225 (96.2)
	Government employee	5 (4.3)	9 (3.8)
Educational level of husband	No formal education	23 (20.2)	102 (45.1)
	Grade (1-8)	50 (44.7)	92 (40.7)

	Grade (≥ 9)	40 (35.1)	32 (14.2)
Occupation of husband	Farmer	83 (72.8)	187 (82.7)
	Government employee	17 (14.9)	16 (7.1)
	Daily labor worker	4 (3.5)	6 (2.7)
	Merchant	10 (8.8)	17 (7.5)
Family size	01-03	17 (14.7)	24 (10.3)
	04-06	77 (66.3)	126 (53.8)
	>6	22 (19)	84 (35.9)

Table 1: Socio-demographic characteristics of participants, Amigna district, southeast Ethiopia, May-June, 2016 [*divorced, widowed].

Determinants of postnatal care service utilization

Bivariate analysis

Bivariate analysis with binary logistic regression showed that educational level of the mother, educational level of husband ,family size, mother's knowledge on postnatal care, parity, need for the last child, ANC follow up during pregnancy, encountering health problem during pregnancy, place of delivery, encountering health problem during delivery, plan to utilize PNC , decision for service utilization and distance from health institution were statistically associated with postnatal care service utilization at p-value <0.25 (Table 2).

Variables	Categories	PNC utilization		p-value	COR (95%CI)
		Cases	Controls		
		No. (%)	No. (%)		
Socio-demographic characteristics					
Age of mother	20-29	55 (47.4)	89 (38)	0.341	1.5 (0.7,3.3)
	30-39	51 (44.0)	121(51.7)	0.978	1.0 (0.5,2.3)
	>39	10 (8.6)	24 (10.3)		1
Place of residence	Urban	30 (25.9)	55 (23.5)	0.628	1.1 (0.7,1.9)
	Rural	86 (74.1)	179 (76.5)		1
Ethnicity	Oromo	114 (98.3)	228 (97.4)	0.623	1.5 (0.3,7.6)
	Amhara	2 (1.7)	6 (2.6)		1
Religion	Muslim	70 (60.3)	153 (65.4)	0.356	1
	Orthodox	46 (19.7)	81 (34.6)		1.2 (0.8,1.9)
Marital status	Married	114 (98.3)	226 (96.6)	0.38	2.0 (0.4,9.7)
	Others	2 (1.7)	8 (3.4)		1
Educational level of mother	No formal education	24 (20.7)	113 (48.3)	-	1
	Grade (1-8)	55 (47.4)	96 (41)	<0.0001	2.7 (1.6,4.7)*
	Grade (≥ 9)	37 (31.9)	25 (10.7)	<0.0001	6.9(3.6,13.7)*
Occupation of mother	House wives	111 (95.7)	225 (96.2)	0.835	1
	Government employee	5 (4.3)	9 (3.8)		1.1 (0.4,3.4)
Educational level of husband	No formal education	23 (20.2)	102 (45.1)	-	1
	Grade (1-8)	50 (43.9)	92 (40.7)	0.004	2.3 (1.3,4.0)*

	Grade (≥ 9)	40 (35.1)	32 (14.2)	<0.0001	5.3 (2.8,10.0)*
Occupation of husband	Farmer	83 (72.8)	187 (82.7)	-	1
	Government employee	17 (14.9)	16 (7.1)	0.869	2.4 (0.2,3.9)
	Daily labor worker	4 (3.5)	6 (2.7)	0.264	1.5 (0.2,1.6)
	Merchant	10 (8.8)	17 (7.5)	0.502	1.3 (0.6,3.0)
Family size	01-03	17 (14.7)	24 (10.3)	0.012	2.7 (1.2,5.9)*
	04-06	77 (66.3)	126 (53.8)	0.002	2.3 (1.3,4.0)*
	>6	22 (19)	84 (35.9)		1
Mother's knowledge	Good	68 (58.6)	62 (26.5)	<0.0001	8.7 (4.4,17.5)*
	Moderate	36 (31)	76 (32.5)	0.002	3.8 (1.8,7.8)*
	Poor	12(10.4)	96 (41)		1
Obstetric, maternal, service use and facility characteristics					
Parity	1	14 (12.1)	11 (4.7)	0.001	4.3 (1.8,10.3)*
	02-03	61 (52.6)	83 (35.5)	<0.0001	2.5 (1.6,4.0)*
	≥ 4	41 (35.3)	140 (59.8)		1
ANC visit	Yes	106 (91.4)	149 (63.7)	<0.0001	6.0 (3.0,12.2)*
	No	10 (8.6)	85 (36.3)		1
Consumed iron during pregnancy	Yes	72 (62)	131 (56)	0.278	1.3 (0.8,2.0)
	No	44 (38)	103 (44)		1
Need for the last child	Yes	74 (63.8)	10 (46.6)	0.003	2.0 (1.3,3.2)*
	No	42 (36.2)	125 (53.4)		1
Encountered problem during pregnancy	Yes	37 (31.9)	43 (18.4)	0.005	2.1 (1.2,3.5)*
	No	79 (68.1)	191 (81.6)		1
Place of delivery	Home	24 (20.7)	142(60.7)		1
	Health Institution	92 (79.3)	92 (39.3)	<0.0001	5.9 (3.5,10.0)*
Encountered problem during delivery	Yes	43 (37.1)	54 (23.1)	0.006	2.0 (1.2,3.2)*
	No	73 (62.9)	180 (76.9)		1
PNC for previous delivery	Yes	50 (43.1)	88 (37.6)	0.322	1.3 (0.8,1.9)
	No	66 (56.9)	146 (62.4)		1
Plan to utilize PNC	Yes	64 (55.2)	108 (46.2)	0.113	1.4 (0.9,2.2)*
	No	52 (44.8)	126 (53.8)		1
Decision maker	Mother alone	55 (47.4)	89 (38)	0.034	2.0 (1.1,3.8)*
	Mother and husband	44 (37.9)	90 (38.5)	0.168	1.6 (0.8,3.0)*
	Husband alone	17 (14.7)	55 (23.5)		1
Time to reach HI (on foot)	≤ 1 hr	80 (69)	83 (35.5)	<0.0001	4.0 (2.5,6.5)*
	>1 hr	36 (31)	151 (64.5)		1

Access of transportation	Yes	34 (29.3)	75 (32.1)	0.602	0.9 (0.5,1.4)
	No	82 (70.7)	159 (67.9)		1
Think waiting time is a problem	Yes	65 (56)	131 (56)	0.993	1
	No	51 (44)	103 (44)		0.9 (0.6,1.6)

Table 2: Bivariate logistic regression of determinants of postnatal care (PNC) service utilization, Amigna district, Southeast Ethiopia, May-June, 2016 [*Statistically significant at p-value <0.25].

Multivariate analysis

In multivariate logistic regression, educational level of mother, educational level husband, maternal knowledge of postnatal care, ANC follow up during pregnancy, place of delivery and distance from health institution were found to be determinants of postnatal service utilization at p-value<0.05.

Mother who attended at least secondary school was 3.2 times [95% CI:(1.4, 7.3)] more likely to utilize postnatal care services compared to mother who did not attend formal education. Similarly, mother whose husband attended at least secondary school was nearly 3 times [95% CI:(1.3, 6.7)] more likely to utilize postnatal care services compared to mothers whose husband did not attend formal education. Mother who had good knowledge of postnatal care was 4.5 times [95% CI:(2.0, 10.0)] and mother who had moderate knowledge of postnatal care was 3.2 times [95% CI:(1.4, 7.3)] more likely to utilize postnatal care services compared to that who had poor knowledge of postnatal care. Mother who visited antenatal care at least once was 3.3 times [95% CI: (1.5, 7.3)] more likely to utilize postnatal care services compared to mother who did not visit antenatal care at all. Similarly, mother who gave birth in health institution was nearly four times [95% CI:(2.0, 7.2)] more likely to utilize postnatal care compared to mother who gave birth at home. Mother who traveled at most one hour to reach the nearest health institution was 3.4 times [95% CI:(1.9, 6.2)] more likely to utilize postnatal care services compared to mother who traveled more than one hour (Table 3).

Variables	**Categories**	**PNC utilization**		**COR (95%CI)**	**AOR (95%CI)**
		Cases	**Controls**		
		No. (%)	**No. (%)**		
Educational level of mother	No formal education	24 (20.7)	113 (48.3)	1	1
	Grade (1-8)	55 (47.4)	96 (41)	2.7 (1.6,4.7)	1.5 (0.7,3.0)
	Grade (≥ 9)	37 (31.9)	25 (10.7)	6.9 (3.6,13.6)	3.2 (1.4,7.3)*
Educational level of husband	No formal education	24 (21.0)	102 (45.1)	1	1
	Grade (1-8)	50 (43.9)	92 (40.7)	2.3 (1.3,4.0)	1.6 (0.8,3.1)
	Grade (≥ 9)	40 (35.1)	32 (14.2)	5.3 (2.8,10.0)	2.9 (1.3,6.7)*
Family size	01-03	17 (14.7)	24 (10.3)	2.7 (1.2,5.9)	0.8 (0.4,1.8)
	04-06	77 (66.3)	126 (53.8)	2.3 (1.3,4.0)	0.7 (0.2,2.7)
	>6	22 (19)	84 (35.9)	1	1
Mother's knowledge	Good	68 (58.6)	62 (26.5)	8.7 (4.4,17.5)	4.5 (2.0,10.0)**
	Moderate	36 (31)	76 (32.5)	3.8 (1.8,7.8)	3.2 (1.4,7.3)**
	Poor	12 (10.4)	96 (41)	1	1
Parity	1	14 (12.1)	11 (4.7)	4.3 (1.8,10.3)	2.0 (0.7,6.5)
	02-03	61 (52.6)	83 (35.5)	2.5 (1.6,4.0)	1.4 (0.7,2.6)
	4 and above	41 (35.3)	140 (59.8)	1	1
ANC visit	Yes	106 (91.4)	149 (63.7)	6.0 (3.0,12.2)	3.3 (1.5,7.3)*
	No	10 (8.6)	85 (36.3)	1	1
Need for the last child	Yes	74 (63.8)	109 (46)	2.0 (1.3,3.2)	0.8 (0.4,1.6)

	No	42 (36.2)	125 (53.4)	1	1
Encountered problem during pregnancy	Yes	37 (31.9)	43 (18.4)	2.1 (1.2,3.5)	1.7 (0.8,3.4)
	No	79 (68.1)	191 (81.6)	1	1
Place of delivery	Home	24 (20.7)	142 (60.7)	1	1
	Health institution	92 (79.3)	92 (39.3)	5.9 (3.5,10.0)	3.8 (2.0,7.2)**
Encountered problem during delivery	Yes	43 (37)	54 (23)	1.9 (1.2,3.2)	1.1 (0.5,2.3)
	No	73 (63)	180 (77)	1	1
Plan to utilize PNC	Yes	64 (55.2)	108 (46.2)	1.4 (0.9,2.2)	1.7 (0.9,3.0)
	No	52 (44.8)	126 (53.8)	1	1
Decision maker	Mother alone	55 (47.4)	89 (38)	2.0 (1.1,3.8)	1.4 (0.7,2.8)
	Mother and husband	44 (37.9)	90 (38.5)	1.6 (0.8,3.0)	1.2 (0.5,2.8)
	Husband alone	17 (14.7)	55 (23.5)	1	1
Distance from HI (on foot)	≤ 1hr	80 (69)	83 (35.5)	4.0 (2.5,6.5)	3.4 (1.9,6.2)**
	>1hr	36 (31)	151 (64.5)	1	1

Table 3: Multivariable logistic regression determinants of postnatal care (PNC) service utilization, Amigna district, Southeast Ethiopia, May-June, 2016 [*statistically significant at p-value <0.05; **statistically significant at p-value <0.001].

Discussion

This study tried to assess determinants of postnatal care service utilization among mothers who gave birth in the past one year prior to the study in Amigna district, Southeast Ethiopia. Educational level of mother, educational level husband, maternal knowledge of postnatal care, ANC follow up during pregnancy, place of delivery and distance from health institution were found to be determinants of postnatal service utilization.

This study showed that educational status of the mother has positive association with postnatal care service utilization. This finding is in line with the findings of previous study conducted in Nepal [14], report of Ethiopian Demographic Health Survey 2011 [15] and Jabtine district, Ethiopia [12]. This is may be due to the reason that better education increases access to information and risk perception which in turn increase health-seeking behavior. This study also showed that educational status of husband has positive association with postnatal service utilization of mother. This finding is in agreement with report of studies conducted in Nigeria and Ethiopia [11,15,16]. This is may be due to the fact that educated husbands may have a better communication with their wives and willingness to discuss the use of postnatal care services. They have an access to information and may also provide more autonomy to their wives.

Knowledge of mother on postnatal care and postpartum danger signs was found to be determinant of postnatal care service utilization. This result is similar to the finding of study conducted in Kenya [17] where mother who had good and moderate knowledge on postnatal care utilized postnatal care service better than mother who had poor knowledge of postnatal care. This can be explained by the fact that awareness on postnatal care and postpartum danger signs is an important factor that motivates a woman and her families to attend heath care services at the earliest opportunities with the intention of prevention, early detection and getting managed for postpartum danger signs.

In this study, utilization of ANC service during pregnancy was one of the determinants of postnatal care service utilization. Postnatal care services utilization was higher among mothers who visit ANC during pregnancy as compared to mothers who had not visit ANC. This is consistent with the analysis of the 2011 EDHS [15] and with study conducted in Dembecha district; North West Ethiopia [11].This may be explained by the reason that attending ANC provides a pregnant woman to obtain necessary health information on possible preparation for childbirth, and also on postnatal service utilization after delivery.

Antenatal care (ANC) visit was also one determinants of postnatal care identified by this study. A woman who had ANC visit is more likely utilized PNC services. This might be because counseling during ANC also includes utilization of PNC services. As a result, a pregnant woman may perceive that PNC service is important and is available in her nearby health institution. The other determinant of postnatal care service utilization identified in this study was place of delivery. A mother who delivered her last baby in health institution was more likely utilized PNC services compared that who delivered at home. This finding is consistent with report of study conducted in Jabtine district, Ethiopia [12]. This positive association of PNC services utilization with place of delivery can be attributed to the fact that women who gave birth in health institution have greater opportunity to get exposed to health information related to PNC services at the place of delivery and thus, get access to learn about the types, benefits and availabilities of PNC services during their stay in the health institutions.

In this study, a woman who traveled at most one hour to reach the nearby health institution is more likely utilized postnatal care services than those who traveled more than one hour. This finding is in agreement with reports of other studies [11,18,19] where distance from

health institution remains a problem in postnatal care service utilization. This might be because having nearby health facility increases access to health information and reduces distance barriers leading to better utilization of services.

The possible limitation of this study was recall bias for some variables such as health problems during pregnancy and delivery though we included only mothers who gave birth in the last one year before data collection.

Conclusion

This study identified educational level of mother, educational level of husband, mother's knowledge on postnatal care, antenatal care utilization during pregnancy, place of delivery, and distance from health institution were determinants of utilization of postnatal care service.

Recommendations

Based on the findings of the study, the following recommendations are forwarded to improve postnatal care service utilization.

Health workers and health extension workers of the district should:

- Improve other maternal service utilization like ANC and skilled delivery which are the key entry points to seek postnatal care services
- Should take the opportunities to encourage mothers who attend delivery and ANC on the importance and availability of PNC services
- Researchers should conduct studies considering health care system and quality of postnatal care related factors which were not addressed in this study

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Ethical Considerations

Ethical approval was secured from Institutional Review Board (IRB) of the College of Health Sciences, Jimma University. Permissions to undertake the study were obtained from Amigna district health office and local administrative. All study participants were informed about the objective and importance of the study and their verbal consent was obtained before data collection. They were also informed about their right of not participating in the study or withdrawing from interview at any time. Privacy and confidentiality of information was assured.

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