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RESEARCH ARTICLE

MAGNITUDE AND PREDICTORS OF POSTNATAL CARE UTILIZATION IN HADIYA ZONE, SOUTH ETHIOPIA: A COMMUNITY BASED STUDY

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ABSTRACT

Background: Maternal mortality is relatively high in Ethiopia with more than one in five deaths to women aged 15-49 years. This is mainly attributed to pregnancy and pregnancy related causes. Postnatal care utilization is extremely low in Ethiopia with more than nine in ten mothers received no postnatal care at all while only 5% received postnatal care within the critical first two days after the delivery. Therefore, the objective of this study was to identify the magnitude and determinants of postnatal care services utilization in Hadiya Zone, Southern Ethiopia.

Methods: A community based cross sectional quantitative study was conducted in Hadiya Zone of Southern Ethiopia during January and February 2009. A multi stage sampling technique was used to select the study participants from one urban and five rural kebeles. A total sample size of 710 was determined using single population proportion formula. The data was analyzed using SPSS version 16 statistical software. Logistic regression analysis was used to determine association between dependent and independent variables using both crude and adjusted odds ratio with 95% confidence interval.

Result: More than seven in ten mothers received no postnatal care at all and only 22.7% received postnatal care within the critical first two days after delivery. Antenatal care attendance, place of delivery, distance from the facility, cultural belief, and maternal workload, not knowing about postnatal care, and being apparently healthy were major predictors of postnatal care service utilization. There is no marked variation of postnatal care utilization within the first two days of birth by the age of the mothers.

Conclusion: Postnatal care uptake was low and predicted by reasonably modifiable factors such as antenatal care visit, place of delivery and awareness about postnatal care. Therefore, improvement in the uptake of postnatal care could be expected provided that measures targeted at raising antenatal care visit and institutional delivery is introduced timely.

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INTRODUCTION

Of all the health statistics monitored by the World Health Organization (WHO), maternal mortality has the largest discrepancy between developed and developing countries. More than one in four maternal deaths in developing countries occurs during labor and delivery and in the 24 hours post-delivery (Ross D, 1986). Two in four maternal deaths occur from the onset of labor to the end of the first week post-delivery (Pathmanathan et al., 1990). It has been reported that more than half a million women continue to die each year from complications of pregnancy and childbirth.

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Yet most of these deaths could be avoided if preventive measures were taken and adequate care is available (CSA-Ethiopia, 2006). In Ethiopia, the levels of maternal and infant mortality and morbidity are among the highest in the world with more than one in five deaths of women aged 15-49 attributed to pregnancy or pregnancy related causes (CSA-Ethiopia, 2006; Addai, 2000). The Ethiopian demographic health survey (EDHS) 2005 indicated that the maternal mortality rate was 673 deaths per 100,000 live births while infant mortality rate was as high as 77 deaths per 1000 live births (CSA-Ethiopia, 2006). In spite of the clear importance of maternity care, poor access to and low utilization of such services continue to be important determinants of maternal mortality and morbidity throughout the world (Bhandari, 1989; Holian, 1989; Paul, 1991).

A lifetime risk of maternal death in developing countries is forty times higher than that of the developed world making maternal mortality a neglected tragedy in terms of the magnitude of the problem, equity and social justice (UNFPA, 2004). The health care that a mother receives during pregnancy, at the time of delivery and soon after delivery is important for the survival and well-being of both the mother and the child (Leslie, 1989). Taking antenatal and delivery service use as indicators, a study in 2003 demonstrated that the use of maternity-care services in Ethiopia was inadequate. The situation is even worse in the rural areas where more than 80% of the population reside (Mekonnen, 2003). The postnatal period is the period when most maternal deaths occur compared to the ante-partum and intra-partum periods. More than one in four maternal deaths and two in four prenatal deaths in developing countries occur during labor and delivery and within 24 hours post delivery. A report based on data from seven studies revealed that 61-72% of all maternal death occurs within the 42 days postpartum. Most of these deaths occur soon after delivery with numbers tapering off as time passes (Marjorie, 2005).

Post natal care is the care provided to the woman and her baby during the six weeks period following delivery in order to promote healthy behavior and early identification and management of complications. WHO estimates that levels of use of postpartum care are below 30% for developing countries; these estimates are lower for women not delivering with a skilled birth attendance or did not use antenatal care (Marjorie, 2005). Postnatal care coverage is extremely low in Ethiopia. More than nine in ten mothers received no postnatal care at all and only 5 percent received postnatal care within the critical first two days after the delivery (CSA-Ethiopia, 2006). Residence and educational status significantly influenced the utilization of postnatal care by mothers who delivered outside a health facility in Ethiopia (Mekonnen, 2002). Moreover, there are significant differences between women in the receipt of postnatal care within two days by wealth quintile (CSA-Ethiopia, 2006). General barriers to the use of postpartum care include cost/fees of the services, distance/transport, non-availability of services/providers, perceived poor quality, and lack of decision-making power on the part of the woman (Marjorie, 2005). Although there are a handful of studies dealing with identification of predictors of maternal health services utilization in general, there are very few specifically focusing on postnatal care. Therefore, the objective of this study was to assess the magnitude and identify predictors of postnatal care services utilization in Hadiya Zone of Southern Ethiopia.

MATERIALS AND METHODS

Study area

A community based cross-sectional study which employed quantitative method was conducted in Hadiya Zone during January and February 2009. Hadiya zone is one of the 14 zones in the southern region of Ethiopia. The zone is administratively divided in to 11 *woredas* (districts) and 324 *kebeles* (the smallest administrative unit) and has a population of 1,451,305 about 50% being females.

The potential health services coverage is 82% with one zonal hospital, 17 health centres, 14 upgrading health centres and 244 health posts which all belong to the public health system.

Study participants

The study area was stratified into urban and rural. All ten rural *woredas* found in the Zone were considered during selection of the study sites. For logistic and cost reasons, three *woredas* namely Misha, Lemo and Anlemo were randomly selected. The capital town of the Zone, Hossana, was included in the study to represent the urban communities. A total of six *kebeles* were selected by lottery method. The study population comprised of mothers who gave birth at least once in the last five years preceding the survey, irrespective of place and outcome of delivery, and who are residents of the study area for at least 1 year. A census was conducted in each selected *kebele* to obtain the list of mothers. The total number of mothers who gave birth at least once in five years preceding the survey was 1,730. Based on this, a sampling frame which enlists all eligible mothers was prepared and 710 women were randomly selected to be included in the study.

This is part of a study published somewhere else on antenatal care utilization. All women in the study were included during the analysis for this part of the study. The assumptions during the sample size calculation were: proportion of women attending ANC in the southern region ($p=30\%$), 95% confidence interval, 10% non-response rate, and a design effect of 2. Finally, a total sample size of 710 was taken. The total sample size was then allocated proportional to size of households in each *kebeles*.

Measurement and data collection

A structured questionnaire congruent to the objectives of the study was prepared and adapted from EDHS 2005. The contents of the questionnaire include: socio-demographic variables, economic status and postnatal service utilization and other factors affecting utilization of postnatal service. After the instrument was translated into the local language (Hadiyigna) and pre-tested data was collected by ten individuals who were grade 12 completed and can speak the local language. A face-to-face interview was conducted going house to house in the selected *kebeles*. Mothers who were not present during first visit were revisited twice and the result of visiting was recorded on the tool. Two health officers were assigned to supervise and assist the data collection process.

Data processing and analysis

The data from the household survey was entered into SPSS version 16 statistical software. The data was cleaned for inconsistencies and missing values after revision of the original data using the code numbers. Frequencies and summary statistics (mean, standard deviation, and percentage) were used to describe the study population in relation to socio-demographic and other relevant variables. The degree of association between dependent and independent variables were assessed using crude and adjusted odds ratio with 95% confidence interval.

Logistic regression was considered more appropriate statistical method to apply here, because most of the variables are categorical and dichotomous. Simple logistic regression analysis was performed to assess statistical association between dependent and independent variable and then multiple logistic regressions was also carried out to control potential confounding variables.

Operational Definition

The category of 'attended postnatal care' applies to a mother who had visited a health facility to receive postnatal care with in two days during the last delivery.

Ethical Considerations

Ethical clearance was obtained from the Ethical Review Committee of Jimma University and Southern Ethiopia Regional Health Bureau. Informed verbal consent was obtained from each respondent. Moreover, the right of the respondents to refuse participation was respected and access to the collected data was limited to the members of research team.

RESULTS

Socio-demographic and obstetric characteristic of the respondents

A total of 691 women who gave birth at least once within the last five years preceding the survey were interviewed from one urban and five rural kebeles. The overall response rate was 97%. Two hundred forty nine (36%) of the respondents were in the age group of 25-29 with the mean age of 29.38 + 5.43 ranging from 29.34 + 5.19 in urban to 29.39 + 5.48 in rural women. Five hundred forty six (79%) and 74 (10.7%) were followers of protestant and Orthodox religions, respectively. The majority (91.5%) of the study participants were housewives. Eight in ten of the urban and only six in ten of their rural counter-parts had attended formal education. Nineteen (16.1%) of the urban and only 7 (1.2%) of the rural mothers attended secondary school and above which shows a 16 times higher probability for the urban women to attend secondary school than their rural counter parts. Most of the mothers (93.1%) are currently living with their husband. About half of (50.7%) the respondents earn monthly income of 100-499 Ethiopian Birr (1 USD=13 Eth. Birr).

Table 1. Socio-demographic characteristics of mothers who gave birth at least once during the last five years in Hadiya Zone, Southern Ethiopia, Jan - Feb 2009 (n=691)

Variable	Residence		Total (%)
	Urban (n=118) (%)	Rural (n=573) (%)	
Age			
<20	8 (6.8)	30 (5.2)	38 (5.5)
20-24	12 (10.2)	69 (12.0)	81 (11.7)
25-29	32 (27.1)	217 (37.9)	249 (36.0)
30-34	39 (33.1)	141 (24.6)	180 (26.0)
>34	27 (22.9)	116 (20.2)	143 (20.7)
Mean + SD	29.34 + 5.19	29.39 + 5.48	29.38 + 5.43
Educational status			
Unable to read & write	10 (8.5)	211 (36.8)	221 (32)
Primary school	89 (75.4)	355 (62.0)	444 (64.3)
Secondary and above	19 (16.1)	7 (1.2)	26 (3.8)
Ethnicity			
Hadiya	75 (63.6)	493 (86)	568 (82.2)
Gurage	8 (6.8)	16 (2.8)	24 (3.5)
Amhara	22 (18.6)	11 (1.9)	33 (4.8)
Kambata	5 (4.2)	26 (4.5)	31 (4.5)
Silite	6 (5.1)	20 (3.5)	26 (3.8)
Other	2 (1.7)	7 (1.2)	9 (1.3)
Occupation			
Housewife	83 (70.3)	546 (95.5)	629 (91.2)
Civil servant	20 (16.9)	5 (0.9)	25 (3.6)
Merchant	7 (5.9)	14 (2.4)	21 (3.0)
Student	8 (6.8)	5 (0.9)	13 (1.9)
Others	0	2 (0.3)	2 (0.3)
Religion			
Protestant	86 (72.9)	461 (80.5)	547 (79.2)
Orthodox	23 (19.5)	52 (9.1)	75 (10.9)
Muslim	8 (6.8)	46 (8.0)	54 (7.8)
Others	1 (0.8)	14 (2.4)	15 (2.2)
Marital status			
Married	100 (84.7)	543 (94.8)	643 (93.1)
Divorced	1 (0.8)	3 (0.5)	4 (0.6)
Widowed	8 (6.8)	1 (0.2)	9 (1.3)
Never married	1 (0.8)	3 (0.5)	4 (0.6)
Separated	8 (6.8)	23 (4.0)	31 (4.5)
Family income			
<100	3 (2.5)	173 (30.2)	176 (25.5)
100-499	25 (21.2)	325 (56.7)	350 (50.7)
≥500	90 (76.3)	75 (13.1)	165 (23.9)
Family size			
1-2	4 (3.4)	9 (1.6)	13 (1.9)
3-4	22 (18.6)	110 (19.2)	132 (19.1)
≥5	92 (78.0)	454 (79.2)	546 (79.0)

Table 2: Obstetric characteristics and residence of mothers who gave birth at least once during the last five years in Hadiya Zone, Southern Ethiopia, Jan. - Feb. 2009 (n=691)

Variable	Residence			p-value
	Urban (n=118)	Rural (n=573)	Total	
Age at first pregnancy				
<20	67 (56.8%)	489 (85.3%)	556 (80.5%)	0.000
>20	51 (43.2%)	84 (14.7%)	135 (19.5%)	
Mean+ SD	20.5 + 2.91	18.99 + 2.38	19.26 + 2.52	
Gravidity				
1	20 (16.9%)	56 (9.8%)	76 (11%)	0.010
2-4	54 (45.8%)	247 (43.1%)	301 (43.6%)	
>=5	44 (37.3%)	270 (47.1%)	314 (45.4%)	
Parity				
1	20 (16.9%)	62 (10.8%)	82 (11.9%)	0.030
2-4	55 (46.6%)	252 (44%)	307 (44.4%)	
>=5	43 (36.4%)	259 (45.2%)	302 (43.7%)	
Number of live birth				
1	20 (16.9%)	68 (11.9%)	88 (12.7%)	0.038
2-4	57 (48.3%)	253 (44.2%)	310 (44.9%)	
>=5	41 (34.7%)	252 (44%)	293 (42.4%)	
Ever had infant death				
Yes	5 (4.2)	74 (12.9%)	79 (11.4%)	0.007
No	113 (100%)	499 (87.1%)	612 (88.6%)	
Ever had abortion				
Yes	13 (11%)	70 (12.2%)	83 (12%)	0.700
No	105 (97.5%)	503 (87.8)	608 (88%)	
Ever had still birth				
Yes	8 (6.8)	38 (6.6%)	46 (6.7%)	0.950
No	110 (100)	535 (93.4%)	645 (93.3%)	
Planned pregnancy				
Yes	58 (49.6%)	344 (60.4%)	402 (58.5%)	0.030
No	59 (50.4)	226 (39.6%)	285 (41.5%)	

Table 3: Postnatal care utilization among mothers who gave birth at least once in the last five years in Hadiya Zone, Southern Ethiopia, Jan. - Feb. 2009

Variable	Postnatal care utilization		P - Value
	Yes (N=157) N (%)	No (N=534) N (%)	
Mother age			
<20	13 (8.3)	25 (4.7)	0.003
20-24	16 (10.2)	65 (12.2)	
25-29	58 (36.9)	191 (35.8)	
30-34	46 (29.3)	134 (25.1)	
>=35	24 (15.3)	119 (22.3)	
Gravidity			
1	26 (16.6)	50 (9.4)	0.002
2-4	73 (46.5)	228 (42.7)	
>=5	58 (36.9)	256 (47.9)	
Parity			
1	28 (17.8)	54 (10.1)	0.000
2-4	74 (47.1)	233 (43.6)	
>=5	55 (35)	247 (46.3)	
Residence			
Urban	67 (56.7)	51 (43.3)	0.000
Rural	90 (15.7)	483 (84.3)	
Mother education			
Cannot read and write	15 (9.6)	206 (38.6)	0.000
Primary school	127 (80.9)	317 (59.4)	
Secondary and above	15 (9.6)	11 (2.1)	
Family income			
<100	24 (15.3)	152 (28.5)	0.000
100-499	58 (36.9)	292 (54.7)	
>=500	75 (47.8)	9 (16.9)	

Majority (78%) of the urban respondents and 454 (79%) of their rural counter parts had a family size of greater than five Table 1.

The obstetric history of the respondents revealed that 556 (80.5%) of the respondents had their first pregnant before the age of twenty.

The mean age at first pregnancy was 19.26 + 2.52 ranging from 18.99 + 2.38 in rural to 20.5 + 2.91 in urban women. Age at first pregnancy was significantly associated with place of residence ($p < 0.000$). Women residing in rural area were 1.5 times more likely to be pregnant before the age of 20 than the urban residents. Out of the total respondents 43 (36.4%) of the urban and 259 (45.2%) of the rural mothers had five or more children. The number of grand multi-para was relatively higher among rural than urban respondents. From the total study participants about one in ten of the respondents (11.4%) had lost at least one child before the age of one. Eighty three (12%) and 46 (6.7%) of the mothers had history of abortion and stillbirth, respectively. In a significant proportion of the respondents (41.5%) the last pregnancy was unplanned Table 2.

Fifty seven percent of the mothers in the urban areas received postnatal care within two days of the birth compared with 16% of the mothers in rural areas ($p = 0.000$). Similarly, ten percent of mothers with no education received timely postnatal care while 80.9% of the mothers with primary education did so ($p = 0.000$). There were significant differences between women in the receipt of postnatal care within two days by their family monthly income ($p = 0.000$) Table 3.

Predictors of Postnatal Care Service Utilization

There are no marked variations by mother's residence, marital status, family income, pregnancy status (planned/unwanted) and birth order for the utilization of postnatal care services within the first two days of birth when adjusted for each other.

Table 4. Predictors of postnatal care utilization in mothers who gave birth at least once in the last five years in Hadiya zone, southern

Variable	Postnatal care utilization		COR (95% CI)	AOR (95% CI)
	Yes (%)N=157	No (%)N=534		
Residence				
Urban	67 (42.7)	51 (9.6)	0.14 (0.092, 0.21)*	1.96 (0.85, 4.49)
Rural	90 (57.3)	483 (90.4)	1.00	1.00
Marital status				
Married	138 (87.9)	505 (94.6)	2.4 (1.3, 4.4)*	0.79 (0.31, 1.97)
Other	19 (12.1)	29 (5.4)	1.00	1.00
Family income				
<100	24 (15.3)	152 (28.5)	1.00	1.00
100-499	58 (36.9)	292 (54.7)	0.79 (0.47, 1.33)	0.52 (0.25, 1.09)
>=500	75 (47.8)	90 (16.9)	0.18 (0.11, 0.32)	0.66 (0.27, 1.62)
Education				
Illiterate	15 (9.6)	206 (38.6)	1.00	1.00
Primary	127 (80.9)	317 (59.4)	0.18 (0.10, 0.319)	0.67 (0.31, 1.45)
Secondary & above	15 (9.6)	11 (2.1)	0.05 (0.02, 0.13)	1.25 (0.36, 4.34)
Gravidity				
One	26 (16.6)	50 (9.4)	0.43 (0.25, 0.75)	2.8 (0.06, 115)
2-4	73 (46.5)	228 (42.7)	0.70 (0.48, 1.04)	1.12 (0.16, 7.58)
>=5	58 (36.9)	256 (47.9)	1.00	1.00
Parity				
One	28 (17.8)	54 (10.1)	0.42 (0.25, 0.73)*	0.36 (0.09, 14.4)
2-4	74 (47.1)	233 (43.6)	0.70 (0.47, 1.03)	0.97 (0.14, 6.6)
>=5	55 (35)	247 (46.3)	1.00	1.00
ANC attendance				
Yes	154 (98.1)	442 (82.8)	0.09 (0.02, 0.30)*	0.13 (0.03, 0.57)**
No	3 (1.9)	92 (17.2)	1.00	1.00
Place of delivery				
Health Institution	129 (82.2)	48 (9)	0.02 (0.01, 0.03)*	0.01 (0.09, 0.38)**
Home	28 (17.8)	486 (91)	1.00	1.00
Walking distance				
<1hour	137 (87.3)	266 (49.8)	0.21 (0.08, 0.55)	1.00 (0.32, 3.15)
1-2 hour	15 (9.6)	223 (41.8)	1.7 (0.57, 4.77)	3.6 (1.02, 12.66)*
>2 hour	5 (3.2)	45 (8.4)	1.00	1.00

Ethiopia, Jan-Feb 2009

Adjusted for: residence, marital status, family income, mother education, antenatal attendance, place of delivery, gravidity, parity and walking distance

*p - value <0.05, ** p- value <0.001

Postnatal care utilization

To assess the extent of postnatal care utilization, respondents were asked whether they had received a health check after the last delivery during the five years preceding the survey. More than seven in ten mothers received no postnatal care at all and only 22.7% received postnatal care within the critical first two days after the delivery. There was no marked variation in postnatal care services utilization within the first two days of birth by the age of the mother.

But all of these variables appeared to be determinants of postnatal care utilization when the crude OR was looked at. Antenatal care attendance, place of delivery and distance from the facility were associated with receiving postnatal care within two days of delivery.

Mothers who attend antenatal care at least once during pregnancy were more likely to receive postnatal care service than those who never attended antenatal care (OR=0.13, 95% CI=0.033, 0.057).

The place of delivery is significantly associated with postnatal care uptake. Women who delivered in the health facility had greater chance of having postnatal care than the women who gave birth at home (OR = 0.01, 95% CI = 0.009, 0.38). Similarly, farther distance from the health facility was also associated with a lower utilization of postnatal care. Women who live in a walking distance farther than two hours were 3.6 times less likely to utilize postnatal care than women living in a walking distance of less than two hours (OR = 3.6, 95% CI = 1.02, 12.66) Table 4.

Finally, all women were asked to give their opinion on the factors that can hinder postnatal care service utilization in their community. Main barriers listed by the respondents were cultural belief (fear of Michi) (n=161, 31.8%), lack of money for transport (n=113, 21.4%), attending to other family matter or maternal work overload (n=98, 18.6%), not being aware about postnatal care (n=83, 15.7%), did not think it is necessary (n=75, 14.2) and other (n=9, 1.7%) Figure 1.

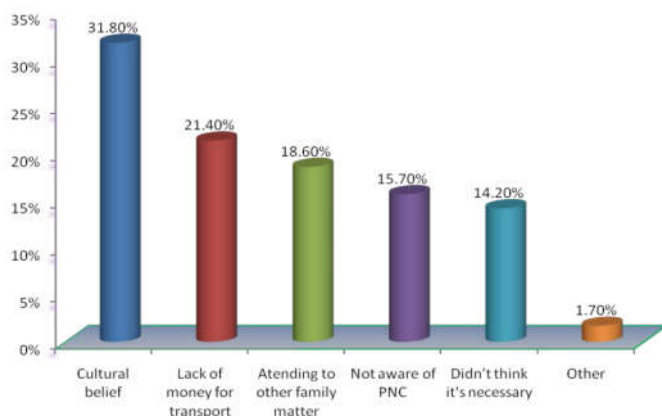


Figure 1. Reasons for not attending postnatal service by mothers who gave birth at least once in the last five years in Hadiya zone, Southern Ethiopia, Jan-Feb 2009

DISCUSSION

A significant proportion of maternal and neonatal deaths occur during the first 48 hours after delivery. Thus, postnatal care is important for both the mother and the child to treat complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child (Ross, 1986). In this study, the utilization of postnatal care service was found to be very low. Only less than a quarter (22.7%) of the respondents utilized postnatal care. This finding is consistent with the study done in Nepal, but it differs significantly with the finding of another study in Ethiopia (Sulochana, 2007; Mekonnen, 2002). The variation might be attributed to methodological and service availability differences in the study areas. However, antenatal care attendance, place of delivery and walking distance were the main determinants of postnatal care service utilization in this study, which is in line with the finding of the study conducted in Nepal (Sulochana, 2007). This study reveals that, the utilization of postnatal services in the study area was low. Only twenty two point seven percent received postnatal care within the critical first two days after delivery.

This indicates that regardless of place of birth, mothers and newborns spend most of the postnatal period (the first six weeks after birth) at home. The postnatal period is a neglected period. Despite the fact that the majority of maternal and newborn deaths occur within the first week of the postnatal period, health care providers across the country continue to advise mothers to come back to the facility for a first check-up only after six weeks. This is a visit for survivors. The significant factors that were found to influence utilization of postnatal services were ANC care attendance, place of delivery, walking distance, and others perceived reasons by the mothers.

Competing interests

All the authors declare that they have no any competing interests, be it financial or non financial.

Authors' contributions

ZA was involved in the conception, design, analysis, report and manuscript writing. MW and SO were involved in the design, analysis and interpretation of the data, and report writing. MW also took part in manuscript preparation.

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