

Magnitude and Determinants of Postnatal Care Service Utilization Among Women Who Gave Birth in the Last 12 Months in Northern Ethiopia: A Cross-Sectional Study

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Introduction: The postnatal period is the first 6 weeks (42 days) following delivery of a baby. The first hours, days and weeks after childbirth are the most critical times for both the mother and newborn infants. Most maternal and neonatal deaths occur during the first 24 hours after childbirth.

Purpose: This study aimed to assess the magnitude and its determinants of postnatal care service utilization among women who gave birth in the last 12 months from May 1 to 21, 2019, in the Northern part of Ethiopia.

Methods: A community-based cross-sectional study was conducted among 413 women who had given birth in the previous 12 months. A systematic random sampling technique was used to select the study participants. Data were collected by using a semi-structured questionnaire adopted from UNICEF and similar studies. Data were entered, cleaned and coded into EPI info version 3.5 and exported to SPSS version 20 for analysis. Logistic regression was applied to identify associations between explanatory variable and the outcome variable. Statistical significance was declared at $p < 0.05$ and 95% CI.

Results: In this study, the magnitude of postnatal care service utilization was 37%. A live birth outcome AOR (95% CI) = 5.7 (1.53, 21.216), maternal educational AOR (95% CI) = 3.3 (1.90, 5.60) household income > 1,500 ETB per month AOR (95% CI) = 2.9 (1.20, 6.70), a planned and supported pregnancy AOR (95% CI) = 3.9 (1.71, 9.01) and last pregnancy of facility delivered AOR = (95% CI) = 3.1 (1.25, 7.70) are positively associated with utilization of postnatal care services.

Conclusion: The major determinant factors that affect utilization of PNC identified in this study include monthly income of household, last pregnancy birth outcome, educational status of the mother, wantedness of the pregnancy and place of delivery were significantly associated with postnatal care service utilization. To improve PNC service utilization and to minimize maternal and neonatal mortality, mothers should be made aware about postnatal care services.

Keywords: utilization, PNC, maternal death, Dessie Ethiopia

Introduction

Globally, each year, 287,000 women die from complications related to pregnancy and childbirth, and about 99% of these deaths occur in developing countries which is a decline of 45% from 1990. The majority of maternal and neonatal deaths occur during childbirth and the postnatal period.^{1,2}

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The majority of maternal deaths and disabilities occur during the postnatal period. Lack of care during this time period may result in death or disabilities.²

A large proportion of maternal and neonatal deaths occur during the first 48 hours after delivery. Thus, prompt postnatal care (PNC) for both the mother and the child is important to treat any complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child.³

According to the EDHS 2016 report from the total of mothers, 42.2%, of mothers received postnatal care utilization within the first 6 weeks and only 17% received any within the first 48 hours after delivery.^{5,6}

In Ethiopia, if all newborns receive appropriate postnatal care in the recommended time, neonatal mortality could be reduced by 10–27%.¹¹ In other words, high postnatal care coverage could save up to 60,000 newborn lives a year. Safe motherhood programmers recommend that all women receive a check of their health within 2 days after delivery.⁷

Postnatal care services utilization is one of the key components to reduce maternal mortality and improves the reproductive health outcome of women. Postnatal care, in particular, prevents the great majority of maternal and child morbidity and mortality. PNC services enable health professionals to identify post-delivery problems including potential complications and to provide treatments promptly. Therefore it is important for both the mothers' and the child's health in preventing both the short-term and long-term complications and deaths arising from delivery.

The level of PNC coverage is extremely low in Ethiopia. There is also limited information on mothers' use of postnatal care services in the study area and previously no research had been conducted regarding utilization of postnatal care services in the study area.

Methods

Study Design and Area

A community-based cross-sectional study was conducted from May 1 to 21, 2019, at Dessie town. The study was conducted in Dessie town which is located at 401 km to the North east of the capital city of Ethiopia (Addis Ababa) and is found in the Amhara region with a distance of 480 km to the North East direction. According to Dessie town administration office report, Dessie town is the capital city of South wollo, it has a total of 15 kebeles, It has a

total population of 219,998 and It has 52,362 women in the reproductive age group (15–49 years). There are four health centers, six health postes and one governmental general hospital providing PNC services in the town.

Sample Size Calculation

The sample size was determined using a prevalence of 42.2% of urban women postnatal care service based on a similar study done in EDHS 2016.¹⁴ Thus with 95% confidence level and 10% non-response rate, making the final sample size 413. The study was conducted by using a systematic random sampling method to recruit participants.

Sampling Procedure

From the total of 15 kebeles of Dessie Town, five kebeles were selected by a simple random sampling method. A sample frame of each kebele was taken from the zonal health bureau 3-month report and the sample size for each selected kebele was allocated proportionally. Study participants were selected by using a systematic random sampling technique. A list of respondent's households was obtained from HEW. After obtaining a list of participant households, every Kth mother was recruited by labeling each household which had a mother who had given birth in the last year in the five kebeles until the required sample size was fulfilled and the starting household was selected by simple random sampling method. If there was more than one eligible mother in a household a lottery method was used.

Operational Definition

Postnatal Care Utilization

We examined whether the use of postnatal care services by women following delivery till 42 days was at least once after childbirth.

Data Collection Tool and Procedure

Four diploma holder midwives collected the data under supervision of two degree holding midwives. Data were collected by using a semi-structured questionnaire adopted from UNICEF and similar studies. Appropriate training and supervision were given about the aim of the study and the data collection technique for both data collectors and supervisors before the actual work was conducted.

Data Quality Assurance

Training was given for the data collectors and supervisors. The questionnaire was checked and pre-tested before

conducting data collection in a similar population in an adjacent kebele that was not selected for the study to validate the instrument. The questionnaire was translated into local language and back to English to check its consistency.

Data Processing and Analysis

After the data collection was completed the data was entered and cleaned using EPI info version 3.5 and analyzed using SPSS version 22. Descriptive statistics were computed for each study variable. All variables with an association of $p < 0.2$ in the binary logistic regression analysis were entered into the final multivariable regression model to identify their independent effect. Statistical significance was declared at $p < 0.05$. Tables were used for data presentation.

Ethical Consideration

Ethical clearance was obtained from the institutional Ethical Committee of Wollo University. Then permission letters from Dessie town health office were obtained. Written informed consent was obtained from the respondents. All participants provided written informed consent, and this study was conducted in accordance with the Declaration of Helsinki as a statement of ethical principles for medical research involving human subjects.

Results

Sociodemographic Characteristics of the Participants

In this study the response rate was 100%. From the total respondents, 245 (59.3%) were in the age group 20–29 years, 384 (92.8%) of the mothers were married and 234 (55.9%) of the respondents were Muslim religious followers. From the total of respondents, approximately one-sixth of the respondents, 65 (15.7%) were illiterate. In the case of their husbands' educational status, 34 (8.2%) were unable to read and write, and 157 (38%) of the husband's occupation were governmental employed (Table 1).

Obstetric Characteristics of Respondents

From the total of respondents, 283 (68.5%) mothers were categorized as Para two to Para four followed by Para one, 79 (19.1%). Among the respondents, 11 (3.7%) mothers faced stillbirth at their last delivery. Overall, 346 (86.2%) were planned and supported pregnancies and 389 (94.2%) mothers had their last delivery at a health facility.

Table 1 Sociodemographic Characteristics of the Women Interviewed Who had Given Birth in the Previous 12 Months in Dessie Town, Northeast Ethiopia, May 2019 (n=413)

Variables	Frequency	Percent
Age		
<20	24	5.8
20–34	245	59.3
35–49	144	34.9
Marital status of the mother		
Married	384	84.3
Single	27	6.5
Divorced	28	6.8
Widowed	10	2.4
Religion of the mother		
Orthodox	174	42.1
Muslim	234	55.9
Protestant	5	2
Ethnicity		
Amhara	403	97.8
Oromo	8	1.9
Other	2	0.5
Educational status of the mother		
Cannot read and write	65	15.7
Can read and write	113	27.4
Elementary education (1–8)	110	26.6
Diploma and above	125	30.3
Occupational status of the mother		
Housewife	130	31.4
Government employed	67	16.2
Merchant	81	19.6
Daily laborer	91	22
Farming	16	3.9
Other	28	6.8
Educational status of the husband (n=413)		
Cannot read and write	34	8.2
Can read and write	65	15.7
Elementary education(1–8)	109	26.4
Secondary education and above	205	49.6
Husband's occupational status (n=413)		
Merchant	157	38
Farming	16	3.9
Government employed	157	38
Daily laborer	79	19
Other	4	1
Average monthly income		
<500 Eth birr	17	4.1
500–1500 Eth birr	173	42
>1500 Eth birr	223	56.4

As to the mode of delivery, most respondents 301 (72.9%) delivered by spontaneous vaginal delivery. From the total of women who gave birth in the health institution, 316 (76.5%) of them were advised about danger signs of the postpartum period before discharge. Almost all, 368 (89.1%) of the mothers had antenatal care follow-up during their last pregnancy (Table 2).

Prevalence and Characteristics of Postnatal Care Utilization

From the total respondents, 153 (37%) mothers utilized postnatal care services while 260 (63%) of them did not utilize the service. With regard to the frequency of

maternal PNC visits, 97 (63.4%) of the mothers had had one visit, 36 (23.5%) had had two visits, and the rest, 20 (13.3%), mothers had had more than three visits.

Associated Factors of Postnatal Care Utilization

During the bivariable logistic regression analysis, those variables that had a significant association with the dependent variable with p -values of less than 0.2 were entered into the multivariable logistic regression. Among the independent variables, marital status, maternal decision making on her child, birth outcome, parity, educational status, nature of last pregnancy, place of delivery, household monthly income and maternal decision making on her health had shown associations with p -values <0.2 . Multivariable logistic regression analysis was conducted to examine the association between independent variables with the utilization of PNC service. In this study it was found that there is a statistically significant association between educational status of the mother, household income, nature of last pregnancy, outcome of last pregnancy and place of delivery. Mothers whose educational status was more than secondary school were three times AOR (95% CI) =3.3 (1.94, 5.58) more likely to utilize PNC services than those women who were illiterate. The mothers who had a monthly income >1500 ETB were more likely to utilize PNC services than the reference group AOR (95% CI) =2.3 (1.22, 6.69). Mothers who had given birth in a health facility were 3 times AOR (95% CI)=3 (1.24,7.68) more likely to get PNC service utilization than those who had given birth at home. Those mothers who had given birth to a live neonate were 6 times AOR (95% CI) =6 (1.54,1.23 (Table 3).

Discussion

This community-based cross-sectional study confirms that the magnitude of postnatal care service utilization was low among mothers who live in the study area.

Based on this study the result showed that the prevalence of PNC service utilization is 37%. This result is in line with the study conducted in Dembecha District, Northwest Ethiopia the prevalence of postnatal care service utilization was 34.8%¹⁹ and the study conducted in the southern part of Ethiopia was 37.2%.^{8,10,20}

In this study, utilization of PNC service is lower than the study conducted in Adwa town in the Northern part of Ethiopia (78.3%),²⁴ Gondar Zuria District, Ethiopia

Table 2 Obstetric Characteristics of the Women Interviewed Who had Given Birth in the Previous 12 Months in Dessie Town, Northeast Ethiopia, May 2019 (n=413)

Variables	Frequency	Percent
Parity		
One	79	19.1
Two-four	283	68.5
Five and above	51	12.3
Outcome of birth		
Alive	402	97.3
Stillbirth	11	3.7
Nature of pregnancy		
Supported and Planned	356	86.2
Supported but planned	49	11.9
Unsupported and unplanned	8	1.9
Place of labor		
At home	24	5.8
Health facility	389	94.2
Mode of delivery (n=413)		
SVD	301	72.9
Assisted delivery	83	20.1
Cesarean section	29	7
Counseling for danger signs before discharge (n=413)		
Yes	316	76.5
No	97	23.5
ANC visit (n=413)		
Yes	368	89.1
No	45	10.9
Awareness of PNC service (n=413)		
Yes	321	77.7
No	92	22.3

Table 3 Multivariable Logistic Regression Analysis of Associated Factors with PNC Service Utilization of the Participants in Dessie, Ethiopia, 2019 (n=413)

Variables	Postnatal Care Utilization		COR (CI)	AOR (CI)
Marital Status	Yes	No		
Married	310	211	3.232 (1.500–6.965)*	1.277 (0.443–3.681)
Divorced	13	12	2.383 (0.806–7.044)	2.619 (0.775–8.850)
Widowed	5	5	2.200 (0.517–9.356)	1.315 (0.248–6.963)
Single	10	22	1.00	1.00
Educational status of women				
Unable to read and write	38	64	1.00	1.00
Can read and write	35	33	1.786 (0.956–3.328)	1.702 (0.883–3.281)
Primary education	80	78	1.727 (1.039–2.872)*	1.476 (0.861–2.532)
Secondary education and above	185	75	4.154 (2.563–6.733)*	3.292 (1.943–5.577)**
Monthly income (ETB)				
<500	9	22	1.00	1.00
500–1500	55	66	2.037 (0.867–4.786)	2.184 (0.881–5.414)
>1500	274	162	4.134 (1.859–9.197)*	2.850 (1.215–6.685)**
Decision making power on her health				
Self	52	55	1.477 (0.710–3.075)	1.759 (0.646–4.788)
Both	270	170	2.482 (1.288–4.783)*	1.594 (0.691–3.681)
Husband	16	25	1.00	1.00
Decision making power on her child's health				
Self	38	51	0.888 (0.455–1.735)	0.994 (0.470–2.100)
Both	274	168	1.945 (1.116–3.389)*	1.360 (0.732–2.526)
Husband	26	31	1.00	1.00
Parity				
One	122	81	2.071 (1.026–4.181)*	1.416 (0.618–3.243)
Two-four	200	147	1.871 (0.949–3.686)	1.162 (0.537–2.516)
Five and above	16	22	1.00	1.00
Birth outcome of the last pregnancy				
Alive	335	235	7.128 (2.041–24.897)*	5.708 (1.536–21.216)**
Still birth	3	15	1.00	1.00
Nature of the last pregnancy				
Planned and supported	236	160	4.589 (2.109–9.984)*	3.946 (1.727–9.015)**
Unplanned but supported	93	62	4.667 (2.062–10.563)*	4.409 (1.847–10.526)**
Unplanned and unsupported	9	28	1.00	1.00
Place of delivery				
Home	7	22	1.00	1.00
Health facility	331	228	4.563 (1.917–10.859)*	3.086 (1.240–7.684)**

Notes: *Had significant association at $p < 0.2$. **Statistically associated at $p < 0.05$.

(66.83%)⁴ and Manmohan Memorial Institute of Health Sciences (69.2%)¹⁵ This difference may be due to place, study design, sample size difference and social context variation between the present study and previous studies.

In this study, the finding is higher than the study done in Hadiya zone, South Ethiopia (22.7%),²⁵ study conducted in Abuna Gindeberet District, West, Oromiya Region (31.7%)²⁶

and in the EDHS 2016 report (17%).¹⁷ The difference may be due to time, place, cultural barriers and social context variation between the present study and previous studies.

The current study showed that utilization of postnatal care services, household monthly income, maternal educational status, birth outcome, nature of pregnancy and place of delivery are factors associated with PNC service utilization.

The first statistically significant factor in this study was the educational status of women. Maternal education above secondary school were 3 times more likely to use PNC than mothers who were illiterate, AOR (95% CI) =3.3 (1.94, 5.58). This finding is similar with the study done in Jabitena district, Amhara region which revealed that women whose educational status was secondary school and above were about 4 times more likely to utilize postnatal care services than illiterate women which is also similar to studies conducted at Entoto Fana Health Center,¹² in the rural Haramaya District Eastern Ethiopia,¹³ and in the Dembecha District. Northwest Ethiopia in 2015.¹⁸ This may be due to the fact that education is likely to enhance female autonomy so that women develop greater confidence and capability to make decisions on their health. It is also likely that educated women seek out higher quality services and have greater ability to use health care inputs that offer better care. Also, education helps to increase mothers' awareness and increase acceptance of new idea and provides better education to other women regarding postnatal care utilization than those with a low educational level.

The second statistically significant finding of this study is the monthly household income which was a significant factor in the utilization of postnatal care services. Household income was positively correlated with postnatal care service utilization. Those women who had a monthly household income of >1500 ETB were 2.9 times more likely to utilize PNC services than those who earned <500 ETB AOR (95% CI)=2.9 (1.215–6.685). This finding is consistent with a study done in developing countries, and studies carried out in Rwanda, Nigeria, Tanzania, India, and Nepal.^{16,27,28,33,36} The only research which supports this finding in Ethiopia was a study done at Entoto Fana health center, Gullele sub-city, Addis Ababa.^{21,34} This may be due to women with low income were less likely to use PNC services as compared to those with high income.

The third statistically significant factor in this study was birth outcome of the latest pregnancy. Those mothers who gave birth to a live neonate were 6 times more likely to utilize PNC services as compared with women who had a stillbirth, AOR (95% CI)=5.7 (1.54–1.22). This is in line with a study done in Debre Markos town on postnatal care service utilization and associated factors,²² and studies carried out in Gullele Sub-city,³⁰ and the rural Haramaya District, Eastern Ethiopia.³¹

The fourth major factor predicting postnatal care service utilization was wantedness of the pregnancy. Mothers whose pregnancy was planned and supported were 3.9 times more likely to use postnatal care services as compared to those women whose pregnancy was unplanned and unsupported [AOR (95% CI)=3.9 (1.727,9.015)]. This finding is supported by studies done in three rural districts of Tanzania²³ and California.²⁹

The last statistically significant factor in this study was place of delivery. Mothers who delivered their last baby at a health facility were 3.086 times more likely to utilize postnatal care services than mothers who had their baby at home [AOR (95% CI)=3 (1.240,7.684)]. This finding is consistent with a study done in three rural districts of Tanzania,³⁵ and studies carried out in Rwanda,³⁶ Nigeria,³² Tanzania,³⁵ and Nepal.⁹

Conclusion

The results of this study revealed that the majority of the respondents were delivered in health facilities, however more than half of the respondents did not utilize the postnatal care services. In conclusion, this study show that utilization of the PNC services in Dessie town North east Ethiopia, is still low compared to some previous studies conducted in different areas of Ethiopia.

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Disclosure

The author reports no conflicts of interest in this work.

References

1. WHO. *Technical Consultation on Postpartum and Postnatal Care: Department of Making Pregnancy Safer*. Switzerland: World Health Organization; 2008.
2. WHO, UNFPA, the World Bank. *Trends in Maternal Mortality: 1990 to 2010*. World Health Organization, UNICEF, UNFPA, and the World Bank; 2012.
3. Addis Ababa, Maryland, USA. *Central Statistical Agency and ICF International*. Central Statistical Agency [Ethiopia] and ICF International: Ethiopia Demographic and Health Survey 2011; 2012.

4. Alkema L, Chou D, Hogan D, et al. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group. *Lancet*. 2016;387(10017):462–474. doi:10.1016/S0140-6736(15)00838-7
5. Central Statistical Agency [Ethiopia] and ICF International. *Ethiopia Demographic and Health Survey 2016 Report Addis Ababa, Maryland, USA: Central Statistical Agency and ICF International. Ethiopia Demographic and Health Survey 2016 Report Addis Ababa*. Rockville, Maryland, USA: Central Statistical Agency and ICF International; 2016.
6. FDRE, MOH. *National Reproductive Health Strategy: 2006–2015*. Department of FH Addis Ababa: Ministry of health; 2006.
7. FDRE, MOH. *Postnatal Care Blended Learning Module for Health Extension Program Ethiopia*. 2014.
8. Sandeep Kumar Uppadhaya SB. utilization of postnatal care services in rural area of Western Rajasthan. *India Nat J Community Med*. 2016;7:7.
9. Ith P, Dawson A, Homer C, Whelan A. Practices of skilled birth attendants during labour, birth and the immediate postpartum period in Cambodia. *Midwifery*. 2013;29(4):300–307. doi:10.1016/j.midw.2012.01.010
10. Khanal V, Adhikari M, Karkee R, Gavidia T. Factors associated with the utilization of postnatal care services among the mothers of Nepal: analysis of Nepal demographic and health survey 2011. *BMC Women's Health*. 2014;14(1):19. doi:10.1186/1472-6874-14-19
11. Dhaher E, Mikolajczyk R, Maxwell A, Krämer A. Factors associated with lack of postnatal care among Palestinian women: A cross-sectional study of three clinics in the West Bank. *BMC Pregnancy Childbirth*. 2008;8(1):26. doi:10.1186/1471-2393-8-26
12. Izudi J, Amongin D. Use of early postnatal care among postpartum women in Eastern Uganda. *Int J Gynecol Obstetrics*. 2015;129(2):161–164. doi:10.1016/j.ijgo.2014.11.017
13. James L, John S, Angelina S. Utilization of maternal postnatal care services among women in selected villages of Bahi District, Tanzania. *Curr Res J Social Sci*. 2015;7(4):106–111.
14. D KS Y, Goujon A, et al. A review of factors associated with the utilization of health care services and strategies for improving postpartum care in Africa. *Afrika Focus*. 2015;28(2):83–105.
15. Adhikari C, Yadav RK, Timilshina P, Ojha R, Gaire D, Ghimire A. Proportion and factors affecting for post-natal care utilization in developing countries: A systematic review. *J Manmohan Memorial Inst Health Sci*. 2016;2:14–19. doi:10.3126/jmmihs.v2i0.15791
16. Tesfaye S, Barry D, Gobeze AG, et al. Improving coverage of postnatal care in rural Ethiopia using a community-based, collaborative quality improvement approach. *J Midwifery Women's Health*. 2014;59(s1):S55–S64. doi:10.1111/jmwh.12168
17. Workneh YG, Hailu DA. Factors affecting utilization of postnatal care service in Jabitena district, Amhara region Ethiopia. *Sci J Public Health*. 2014;23:169–176. doi:10.11648/j.sjph.20140203.15
18. Hordofa M, Almwaw S, Berhanu M, Lemiso H. Postnatal care service utilization and associated factors among women in Dembecha District. *Northwest Ethiopia*. 2015;3(5):686–692.
19. Regassa N. Antenatal and postnatal care service utilization in southern Ethiopia: a population-based study. *Afr Health Sci*. 2011;11:3.
20. Tesfahun F, Worku W, Mazengi F, Kifle M. Knowledge, perception and utilization of postnatal care of mothers in Gondar Zuria District, Ethiopia: a cross-sectional study. *Matern Child Health J*. 2014;18(10):2341–2351. doi:10.1007/s10995-014-1474-3
21. Limenih MA, Endale ZM, Dachew BA. Postnatal care service utilization and associated factors among women who gave birth in the last 12 months prior to the study in Debre Markos Town, Northwestern Ethiopia: a community-based cross-sectional study. *Int J Rep Med*. 2016;2016:1–7. doi:10.1155/2016/7095352
22. Senait B. *Assessment of Prevalence of Postnatal Care Utilization and Associated Factors Among Women Who Gave Birth and Attending Immunization Clinic in Selected Government Health Centers in Addis Ababa, Ethiopia*. Vol. 2015. AAU; 2015.
23. Berhe H, Tilahun W, Aregay A, Bruh G, Gebremedhin GH. Utilization and associated factors of postnatal care in Adwa town, tigray, Ethiopia-a cross sectional study a Peer Reviewed. *Int J Pharm Allied Res*. 2012;3(1).
24. Al Z. Magnitude and predictors of postnatal care utilization in Hadiya zone, South Ethiopia. *Int J Curr Res*. 2015;7(11):23176–23182.
25. Birhanu Darega ND, Tafese F, Ololo S, Ololo S. Institutional delivery and postnatal care services utilizations in Abuna Gindeberet District, West Shewa, Oromiya Region, Central Ethiopia: A Community-based cross sectional study. *BMC Pregnancy Childbirth*. 2016;16:149. doi:10.1186/s12884-016-0940-x
26. Tefera B, Ayanos T, Tamiru B. Postnatal care service utilization and associated factors among mothers in Lemo Woreda. *Ethiopia Women's Health Care*. 2016;5:3.
27. De A, Kerstens B, Kouanda S. Opportunities to improve postpartum care for mothers and infants: design of context -specific packages of postpartum interventions in rural districts in four Sub-Saharan African countries. *BMC Pregnancy Childbirth*. 2015;15(1):131. doi:10.1186/s12884-015-0562-8
28. Ibisomi SA. Determinants of postnatal care non-utilization among women in Nigeria. *BMC Res Notes*. 2016;9:21. doi:10.1186/s13104-015-1823-3
29. Singh PK, Alagarajan M, Singh L. Determinants of maternity care services utilization among married adolescents in rural India. *PLoS One*. 2012;7:2.
30. Admassu EA. Factors associated with postnatal care utilization at Entoto Fana health center, Gullele Sub-city, Addis Ababa. *Int J Med Sci Public Health*. 2015.
31. Dereje Kifle TA, Gelaw YA, Melsew YA, Melsew YA. Maternal health care service seeking behaviors and associated factors among women in rural Haramaya District, Eastern Ethiopia: a triangulated community-based cross-sectional study. *Reprod Health*. 2017;14(1):6. doi:10.1186/s12978-016-0270-5
32. Alemayeh H, Assefa H, Adama H. Prevalence and factors associated with post natal care utilization in Abi-Adi Town, Tigray, Ethiopia: a cross sectional study. *Medicine* 2010. *Semantic Scholar*.
33. Al R, Mukamurigo J, Thomson DR, Hedt-Gautier BL, Semasaka JPS. Factors associated with postnatal care utilisation in Rwanda: A secondary analysis of 2010 Demographic and Health Survey data. *BMC Pregnancy Childbirth*. 2016;16(1):122. doi:10.1186/s12884-016-0913-0
34. Lwelamira J, Safari J, Stephen A, James Lwelamira JSaAS. Utilization of maternal postnatal care services among women in selected villages of Bahi District. *Tanzania Curr Res J Social Sci*. 2015;7(4):106–111. doi:10.19026/crjss.7.1690
35. Al K, Chung CE, Larsen AM, Exavery A, Tani K, Phillips JF. Factors associated with compliance with the recommended frequency of postnatal care services in three rural districts of Tanzania. *BMC Pregnancy Childbirth*. 2015;15(1):341. doi:10.1186/s12884-015-0769-8
36. Jessica N. Use of postpartum care: predictors and barriers. *J Pregnancy*. 2014.

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