Postnatal Care Service Utilization and Associated Factors among Women Who Gave Birth in the Last six weeks at Public Health Facilities in Adama Town, Southeast Ethiopia: A facility based cross-sectional study

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ABSTRACT

Background:-*Postnatalperiodis a critical phase in the lives of mothers and newborn babies. Postnatal care is regarded as the most important maternal health care service for the prevention of physical and cognitive impairments as well as disability resulting from postnatal causes.The aim of this study is to assess postnatal care service utilization and associated factors among women who gave birth in the last 6weeks at public health facilities in Adama Town, Oromia Regional State, Ethiopia.*

Method:-*A facility-based cross-sectional study was conductedfrom August 25 to September 25, 2019 among 410 women those gave birth in the last 12 monthes prior to the survey were involved. Data were collected by using structured questionnaire. Binary logistic regression and multiple logistic regression analysis were carried out to identify factors associated with postnatal care services utilization. A significant association was declared at P-value is less than 0.05.*

Result: *This study revealed that majority of the respondents 394 (96%) delivered at health facility. However, themagnitude ofrespondetspostnatal care services utilization was 77.8%. Multi varaite analysis revealed that,education[AOR= 6.27; 95%CI :2.10, 18.70],Antenatal Carefollow up[AOR = 3.06; 95%CI :1.70, 5.48] and awareness about Potnatal Care [AOR = 4.67; 95%CI :2.54, 8.58] were siginificantpridictors of Potnatal Care utilizations.*

Conclusion*: proportion of postnatal care service utlizaationwas higheras compared to result of national survey. Educational status, Antenatal Carefollow up and aweness ofpostpartumservices were the factors making a difference in utilizing Potnatal Care service. Strengthening the provision of information, education and provision of quality Antenatal Careservice was recommended.*

Keyword: Postnatal care Utilizations, Factors, Women gave birth, Adama town, Ethiopia.

INTRODUCTION

The postnatal period, defined as the time immediately after the birth of the baby and up to six weeks (42 days) after birth. Approximately the world, it has standarded that, postnatal care is vital in preserving and promoting the health of the woman and the newborn baby, while as long as an opening for health professionals to identify, monitor and manage health conditions that may develop the mother and newborn during the postnatal period. In addition, postnatal care gives health professionals with the prospect to encourage exclusive breastfeeding, personal hygiene, proper feeding practices, and family planning counsel and services. Moreover, postnatal care agrees to for the provision of postnatal vitamin A and iron supplementation to the mother and immunization of newborns to provide them with optimal start to life. For this reason the World Health Organization (WHO) advises that mothers receive postnatal care within the first 24 hours tracked by postnatal check-up on the second or third day, and then on the seventh day after delivery (Harish ChT and Sudhir KG 2017).

The postnatal periods are a serious phase in the lives of mothers and newborn babies. Postnatal care is considered as the most significant maternal health care service for the prevention of physical and cognitive impairments as well as disability resulting from postnatal causes. Care during this period is dangerous for the health and survival of both the mother and the newborn(Nega BA 2018). It is a primary health care specified to mother and newborn by health professionals (physicians, health officers, midwives, and nurses) in health conveniences and at home(Facha W, Alemayehu M et al. 2017).Postnatal care assists to detect and handle complications that may arise at the time of labor, delivery, or early after delivery. For the duration of antenatal care, health workers can notify mothers about neonatal and maternal danger signs that may arise during the postnatal period. In addition, emotional and psychosocial carry is provided to alleviate stress(Fekadu, Getahun et al. 2018). This period is normally the most neglected in developing countries mothers and new born babies do not obtain postnatal care services from a skilled health care provider throughout the first few days after delivery (WHO 2015).

Moreover the primary objectives of (PNC) services are first to hold the mother and her family in the transition to a new family constellation, prevent, early diagnose and treat complications of the mother and infant. Second, to refer the mother and infant for area of expertise care when necessary, advice on baby care, sustain breastfeeding, counsel on maternal nutrition, and third to supplement if necessary, and counsel and provide contraception service, and immunize the infant. With limited resources, make contact with the health care system at least during the first twenty four hours and prior to the end of the first week would be the most effective strategy(Admassu 2016).

Furthermore the contents of postnatal care are monitoring and assessment of maternal and neonatal well-being, maintain for good care giving practices (warmth, hygiene, early initiation and exclusive breast-feeding) , Responsive care and stimulation, prevention, detection and

treatment of complications (post partum Hemorrhage (PPH), hypertension, infection, birth asphyxia, prematurity, sepsis) , given that information and counseling, nutrition, family planning and psychological support(WHO 2015).

Globally, 216 women per 100,000 live births die every year due to pregnancy associated complications. Sustainable Development Goals (SDGs) aims at reducing the global maternal mortality to 70 women per 100,000 live births by2030(Jessie JK and Sithole 2019). The majority maternal and infant deaths occur in the first month after birth, almost half of postnatal maternal deaths happen within the first 24 hours, and 66% occur during the first week. Considerable progress has made globally in improving maternal health. Around the world, 72% of women give birth attended by skilled personnel, and the maternal mortality ratio has decreased from 380 to 210 per 100,000 live births between 2000 and 2013. Yet, in South-East Asia and sub-Saharan Africa, only 67% and 48% of women give birth with the assistance of skilled personnel respectively(WHO, 2015). This directs that postnatal care reaches even fewer women and newborns: less than half of women receive a postnatal care visit within 2 days of childbirth. An analysis of Demographic and Health Survey (DHS) 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(WHO 2015).

Nearly 4.7 million mothers, newborns, and children die each year in sub-Saharan Africa: 265,000 mothers die due to complications of pregnancy and childbirth and 3,192,000 children, who stayed alive their first month of life, die before their fifth birthday. 1,208,000 babies die before they reach one month of age this toll of more than 13,000 deaths per day accounts for half of the world is maternal and child deaths. In addition, an estimated 880,000 babies are stillborn in sub-Saharan Africa and remain invisible on the policy agenda(Amane T 2018).Even though there is enormousinconsistency across and within countries in the reported use of postpartum services, higher levels are found in high-income countries, where less than 10-11% of women do not attend postnatal visits(Berhanu S, Asefa Y et al. 2016).

Nationaly since for last along og time the postnatal period is a critical phase led that afocused interventions planned in the Health Sector Development Plan (HSDP) with a target of 78% by the year 2014/15 Ethiopian Fiscal Year EFY 2007). Although Health Management Information (HMIS) do not capture PNC in the first two days, the EDHS 2014 reported coverage of 12% for PNC within the recommended two days period. Nevertheless, this is an improvement from three years ago with only 7 percent(federal Democratic Republic of Ethiopia 2015).

Likewise lack of awareness, marital status, using continuum maternity care like ANC follow up and delivery at heath facilities, place of residence (distance), culture, number of children were major factors affecting utilization of postnatal care services. This was resulted that only 52.19% mothers got any post-natal care services through health extension workers. Of this indication

mothers come to health institution most of the time after delivered, if they faced some problems and they want motivation to be serving. Ethiopia has accepted universal health coverage as strategies to decrease maternal and child mortality. This is by engaging to capacitate health care providers, accessible health facilities increasing number of health extension workers (HEWs) and mobilizing the community. But still unacceptable death and disabilities continue(Melese T, 2016). The significance of study is that many studies have been showed that the coverage of postnatal care is below 50 percent and what factors affect the postnatal care utilization are not well identified in study areas. However, As per the 2016 Ethiopia Demographic and Health Survey (EDHS), the proportion of women receiving a postnatal checkup within two days of delivery is higher in urban areas 42.2% than in rural areas 12.6%, lowest in Oromia 9% and highest in Addis Ababa 55.4%, and increases with women's education and household wealth(Central Statistical Agency Addis Ababa 2016).Therefore, this study aimed to assess postnatal care service utilization and associated factors among women who gave birth before 42 days (6wks) prior to the study in public health facilities in Adama town, findings of this study will help to improve postnatal care service utilization in the area and used as bench marke for further study forwards.

METHODS AND MATERIALS

Study design and setttings

An Institution based cross-sectional study was conducted from August 25 to September 25, 2019 at all Public Health Facilities in Adama Town, Ethiopia. Adama town is found in East Shoa Zone, 100 km far from Addis Ababa capital city of Ethiopia. It has estimated total populations of 353,233 (projected from 2007 Census)(Central Statistical Agency Addis Ababa 2007). Population projected for the year 2019, males are 178,878 and 174,355 females. Administratively, the town divided into 6 sub cities and 18 Kebeles.Concerning the major social facilities and infrastructures, there is 24 hours electrical power supply, clean and safe water supply, land transportation services and mobile services are available in the town. There is one Referral & Teaching Hospitalandseven health centers that are owend by Governmental and one Health Center and 3 clinics owned by NGOs, 4 Hospital, 16 Special Clinics, 36 Medium Clinics, and 47 Lower Clinics are private health institutions. The population of Adama town obtains health services from all Health Facilities. All these facilities run integrated health services routinely.

Source Populatio

All women, who gave bith 6 weeks before the priorty to study period and those who conducted healrhfacilitries after birth within 6 weeks for attending maternal& child service at all public health facilities in Adama Townthatvisited for immunization, family planning and others services.

Study population: Systematically selected women after birth that visiting within6weeks for attending maternal& child service at public health facilities inAdama Town that visited for immunization, family planning and others services fulfill the inclusion criteria.

Exclusion criteria: -Those women who gave birth extended of beyond 6 weeks and haddifficulty in communication due to intellectual disability were excluded.

Sample size determination

The sample size was determined using the single population proportion formula by considering 58.5% proportion of PNC service utilization from the study conducted in SheboSombo district, Jimma Zone Oromia Regional state , Ethiopia(Chemir F, Gelan M et al. 2018)].With a marginal error of 5% between the sample and the population at 95% confidence level by considering10% response rate.

Based on these assumptions, the sample was calculated as follows:

$$n = \frac{(Z\ \alpha/2)^2 p\ (1-p)}{d^2}$$

n = the number of mothers to be interviewed;

(Z α/2)2 = standardized normal distribution value for the 95% CI,

P = Proportion of antenatal care four visit service utilization in SheboSombo. P = (**58.5%)(Chemir F, Gelan M et al. 2018)**

d = margin of error taken as 5%,

$$n = \frac{(Z\ \alpha/2)2 \times P(1-P)}{d2} = \frac{(1.96)2 \times 0\ .585\ (0.415)}{(0.05)2} = \mathbf{373}$$

By considering, none response rate of 10%, the final sample size required was **410.** Regarding to determination of sample size related factors associated with outcome varible while it was detacted and calculated become less than the calculation of prevelance rate. As a result the calculated sample size with proportion was taken for the study which was 410.

Sampling procedure

A Systematic sampling technique was used to select the participants. The three months average estimate numbers of mothers who came to seven health centers & one hospital after six week of delivery for infan immunization or Family Planning were taken as basic for estimating to set exact proportionaly value. For this case the conducted survey considered that less than 5 years OPD, and child immunization service from reported data was 1,502.Then proportionately allocation the sample as per the client pool in each health centers with the formula: **- nf= n/N ×** sample size, give that:-After proportionate allocation for each health facilities, the first respondent was select by randomly, then continue based on sampling interval (K^{th}) which was every three interval until the required sample was obtained for all the selected health facilities.

Study variables

Dependent variable:-Postnatal Care Service Utilization

Independent variables:-Socio-demographic characteristics, Maternal Obstetric factors and Health facility and care provider's factors etc.

Operational Definitions

Postnatal Care: refers to the assistance or care given to mother and baby by health workers during the postnatal follow up period such as counsel on baby care, support breastfeeding, maternal nutrition, provide contraception service, and immunize the infant (.Berhanu S, 2016)

Attended or utilized PNC: It refers mother who have at least one subsequent postnatal visit after discharge and first contact for home delivery (Admassu EA, 2016)

Awareness: Refers to whether the mother mentioned at least two of the PNC services among the components.

Recommended Postnatal Care: Timing of discharge from health facility after birth, Number and timing of postnatal contacts, Home visits for postnatalcare, Assessment of the baby, Cord care and other postnatal care. Number and timing of postnatal contacts first day (24 hours), Day 3 (48–72 hours), between days 7–14 and at Six weeks after delivery(WHO, 2015).

Data collection Tools and Procedures

Structured interviewer adminitered questionnaire that is adapted from reviewing relevantliteratures and questionaires of EDHS 2016 and WHO guideline for PNCwas used to collect data from the respondents(WHO, 2015, Berhanu S, 2016, Chemiru F, 2018). The main content of the questionnaire was conducted on socio-demographic characteristics, maternal Obstetric factors and Health facility as well as care provider's factors.The final part of the questionnaire was intented to interview on prevalence of postnatal care utilization. The questionnaire was preparedorginal in English language& translated to both local language Afan Oromo & Amharic and then translated back to English by person proficient in three languages to hold the consistency and content of the questionnaires.The data was collected by six trained data collectors those were being community health workers in their profession. Three BSc holders who had experiance on data collection were used as supervisors for collecting data process at data collection period.

Data quality assurance

Data quality was controlled by designing appropriate data collection materials, training of data collectors for two dayson ensure confidenti-ality of information, be aware of the meanings of each question in the questionnaire, how to come close to participants, how to track ethical procedures and general in-formation on postnatal care follow upbefore actual data collection time.The questionnaire (tool) wasconducted pretestedon 5% of total sample size (20 respondents) inWonjiKuriftu Health Center which wasout of the study area. Its validity and reliability was checked via croboch alpha and accepted at which was its value greater than 0.70. The collected

data was reviewed and checked for completeness, accuracy and consistency by the supervisor and investigator and correction action was taken prior to data collection to minimize errors.

Data analysis

Data was codedand cleanedby using Epi-Info-7 and export to SPSS. Using SPSS version 21, descriptive analysis (Mean ± SD for continuous variables and frequencies for categorical variables) were computed.Variables that have statistically significant bybinary logistic regression at the p-value <0.05 was as a candidate for mulitvariable analysis, for declaration of association with utilization of PNC by using Odds Ratio with 95% confidence interval and P-value <0.05 was considered as declaring statistical significance.The final model was tested for its goodness of fit by Hosmer and Lemeshow p-value andp-value > 0.05 was best fit. Finally, variables that showed significant association at (P< 0.05) were recognized as independent predictors of PNC service utilization.

Ethical consideration

Ethical clearance was obtained from the institutional review board of Arsi University, College of health Sciences. Formal letter of cooperation was written for Oromia Regional Health Bureau,AdamaTwon health office andrespective heath facilities and permission was obtained. Participants of the study were given full information about the objective of the study, the benefits /risks due to participation and asked permission and oral consent after they agree to take part in the assessment. In order to maintain confidentiality of any information provided by study subjects, the data collection procedure were unnamed. Participation was on voluntary basis and they could extract from the study at any time of data collection.

RESULTS

Socio-demographic Characteristics of Respondents

A total of 410 mothers participated in this survey making a response rate of 100%. The mean age of the participants was 25.92 years and (±4.351 SD). Among them 145(35.4%) were aged less than or equal to 24 years, 185(45.1) were aged 25-29 years and 80(19.5) were age equal or greater than 30 years. One handred nighty six (47.8%) of the respondents were Orthodox and 11.5% wereprotestants in religions.Regarding their ethnicity, majority 252 (62%) were Oromo and only 23 (5.6%) of repondentes were from rural in the case of residence.Moreover, the majority377 (92%) of the respondents were married. One handredfourty nine (36.3 %) of the respondents were attended secondary school education while 86 (21%) of the respondents attended their education in tertiary school. More than two thrid 293 (71.5%) of the respondents werehomemaker. One handred eighty-eight (45.9%) of the respondents have less than or equal to 3 family size and 48(11.4%) equal to six or above members. Regarding average monthly income, 150 (36.6%) of the mothers reported that their monthly income less than or equal to 2000Ethiopian birr(Table1).

Table 1: Socio-demographic characteristics of the Women of Interviewed in all Public Health Facilities at Adama town, Oromia Regional state, Ethiopia, September 2019

Variable	Frequency	Percentage (%)
Age		
≤24	145	35.4
25-29	185	45.1
≥30	80	19.5
Religion		
Orthodox	196	47.8
Muslim	158	38.5
Protestant	47	11.5
Others	9	2.2
Ethnicity		
Oromo	254	62
Amhara	83	20.2
Gurage	29	7.1
Others*	44	10.7
Residence		
Urban	387	94.4
Rural	23	5.6
Marital status		
Married	377	92
Not married	33	8
Education		
No formal education	38	9.3
Primary	137	33.4
Secondary	149	36.3
College/above	86	21
Occupation		
Housewife	293	71.5
Not housewife	117	28.5
Husband education		
Un able to read & write	27	7.16
Primary School	136	36.1
Secondary (9-12)	123	32.6
College/university	91	24.1
Husband occupation		
No Job/ Un employee	9	2.2
Merchant	94	22.9

Self Employee	66	16.1
Private Employee	59	14.4
Gov't Employee	53	12.9
Others**	96	23.4
Family size		
≤3	188	45.9
4 to 5	174	42.4
≥6	48	11.7
Income		
≤2000	150	36.6
2001-3000	58	14.1
3001-5000	103	25.1
>5000	99	24.1

Note: Others*= Wolata, Tigrie&Hadiya; others**= NGO, farmer& daily labour

Maternal obstetric cherectersitics

Amongthe total of 410 respondentes 169(41.2%) were1-2 gravida, 67(16.3%) have history of abortion and 192(46.8%) of women have 1-2 children. The majirity of them 359 (87.6%) reported that had ANC follow up. Of which 201 (56%) had more than or equal to four timesvisited (Table 2).

Table 2:- Maternal obstetric characteristics of the Women of Interviewed in all Public Health Facilities at Adama town, Oromia Regional state, Ethiopia, September 2019.

Variable	Frequency	Percentage (%)
Number of pregnancy		
1-2	169	41.2
3- 4	166	40.5
≥5	75	18.3
Had history of abortion		
No	343	83.7
Yes	67	16.3
Number of children		
1 to 2	192	46.8
3 to 4	152	37.1
≥5	66	16.1
Planned pregnancy		
Yes	350	85.4
No	60	14.6

Antenatal care visits		
No	51	12.4
Yes	359	87.6
Number of visit		
<4 times	158	44
≥4 times	201	56
Place of ANC attended		
Health center	232	64.6
Gov. Hospital	46	12.8
Private clinica/hospital	81	22.6
Complication during pregnancy		
No	341	83.2
Yes	69	16.8
Types of danger signs		
Vaginal bleeding	12	17.4
Severe headache	28	40.6
Severe abdominal pain	22	31.9
Blurring vision	13	18.8
Poor or no fetal movement	8	11.6
High grade fever	2	2.9
Other	14	20.3

Health care provider and facility characters

Over half (51%) of the repondentes traveled15-30 minutes to get health facility and less than 2% of them traveled more than 1 hour. The majority of repondents394 (96%) were delivered at health institution. Of this199(48.5%) of them delivered at health centers, 118 (28.8 %)of them at governmental hospital and the rest 77 (18.8%) of them private Cilinic/ Hospitals. Almost around three-fourth of delivered wasassisted by health professionals with spontaneous vaginal delivery 307(74.9%).

Regarding the time of staying in health facility after delivered 149(37.8%), 102(25.9%), 101(25.6%) and 42(10.7%) were in betwen 6-12 hrs, 12-24hrs, longer than 24hrs and discharged befor 6hrs espectively. Two handred fifty one(61.2%) of mothers had have awernessabout PNC sevicefromhealthprofetionals, 284(69.3%)of them ever gave appointed withen 7-14days and 48-72hrs 47%,and 2.3% respectively.The power of decision making for utilization of PNC sevicewas reported that 282(68.8%)decided by both husband &wife (table 3).

Table 3:- Health care provider and facility characteristics of the Women of Interviewed in all Public Health Facilities at Adama town, Oromia Regional state, Ethiopia, September 2019.

Variable	Frequency	Percentage (%)
Place of delivery		
Home	16	3.9
Health center	199	48.5
Gov. Hospital	118	28.8
Private clinical/hospital	77	18.8
Delivery assisted by		
Health Professional	394	96
Trained Traditional Birth Attendant	8	2
Relative/Friend/Neighbor	8	2
Mode of delivery		
Normal delivery (SVD)	307	74.9
Instrumental deliver	12	2.9
Caesarean section (CS)	56	13.7
Episiotomy/perianal tear during vaginal delivery	35	8.5
Length of stay in the health facility(n=394)		
Less than 6 hrs	42	10.7
between 6-12 hrs	149	37.8
between 12-24 hrs	102	25.9
Longer than 24hrs	101	25.6
Have awareness about PNC		
No	159	38.8
Yes	251	61
Source of information		
Health professional	203	80.9
Television	33	13
Radio	6	2
Relatives/ Friends/ Neighbors/	18	7
Other	8	3
Ever gave appointment		
No	110	26.8
Yes	284	69
What time you appointed		
within 3 days (48–72 hours)	9	2
Between 7–14 days	185	47
Within 4-6 weeks	147	37
Others	7	1.8
Decision-making		

Husband only	27	6.6
Self	101	24.6
Both the wife and the husband	282	68.8

Magnitude ofPostanalCare (PNC) service utilization

Out of the total respondents, 319 (77.8%) within the 95% CI (73.4, 81.7) hadrecieved postnatal care service in health facilities under the supervision of skilled profetionals. However, 22.2% respondents were notrecieved postnatal care. The reasonsfor not attending PNC during their recent delivery were as follows: lacks of awerness 38.5%, 16.5 % of them are perceived long waiting time in health facility and 12.1% of them appointment not given by health worker.

Timing and Types of PNC sevicesprovided

Regarding postnatal care serviceutlization within 6 weeksofdischarge144(45.1%), 81(25.4%), 58(18.2%) and 36(11.3%) were one times, two times, three times and four tmiesrepectively. From these 43(10.5%) recived the service within 3 days (48-72 hours), 99(24.1%) utilized the service in between 7-14 days, greater than half 253(61.7%) of participants utilized the services in between 4-6 weeks.Concerning theservices provided for the women during postnatal care visit wasalmost one-fourth 102(24.9%) counseled about exclusive breast feeding, 99(24.1%) of the respondents provided contraceptives and more than two-thrid278(67.8%) of the babies had received immunization (Table 4).

Table4:-Distributions of postnatal care utilization time of the Women of Interviewed in Public Health Facilities at Adama town, Oromia Regional state, Ethiopia, September 2019.

Variable	Frequency	Percentage (%)
Number of visits for PNC		
One times	144	45.1
Two times	81	25.4
Three times	58	18.2
Four tomes	36	11.3
At what time you were visit health facility		
within 3 days (48–72 hours)	43	10.5
Between 7–14 days	99	24.1
Within 4-6 weeks	253	61.7
Types of postnatal care services received		
Mothers body temperature measurement	79	19.3
Examination of breast	53	12.9
Examination for abnormal bleeding	55	13.4
CounselingonExclusiveBreastfeeding	102	24.9
Blood pressure measurement	111	27.1

Family planning services	99	24.1
Counseling about HIV transmission	104	25.4
Counseling about care of the baby	100	24.4
Counseling on baby danger signs	69	16.8
Counseling on personal hygiene	89	21.7
Other specify	4	1
Type of care provided for baby		
Immunization	278	67.8
Checking hygiene of cored and skin	96	23.4
Body temperature measurement	114	27.8
Checking of the body weigh	7	1.7
Other	240	58.5

Factors associated with postnatal care service utilization

Inbinary logistic regression analysis varaibles such as:age, residence, mother education, planned pregnancy, number of ANC visit, had awerness about PNC and decision making power for PNC service utilization were indicated statistically significant association with PNC service utilization atP-value<0.05. These variables were incorporated in the multivariable logistic regression analysis. After controlling for the effects of potentially confounding variables using multivariable logistic regression modelthree variables like educational levelof mother, number of ANC visit and had awerness about PNC were factors significantly associated with postnatal care service utilization at P-value < 0.05 with 95% CI.

The odds ratio of PNC service utilization among mothers who had primary education was 6.27 times higher as compared to mothers who had no formal education [AOR = 6.27; 95%CI :2.10, 18.70].Mothers who had secondary educational level had 10.79 times higher odds of PNC service utilization as compared to mothers who had no formal education [AOR = 10.79; 95%CI :3.23, 36.05]. Mothers who had college/above level had 6.50 times higher odds of PNC service utilization as compared to mothers who had no formal education [AOR = 6.50; 95%CI :2.19, 19.27]. Mothers who had experienced antenatal care service more thanor equal to four times had 3.06 times higher odds of PNC service utilization as compared to those who had antenatal care service less than four times [AOR = 3.06; 95%CI :1.70, 5.48]. The odds ratio of PNC service utilization among mothers who had awerness about PNC service was 4.67 times higher as compared to those who had no awerness about PNC service [AOR = 4.67; 95%CI :2.54, 8.58] (Table 5).

Table5: Logistic regression analysis to identify factors associated with postnatal care utilization of the Women of Interviewed in Public Health Facilities at Adama town, Oromia Regional state, Ethiopia, September 2019

Variable	Utilized PNC		COR (95%CI)	AOR (95%CI)	P-value
	Yes (%)	No (%)			
Age (year)					
≤24	108(74.5)	37 (25.5)	1	1	
25-29	143(77.3)	42(22.7)	1.17 (0.70, 1.94)	1.05 (0.56, 1.97)	0.875
≥30	68 (85.0)	12 (15.0)	1.94(1.91, 3.98)*	1.95 (0.79, 4.79)	0.144
Residence					
Urban	306 (79.1)	81 (20.9)	1	1	
Rural	13 (56.5)	10 (43.5)	0.34 (0.15, 0.81)*	0.51 (0.15, 1.69)	0.268
Mother education					
No formal education	21 (55.3)	17 (44.7)	1	1	
Primary	102 (74.5)	35 (25.5)	**2.36 (1.12, 4.97)***	**6.27(2.10, 18.70)****	**0.001**
Secondary	75 (87.2)	11 (12.8)	**3.49 (1.64, 7.48)***	**10.79 (3.23, 36.05)****	**0.001**
College/above	121 (81.2)	28 (18.8)	**5.52 (2.25, 13.57)***	**6.50 (2.19, 19.27)****	**0.001**
Planned pregnancy					
Yes	277 (79.1)	73 (20.9)	0.22 (0.33, 0.63)*	0.86 (0.37, 1.99)	
No	42 (70.0)	18 (30.0)	1	1	
Number of ANC visit					
<4 times	106 (67.1)	52 (32.9)	1	1	
≥4 times	174 (86.6)	27 (13.4)	**3.16 (1.87, 5.34)***	**3.06 (1.70, 5.48)****	**0.001**
Had awareness about PNC					
No	96 (60.4)	63 (39.6)	1	1	
Yes	223 (88.8)	28 (11.2)	**5.23 (3.15, 8.66)***	**4.67 (2.54, 8.58)****	**0.001**
Decision making power for PNC utilization					
Husband only	14 (51.9)	13 (48.1)	1	1	
Self	72 (71.3)	29 (28.7)	2.31 (0.97, 5.49)	1.19 (0.40, 3.53)	0.749
Both (wife & Husband)	233 (82.6)	49 (17.4)	4.42 (1.95, 9.98)*	2.02 (0.72, 5.62)	0.180

*1= Reference category; *p<0.05, **p<0.001*

DISCUSSION

This study indicated that the level of PNC utilization among study participants was (77.8% (95% CI, 73.4-81.7%)) utilized PNC services during the 6 weeks following delivery. This finding was similar with the previous study done, in Adwa town by Berihe H 78.3%, in SodoZuriya by Tilahun S 77.7% and inAddisAbeba, Gulele sub city by EyobAyanew 76.2% (Berhe, Tilahun et

al. 2013, Admassu 2016, Saol 2016). This may be due to the same study design and similar socio-demographic character of study subjects.

Similarly, the postnatal care utilization of this study finding also higher when compared to the studies conducted in African and Asian countries; the prevalence postnatal care in Nijeria 37%, in Tanzania 43.5%, 45.6%, in Malawi 48.4% andMayanmar was 25.2% (F. 2015, James L, John S et al. 2015, Oluwaseyi DS 2016, Aye SM, Myo KP et al. 2018, Jessie JK and Sithole 2019). The difference may be attributed to time, place, study design and social context variation between the present study and previous studies.These resultlower than the findings of community based cross sectional study in DebrebrhanTwon in 2015 that showed 83.5 % of the mothers utilized PNC service at least one times(Nega BA 2018).The possible explanation may be due to social context variation with study pooullation.

On the other side the postnatal care utilization within 48-72 hrsof this study was 10.5% ,that lower than the survey carried out based on EDHS 2016 in which postnatal utilization within two days by region those wereAddisAbeba (55.4%),Tigray (45.4%), Harari (37.4%),Dire Dawa(27.8%),Amhara (18.4%), Gambela (16.9%), and SNNP (16.9%). And in line withBenishangul-Gumuz (14.5%), Somali (11.9%), Afar (11.6%), and Oromiya (9%)(Central Statistical Agency Addis Ababa 2016). Similarly higher than study conducted in Jabalpur district India was 1.11% (Dhruvendra P 2019). The reason for this difference may be design and in contrast. Or else this variation can also be attributed to the study was conducted in the urban area particularly institution based study.

Moreover this study identified the following factors as having an important influence on the utilization of postnatal care service. Educational level of the mother, attendance of ANC service and having awernessabout PNC service.Utilization of PNC among mothers who had secondary education was 10.79 times higher as compared to mothers who had no formal education.The finding consistent withseveral studies showed that factor affecting utilization of postnatal care serviceiseducational level; women with at least secondary education were more likely to use PNC services compared to those with no formal education in Ehiopia, Tanzania, Malawi and Mayanmar(James L, John S et al. 2015, Aye SM, Myo KP et al. 2018, Mequanent MS, Taddege TG et al. 2018, Jessie JK and Sithole 2019). The possible reasons for this comparison might be due to the fact that once a women is educated, her autonomy and decision making skill on her health and maternal health care services utilization is become high in their life. Education also helps to increase mothers' level of awareness and their acceptance of new idea in their socailinterction.

Mothers who had tertiary level of education are 6.50 times more likely to utlize PNC service as compared to mothers who had no formal education. This result was also in line with previous studies that associated postnatal service utilization among women whohad attained secondary school or tertiary education more likely utilized PNC than among women who had no education in Tigray, Uganda, and Jabalpur, GorakhpurIndia(Alemayeh H, Assefa H et al. 2014, Gideon R,

Stephen OW et al. 2015, Harish ChT and Sudhir KG 2017, Dhruvendra P 2019). This could be explained by the fact that education has a valuable input in enhancing female autonomy and help women develop greater confidence and capability to make decisions about their own health. Thus, litrate women seek out higher quality health services and have greater ability to use health care inputs that offer better health outcomes.

Utilization of antenatal care services has positive impact on the use of PNC.Mothers who haveused antenatal care service more thanor equal to four times be 3.06 times more likely as compared to those who recived antenatal care service less than four times, this is in line with different studies (Tesfahun F, Mazengiya F et al. 2014, F. 2015, Admassu 2016, Oluwaseyi DS 2016, Abuka TA and Jember DT 2018, Mequanent MS, Taddege TG et al. 2018, Worku Dechassa Heyi, Makonnen Mamo Deshi et al. 2018, Dhruvendra P 2019).The possible reasones for the strong positive association between ANC attendance and PNC service utilization might be that mothers and their families receive health education, counselling, and advice during ANC visits and thus become access to learn about the benefits of PNC services follow up in health care facilities.

Finally, the other important factore that wasawerness of the mother.It has statistically significant effect on postnatal care service utilization. PNC service utilization among mothers who had awernessabout PNC service was 4.67 times higher as compared to those who had no awerness about PNC. Similar study done in urban north Ethiopia and DebreMarkostwonindicat that , women who had have awerness about postnatal care service were also more likely to utilize postnatal care service than women who lacked awerness about the services(Andualem ML, Mulaw ZE et al. 2016, Gebrehiwot G, Abrha AM et al. 2018).This can be explained by the fact that awareness of the services are an important factor in motivating women and their families to attend health care service at the earliest opportunity with the intention of prevention, early detection and getting managed.

LIMITATION

Despite the fact that those mothers who gave birth in the last less than three days during data collecting period are included in the study, there might be a recall bias and in this study quality of the services were not assessed.

CONCLUSION AND RECOMMENDATION

The magnitude of postnatal care service utilizationwas higher as compared to result of national surveystudies. History of ANC follows up, and beinginformedabout PNC and educational status of the mothers were found to besignificantly associated with PNC service utilization. As a result different means of behavioral change communication should be designed to improve the demand for institutional delivery and postenatal care services. Increasing community awareness based health education and improving betterto information, access, feasible, affordable and quality

service for mothers regardingANC, institutional delivery services. In addition, postnatal careHealth professional's attitude should be changed towards a friendly approach/greeting the mothers in the health facility during providing the service together with encourage and promote mothers and their partner about the benefits of PNC service utilization and providing awareness about the risk of home delivery.

Abbreviations:ANC: Antenatal Care; AOR: Adjusted Odd Ratio; CI: Confidence Interval; COR: Crude Odd Ratio; DHS: Demographic Health Survey; EDHS: Ethiopian Demographic and Health Survey; HEWs: Health Extension Workers; HMIS: Health Management Information System; HSDP: Health Sector Development Plan; HSTP: Health Sector Transformation Plan

Declarations

Ethics Approval and Consent to participate

The ethical clearance letter was obtained from Research and Ethics Committee of Arsi University College of Health Science. Additionally letter of support was written to Adama town to get the consent of collecting information. An informed verbal consent obtained from each respondent after providing sufficient information about the purpose of study and their right to participate, refusal of participation or to jump some questions not comfortable to answer. Name of respondents' was not written on the questionnaires to secure confidentiality.

Consent to publish: **Not Applicable.**

Availability of data and materials

The data set used during analysis for the study is available from the corresponding author on reasonable request.

Competing interests

The author declares that there is no competing interest.

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Authors' contribution

HN participated in conceptualization, data collection, supervision and Analysis.MT&GW participated in conceptualization, data analysis and manuscript preparations and GA in conceptualizations and Analaysis.All authors have read and approved the manuscript.

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