



ARSI UNIVERSITY

COLLEGE OF HEALTH SCIENCES DEPARTMENT OF MIDWIFERY

RECOMMENDED POSTNATAL CARE CONTENTS RECEIVED AND
ASSOCIATED FACTORS AMONG POSTNATAL MOTHERS IN PUBLIC
HEALTH FACILITIES OF ASELLA TOWN, SOUTHEAST ETHIOPIA

BY: GENAT NAMO (BSc, MSc CANDIDATE)

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NURSING.

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ASELLA, ETHIOPIA

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Acronyms

ANC: Antenatal Care

AOR: Adjusted Odd Ratio

CI: Confidence Interval

COR: Crude Odd Ratio

DHS: Demographic Health Survey

EBF: Exclusive Breastfeeding

EMDHS: Ethiopia Mini-Demographic Health Survey

IFAS: Iron and Folic acid Supplementation

PNC: Postnatal Care

SDG: Sustainable Developmental Goal

SPSS: Statistical Package of Social Science

VIF: Variance Inflation Factors

WHO: World Health Organization

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Abstract

Introduction: Postnatal care is crucial for maternal and child health, yet inadequate provision of recommended contents of care can lead to poor health outcomes and complications. Even though providing recommended postnatal care (PNC) contents is crucial to the wellbeing of the women and their babies, the level of receiving the recommended components and its influencing factors were not well studied in Ethiopia, particularly in Asella.

Objective: To assess recommended PNC contents received and associated factors among postnatal mothers in Public Health Facilities of Asella Town, Southeast Ethiopia, 2024

Method: A facility-based cross-sectional study was conducted from October 12, 2024, to November 12, 2024, among 575 postnatal mothers in the public health facilities of Asella Town using a systematic random sampling technique. Data were collected using the structure and a pre-tested questionnaire. Data were entered into Epi Data version 4.6 and exported to Statistical Package of Social Science (SPSS) version 26 for analysis. Bivariable and multivariable logistic regression analyses were done to identify associated factors. The statistically significant was declared with a p-value less than 0.05, and AOR with a 95% confidence interval was used to measure the strength of association.

Results: The overall magnitude of mothers who received recommended PNC contents service was 12.9% (95% CI: 10.1-15.6). Being civil servants (AOR: 2.35; 95% CI: 1.07-5.75), multiparous (AOR: 2.21; 95% CI: 1.02-4.77), giving birth at the hospital (AOR: 2.37; 95% CI: 1.27-4.44), and giving birth by caesarean section (AOR: 1.91; 95% CI: 1.05-3.46) were found to be statistically associated with receiving all contents of postnatal care.

Conclusion and recommendation: The proportion of mothers who received recommended PNC contents was found to be low when compared to the national study. Being civil servants, multiparous, giving birth by caesarean section, and giving birth at a hospital were significantly associated receiving the recommended PNC contents. Health care providers should provide all components of PNC to every postpartum woman, irrespective of their occupational background, parity, and their mode of delivery.

Keywords: Postnatal care, Contents, Asella town, Ethiopia

1. Introduction

1.1 . Background

The recommended contents of postnatal care are addressing of the physical, emotional, and social needs of the mother and newborn, as well as provide guidance on breastfeeding, family planning, and identifying potential complications. Post-natal care (PNC) is medical care given to a woman and her child within the first 42 days following birth with the goal of lowering the risk of problems and deaths while also enhancing the mother's and the baby's health (1).

According to the World Health Organization (WHO), postnatal care for women and newborns should be provided at the facility for at least 24 hours following delivery if the birth takes place in a health institution. All postpartum women should have routine evaluations of their temperature, heart rate (pulse rate), fundal height, uterine contractions, and vaginal bleeding during the first few days after giving birth. Urine void should be documented within six hours. All women should be given information about the physiological process of recovery after birth, and told that some health problems are common, with advice to report any health concerns to a health care professional; Women should be counseled on nutrition, hygiene, birth spacing and family planning. Contraceptive options should be discussed, and contraceptive methods should be provided if requested. Iron and folic acid supplementation should be provided for at least three months after deliver (3,4).

According to WHO, all women should receive PNC within the first hour of giving birth, and they should continue receiving care for the first six weeks after giving birth. The suggested PNC components are crucial to guaranteeing a safe and healthy transition to motherhood because they are made to address the physical, emotional, and psychological needs of both women and their infants (2).

The prevalence of adequate content of PNC in sub-Saharan Africa was 23.51%, which ranged from 2.19% in Burundi to 67% in South Africa (5). According to the Ethiopia Mini Demographic and Health Survey (EMDHS) 2019 report, the magnitude of mothers receiving

components of PNC was 21% in Ethiopia, 10.7% in the Harari region, 46.8% in Addis Ababa, and 16.2% in the Oromia region (6).

1.2 . Statement of the problem

Even though PNC is a critical period for providing interventions that are essential to the health of both the mother and the newborn, it is the most neglected area in the health care delivery system (7). The majority of deaths in infants occur during the postnatal period, which lasts from the first hour of life to 42 days and is crucial for both mother and child (8,9). Death is still a problem in the world, despite a lot of national and international efforts to improve the health of mothers and babies (10).

In 2020, there were over 287,000 maternal deaths worldwide, with 95% of these deaths occurring in low- and lower-middle-income countries. About 70% of maternal deaths (202,000) happened in Sub-Saharan Africa alone (11). Globally, approximately one million babies pass away in the first 24 hours (12). A Sub-Saharan Africa has the highest burden of neonatal mortality globally, with 27 deaths per 1000 live births, contributing to 45% of global newborn deaths (13). In Ethiopia, 65.1% of the maternal deaths happened during the postpartum period (14). In 2020, Ethiopia's newborn death rate was 27 per 1000 live births and its maternal mortality rate was 267 per 100,000 live births (15).

Studies carried out in Ethiopia found that a different factor, including maternal age, mothers with no formal education, mothers who have had four or more ANC visits, and maternal knowledge were factors influence the contents of postnatal care that is provided to mothers (16,17).

Inadequate postnatal care can raise the risk of HIV transmission from mother to child, maternal and neonatal death, and lower breastfeeding rates, which can cause malnourishment, stunted growth, and a higher risk of infectious infections in the baby. Inadequate PNC can also make mothers more susceptible to infection, severe pain, and postpartum hemorrhage. Moreover, insufficient PNC can raise the risk of infectious in infants by increasing their susceptibility to hypothermia, hypoglycemia, and respiratory distress (18–20).

Adequate postpartum care is essential in order to achieve the Sustainable Development Goals (SDG) and Ending Preventable Maternal Mortality lowering maternal and newborn mortality to 70 per 100,000 live births and 12 per 1000 live births, respectively (21,22). In order to tackle the high maternal and newborn morbidity and mortality in Ethiopia, the Ethiopian Ministry of Health has developed national implementation guideline for postnatal care within 24 hours in 2018 (3). Also, the Ethiopian Ministry of Health has developed new guidelines for the Obstetrics Management Protocol for hospitals and health centers in 2021 to address the timing and content of postnatal care for mothers and newborns (23,24).

Despite the fact that postnatal care is critical for better improvement of maternal and child health and it is a period of major maternal and neonatal death occurrences, existing studies have focused on the utilization of PNC visits; however, there has been less emphasis on the recommended content of the PNC care package required to meet the needs of both mothers and/or babies. Furthermore, even though providing the recommended PNC contents is crucial to the well-being of the women and their babies, the level of receiving the recommended PNC contents and its influencing factors were not well studied in Ethiopia, particularly in Asella. Therefore, this study was designed to assess the recommended PNC contents received and their associated factors among postpartum mothers in the public health facilities of Asella town.

1.3. Significance of the study

The results of this study will encourage the provision of all postnatal care components, which will have significant implications on the health and wellbeing of mothers and children.

The results of the study will also help public health facilities in Asella town by offering methods to enhance postnatal care delivery, which will ultimately improve the health of both mothers and their newborns.

Additionally, the findings of the study will influence decision-makers, programmers, implementers, and other stakeholders to enhance the quality of postnatal care services. The study's findings will help stakeholders create efficient plans to remove bottlenecks in the provision of postnatal care components, which will eventually enhance the health of mothers and children.

Furthermore, the study will help the health sector across various levels and stakeholder groups by offering insightful information and supporting data to guide program and policy decisions.

Finally, it would also serve as literature for scholars/researchers who are interested in/working in the field.

2. Literature Review

Postnatal care refers to the medical and emotional support provided to women during the postpartum period, typically extending from the immediate post-delivery period to six weeks after childbirth. The postnatal period is a critical time for new mothers, as they recover from the physical and emotional demands of childbirth and adjust to caring for their newborn. Effective postnatal care is essential for promoting the health and well-being of both the mother and the baby.

2.1. Magnitude of contents of postnatal care received

A study conducted in Bangladesh in 2023 indicated that the overall prevalence of mothers receiving all components of PNC was only 6.6% (25). A study conducted in Sub-Saharan Africa in 2024 showed that 23.51% of mothers received adequate content of PNC (5). The Demographic Health Survey (DHS) 2020 conducted in Rwanda indicated that 44.3% of mothers had received all the PNC components (26).

According to the 2019 Ethiopian Mini Demographic and Health Survey (DHS), the magnitude of mothers receiving all contents of PNC was 20.9% in Ethiopia, 10.7% in the Harari region, 46.8% in Addis Ababa, and 16.2% in the Oromia region (6). A community-based cross-sectional study conducted among women who gave birth in Southern Ethiopia in 2021 showed that the contents of postnatal care given to the mother and newborn by skilled health care providers were 14.6% (17). A study conducted in Ezha district, Southern Ethiopia, in 2019 showed that the prevalence of complete postnatal care utilization was 19.6% (5).

A cross-sectional study conducted in the Jimma University Medical Center maternity ward in 2017 among postnatal mothers and their newborn babies showed that 35.2% of women received all maternal observation components, and 3% of the newborns received all components of essential newborn care (27).

2.2. Factors associated with contents of postnatal care offered

2.2.1. Socio-demographic factors

A study conducted in Sub-Saharan Africa in 2024 showed that mothers aged ≥ 35 years, mothers with primary education, secondary education, higher education, and urban dwellers were associated with adequate content of PNC (5).

The Demographic Health Survey (DHS) 2020 conducted in Rwanda indicated that being a working person was associated with receiving all components of postnatal care services (26).

A cross-sectional study conducted in Ethiopia found that mothers with an age of between 25 and 35 years old and a secondary level of education were factors associated with adequate postnatal care service (28). Similarly, Ethiopian Mini EDHS 2019 revealed that mothers aged 20–34 years and the elderly (35–49 years) were associated with receiving all components of postnatal care services (6). A community-based cross-sectional study conducted among women who gave birth in Southern Ethiopia in 2021 showed that mothers lacking formal education was a factor associated with receiving adequate PNC (17). A study conducted in Ezha district, Southern Ethiopia, in 2019 showed that maternal education of secondary and above was a factor associated with complete postnatal care utilization (5).

2.2.2. Obstetrics related factors

A study conducted in Bangladesh in 2024 indicated that mothers who had c-sections was factor associated with receiving all components of postnatal care services (25). The Demographic Health Survey (DHS) 2020 conducted in Rwanda indicated that parity of more than four was associated with receiving adequate contents of PNC (26).

A cross-sectional study conducted in Ethiopia found that mothers having parity of between two was a factor associated with adequate postnatal care service (28). According to the Ethiopian Mini EDHS, the 2019 report showed that mothers with a birth interval greater than 2 years were significantly associated with receiving all postnatal contents (6). A study conducted in Ezha district, Southern Ethiopia, in 2019 showed that mother who give birth by Caesarean section was associated with complete postnatal care utilization (5).

2.2.3. Health service related factors

A study conducted in Bangladesh in 2024 indicated that mothers with skilled birth attendants was associated with receiving all components of postnatal care services (25).

The DHS 2020 conducted in Rwanda indicated that antenatal care (ANC) frequency of greater than 4 times, receiving full contents of ANC services, and attending ANC in a private facility were associated with receiving all components of postnatal care services (26). A study conducted in Sub-Saharan Africa in 2024 showed that mothers having antenatal care (ANC) visits 8 and above and health facility delivery were associated with adequate content of PNC (5).

A cross-sectional study conducted in Ethiopia in 2021 found that mothers having ANC follow-up four and above was a factor associated with adequate postnatal care service (28). Data from the nationally representative Ethiopia Mini Demographic and Health Survey 2019 revealed that mothers who had commenced ANC contact during the first trimester and mothers who received skilled personnel-assisted birth were associated with receiving all components of postnatal care services (6).

A study conducted in Southern Ethiopia in 2021 showed that mothers who have received four or more ANC visits and are members of community-based health insurances were factors associated with receiving adequate PNC (17). Similarly, a study conducted in Ezha district, Southern Ethiopia, in 2019 showed that having antenatal visits was associated with complete postnatal care utilization (5).

2.3. Conceptual framework

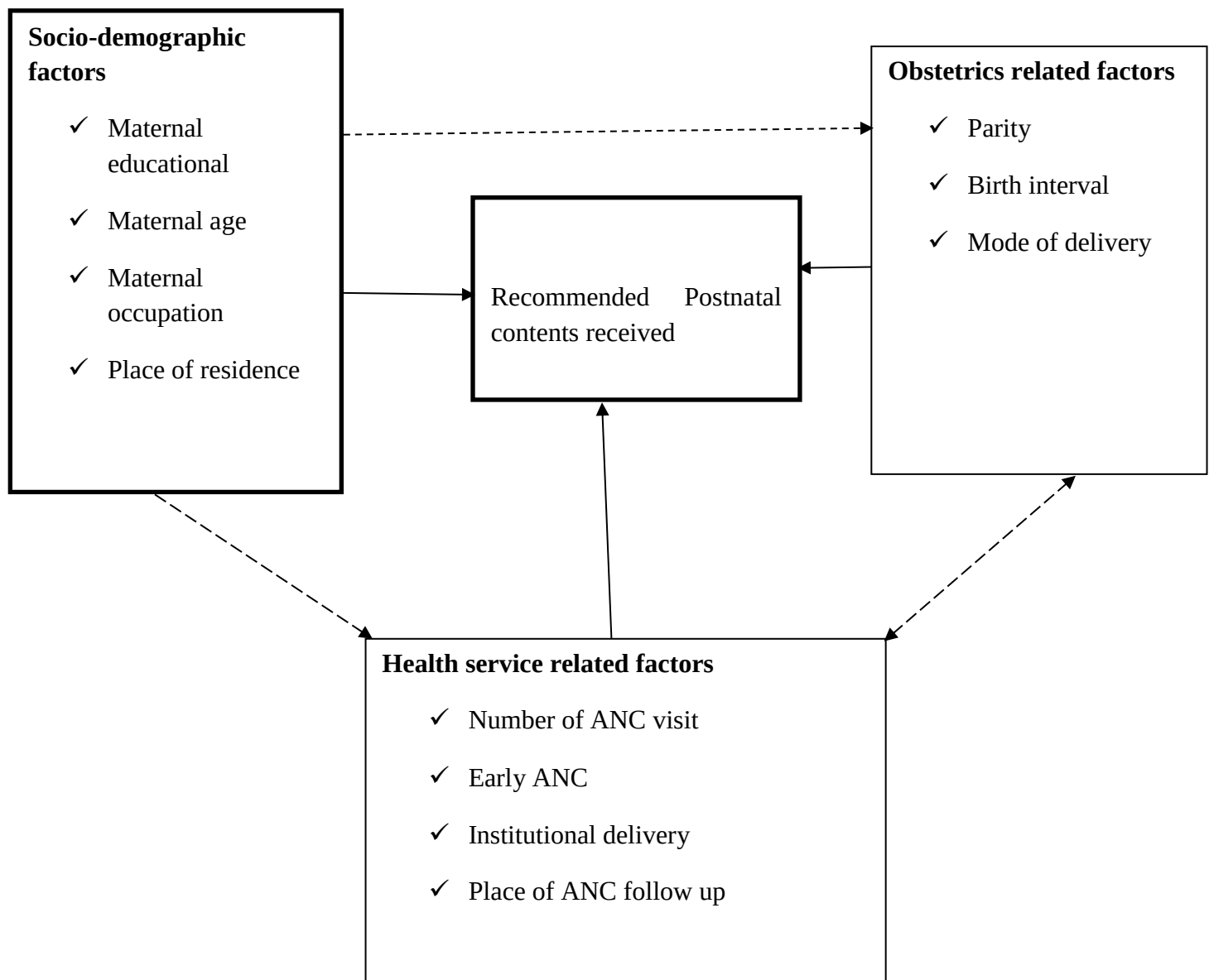


Figure 1: Conceptual frame work of factors associated with Postnatal contents received adapted from different literatures(16,29,30).

3. Objectives

3.1. General objective

- ❖ To assess recommended postnatal care contents received and associated factors among postnatal mothers in the public health facilities of Asella Town, Southeast Ethiopia, 2024.

3.2. Specific objectives

- ❖ To assess the magnitude of recommended postnatal care contents received among postnatal mothers in public health facilities of Asella town, Southeast Ethiopia, 2024.
- ❖ To identify factors associated recommended postnatal care contents received among postnatal mothers in public health facilities of Asella town, Southeast Ethiopia, 2024.

4. Methods and Materials

4.1. Study setting and period

The study was conducted in Asella town, Southeast Ethiopia. It is located about 168 km from the capital city of Addis Ababa in a southeastern direction. Asella town has one governmental referral hospital and two health centers. In 2023/24, a total of 7620 and 7740 mothers received skill birth attendant and PNC services, respectively, in Asella town health facilities. Based on the population projection of Ethiopia, Asella town in 2024 had a total population of 196,410; out of them, 6,815 were expected to be pregnant women (31). The study was conducted from October 12, 2024 to November 12, 2024.

4.2. Study design

A facility-based cross-sectional study design was employed.

4.3. population

4.3.1 Source population

All mothers who attended postnatal service of Public health facilities in Asella town.

4.3.2 Study population

All selected mothers who attended immediate postnatal service of Public health facilities in Asella town during data collection period.

Inclusion criteria: - All immediate postnatal mothers who gave live birth newborn in Public health facilities of Asella town.

Exclusion criteria: - Those women who are not able to respond due to severe illness were excluded from the study.

4.4 Sample size determination

For the first objective, the sample size was calculated using single population proportion formula. Accordingly, the sample size was calculated by consideration of the following assumptions.

P: The proportion of mothers who received all the contents of PNC in Southern Ethiopia was 14.6% (17).

d = The calculated margin of error was 3%.

$Z_{\alpha/2}$ = critical value at 95% confidence level was 1.96

n: sample size

$$n = \frac{\left(Z_{\frac{\alpha}{2}}\right)^2 P(1 - P)}{d^2}$$

$$n = \frac{(1.96)^2 0.146(1 - 0.146)}{0.03^2}$$

$$n = 532$$

By considering 10% non- response rate, the final sample size was 586.

For the second objective, the sample size was calculated by using double population proportion formula or Epi info version 7.2.5 software by considering the following assumptions. Power=80%, 95% confidence level and ratio=1

Table 1: Sample size calculation for factors associated with received all the contents of PNC from Southern Ethiopia study by statcalc epi info.

S/N	Variables	Proportion of received all the contents of PNC		OR	Sample size	Reference
		Non-exposed (P1)	Exposed (P2)			
1	Mother secondary education	28.91%	61.66%	3.95	82	(17)
2	ANC visit four or more	27.08%	75.40%	8.09	40	
3	Being member of CBHI	57.49%	86.23%	4.63	88	

By comparing the first and second objectives, the maximum sample size of 586 was taken from the first objective.

4.5 Sampling technique and sampling procedure

In this study, all public health facilities in Asella town were included in the study. Based on these, one referral hospital and two health centers were included. The number of study participants from these health facilities was determined from the previous PNC attendants flow. Based on this, the monthly average flow of the previous three months PNC was 735. After identifying the number of eligible mothers in each health facility, the total sample size was proportionally allocated to the facilities. The study participants were selected by systematic random sampling. The sampling interval (Kth value) was determined by dividing the average monthly flow of eligible mothers in selected facilities by the desired sample size, and the k value was found to be 1. Then, at every one mother's, the study participants were taken until the sample size was reached.

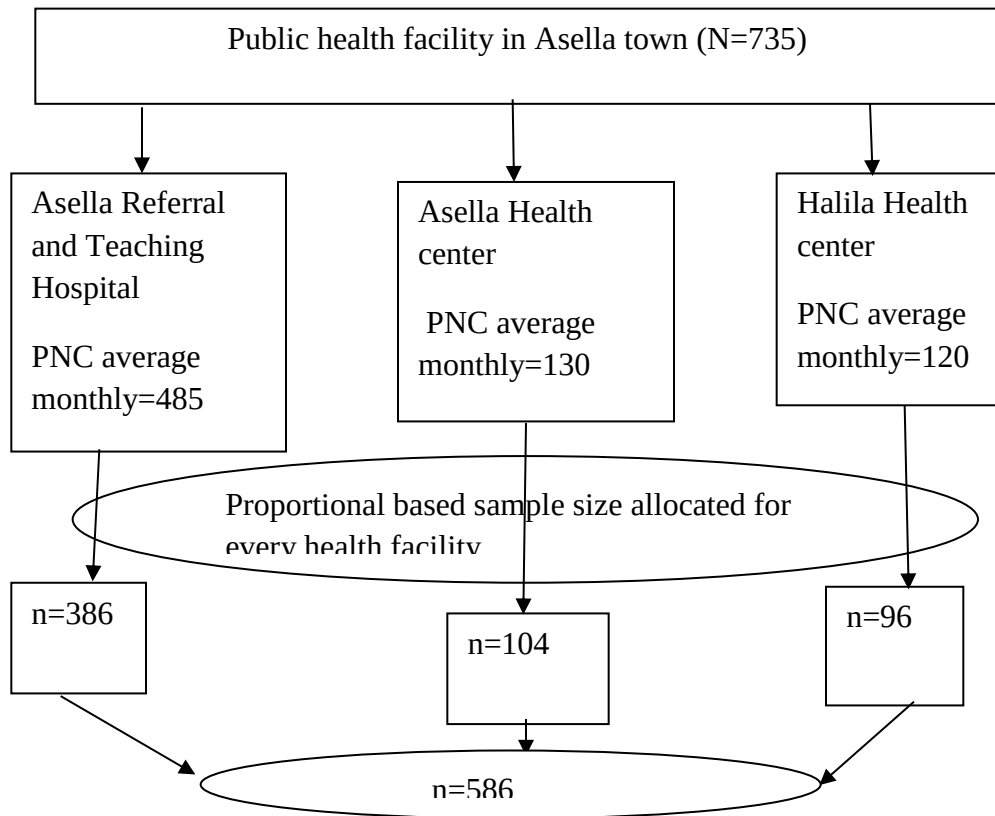


Figure 2: Schematic presentation of the Sampling procedure of Postnatal Care Contents Received among postnatal mothers in public health facilities of Asella town, Southeast Ethiopia,2024

4.6 Variables of the study

Dependent variable

Received recommended postnatal care contents

Independent variables

Socio-economic and demographic factors: mother age, marital status, religion, ethnicity, residence, educational status, husband educational status, mother occupational status, husband occupational status, family size

Obstetrics-related factors: gravity, parity, previous history of preterm, neonatal death, stillbirth, and number of live births

Health service and medical-related factors: ANC visit, mode of delivery, place of ANC follow up

4.7 Operational definitions

Received recommended postnatal care contents: The contents of PNC services are nine. These are an assessment of maternal health for danger signs, assessment of newborn clinical danger signs, promotion of early and exclusive breastfeeding (EBF), provision of chlorhexidine, iron and folic acid supplementation (IFAS), provision of family planning, provision of psychosocial support, counsel for mothers on danger signs, nutrition and hygiene and provide key messages to mothers and families on delayed bathing, skin-to-skin contact and immunization. The response categories were defined as “Yes=1” and “No=0” for each service item. A composite index was created, with a minimum and maximum of 0 and 9 scores, respectively. If the mother scored nine, it was considered as having received the recommended PNC service; otherwise, if she missed at least one component, it was considered as not having received the recommended PNC contents (4).

4.8 Data collection tools and procedures

The questionnaires were developed after reviewed different relevant literature (16,29,30,32,33). Structured questionnaires were used to collect information about respondents' sociodemographic characteristics, obstetrics-related factors, health service-

related factors, and maternal-related factors. Four diploma nurses were recruited to participate in data collection. Two health officers were recruited as supervisors based on their experience. The data were collected using pre-tested, structured and interviewer administered questionnaire one hour before the mothers were discharged. In addition to interviewed mothers, medical card review was used to check the recorded information on postnatal care card related to recommended postnatal contents provided for mothers and newborns by health professional.

4.9 Data quality assurance

The final version of the questionnaire was translated into Afaan Oromo a language expert. Pretests were done on a 5% sample size in Iteya Health Center, which is located 25 kilometers away from the study area, and then necessary modifications were made on sequence, grammar and how to conduct interview. Data collectors and supervisors was trained for one day by principal investigator about the objective of the study and data collection methods. During the actual data collection, close supervision was provided by the principal investigator and the supervisors. The collected data was cross-checked on each day of activity for consistency and completeness.

4.10. Data processing and analysis

Data were entered into Epi Data 4.6 and exported into SPSS version 26 for further cleaning, processing, and analysis. Descriptive statistics, such as frequency distributions, mean, and standard deviation, were computed. A binary logistic regression model was used to identify factors associated with the outcome variable. Bivariable analysis was done to select candidate variables for multivariable analysis. Variables with a p-value <0.25 in the bivariable analysis were transferred to the multivariable logistic regression analysis to control for possible confounders. Multicollinearity was checked among independent variables using variance inflation factors, and then the highest VIF between the independent variables was found to be 1.29, which was below cut -off points. In the multivariable logistic regression, variables with p-value <0.05 were considered statistically significant. Adjusted odds ratio (AOR) along with 95% confidence interval (CI) was estimated to measure the strength of

association. The model fitness was checked by using the Homer-Lemeshow goodness of fit test and found to be $p\text{-value} = 0.86$.

4.11. Ethical considerations

The actual data collection was started after ethical clearance was obtained from the Ethical Review Committee of Arsi University College of Health Science. A formal letter of cooperation was taken to each facility from the Asella town health office. The participants were informed about purposes, procedures, potential risks, benefits, voluntary participation, and the right to refuse participation or withdraw from the study at any time they want; then verbal consent was obtained. Confidentiality was maintained throughout the study by omitting the name of the interviewee on the questionnaire, and information provided by them was kept confidential and used only for research purposes.

4.12. Dissemination of results

The findings of the study will be submitted to the Arsi University College of Health Science Department of Maternity and Reproductive Health in partial fulfillment of the requirements for the degree of master in Maternity and Reproductive Health. The final result will be submitted to the Asella Teaching and Referral hospital and Asella health office. Also, it will be planned to be present at different seminars, conferences, and town meeting levels and published in a peer-reviewed journal.

5. Results

5.1 Socio-demographic characteristics of respondents

A total of 575 mothers were included in the study with a response rate of 98.1%. The mean age of the mothers was 28.18 (SD $\pm$ 5.648) years. About 320 (55.7%) of mothers were found within the age range of 25-34. About 165 (28.7%) of mothers were attended primary education. Five hundred fifty-six (96.7%) of mothers were married. About 441 (76.7%) of study participants were Oromo by ethnicity. Concerning religion, 262 (45.6%) of mothers were Orthodox by religion (Table 2).

Table 2 Socio-demographic characteristics of postnatal mothers in public health facilities of Asella town, Southeast Ethiopia, 2024

Variables (n=575)	Frequency	Percent
Maternal age		
19-24	156	27.1
25-34	320	55.7
35 and above	99	17.2
Marital status		
Married	556	96.7
Others*	19	3.3
Ethnicity		
Oromo	441	76.7
Amhara	66	11.5
Silte	32	5.6
Gurage	36	6.3
Religion		
Orthodox	257	44.7
Muslim	245	42.6
Protestant	64	11.1
Others**	9	1.6
Maternal education		
No formal education	126	21.9
Primary education	165	28.7
Secondary education	158	27.5
College and above	126	21.9
Husband education		
No formal education	103	17.9
Primary education	187	32.5
Secondary education	170	29.6
College and above	115	20
Maternal occupation		
Daily labor	116	20.2
Housewife	220	38.3
Merchants	113	19.7
Civil servants	126	21.9
Husband occupation		
Daily labor	92	16
Farmer	219	38.1
Merchant	149	25.9
Civil servants	115	20

* single, widowed and divorced; **: Catholic and Wakefata

5.2. Obstetric and maternal health service related factors of respondents

Four hundred fifty (78.3%) of respondents were multipara or gave birth more than one times. Regarding to still birth, 60 (10.4%) of mothers had previous history of still birth. About, 83 (14.4%) of mothers had previous history of neonatal death. Concerning ANC follow up, 552 (96%) mothers were attended antenatal care for their last pregnancy. Among 552 mothers attend ANC, 433(78.4%) of mothers attended four and above ANC visits. Regarding place of delivery, 382 (66.4%) mothers delivered at hospital. Regarding of mode of delivery, 469 (81.6%) of the mothers gave birth spontaneously via the vagina (table 3).

Table 3 Obstetric and maternal health service characteristics of postnatal mothers in public health facilities of Asella town, Southeast Ethiopia, 2024

Variables (n=575)	Frequency	Percent
Parity		
Multiparous	450	78.3
Primiparous	125	21.7
History of still birth		
Yes	60	10.4
No	515	89.6
History of neonatal death		
Yes	83	14.4
No	492	85.6
Attend ANC		
Yes	552	96
No	23	4
ANC visit		
>=4 visit	433	78.4
<4 visit	119	21.6
Place of ANC attended		
Private clinic	157	28.4
Hospital	240	43.5
Health center	155	28.1
Place of delivery		
Hospital	382	66.4
Health center	193	33.6
Mode of delivery		
Cesarean section	106	18.4
Spontaneous vaginal delivery	469	81.6

ANC: Antenatal care

5.3 Magnitude of Postnatal care contents received among postnatal mothers

The overall magnitude of mothers who received recommended PNC contents was 74 (12.9%) (95%CI: 10.1-15.6). Regarding content of the PNC services provided, 564 (98.1%) of mothers received regular assessment, 536 (93.2%) of neonatal checked all necessary assessment, 556 (96.7%) of mothers received counseled on breastfeeding, and 452 (78.6%) use chlorhexidine for cord care (figure 3)

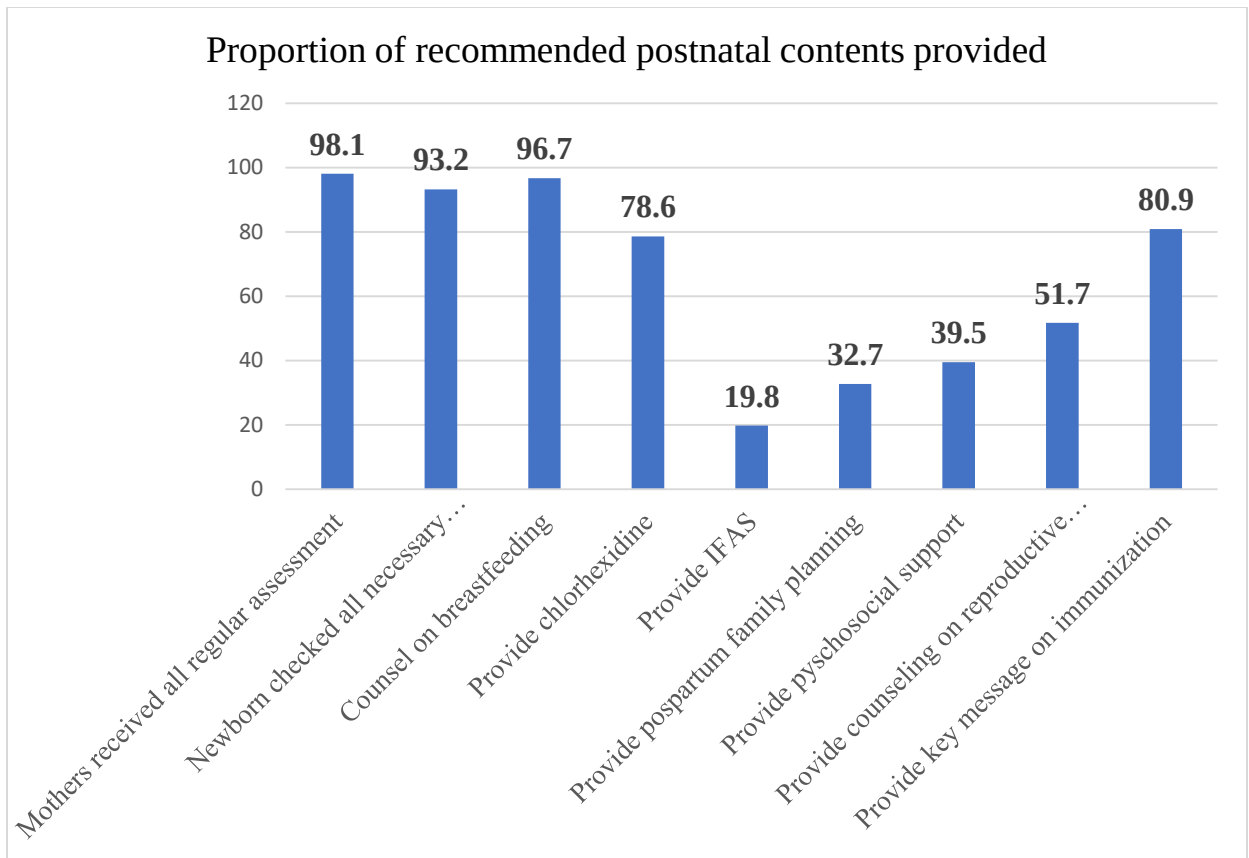


Figure 3 Percentages of mothers received each contents of care during PNC visit in public health facilities of Asella town, Southeast Ethiopia, 2024

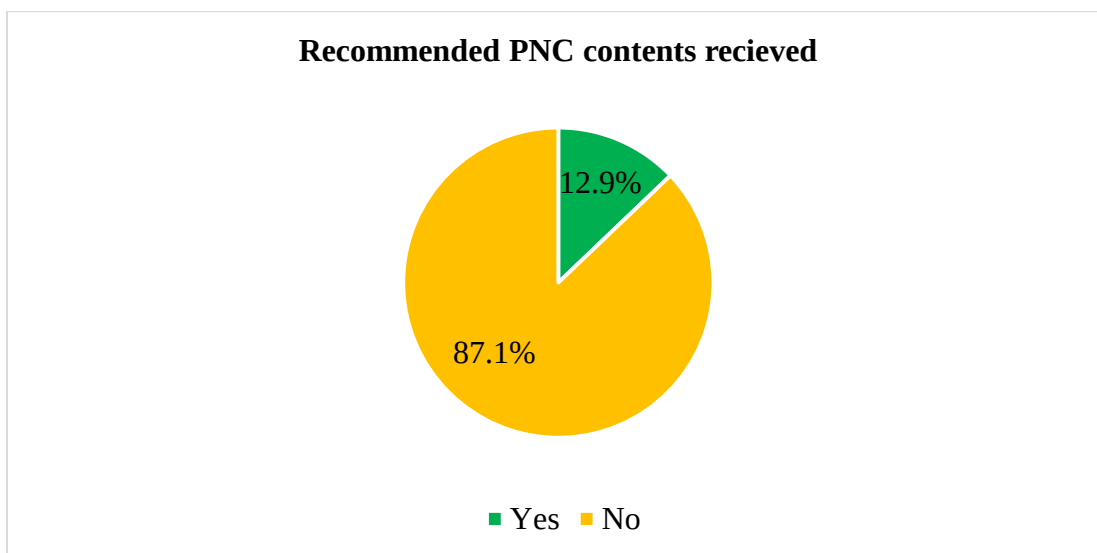


Figure 4 Magnitude of mothers received recommended PNC contents in public health facilities of Asella town, Southeast Ethiopia, 2024

5.4 Factors associated with mothers received recommended PNC content

In the bivariable logistic regression analysis; maternal age, maternal education, husband education, maternal occupation, parity, place of delivery and mode of delivery were considered as candidates for multivariable analysis at a p-value of <0.25.

In the multivariable logistic regression analysis, being civil servants, multiparous, give birth at hospital and give birth by caesarean section were factors significantly associated with received recommended PNC contents at p-value of <0.05.

Mothers who were civil servants had 2.35 times higher odds of receiving recommended PNC contents compared to housewives (AOR: 2.35; 95% CI: 1.07-5.75). Mothers with multiparous were 2.21 times higher odds of receiving recommended PNC contents compared to primiparous mothers (AOR: 2.21; 95 % CI: 1.02-4.77). Mothers who gave birth at the hospital were 2.37 times higher odds of receiving recommended PNC contents compared to mothers who give birth in a health center (AOR: 2.37 95 % CI: 1.27-4.44). Mothers who give birth by caesarean section were 1.91 times higher odds of receiving recommended PNC contents compared to mothers give birth spontaneous vaginal delivery (AOR: 1.91; 95 % CI: 1.05-3.46) (table 5).

Table 4 Bivariable and multivariable analysis of factors associated with received recommended PNC contents in public health facilities of Asella town, Southeast Ethiopia, 2024

Variables (n=575)	Received recommended PNC contents		COR (95%CI)	AOR (95%CI)
	Yes	No		
Maternal age				
19-24	14	142	1	1
25-34	43	277	1.57(0.83,2.97)	1.22(0.59,2.55)
≥ 35	17	82	2.10(0.98,4.48)	2.36(0.98,5.68)
Maternal education				
No formal education	15	111	1	1
Primary education	16	149	0.79(0.37,1.67)	0.50(0.33,1.71)
Secondary education	17	141	0.89(0.42,1.86)	0.75(0.33,1.71)
College and above	26	100	1.92(0.96,3.83)	1.73(0.68,4.38)
Husband education				
No formal education	12	91	1	1
Primary education	17	170	0.75(0.34,1.65)	1.12(0.47,2.67)
Secondary education	25	145	1.30(0.62,2.73)	1.50(0.69,3.24)
College and above	20	95	1.59(0.73,3.45)	1.52(0.66,3.47)
Maternal occupation				
Daily laborer	11	105	1	1
Housewife	16	204	0.74(0.33,1.67)	0.54(0.23,1.28)
Merchant	21	92	2.17(0.99,4.75)	2.15(0.89,5.19)
Civil servants	26	100	2.48(1.16,5.28)	2.35(1.07,5.75) *
Parity				
Multiparous	64	386	1.90(0.94,3.83)	2.21(1.02,4.77) *
Primiparous	10	115	1	1
Place of delivery				
Hospital	58	324	1.98(1.10,3.54)	2.37(1.27,4.44) *
Health center	16	177	1	1
Mode of delivery				
Caesarean section	21	85	1.93(1.11,3.38)	1.91(1.05,3.46) *
Spontaneous vaginal delivery	53	416	1	1

*Statistically significant at p-value <0.05, 1: reference category. AOR: Adjusted Odds Ratio; COR: Crude Odds Ratio; PNC: Postnatal Care; CI: Confidence interval

6. Discussion

This study aimed to assess the magnitude of mothers received recommended PNC contents and its associated factors among mothers attending PNC in public health facilities of Asella town, Southeast Ethiopia. This study revealed that the magnitude of mothers received recommended PNC contents was 12.9% (95% CI: 10.1-15.6). This finding was comparable to reports from studies conducted in Ezha District, Southern Ethiopia 14.6% (17). On the contrary, this finding is lower than studies conducted in Sub-Sahara Africa 23.51%(5), Rwanda 44.3%(26), Ethiopia 20.9% (6) and Jimma 35.2% (27). The possible reason for this difference might be due to a difference in study area, sample size and period. Furthermore, a possible reason in the case of the study conducted in Rwanda and Ethiopia were study conducted at national level. In case of study done in SSA the reason for variation was due to study done in SSA was pooling prevalence taken from national demographic health survey.

However, this study is higher than study done in Bangladesh 6.6% (25). The possible variation was due to the difference in study area, sample size and study period. This variation in findings may be due to differences in study design, sample size, and population characteristics. Additionally, the PNC contents and services provided in Ethiopia and Bangladesh may also differ, which could contribute to the variation in results.

Mothers who were civil servants were higher odds of receiving recommended PNC contents compared to housewife. This finding in line with study done in Rwanda(26). The possible explanation for this could be that government employees may have higher levels of education and awareness about the importance of PNC. They may be more likely to understand the benefits of receiving all PNC services and to take the necessary steps to ensure their children receive them. In addition, government employees may have access to social support networks, such as colleagues which can provide advice, encouragement, and assistance in accessing PNC services.

Mothers with multiparous were higher odds of receiving recommended PNC contents compared to primiparous mothers. This finding supported study done in Rwanda (26). The potential explanation was that multiparous women might have already experienced pregnancy, delivery, and postpartum care during their prior pregnancies. This earlier experience might have given them a better understanding of the significance of PNC and the particular elements involved. Because they may be more familiar to the postnatal care process, multiparous mothers are more likely to actively seek out and utilize complete PNC services than first-time mothers.

Mothers who gave birth at hospital were higher odds of receiving recommended PNC contents compared to mothers give birth in health center. This finding is consistent with study conducted in Bangladesh (25). A possible reason could be that the multidisciplinary team of medical specialists available to mothers giving birth in hospitals includes obstetricians, pediatricians, nurses, and midwives, and they may offer complete PNC services. Advanced follow-up and monitoring systems are typically in place in hospitals to further track the health of women and newborns after delivery. Mothers who give birth at hospital may receive more regular check-ups, tests, and assessments during the postnatal period, ensuring they obtain all the components of PNC and promptly addressing any potential health concerns. Hospitals frequently have medical professionals with advanced training and experience in handling postnatal problems, doing screenings, and offering specialized care for mothers and newborns.

Mothers who gave birth by caesarean section were higher odds of receiving recommended PNC contents compared to mothers give birth spontaneous vaginal delivery. This finding supported by study done in Bangladesh (25) and Southern Ethiopia (17). The potential explanation was that, because caesarean sections are surgical procedures, mothers who have them frequently need more frequent medical monitoring and follow-up treatment. For mothers who have had a caesarean delivery, this increased medical care may lead to more frequent postnatal check-ups, assessments, and screenings, increasing the chance of obtaining all PNC components.

7. Strength and Limitation of study

Strength of the study

Data were collected from women who attend immediate postnatal care service in the facilities; this might reduce recall bias among respondents.

Limitation of the study

There was insufficient evidence based on the latest WHO guideline (2013) on the content of PNC. The study used a cross-sectional design, which may not be able to capture the temporal relationships between variables.

8. Conclusion and Recommendation

Conclusion

The proportion of mothers receiving recommended postnatal care contents was found to be low when compared to the national study (20.9%). Being civil servants, multiparous, giving birth by caesarean section, and giving birth at the hospital were factors that are significantly associated with the received recommended postnatal care contents in the study area.

Recommendation

The Ministry of Health and Oromia Regional Health Bureau should develop standardized protocols and checklists for PNC service provision to ensure that all essential components of postnatal care are systematically delivered to every woman during their postpartum stay at the health facility in order to improve utilization provision of all contents of PNC to mothers.

The Ministry of Health and Oromia Regional Health Bureau should strengthen healthcare facilities to work towards bridging the gap in the provision of all contents of PNC between health centers and hospitals.

Asella town health office should give special attention to mothers' deliveries at the health center to receive all essential components of postnatal care provided to every woman during their postpartum stay at the health facility.

Health care providers should provide recommended PNC contents to every postpartum woman, irrespective of their occupational background, parity, and their mode of delivery.

Future research should use mixed-methods approaches to gain a deeper understanding of the factors that influence PNC contents receipt and the impact of PNC contents on maternal and newborn outcomes.

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10. Annexes

Annex I: English version Information Sheet and Consent Form

Principal investigator: Genat Nemo

Title: Postnatal care contents received and associated factors among postnatal mothers in public health facilities of Asella town, Southeast Ethiopia, 2024.

My name is _____. I am working as a data collector for the study being conducted in this Hospital/Health center by Mrs. Genet Nemo who is studying for her Master's degree at Arsi University Department of Midwifery. She is conducting a research for the partial fulfillment of second degree on topic mentioned above in selected health facilities. I request you to take part in this study and to respond genuinely. Your cooperation and willingness are greatly helpful in identifying problems related Postnatal care contents offered to postnatal mothers. The findings of this study can be used to identify factors associated with Postnatal care contents offered to postnatal mothers. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillment of a Master's Program in public Health for the principal investigator. The study will be conducted through face to face interviews which may take about 20 minutes, to help us in this study. The risk of participating in this study is very minimal, only taking few minutes from your time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for concerned bodies. All information given by you will be kept strictly confidential and won't be accessible to any third party. Participation for this study is fully voluntary. You have the right to declare to participate or not in this study. If you decide to participate, you have the right to withdraw from the study at any time, this will not affect you for any loss of benefit which you otherwise are entitled. You do not have to answer any question that you do not want to answer. If there are any questions or enquiry any time about the study or the procedure, please contact: phone: 0968172266

Are you willing to participate in this study?

1. Yes Continue to the next page
2. No Skip to the next participant

Annex II: English version questionnaires

Questionnaire for assessment of postnatal care contents and associated factors among postnatal mother in Asella town, Southeast Ethiopia, 2024. Instruction: Please indicate the response by circling the number of respondent choice or by writing the response in the space provided accordingly.

General Information

Code No: _____

Name of health facility _____ Date ____/____/2016 EC

SECTION 1: Socio Demographic Characteristics

S/N	Question	Response	Code
101	Age of respondents (in years)	_____	
102	Marital status	1. Married 2. Single 3. Divorced/Separated 4. Widowed	
103	Ethnicity	1. Oromo 2. Amhara 3. Silte 4. Gurage 5. Tigre 6. Others	
104	Religion	1. Orthodox 2. Muslim 3. Protestant 4. Catholic 5. Wakefata	

105	Educational status of woman	1. No education 2. Primary education 3.Secondary education 4.College education & above	
106	Educational status of husband	1. No education 2. Primary education 3.Secondary education 4. College education & above	
107	Occupational status of women	1.Housewife 2.Farmer 3.Civil servants 4.Private sector/NGO 5. Merchant 6.Dail laborer 7.Other(specify)_____	
108	Occupational status of husband	1.Farmer 2.Civil servants 3.Private sector/NGO 4. Merchant 5.Dail laborer 6.Other(specify)_____	

Part II: Obstetrics related factors

SN	Question	Response	Code
201	Gravid (in number)	_____	

202	Para (in number)	_____	
203	Number of live children (in #)	_____	
204	Do you have previous history of still birth?	1. Yes 2. No	
205	Do you have previous history of neonatal death?	1. Yes 2. No	

Part III: Health service related factors

SN	Question	Response	Code
301	Did you attend ANC?	1. Yes 2. No	
302	At what month, you started ANC?	_____month	
303	How many ANC follow up did you attend?	_____	
304	Where did you attend your ANC follow-up?	1. Health post 2. Health center 3. Hospital 4. Private clinic	
305	Place of delivery	1. Hospital 2. Health center 3. Home	
306	Mode of delivery	1. spontaneous vaginal delivery 2. Cesarean section delivery	

Part IV. Contents of Postnatal Care for the mother and newborn

SN	QUESTION	RESPONSE	Code
401	Did mothers received all regular assessment such as check vaginal bleeding, uterine contraction, urine void, blood pressure, temperature and heart rate (pulse)?	0. No 1. Yes	
402	Did newborn checked all necessary assessment such as feeding status, breathing, chest in-draw, fever, body temperature and jaundice?	0. No 1. Yes	
403	Did mothers counsel on early and exclusive breastfeeding (EBF)?	0. No 1. Yes	
404	Did health care provider provide chlorhexidine for umbilical cord care?	0. No 1. Yes	
405	Did health care provider provide iron and folic acid supplementation for mother.	0. No 1. Yes	
406	Did health care provider give family planning for the mothers?	0. No 1. Yes	
407	Did health professionals provide Psychosocial support for a woman?	0. No 1. Yes	
408	Did health care provider give counsel for mothers on danger signs, nutrition and hygiene?	0. No 1. Yes	
409	Did health care provider provide key messages to mothers and families on delayed bathing, skin-to-skin contact and immunization?	0. No 1. Yes	

THANK YOU SO MUCH!!!

Annex III: - Consent form and Information sheet (Afan Oromo version)

Akkam jirtuu! Maqaan kiyya_____jedhama. Ani bakka barattuu Gannat Namoo tan Qorannoo Univaarsiity Arsii mummee fayyaa Walhormata barattuu digirii 2 ffaa kan taate qorannoo dubartoota kuta dahumsa keessa jiran keessa meeqa tajaajila argachuu qaban hunda argata jiran fi sababoota wan kana wajjin walqabatan dubartoota dhabbiilee fayya mootumma dhufaan irratti qorachuudhaf. Bu'aan qorannoo kana akka magaalaa Asallatti tajaajila dahumsa booda hadha fi daa'ima kennamu qaban hunda kennamaf jirachuu adda baasuun furuuf gahee ol'aanaa qaba. Halli raga isin irraa itti funannu gaffile qopha'an isin gafachu dhan erga isin akka qoranno kana irratti hirmachuf eyyama tatan booda. Yeroo gaffile kana isin gafannu daqiiqa 20 kan fudhatuudha.

Qoranno kana irratti wan hirmattanif kallattidhan wanti isin kaffalamu hin jiruu akkasuma qoranno kana irratti yoo hirmattan midhan isin irra gahu hin jiru yeroo gaffiile isin gafannu isin irra fudhachuu yoo tahee malee. Qorannicha kana irratti kan hirmatan feedhidhan akkasuma yeroo hirmattan jidduudhan yoo isinitti hin tolee adda kuttan dhisuu ni dandettu. Ragaan isin irraa funanamme iccitidhan kan qabu akkasuma yeroo raga kana isin irra fudhannu maqaan kessan kan hin barrofne dha. Raga kessan kan itti fayyadamu abba qoranno kana gaggesse qofa tahu isin hubachifna. Gaaffii yoo qabattan qorata qorannoo kana kan tatee addee Gannat Namo lakkoofsa bilbila ishee +251968172266 bilbiltan gafachuu dandeettu.

Qorannoo kana keessatti hirmaachuuf fedha qabda?

Eeyyee..... Gara gaaffiiwwan itti annutti darbi

Lakki..... Asumatti dhaabii gara hirmaataa itti aanuutti
tari

Annex IV; - Afan Oromo Version Questionnaires

Koodii: _____

Maqaa dhabbata fayya _____ Guyyaa ____/____/2016 EC

Kutaa 1ffaa: Odeffannoo haalaa hawaasumma

S/N	Gaffilee	Deebiiwwan	Code
101	Umrii keessan meeqa?	_____	
102	Haala gaa'ilaa	1. Kan heerumte 2. Kan hin heerumne 3. Kan wali hikan/garagara jiratan 4. Kan irraa du'ee	
103	Saba	1. Oromoo 2. Amaara 3. Silxee 4. Guragee 5. Tigree 6. Kan biro _____	
104	Amantii	1. Ortoodoksii 2. Muslimaa 3. Proteestaantii 4. Katoolikii 5. Waqeefata	
105	Sadarkaa baruumsa	1. Kan hin barannee 2. kutaa 1-8 kan baratan 3. Kutaa 9-12 kan baratan	

		4.Kollejji fi isaa oli	
106	Sadarka baruumsa abba mana keeti	1. Kan hin barannee 2. kutaa 1-8 kan baratan 3.Kutaa 9-12 kan baratan 4.Kollejji fi isaa oli	
107	Hojii keessan	1.Hadha mana 2.Qonnan bula 3.Hojjattu mootumma 4.Dhabbata dhunfa/miti motumma 5. Daldaltuu 6.Hojii guyyaa 7.Kan biro ha ibsamu_____	
108	Hoji abba mana keetii	1.Qonnan buula 2.Hojii idilee 3.Dhabbata dhuunfa/miti mootumma 4. Daldala 5.Hoji guyya guyyaa 6.Kan biro ha ibsamu_____	

Kutaa 2ffa: haala ulfa fi dahuumsa wajjin walqabatan

SN	Gaffilee	Deebiiwwan	Code
201	Hagama amma meeqa ulfoofte?	_____	
202	Hanga amma ijolle meeqa dessee	_____	
203	Bayina ijollee lubbu jiran	_____	
204	Asin dura da'ima lubbu hin qabne dessee jirta?	1. Eyyee	

		2. Lakkii	
205	Daa'imni kichuu dhalatee lubbun si jala darbee jira?	1. Eyyee 2. Lakkii	

Kutaa 3ffaa: Haala tajaajila hadhoole wajjin walqabatan

SN	Question	Response	Code
301	Ulfa yeroo darbee dhabbile fayyatti hordoftee jirta??	1. Eyyee 2. Lakkii	
302	Ulfoftee Ji'a meeqaffa yoo gessee hordoftee?	Ji'a_____	
303	Si'a meeqa deddebitee ilaalamtee?	_____	
304	Tajaajila dahuumsa dura kana essatti ilaalamtee	1. keella fayya 2. Buufata fayyaa 3. Hospitaala 4. Kilinika dhuunfa	
305	Essatti desse?	1. Hospitala 2. Buufata fayya 3. Manatti	
306	Haala kamin dessee?	1. Kara gadameessatiin 2. Baqaqsan yaaluudhan	

Kutaa IV. Qabiyyee Kunuunsa Da'umsa Boodaa haadha fi daa'ima reefuu dhalateef

SN	Gaffilee	Deebiiwwan
401	Haadholiin tajaajila barbaachisaa hunda kan akka dhiiguu qaama saalaa sakatta'uu, dhiita'uu gadameessaa, fincaan ba'uu, dhiibbaa dhiigaa, ho'a qaamaa fi dha'annaa onnee argataniiru?	0. Lakki 1. Eyyee

402	Daa'imni reefuu dhalate madaallii barbaachisaa hunda kan akka haala nyaataa, seenaa raafamuu, hafuura baafachuu, dhoqqachu laphee, ho'a qaamaa fi goga kelloo tahuu sakatta'aman jiran?	0. Lakki 1. Eyyee
403	Haadholiin harma dafaanii hoosisu fi harma qofa hanga ji'a jaha hoosisuu irratti gorsi kennameera?	0. Lakki 1. Eyyee
404	Ogeessi fayya qoricha dibata hadhura da'ima irraa debamu kennera?	0. Lakki 1. Eyyee
405	Ogeessii fayya kinini hanqinna dhiiga ittisuu hadhaf kennee jira?	0. Lakki 1. Eyyee
406	Hadholeef qoricha infection ittisuu kennameera?	0. Lakki 1. Eyyee
407	Ogeeyyiin fayyaa deeggarsa Saayikooshawaasummaa hadhooleef da'umsa boodaa gorsi kennamef jira?	0. Lakki 1. Eyyee
408	Ogeessi fayyaa haadholiidhaaf mallattoo balaa cima, soorata, sochii, qulqullina, addaan fagessan dahuu fi karoora maatii irratti gorsa kenneef jira?	0. Lakki 1. Eyyee
409	Ogeessi fayyaa haadholii fi maatiidhaaf ergaawwan ijoo kannen akka yeroo qama daa'ima dhiqan, daa'iman qama ofitti akka tuqsiftu fi talaallii irratti kennamef jira?	0. Lakki 1. Eyyee

Hirmanna keessaniif galatooma!

ARSI UNIVERSITY

COLLEGE OF HEALTH SCIENCES DEPARTMENT OF MIDWIFERY

Name of investigator	Genat Namo (BSc)
Name of advisors	1. Getahun Tiruye (MPH, Assist proff. of Reproductive Health) 2. Hikma Yasin (MSc)
Title of the research project	Postnatal Care Contents Received and Associated Factors Among Postnatal mothers in Public Health Facilities of Asella Town, Southeast Ethiopia, 2024.
Duration of the project	October 12 -30, 2024
Study setting	Asella town
Total cost of the project	27,930 Ethiopia Birrs
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Declaration of Investigator

I, the undersigned student of Master of Reproductive Health, declare that this research proposal is my original work in partial fulfillment of the requirement for the degree of Master of Maternity and Reproductive health to my best knowledge.

Name of investigator: _____

Signature: _____ Date_____

Declaration of Advisors

We, the undersigned Advisors, declare that this research proposal is our original work in partial fulfillment of the requirement for the degree of Master of Maternity and Reproductive health for the stated student above to our best knowledge. We confirmed that this proposal is ready for defense with our approval as the university advisor(s).

Date of Submission: _____

Name of primary Advisors:	Signatures	Date
1. _____	_____	_____

Name of secondary Advisors:	Signatures	Date
2. _____	_____	_____

Examining Board Approval

We, the undersigned Examining board, approved that this research proposal is original work with the basic scientific merits for partial fulfillment of the requirement for the degree of Master of Maternity and Reproductive health for the stated student above to our best knowledge. We confirmed that this thesis is sufficient for the student's promotion to the higher level.

Name of External Examiner

Signatures

Date

Name of Internal Examiner

Signatures

Date

Name of Department Head

Signatures

Date

