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Original research

Postnatal care utilization and associated factors among mothers who gave birth in Gimbi Town, Western Ethiopia: A cross-sectional study

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ABSTRACT

Background: *Postnatal care received within the first week after childbirth is vital for ensuring both mother and newborn are healthy and for advancing universal health coverage. Utilization of these services is still low in many developing countries.*

Objective: *To assess the prevalence and associated factors of postnatal care utilization among women who delivered within the 12 months before the study in Gimbi Town.*

Methods: *A community-based cross-sectional study was implemented from 20 January to 10 February 2022. Participants were selected using a multistage sampling approach and interviewed face-to-face. Associations with complete postnatal care utilization were examined using bivariable binary logistic regression followed by multivariable logistic regression; significance was set at $p<0.05$.*

Results: *Complete postnatal care utilization was 21.90%. Maternal education (AOR = 3.41, 95% CI 1.67-6.94), husband education (AOR = 2.81, 95% CI 1.19-6.58), and knowledge of postnatal danger signs (AOR = 1.67, 95% CI 1.10-2.52) were significantly associated with higher odds of receiving complete postnatal care.*

Conclusion*: Complete postnatal care uptake was lower compared with previous studies and showed a significant association with the mother's education level, the husband's educational level, and the mother's awareness of postpartum danger signs.*

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INTRODUCTION

Postnatal care (PNC) comprises a series of preventive assessments to identify and address maternal and neonatal complications in the weeks following delivery (1).

The postnatal period starts right after the placenta is delivered and continues for six weeks after birth; it is a critical time for the health and survival of both mother and newborn (2). Mothers receive counseling from health workers on maternal diet, breastfeeding practices, vaccination, and related care, along with access to mental health and emotional support(1, 3).

According to the Federal Ministry of Health of Ethiopia, mothers should receive four postnatal contacts, the first occurring within 24 hours after delivery, at 1-3 days, at 6 days, and at 6 weeks (4). Adherence to WHO postnatal care recommendations is >90% in high-income regions (e.g., the Americas and Europe), but markedly lower in low- and middle-income countries (37%) and in Sub-Saharan Africa (13%) (5).

In Ethiopia, only 17% of postpartum mothers received postnatal care within the crucial first two days after delivery; in the Oromia region, this figure was just 9% (6). Although specific determinants differ across studies, most research finds that maternal age**,** mother's and husband's education**,** occupations of both partners**,** place and mode of delivery**,** parity**,** and knowledge of obstetric danger signs and PNC services influence postnatal care use (7,8). Research indicates that PNC service use is affected by factors including obstetric complications, waiting time for PNC service, distance from the health facility, birth outcome, and awareness about PNC services (9).

As part of its universal health coverage efforts, Ethiopia aims to lower maternal and child mortality by building provider capacity, increasing access to health facilities, boosting the number of health extension workers, and mobilizing community support (10). Despite efforts, maternal deaths and disabilities remain high. Complete PNC is vital for universal health coverage by ensuring healthy mothers and newborns. Therefore, strengthening antenatal care, promoting facility-based deliveries, creating home-based PNC strategies, and improving mothers' awareness are recommended to boost PNC uptake (11).

Although few investigations have addressed the uptake of comprehensive postnatal care and related factors in West Ethiopia, none have specifically targeted Gimbi town. This study was thus conducted to determine the prevalence of complete postnatal service utilization and to identify factors influencing it.

METHODS

Study Area and Period

The study was carried out in Gimbi town in Oromia's West Wollega Zone, roughly

441 km from the capital. The 2018 projected population was 44,974, comprising 22,352 men and 22,622 women. Local health facilities include two hospitals, a health center, several private clinics (five medium, one minor, one higher), six private pharmacies, a Red Cross pharmacy, and a police clinic offering maternal and child health services. The fieldwork was conducted from January 20 to February 10, 2022.

Study Design

A community-based, cross-sectional design was employed.

Source Population

Women living in Gimbi town who had a delivery during the 12 months before data collection.

Study Population

All randomly selected women who were between six weeks and 12 months postpartum during the data collection period and who lived in the selected kebeles of Gimbi town.

Inclusion criteria & Exclusion criteria

Included: Women who were between 6 weeks and 12 months postpartum during the data collection period and had lived in the town for at least one year before data collection.

Excluded: Mothers who were critically ill or who had lived in the town for less than one year.

Sample size determination and sampling procedure

Using a single-proportion formula with a 95% confidence interval, 5% precision, and an anticipated postnatal care prevalence of 28.4%, and accounting for a 1.5 design effect plus 10% for nonresponse, the required sample size was 516**.**

A multistage sampling approach was used. From the four administrative kebeles in Gimbi town, two (kebele 01 and kebele 04) were chosen by lottery method. Within those kebeles, mothers who had given birth in the past 12 months were selected using systematic sampling; the first household was chosen at random, and when multiple eligible mothers lived in one household, a lottery method determined the respondent. Interviewers picked a random direction by spinning a pen, walked to the village edge in that direction, and marked each interviewed household to avoid repeat visits.

Data Collection Technique & Procedure

A pretested, structured questionnaire administered via face-to-face interviews was used to collect data. The tool was adapted from the mini EDHS-2019 postnatal care questionnaire and other relevant literature, translated from English into Afaan Oromoo for the interviewers, and back-translated into English to verify consistency. Two bilingual reviewers checked the translations. Four health-science students fluent in the local

language served as interviewers after training, and two BSc nurses supervised data collection.

Data Quality Control

Data quality was ensured through a carefully designed questionnaire that was pretested in Nekemte town on 5% of the sample (n = 26) to confirm clarity for both interviewers and respondents; the tool was revised based on those findings. Data collectors and supervisors received a two-day training on study objectives, interviewing, data handling, and ethics.

Data processing and analysis

Data were coded and entered into EpiData v4.6.0, then exported to SPSS v21.0 for analysis. Descriptive statistics characterized the sample. Bivariable analyses screened candidate variables at $p \leq 0.25$, which were entered into a multivariable logistic regression to control for confounding. Effect estimates are presented as AORs with 95% CIs; multivariable significance was set at $p \leq 0.05$. Results are displayed in narrative form, tables, and figures.

Ethical consideration

Ethical approval was obtained from Wollega University, and permission from selected kebeles in Gimbi. Participants were informed and provided verbal consent. To protect confidentiality, questionnaires excluded personal identifiers, and electronic data were stored on a password-protected computer.

Operational definitions

Postnatal Service Utilization: It refers to mothers who attend at least one postnatal care visit from health institutions by health professionals (midwives, nurses, Health officers, and Doctors) or health extension workers during the first six weeks starting immediately after the time of delivery (12).

Complete Postnatal Care Service Utilization: It refers to mothers who attend at least four PNC visits by health professionals (midwives, nurses, Health officers, and Doctors) or health extension workers during the first six weeks, starting immediately after the time of delivery.

RESULTS

Socio-demographic characteristics

The study included 516 mothers who gave birth in the year preceding data collection, with all selected participants responding (100%**);** the mean age was 25.35 years (standard deviation 5.19). Four hundred ninety-five (95.9%) of the women in the study were married. Of the respondents, 355 (68.8%) identified as Protestant, and most (81.4%) belonged to the Oromo ethnic group. Over one-third (36.2%) of mothers had attained diploma level education or higher, and 251 (48.6%) were housewives (Table 1).

Table 1: Participants' sociodemographic characteristics, Gimbi Town, Ethiopia, 2022 (n=516).

Variables		**Frequency(n)**	**Percent (%)**
Age	15-19	54	10.5
	20-24	190	36.8
	25-29	164	31.8
	30-34	70	13.6
	35 and above	38	7.4
Marital status	Married	495	95.9
	Divorced	7	1.4
	Widowed	3	0.6
	Single	7	1.4
	Separated	4	0.8
Religion	Protestant	355	68.8
	Orthodox	117	22.7
	Muslim	44	8.5
Ethnicity	Oromo	420	81.4
	Amhara	36	7.0
	Gurage	60	11.6
Maternal Occupation	House wife	251	48.6
	Employee	142	27.5
	Farmer	8	1.6
	Merchant	49	9.5
	Daily labor	66	12.8
Husband occupation	Employee	240	46.5
	Farmer	24	4.7
	Merchant	91	17.6
	Daily labor	149	28.9
	Other*	12	2.3
Maternal educational status	Illiterate	6	1.2
	Read & write only	10	1.9
	Primary(1-8)	95	18.4
	Secondary(9-12)	218	42.2
	Diploma & above	187	36.2
Husband's educational status	Illiterate	14	2.7
	Read & write only	12	2.3
	Primary(1-8)	44	8.5
	Secondary(9-12)	186	36.0
	Diploma & above	260	50.4

Obstetric history of the respondents

Two hundred sixty-eight (52%) of the respondents became pregnant for the first time. Three hundred thirty-three (64.5%) gave their last birth a spontaneous vaginal delivery, followed by caesarean section, 182(35.3%) (Table 2).

Table 2: Participants' Obstetric characteristics, Gimbi Town, Ethiopia, 2022 (n=516).

Variable		**Frequency(n)**	**Percent %)**
Age at first pregnancy	15-19	208	40.4
	20-24	268	52
	25-29	34	6.6
	30-34	6	0.1
Number of pregnancies	Prim gravida	208	40.3
	Multigravida	308	59.7
Nature of the last pregnancy	Planned and supported	489	94.8
	Unplanned but supported	16	3.1
	Unplanned and unsupported	11	2.1
Ever attended ANC for the last pregnancy?	Yes	503	97.5
	No	13	2.5
Number of ANC visits for the last pregnancy	One time	21	4.2
	Two times	20	4
	Three times	136	27
	Four times or above	326	64.8
Number of deliveries	Para One	208	40.3
	Multipara	276	53.5
	Grand Multipara	32	6.2
Place of delivery	Health institution	507	98.3
	Home	9	1.7
Mode of delivery	SVD	333	64.5
	Other**	183	35.5
Outcome of the baby	Alive	513	99.4
	Dead	3	0.6
Ever utilized postnatal services during the last pregnancy	Yes	510	98.8
	No	6	1.2
Reason for visiting the postnatal clinic	For the immunization of the baby	239	46.4
	To start family planning	186	36
	They were told to come back	91	17.6
	Immediately after delivery	328	63.6
Starting time for postnatal visit	Within 4 hours of delivery	36	7
	4-23 hours of delivery	36	7
	Within 1-2 days of delivery	39	7.6
	Within 3-46 days of delivery	77	14.9
Number of postnatal visits	One times	113	21.9
	Two times	115	22.3
	Three times	175	33.9
	Four and above times	113	21.9

*Other** (instrumental, caesarean section)*

Knowledge of the respondents on postnatal care services

The majority of the study participants (87%) know the advantages of postnatal care services and can list the advantages of getting postnatal care services allowing family planning (26.7%), checking the condition of the baby (15.8%), and getting information on how to feed the baby (12.4%), to detect and treat postpartum health problems (17.4%) and for vaccination (27.7%). Around half of 218 (42.2%) of respondents declared postnatal danger signs as bleeding, followed by severe headaches, 195 (37.8%) respectively (Table 3).

Table 3: Participants' PNC-related knowledge, Gimbi Town, Ethiopia, 2022 (n=516).

Variables	Frequency(n)	Percent (%)
Know about the advantages of PNC services		
Yes	449	87
No	67	13
Benefits of PNC services		
Give an opportunity for family planning	138	26.7
To check the condition of the baby	82	15.8
To get information on how to feed the baby	64	12.4
To detect and threat to postpartum health problems	90	17.4
To check Vaccination status	143	27.7
Know the problems that may arise during the postnatal period.		
Yes	510	98.8
NO	6	1.2
Problems that may arise during the postnatal period		
Bleeding (PPH)	314	60.8
Maternal death	130	25.2
Sepsis	72	14
Postpartum danger sign		
Severe headache	195	37.8
Bleeding	218	42.2
High-grade fever	47	9.1
Body swelling	56	10.9

Institutional-related health factors

The source of information for postnatal care and antenatal care services was healthcare providers (60.5%, 54.7%), followed by radio/television. The majority of the respondents (89.9%) get postnatal care services within an hour (Table 4).

Complete postnatal service utilization

One hundred thirteen (21.9%) mothers utilized complete postnatal care services. Around one-third of the respondents (33.9%) mothers received the service three times, 115(22.3%) mothers got two times, and 113(21.9%) mothers got one time only. Among mothers who got postnatal care services, 328(63.6%) of the respondents

started postnatal care follow-up immediately after delivery, while 77 14.9%) of the respondents got postnatal care services between 3-45 days of delivery(Table 4).

Table 4: Health institution-related factors of the respondents who gave birth in the last 12 months in Gimbi Town, Western Ethiopia, 2022 (n=516).

Variables	**Frequency(n)**	**Percent (%)**
Ever heard about ANC		
Yes	488	94.6
No	28	5.4
Source of information about ANC		
Health care provider	267	54.7
Radio/Television	120	24.6
Family/relatives	101	20.7
Ever heard about PNC service		
Yes	513	99.4
No	3	0.6
Source of information about the PNC service		
Health care provider	312	60.5
Radio/Television	109	21.1
Relatives/Families	95	18.4
Types of service they provided during the postnatal visit		
Immunization of a baby	179	34.7
Family planning service	144	76.2
Counseling	91	27.9
Health education on breastfeeding	68	13.2
Physical examination	34	6.6
Average waiting time to get the postnatal care service		
≤ hour	464	89.9
>1 hour	52	10.1

Associated factors of complete postnatal care service utilization

After controlling for confounders, maternal education (AOR = 3.41, 95% CI 1.67-6.94), spouse education (AOR = 2.81, 95% CI 1.19-6.58), and knowledge of postnatal danger signs (AOR = 1.67, 95% CI 1.10-2.52) were significantly associated with complete PNC utilization(Table 5).

DISCUSSION

This study determined the prevalence of complete postnatal care utilization and identified associated factors among women living in Gimbi Town. It found that 21.9% of women received full postnatal care. This result is comparable to previous reports from Southern Ethiopia, where the rate was 23.9%, and from Nepal, which reported 22%. However, it is lower than reports from North Shoa, Ethiopia (28.4%**)** and Myanmar (25.2%**).** Differences in participants' socio-demographic profiles, such as education and living standards, and disruptions from the COVID-19 pandemic may explain the lower uptake.

Table 5: Factors associated with Postnatal utilization among the study participants, Gimbi town, 2022 (n=516)

Variable	Category	CPNC use		COR(CI)	AOR(CI)	p-value
		Yes	No			
Age	15-19	25(48.1%)	27(51.9%)	1.72(0.73-4.06)	0.82(0.27-2.45)	0.718
	20-24	108(57.8%)	79(42.2%)	2.63(1.27-5.46)	0.64(0.27-1.53)	0.314
	25-29	102(62.6%)	61(37.4%)	3.22(1.53-6.75)	0.52(0.22-1.20)	0.126
	30-34	39(55.7%)	31(44.3%)	2.42(1.07-5.49)	0.63(0.25-1.59)	0.329
	>35	13(34.2%)	25(65.8%)	1		
Marital status	Married	383(77%)	112(22.6%	5.10(1.67-5.60)	2.18(0.38-2.33)	0.380
	Others*	20(95.2%)	1(0.9%)	1		
Maternal educational status	Illiterate	2(33.2%)	4(66.7%)	0.23(0.04-1.23)	4.12(0.53-2.03)	0.176
	Read & write only	3(30%)	7(70%)	0.20(0.05-0.78)	1.83(0.34-9.83)	0.418
	Primary(1-8)	32(34%)	62(66%)	0.23(0.14-0.40)	3.41(1.67-6.94)	0.001
	Secondary(9-12)	122(56.7%)	93(43.7%)	0.60(0.40-0.91)	1.59(0.93-2.74)	0.089
	Diploma and above	128(68.8%)	58(31.2%)	1		
Husband education	Illiterate	11(78.6%)	3(21.4%)	2.13(0.58-7.80)	0.21(0.04-1.03)	0.055
	Read & write only	4(33.3%)	8(66.7%)	0.33(0.09-1.16)	1.51(0.29-7.85)	0.624
	Primary(1-8)	13(29.5%)	31(70.5%)	0.24(0.12-0.49)	2.81(1.19-6.58)	0.018
	Secondary(9-12)	95(52.2%)	87(47.8%)	0.63(0.43-0.93)	1.17(0.69-.98)	0.548
	Diploma a above	164(63.3%)	95(36.7%)	1		
Number of pregnancies	Prim gravida	127(44.3%)	77(37.7%)	0.024(0.46-.95)	0.59(0.36-0.99)	0.044
	Multigravida	160(52.1%)	147(47.9%	1		
ANC attendance	Yes	286(57.1%)	1(10%)	0.08(0.11-0.66)	0.28(0.03-2.91)	0.288
	No	215(42.9%)	9(90%)	1		
Number of ANC visits	One times	4(20%)	16(80%)	0.19(0.06-0.59)	4.29(1.09-6.89)	0.370
	Two times	9(40.9%)	13(59.1%)	0.54(0.22-1.30)	1.51(0.51-4.50)	0.458
	Three times	88(63.8%)	50(36.2)	1.37(0.91-2.07)	0.74(0.47-1.17)	0.192
	Four & above	186(56.2%)	145(43.8)	1		
Nature of the last pregnancy	Planned	127(62.3%)	160(52.1%	4.59(1.81-11.63)	2.27(0.62-8.33)	0.219
	Unplanned	77(37.7%)	147(47.1%	1		
Know postpartum dander sign	Yes	145(52.7%)	142(60%)	1.76(1.17-2.65)	1.67(1.10-2.52)	0.006
	No	130(47.3%)	90(40%)	1		

Women with at least secondary education were more likely to receive complete postnatal care than those without formal schooling. This finding aligns with studies from Myanmar and southern and northern Ethiopia (2, 13, 14). Education likely empowers mothers to make informed health decisions and increases exposure to information about maternal and child health,

which may explain their higher uptake of complete PNC.

The study found that awareness of postnatal danger signs increased the odds of completing postnatal care by 1.76-fold**.** Adequate knowledge about what services include, when to attend, and the consequences of missing care likely encourages uptake; indeed, 52% of those who completed PNC were aware of danger signs. Strengthening education on PNC is recommended to improve maternal and neonatal outcomes.

Limitations of the study

Although the study focused on recent births, recall bias may have affected accuracy because participants might not precisely remember the timing of visits or the specific care they received. The cross-sectional nature of the study precludes establishing causal relationships, and the findings may not be widely generalizable. Nonetheless, this investigation represents the first assessment of complete postnatal care coverage in the study area.

CONCLUSION

Complete postnatal care coverage was notably low in this setting. Higher maternal and paternal education and better maternal recognition of postpartum danger signs were associated with greater use of full PNC services. Therefore, targeted awareness-raising during antenatal, intrapartum, and immediate postpartum contacts is essential.

Abbreviations/Acronyms

PNC: Postnatal Care; CPNC: Complete Postnatal Care; ANC: Antenatal Care; SVD: Spontaneous Vaginal Delivery; EDHS: Ethiopia Demographic Health Survey; SPSS: Statistical Package for Social Science; AOR: Adjusted Odds Ratio; WHO: World Health Organization.

Declarations

Ethical approval

Ethical clearance was granted by the Wollega University Research Review Committee, and permission was secured from the Gimbi town administration. All procedures followed relevant guidelines and regulations, and informed consent was obtained from every participant.

Consent for publication

Not applicable

Availability of data and materials

The datasets and materials used in this study can be obtained from the corresponding author upon reasonable request.

Competing interests

The authors declare no competing interests.

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Authors' contributions

The authors' responsibilities were as follows: MF designed the proposal and tool, and TA supervised the data collection and data entry. MF, TA, JM, and GM were assisted in the analysis and interpretation of the data. All authors reviewed the manuscript.

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