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Early postnatal discharge during COVID-19: A cross-sectional study

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Abstract

Introduction: Postnatal hospital stay is decreased by 30% during COVID-19 in developed countries. However, there is paucity of data in developing countries. Hence, this study aims to assess the prevalence of early postnatal discharge during COVID-19 in Jimma Health Centers.

Methods: Facility-based cross-sectional study was conducted from 1 February to 30 March 2021. Sample was calculated using single population proportion formula and allocated proportionally to the health centers. Data were interred into Epidata version 3.1 and exported to SPSS version 22.0 for analysis. Multivariable regression was done to identify associating factors at $p < 0.05$.

Result: Three hundred ninety women were included into study making a response rate of 96.8%. Early discharge prevalence was 316 (81.0%). Attending elementary school adjusted odds ratio = 0.26 (confidence interval = 0.087–0.798), plan for postnatal care within a week adjusted odds ratio = 0.410 (confidence interval = 0.221–0.760), knowing postnatal maternal danger sign adjusted odds ratio = 0.258 (confidence interval = 0.141–0.473), women adjusted odds ratio = 0.421 (confidence interval = 0.211–0.838), or husband adjusted odds ratio = 0.051 (confidence interval = 0.014–0.186) made decision of discharge were negatively and distance on foot <30 min adjusted odds ratio = 3 (confidence interval = 1.121–8.058) was positively associated with early discharge significantly.

Conclusion: This study has identified early postnatal discharge is high which can contribute to reduce the risk of acquiring COVID-19. However, the authors recommend further study to differentiate whether early discharge is due to COVID-19 or other reasons.

Keywords

COVID-19, cross-sectional, early discharge, neonate, postnatal

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Introduction

In case of uncomplicated vaginal child delivery at health facility, the mother should receive care in a similar facility for at least 24 h before she is discharged. This is essential for both the mother and the newborn to receive standard maternity cares recommended by the World Health Organization (WHO). Furthermore, the mother and the newborn should be considered healthy before discharged. Accordingly, mother's bleeding shall be controlled, mother and baby have no signs of infection, and baby is breast-feeding well.[1–4]

Beside to this, among the four recommended postnatal care visits, the first visit is the one that the mother and the newborn should get in the health facility within the first 24 h. If the delivery is not in the health facility, home visit by physicians or early health facility visit by the women is recommended for every woman who gave birth.[1] Evidence shows, postnatal care service helps for physical and emotional recovery of the mother, to promote parenting confidence and well-being and to establish infant feeding in a

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time following childbirth.[5,6] Early postnatal discharge of the mother and the newborn direct them to miss the first postnatal visit and its services. Consequently, it has potential adverse outcomes to the health of both mother and newborn.[7–9]

Furthermore, delay in detecting and preventing maternal morbidity and neonatal pathologies are common among early discharged women and newborns.[10] Similarly, earlier breast weaning, missing professional support, high prevalent postpartum depression, and increased readmission of both the mother and the newborn are common among women who are discharged earlier and do not have postnatal visit within 48 h of child delivery.[11–14] However, postnatal discharge after 24 h is a cost-effective practice for less developed countries such as Ethiopia where home visit is difficult.[13]

However, delayed postnatal discharge during the pandemic of COVID-19 may increase the risk of acquiring this infection in health facilities. Centers for Disease Control and Prevention (CDC) suggests early postpartum discharge after vaginal delivery to limit the patient's personal risk in the hospital environment.[15] Consequently, research evidence indicates, length of hospital stay during COVID-19 has decreased approximately by 30% in developed countries.[16] This shortened postpartum length of stay in the hospital during COVID-19 is without the occurrence of significant differences in a neonatal or maternal adverse outcome.[17] Nevertheless, there are no sufficient data to indicate the status of postnatal discharge in Ethiopia.

Ethiopia Demographic and Health Survey (EDHS) of 2016 indicates, 26.7% and 4.6% of women have stayed for 1–2 days and more than 3 days, respectively, after vaginal delivery.[18] However, the status of postnatal discharge time during the COVID-19 pandemic, as well as before this pandemic is unknown. However, Ethiopia is one of the African countries where COVID-19 case and death from the case is persisted to be high.[19] On top of this, this country is a low-income country where patient admission and treatment are very challenging due to poorly equipped health facilities and low human power available.[20,21] Consequently, reducing all the risk factors of COVID-19 expansion and exercising all possible prevention methods is mandatory for better health outcomes of each individual. Hence, to contribute to the success of this, conducting research and producing related information are a prerequisite activity.

Despite this, as per the authors' knowledge, there is a paucity of data on the prevalence of early postnatal discharge and associated factors in this study area. The EDHS data are more general, countrywide data and include all delivery in different unspecific health facilities. In addition, these data have no information during the COVID-19 pandemic. Accordingly, the main objective of this study is to assess the prevalence of early postnatal discharge and associated factors in selected health Centers of Jimma town during COVID-19 pandemic.

Material and methods

Study area and period

This study was conducted in the three selected health centers that found in Jimma town. Jimma town is located at 353 km far from Addis Ababa, a capital city of Ethiopia to south-west. Jimma Health Center (Faranj Arada Health Center), Higher-2 Health Center, and Mendera Kochi Health Center were selected for this study. The study was conducted from 1 February to 30 March 2021.

Study design and study population

Facility-based cross-sectional study design was conducted to assess the prevalence of early postnatal discharge and its associating factors. All reproductive age group (15–49 years) women,[22] who gave birth by spontaneous vaginal delivery in the selected Jimma Health Centers during the study period, were considered for the study.

Sample size determination and sampling technique

The sample was calculated using single population proportion formula, taking 50% for proportion since there is no similar study from a comparable study setting. Hence, $n=[Z_{\alpha/2}]^2*p*(1-p)/d^2$, where $Z_{\alpha/2}$ is the level of confidence, 1.96, d^2 is the marginal error, 5%, and n is the required minimum sample size. Thus, $n=(1.96)^2*0.5(1-0.5)/(0.05)^2=384$. Adding 5% for expected non-response rate, the final sample size becomes 403.[23,24] Calculated sample was distributed proportionally to the three selected health centers using the preceding month's prevalence of delivery in each health center. The three health centers were selected by lottery method from the total available five health centers in Jimma town. The authors used convenience sampling technique to get sufficient sample since facility delivery is decreased during COVID-19 as the authors identified through observation and pilot study before data collection (Figure 1).

Inclusion and exclusion criteria

Women who gave birth by spontaneous vaginal delivery during the study period were included into the study. Gestational age being at term (37–42 weeks), normal childbirth weight (>2500 gm), and delivering healthy neonate were considered for inclusion criteria.[25] Temperature and respiratory checkup were used as a minimum examination to exclude women who can be suspected for COVID-19. In addition, all vital sign checkups and assessments according to the "safe childbirth checklist"[2] were conducted by healthy professional who wrote discharge summary of each woman.

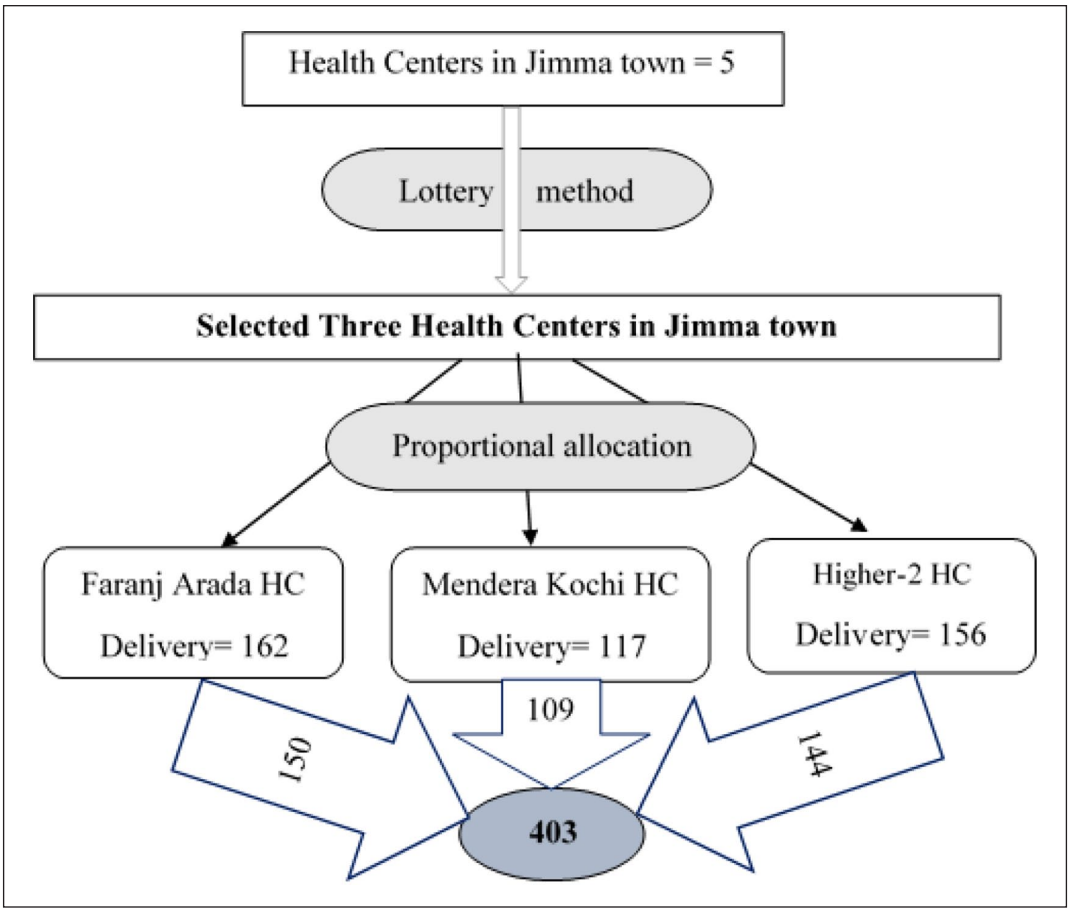

Figure 1. Schematic representation of proportional allocation of sample size to the three selected Jimma town health centers.

Study variables

The dependent variable of this study is "Early postnatal discharge." The independent variables include socio-demographic variables,[26] obstetric characteristics, health service-related, and maternal-related variables.

Participant recruitment, data collection tool, and techniques

All women who gave birth in the selected health centers during the study period and fulfill inclusion criteria were included into the study. Interviewer administered exit interview was conducted individually among selected women. Structured tool was adapted from relevant literatures and prepared originally in English language.[2,16,27,28] The tool was translated into local language and back translated into English by two language experts independently. Since the authors used non-validated tool, pretest of the adapted tool was done among 10% of sampled women in Agaro Health Center before the actual data collection. Important correction was done to the tool according to the pilot study findings before main data collection. The Cronbach's alpha coefficient of the pretest ranges from 0.88 to 0.93 which shows the used instrument has a high reliability standard.[29,30]

Data processing and analysis

Completeness of the information on the questioners was checked daily during data collection by the research team. The data were cleared and coding was done using the original English version before entered into Epidata software version 3.1. The data were then exported to Statistical Package for Social Science (SPSS) version 22.0 software for analysis. Linear regression analysis was performed. Bivariate logistic regression analysis was done to select candidate variables for multivariable logistic regression at a cut of point p-value < 0.025. In multivariable logistic regression, adjusted odds ratio (AOR) and 95% confidence interval (CI) with p-value < 0.05 were used to assess associating factors with early discharge. Hosmer and Lemeshow's goodness of fit was checked, and it was 0.701.

Ethical consideration. Ethical clearance was obtained from the ethical review board of Jimma University with ጀ/ዩ/ጤ/ም/ማ/ቢ 013/13 number. Informed verbal consent was

Table 1. Distribution of socio-demography of the study participants.

Variables	Category	Frequency (%)
Age of women in completed year, N = 390	15–19	30 (7.7%)
	20–24	138 (35.4)
	25–29	160 (41.0)
	30–34	48 (12.3)
	35–39	14 (3.6)
Residence of the women, N = 390	Urban	342 (87.7)
	Rural	48 (12.3)
Ethnicity of the women, N = 390	Oromo	254 (65.1)
	Amhara	60 (15.4)
	SNNP	62 (15.9)
	Tigray	14 (3.6)
Religion of the women, N = 390	Orthodox	98 (25.1)
	Muslim	224 (57.4)
	Protestant	60 (15.4)
	Other*	8 (2.1)
Marital status of the women, N = 390	Married	362 (92.8)
	Divorced	12 (3.1)
	Widowed	4 (1.0)
	In relationship	12 (3.1)
Distance from health center to home on foot, N = 390	<30 min	202 (51.8)
	30 min–1 h	119 (30.5)
	>1 h	69 (17.7)
Women can easily access the transport, N = 390	Yes	320 (82.1)
	No	70 (17.9)

SNNP: Southern Nations, Nationalities, and Peoples.
*Wakefana, catholic.

obtained from all study participants as per it was indicated on the study protocol submitted for ethical review board. For study participants whose age was less than 18 years, informed consent from themselves and assent from their husband or family was obtained. Verbal consent was asked because this study has incorporated human participants to provide information but it has no procedural activities on the study participants. All participants were clearly informed on the objective, harm, and benefit of the study. Participants were guaranteed to discontinue the interview at any time they do not want to proceed. Upon their willingness to continue, the interview was conducted. No personal identifier was used on the questionnaire.

Result

Socio-demography of the study participants

A total of 390 women who gave birth by spontaneous vaginal delivery were included into the study making a response rate of 96.8% (Table 1).

The majority of the study participants have an average monthly income of 1501–2000 birr (Figure 2).

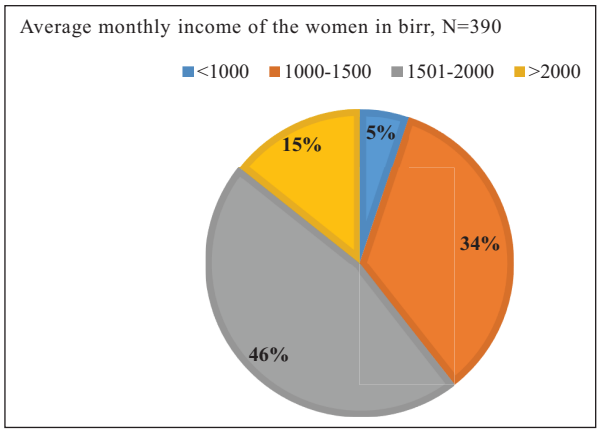

Figure 2. Distribution of average monthly income of the women in birr.

The majority of the study participants are housewives (Figure 3).

The majority of the study participants have attended elementary school (Figure 4).

Most of the women 316 (81.0%) have discharged from health center before 24 h after delivery (Figure 5).

Obstetric characteristics of the study participants

The majority 208 (53.3%) of respondents have more than one previous history of pregnancies (Table 2).

Maternal health and health service-related characteristics

Physicians made decision of postnatal discharge time more frequently 211 (54.1%) (Table 3).

Factors associated with postnatal early discharge

Educational status of women, planed postnatal care within a week, knowing any of postnatal maternal danger signs, decision-maker for discharge and to go home, and distance on foot in a minute from health facility were variables that significantly associated with early postnatal discharge. Accordingly, women who have attended their education to elementary school were 74%, AOR = 0.26 (CI = 0.087–0.798) less likely discharged early compared to those who attended higher than grade 12. Similarly, women who were having plan to come back for postnatal visit within a week were 59%, AOR = 0.410 (CI = 0.221–0.760) less likely discharged early than their counterparts. Women who mentioned at least one type of postnatal maternal danger sign were 74%, AOR = 0.26 (CI = 0.141–0.473) less likely discharged early than those who did not mention any.

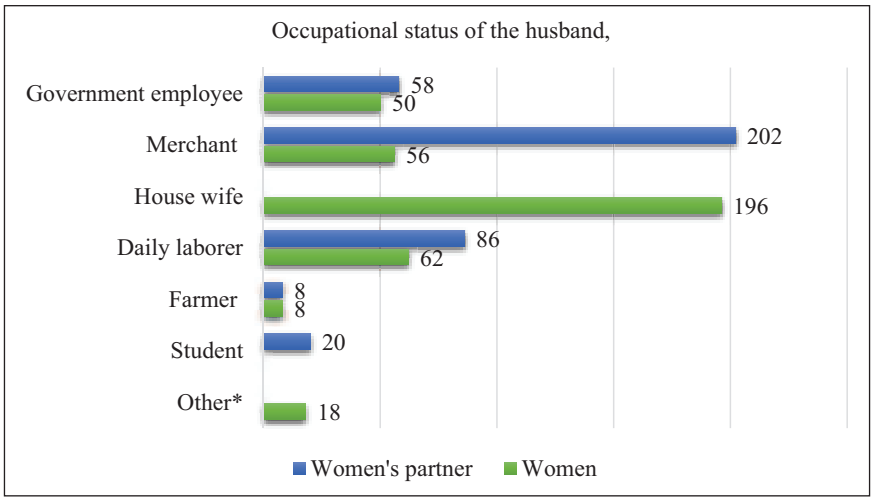

Figure 3. Distribution of occupational status of the study participants and their partners.
*No specific occupation, student.

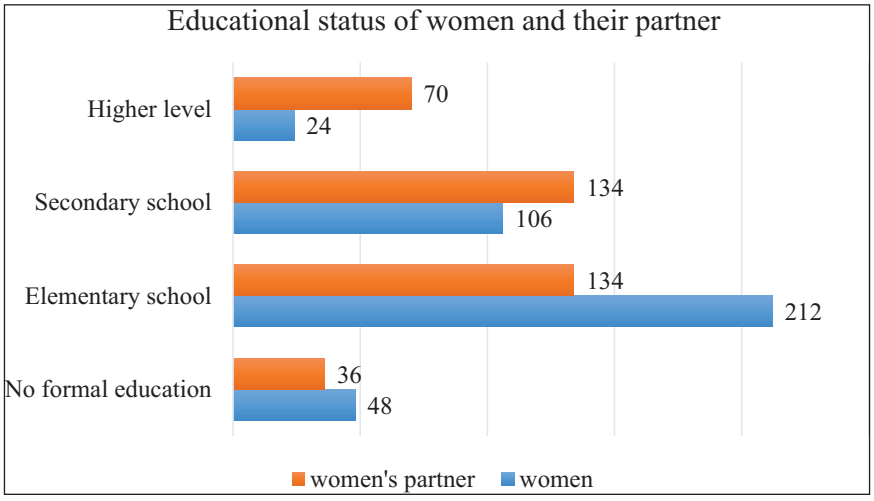

Figure 4. Distribution of educational status of the women and their partners.

Furthermore, when the women or their husband made decision of discharge, women were 58%, AOR = 0.421 (CI = 0.211–0.838) and 95%, AOR = 0.05 (CI = 0.014–0.186) less likely discharged early, respectively, compared to when physicians decided discharge. Conversely, women who are at a distance of <30 min on foot from a health facility were three times, AOR = 3 (CI = 1.121–8.058) more likely discharged early compared to those who are at >1 h (Table 4).

Discussion

Early postnatal discharge

Discussing findings of this study with other study findings is challenging since the researchers could not find similar studies from comparable study areas. Therefore, this discussion is presented discussing with a few literatures, comparing with scientific realities or with possible explanation of the authors.

This study shows prevalence of early postnatal discharge of women who gave birth by spontaneous vaginal delivery and have no complication after delivery is high in the study area. This can be because, health professionals may think women who have no complication are eligible for early discharge. However, this cannot be always true because many pregnancy and child delivery complications are un-expectant. At the same time, they have a potential to be happen at any time and result in maternal death within a short period.[31–33] Consequently, women may not reach health facilities to get aid and treatment within such a short period. Delay to seek treatment can happen because of unable to recognize the complications as early as possible by these low educated women, distance, economic issue in

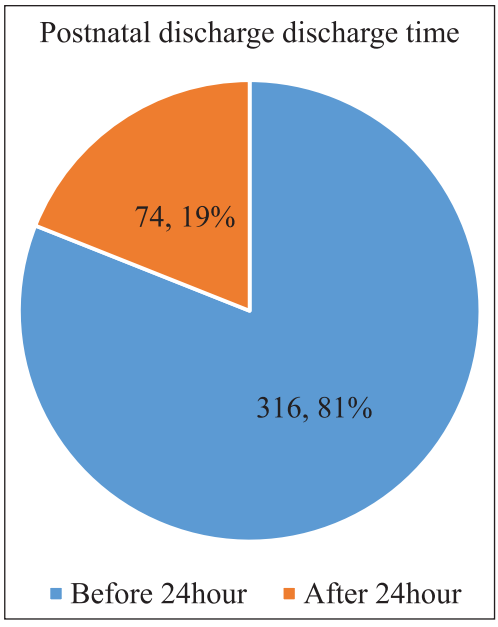

Figure 5. Prevalence of early postnatal discharge from health facilities.

such less developed county, transportation problem, and other affecting factors.[34–36] On top of this, it is ambitious to think these women will come back to health facilities for a postnatal visit or to get treatment for illnesses during this COVID-19 emergency when maternal health service utilization has deteriorated.[37–39]

On the other way, early postnatal discharge of women who are relatively health and at low risk for complication is good to reduce contracting of COVID-19 at health facilities.[40] However, this can be effective only if done with a clear risk assessment before discharging and careful counseling of the women is done.[16,17]

Factors associated with early postnatal discharge

In this study, women whose educational status was up to elementary school were 74% less likely discharged early than those whose educational status is higher than grade 12. This can be as a result of less educated women worry more to leave healthy facility immediately after delivery. Alternatively, more educated women may think that they can care for themselves at home and identify postnatal complications to go for health service immediately.[41] In addition to this, more educated people may have more awareness on the risk of acquiring COVID-19 being in hospital and rush to go their home.[16] However, postnatal complications are emergency and can result the women to death within a short period before reaching health facilities.[32,42] Accordingly, early postnatal discharge should be with strong health information on danger signs and with the availability of help at home if postnatal health problems happen.

Similarly, women who have a plan to come back for postnatal care within a week were 59% less likely discharged early than their counterparts were. This may possibly suggest women who have more awareness of postnatal care service utilization may have a plan to come back, and at the same time, they prefer to utilize the postnatal first visit before discharge. Consequently, increasing awareness on postnatal care starting during prenatal period is important for better utilization of the service.[43,44] Similarly, women who know and mention any type of postnatal maternal danger sign were 74% less likely discharged early as compared to those who do not mention any one of postnatal maternal danger sign. The possible explanation for this can be, knowing danger sign may create fear in the women to be discharged early. Furthermore, when the women or their husbands decide to be discharged, it was 58% and 95% less likely, respectively, the women were discharged earlier than when the physicians decide to discharge them. This may be due to the women and their partner can have poor knowledge on increasing length of stay in health facility can increase the chance of acquiring COVID-19 in health facility.

However, women who are at a distance of <30 min on foot from the health facilities were three times more likely to be discharged earlier compared to those who were at >1 h. This may be because women who are at a relatively shorter distance feel confident to be discharged as they are near to the facility and can go back to the health facility if maternal or neonatal health problems happen to them. However, being at a shorter distance from facility cannot be guaranteed to secure for going back to health facility. It is also not cost-effective to go back to the health facility for treatment and readmission. On top of this, higher levels of postnatal support at home or community level are important to influence the adverse outcome of early discharge which may be difficult in a less developed country such as Ethiopia.[5]

Conclusion

This study has identified early postnatal discharge is high at the study area. Educational status of the women, women planned to come back for postnatal care visit within a week, women know any type of postnatal maternal danger sign, women or their husbands decide discharge, and distance <30 min on foot from the health facilities were factors that associated with early discharge. However, even though early discharge of relatively healthy mothers may contribute to reduce the risk of acquiring COVID-19 from health centers where many patients find in a confined area, further study is important to differentiate if this early discharge is due to COVID-19 or other reasons. Conversely, serious consideration of the risk of early discharge is important because, postnatal maternal and newborn complications are more fatal and dangerous if happen.

Table 2. Obstetric and health service utilization-related characteristics of the respondents.

Variables	Category	Frequency (%)
Number of previous pregnancies, N = 284	1–2	208 (53.3)
	3–4	70 (17.9)
	5–6	6 (1.5)
Previous pregnancy ended with alive birth, N = 284	Yes	264 (93.0)
	No	20 (7.0)
Place of previous child delivery, N = 284	Health center	136 (47.9)
	Private clinic	36 (12.7)
	Hospital	68 (17.4)
	Home	44 (15.5)
Current pregnancy was wanted, N = 390	Yes	318 (81.5)
	No	72 (18.5)
Reason to get unwanted pregnancy, N = 72	Force full sex	8 (11.1)
	Volunteered unprotected sex	18 (25.0)
	Contraceptive fail	46 (63.9)
Current pregnancy planned, N = 390	Yes	290 (74.4)
	No	100 (25.6)
Sex of current child, N = 390	Male	182 (46.7)
	Female	208 (53.3)
Having bad obstetric history during current pregnancy, N = 284	Yes	54 (19.0)
	No	230 (81.0)
Women who have desire to have more child, N = 390	Yes	288 (73.8)
	No	102 (26.2)

Table 3. Maternal health and health service-related characteristics of the study participants.

Variables	Category	Frequency (%)
Women visited health facility during current pregnancy, N = 390	Yes	332 (85.1)
	No	58 (14.9)
Reason for visiting health facility, N = 332	Pregnancy-related problem	44 (13.3)
	Problem not related to pregnancy	18 (5.4)
	For ANC	270 (81.3)
Frequency of antenatal care (ANC) visit for current pregnancy, N = 270	One visit	12 (4.4)
	Two visit	164 (60.7)
	Four and above visit	94 (34.8)
Place of ANC visit for current pregnancy, N = 270	Private clinic	40 (14.8)
	Health center	230 (85.2)
Plan to take family planning after delivery, N = 390	Yes	232 (59.5)
	No	158 (40.5)
Received family planning before discharge, N = 390	Yes	104 (26.7)
	No	286 (73.3)
Plan to have postnatal visit within first week, N = 390	Yes	242 (62.1)
	No	148 (37.9)
Received health information about postnatal care during ANC, N = 270	Yes	172 (69.2)
	No	98 (30.8)
Received health information during ANC on postnatal danger sign, N = 270	Yes	144 (53.3)
	No	126 (46.7)
Know any type of postnatal maternal danger sign, N = 390	Yes	242 (62.1)
	No	148 (37.9)
Received health information during ANC on newborn danger sign, N = 270	Yes	172 (83.1)
	No	98 (16.9)
Who decides to go home after child delivery on current pregnancy, N = 390	Mother	97 (24.9)
	Husband	82 (21.0)
	Physician	211 (54.1)
Type of physician assisted current child delivery, N = 390	Doctor	2 (0.5)
	Health officer	16 (4.1)
	Midwifery	326 (83.6)
	Nurse	46 (11.8)

Table 4. Logistic regression result showing factors associated with early postnatal discharge.

Independent variables	Category	Discharge time		COR (95% CI)	AOR (95% CI)
		Before 24 h	After 24 h		
Educational status of women	No education	35	13	0.902 (0.304–2.673)	0.53 (0.147–1.872)
	Elementary*	180	32	0.432 (0.166–1.124)	0.26 (0.087–0.798)*
	Secondary	84	22	0.636 (0.235–1.725)	0.498 (0.158–1.569)
	Higher level, 12+	17	7	1	1
Desire to have more child	Yes	238	50	0.683 (0.394–1.183)	0.749 (0.364–1.543)
	No	78	24	1	1
Planned postnatal care (PNC) within a week	Yes*	204	38	0.580 (0.348–0.966)	0.410 (0.221–0.760)
	No	112	36	1	1
Know postnatal maternal danger sign	Yes*	211	31	0.359 (0.214–0.602)	0.26 (0.141–0.473)
	No	105	43	1	1
Decision-maker to discharge	Women*	81	16	0.560 (0.302–1.039)	0.421 (0.211–0.838)
	Husband*	79	3	0.108 (0.033–0.355)	0.051 (0.014–0.186)
	Physician	156	55	1	1
Plan for postnatal family planning (FP)	Yes	182	50	1.53 (0.898–2.620)	1.371 (0.706–2.663)
	No	134	24	1	1
Distance on foot	<30 min*	157	45	2.19 (0.974–4.903)	3 (1.121–8.058)
	30 min–1 h	98	21	1.63 (0.681–3.919)	2.654 (0.903–7.806)
	>1 h	61	8	1	1
Women's average monthly income	<1000	13	7	2.81 (0.879–8.998)	2 (0.412–9.801)
	1000–1500	101	33	1.71 (0.756–3.852)	1.697 (0.531–5.416)
	1501–2000	155	25	0.842 (0.368–1.929)	1.028 (0.385–2.746)
	>2000	47	9	1	1

COR: crude odds ratio; AOR: adjusted odds ratio; CI: confidence interval.
*Significantly associating variables at p-value < 0.05 from multivariable model.

Strength and limitation of the study

This study is the first to be conducted in the study area. Subsequently, it can be utilized as baseline data for further study and can give a hint for researchers to plan a study on this area using more stronger approaches. Nevertheless, the study is not without limitations. The finding is unable to indicate the reason for early discharge, especially whether it is to reduce the risk of COVID-19 or not. Consequently, the researchers recommend for more strong study design such as mixed quantitative and qualitative method including healthcare providers to differentiate reason for early discharge.

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Author contributions

All authors contributed to this work equally.

Declaration of conflicting interests

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Guarantor

All the authors are guarantor of this study.

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Data availability

All data used to prepare this article are available in the article. Upon its importance of detailed data, contact the corresponding author at an email address of bekelut23@gmail.com.

Supplemental material

Supplemental material for this article is available online. https://emxpert.net/sageedit/journals/Embox/Index/1042177

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