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Comparison of Home-Based to Health Facility-Based Postnatal Care

Surya Gaire^{1*}, G M Jakaria², Afsana Papri³, Md. Khokon Hossain⁴, Srijana Pandey Gaire⁵, and Roshani Laxmi Tuitui⁵

¹University of Oviedo, Oviedo, Asturias, Spain; ²Master of Physiotherapy, Lincoln University College, Malaysia; ³PhD in Pharmacy, The National University of Malaysia, Malaysia; ⁴Dept. of Biochemistry and Molecular Biology, Gono Bishwabidyalay, Bangladesh; and ⁵Dept. of Nursing, National Academy of Medical Sciences, Bir Hospital, Nepal.

*Correspondence: sugaire@gmail.com (Surya Gaire, Project Coordinator, University of Oviedo, Oviedo, Asturias, Spain).

ABSTRACT

The early postpartum period is considered a valuable time for the mother and newborns. Provision of quality care is essential during this period. Post-natal care (PNC) is an important opportunity for assessing the mother's and new-born health. This study aims to compare home-based and health facility-based postnatal care. Community-based cross sectional mixed method research design with random sampling was adopted to select 104 samples; 52 each from home-based and health facility-based settings. A researcher-designed semi-structured interview schedule was used with four major areas; socio-demographic, maternal and neonatal services, satisfaction level, and incurred expenses. Cronbach's alpha of 12 items satisfaction level questionnaire was 0.80. Odds ratio, chi-square test, independent t-test, and Mann-Whitney U-test were computed to see the association of maternal and neonatal services with post-natal care visits. Maternal and neonatal services utilization was found higher in home-based PNCs as compared to health facility-based PNCs. Maternal and neonatal services including eye check-ups (OR: 0.35, CI: 0.15-0.81, $p = 0.013$), breast examination (OR: 0.40, CI: 0.17-0.94, $p = 0.034$), calcium taken (OR: 0.28, CI: 0.08-0.93, $p = 0.030$), baby temperature measured (OR: 0.40, CI: 0.18-0.90, $p = 0.026$), baby bath (OR: 2.10, CI: 1.79-2.59, $p = 0.022$) and BCG immunization (OR: 0.24, CI: 0.08-0.72, $p = 0.007$) were found statistically significant with PNC visit. Overall satisfaction of postnatal mothers in home-based settings was higher as compared to health facility-based settings. There was a significant difference in 6 out of 12 satisfaction parameters. There was a statistically significant difference ($\chi^2 = 21.67$, $p = <0.001$) in the time spent by postnatal mothers on PNC visits. Overall expenses during health facility visits seem to hike more than in home-based visits. The home-based service delivery approach is found applicable in improving maternal and newborn health services.

Keywords: Comparison of PNC visit, Home-based PNC, Health facility-based, and Postnatal visit.

INTRODUCTION:

Every woman has the right to get quality care for herself and her newborn during pregnancy, childbirth, and the postnatal period (Commission NL, 2018). The first postpartum week is a high-risk period for mothers and newborns as most deaths occur during this period.

This is also a neglected period regarding postnatal care (PNC) (Warren *et al.*, 2009; Lawn *et al.*, 2005). A PNC check-up is an important opportunity for assessing the mother and newborn for health and other problems as well as preventing adverse maternal and neonatal out-comes (Kumar *et al.*, 2016). Postnatal

care helps to prevent complications after childbirth (WHO, 2015; Hodgins *et al.*, 2018). Globally, every day, approximately 810 women die from preventable causes related to pregnancy and childbirth. Between 2000 and 2017, the maternal mortality ratio (MMR) dropped by about 38% worldwide. Ninety-four percent of all maternal deaths occur in low and lower-middle-income countries. Sub-Saharan Africa and Southern Asia accounted for approximately 86% (254000) of the estimated global maternal deaths in 2017 with two-thirds from sub-Saharan Africa and one-fifth from South Asia. Most maternal deaths (75%) occur during the postnatal period due to PPH, sepsis, eclampsia, and preeclampsia (WHO, 2019). The percentage of PNC check-ups within 2 days among women for their last childbirth has increased only slightly from 45% in 2011 to 57% in 2016. As per the 2016 Demographic Health Survey (DHS), 42% of women and 40% of newborns didn't receive postnatal check-ups. Department of Health Services (DoHS) report shows that the proportion of mothers having PNC checkups as per protocol stands at 21.4% in Lumbini province, compared to 18% at the national level (MoHP, 2019). There is still a higher proportion to achieve in protocol-wise PNC visits. In the maternal mortality ratio stands at 239 per 100,000 live births, while the neonatal mortality rate is 21 per 1000 live births. Skilled care before, during, and after childbirth can save the lives of women and newborns (MoHP, 2019).

The World Health Organization (WHO) recommends at least four postnatal visits for all mothers and newborns, on day 1 (first 24 hours), on day 3 (48-72 hours), between days 7-14, and six weeks after birth (WHO, 2016). Home-based care strategy has been effective in reducing neonatal mortality, especially in community with weak health systems, low healthcare use, and high neonatal mortality (Mokhtari *et al.*, 2018). To increase PNC, the easy and socially accepted modality is home visits by health personnel to increase the coverage of postpartum care (Gjoni *et al.*, 2020). Postnatal home visits by skilled health workers could raise awareness in parents on establishing breastfeeding, family planning, and contraception after birth, home hygiene, and care of the neonate (Mokhtari *et al.*, 2018). There is a strong association between home visits by health workers and the survival of neonates.

Similarly, mothers from home-based care had a three times higher chance of breastfeeding than routine care mothers (Gjoni *et al.*, 2020). The main rationale for home visits within the first day or two of life is the high risk of newborn and maternal complications during this period. Contact with the postnatal mother as early as possible can be important for counseling on essential newborn practices (Hodgins *et al.*, 2018).

Sustainable Development Goal (SDG) aims at reducing the MMR, reducing preventable deaths of newborns to less than 1%, and providing PNC for 90 percent of mothers by 2030. A signatory to the Sustainable Development Goals (SDGs), where, 3.2 and 3.3 set the target of reducing the neonatal mortality and maternal mortality rate to 12 or less per 1000 live births and less than 70 per 100,000 live births by 2030 respectively. To achieve this ambitious target, need to reduce its MMR by at least 7.5% annually addressing severe inequities in maternal health access, utilization, and quality (Government of Nepal, 2017). The main purpose for home visits within the first day or two of life is the high risk of newborn and maternal complications during this period. Home-based PNC provides the opportunity for active case-detection for maternal and newborn danger signs and a quick referral approach. Contact with the postnatal mother as early as possible can be important for counseling on essential newborn practices (WHO, 2015). A current study showed that 27.7% of death occurred during pregnancy, 14.9% of deaths occurred during delivery, and 48.9% of death occurred during postpartum (Kumar *et al.*, 2016). If the postnatal mothers and newborns received quality and cost-effective interventions, it is estimated that neonatal mortality could be reduced. Ideally, PNC is best delivered in a health facility.

However, due to many socio-economic and cultural reasons, such as the distance to travel and the cost of attending most rural mothers do not visit the health facilities unless problems are seen. Therefore, in the context, the most realistic way of providing optimum postnatal care for the foreseeable future is likely to be through home visits by a skilled healthcare worker. Much evidence and WHO recommendations also tell that home-based neonatal care strategy was found to be cost-effective. Evidence in developing countries show that community based postpartum interventions are

effective in improving maternal and neonatal health service use (Ghonimat I., and Aburashideh H. 2023). There are limited community-based studies conducted on home-based postnatal care. This subject has rarely been studied, and there have not been many studies conducted on this matter; therefore, to execute this new strategic care method, this study will play a vital role in encouraging researchers to study more in this subject matter. Hence, there can be a lot more learning and recommendations for policy level to further implement the program. The current study aimed to answer the following questions: What is the status of maternal and neonatal health service utilization regarding PNC? What is the level of satisfaction with service provided

during postnatal care? In which setting postnatal care services are likely to be cost-effective? Are there any differences between maternal and neonatal service utilization, satisfaction level, and incurred expenses in home-based and health facility PNC visits?

MATERIALS AND METHODS:

Conceptual Framework

The conceptual framework of this study shows the relationship of influencing variable socio-economic and demographic and study variables are maternal and neonatal health service, level of satisfaction, and expenses incurred.

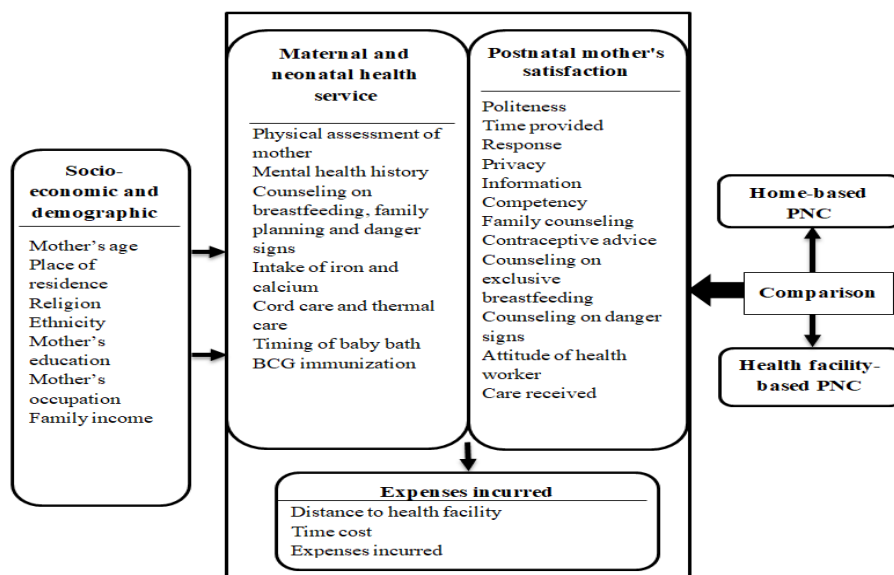


Fig. 1: Conceptual Framework on Comparison of Home Based to Health Facility Based Postnatal Care.

Research Design

A cross-sectional mixed method study design was used to gather information and analyze the data. The triangulation was done to test the consistency of both quantitative results and qualitative findings.

Study Area

The study was conducted in a Bardaghat municipality and two rural municipalities (Pratppur and Palhinadan). There are three municipalities and four rural municipalities in Nawalparasi (west) district. The district borders India in the South.

Study Population

Postnatal mothers within six weeks of the postnatal period were the study population. The study group was UniversePG | www.universepg.com

divided into two categories: Group (i) mothers who have received routine PNC in a health facility, and Group (ii) mothers who have received home-based PNC. The population from these two groups was compared to assess the postnatal care services.

Sampling Technique

Simple random sampling using the lottery method was adopted to select the samples. A list of postnatal mothers who underwent at least 2 postnatal checkups within 42 days was obtained from health facilities and Female Community Health Volunteers (FCHVs) of respective wards. The numbers were randomly selected from the compiled list of mothers who attended postnatal checkups at health facilities and at home separately.

Sample Size

A total of 104 random samples were selected including 52 each from health facility and home-based settings.

Instrumentation

A researcher-designed semi-structured questionnaire was used for quantitative data collection. Similarly, the interview questions were prepared to get qualitative information from the mothers. The questionnaire was divided into four parts:

Part I: Questions related to socioeconomic and demographic information

The interview questions related to age, residence, religion, ethnicity, educational status, occupation, and income were asked of postnatal mothers.

Part II: Questions related to maternal and neonatal health service utilization

The interview questions related to maternal health service utilization including Blood pressure measurement, eye checkup for detecting anemia, breast examination, PV bleeding assessment, leg examination for detecting Homan's signs, mental health history, counseling on family planning, exclusive breastfeeding, danger signs, iron and calcium taking, Neonatal health service utilization including temperature measurement, cord examined, the timing of baby bath and BCG immunization were asked to postnatal mothers.

Part III: Likert scale related to postnatal mother's satisfaction with postnatal care

Tool adopted and contextualized for the study retrieved from factors determining satisfaction among facility-based maternity clients (Cronbach's alpha =0.74) and Client satisfaction with existing postnatal care and associated factors (Cronbach's alpha=0.86) Altogether, 8 related questions were adopted from the above studies, and 4 questions related to maternal and child services were added after consultation with a content expert. This study's Cronbach's alpha for the satisfaction level questionnaire was 0.80. Postnatal mothers' satisfaction was measured by asking participants to rate their level of agreement on a list of statements related to satisfaction with postnatal care. (1= Very unsatisfied 5= Very satisfied). It consists of twelve questions for measuring client satisfaction with postnatal care services. The scoring for the level of satisfaction was as follows:

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<36 = Unsatisfied

≥36 = Satisfied

(The cut-off average score between the lowest and highest mean score was 36. A total mean score of less than 36 was considered unsatisfied and more than or equal to 36 was considered to be satisfied)

Part IV: Questions related to incurred expenses

The interview questions related to medical costs, travel costs, out-of-pocket expenditures, and waiting for time cost valuation were determined after asking to postnatal mother or family members.

Validity and Reliability of the Instrument

The face and content validity of the instrument were established by an extensive literature review, consulting research guides, and subject experts. The internal consistency of the tool (Likert scale) was checked via SPSS after the pre-test by reliability index measurement for satisfaction questions (Cronbach's alpha), which was 0.80.

Data Collection Procedure

Data was collected by using a pre-tested semi-structured interview schedule. A door-to-door visit was performed to collect data. Approval from the research committee of Bir Hospital Nursing Campus and the Institutional Review Board (IRB) of the National Academy of Health Science was obtained. A written request letter from Bir Hospital Nursing Campus was submitted to respective municipalities (Bardaghat, Pratppur, and Palhinadan) for home-based PNC and health facility-based PNC samples. Eligible postnatal mothers' phone number was collected through FCHV of selected wards. Each eligible postnatal mother was contacted for confirmation of seeking home-based or health facility-based PNC. Verbal, as well as written consent, was taken. The interview was taken in a separate corner to maintain privacy.

Ethical Consideration

Before data collection, ethical approval was taken from the Bir Hospital Nursing College (BHNC) and then the institutional research board (IRB) of the National Academy of Medical Science (NAMS). After approval from the IRB, the official letter was submitted to the respective Bardaghat Municipality and Pratappur and

Palhinandan Rural Municipalities to get permission for data collection. After approval from the municipality and rural municipality, the children's data were collected after taking verbal as well as written consent from their mothers or guardians. Postnatal mothers were informed that their decision to participate in the study would be voluntary and that they could withdraw at any time. Postnatal mothers were assured of maintaining the confidentiality of the information they provided.

Data Analysis Procedure

All the collected raw data was checked for errors and completeness. The data was entered into the computer using a suitable statistical software package for analysis. SPSS version 22 was used for data analysis. Data were analyzed and interpreted according to the objectives of the study. Descriptive statistics such as the frequency, percentage, mean, and standard deviation were calculated. The chi-square test, t-test, and Mann-Whitney U test were also computed to see the association between different variables.

RESULTS:

Table 1: Socio-demographic Characteristics of Postnatal Mothers.

Variables	Home based No. (%), (n=52)	Health Facility based No. (%), (n=52)
Age		
15-19	4 (7.71)	2 (3.80)
20-24	19 (36.49)	23 (44.23)
25-29	21 (40.42)	22 (42.37)
30-34	8 (15.38)	5 (9.60)
Mean age(\bar{x})	25.42 years	24.62 years
Residence		
Urban	7 (13.55)	2 (3.80)
Rural	45 (86.45)	50 (96.20)
Religion		
Hindu	44 (84.61)	48 (92.34)
Islam	8 (15.39)	4 (7.66)
Ethnicity		
Dalit	13 (25.12)	21 (40.48)
Janajati	8 (15.28)	9 (17.22)
Madhesi	15 (28.80)	17 (32.70)
Muslim	9 (17.30)	4 (7.70)
Brahmin/Chhetri	7 (13.50)	1 (1.90)

The mean age of postnatal mothers in home-based and health facility-based PNC visit were 25.42 and 24.62 years respectively. Most of the postnatal mothers were from a rural area (home-based 86.45% and health facility-based 96.20%) and most of them fall under the

Hindu religion (home-based 84.61% and health facility-based 92.34%). The largest proportion of postnatal mothers was from home-based was Madhesi (28.80%) and health facility-based were from Dalit (40.48%).

Table 2: Education, Occupation and Family Income of Postnatal Mothers.

Variables	Home based No.(%), (n=52)	Health Facility based No. (%), (n=52)
Education		
Illiterate (cannot read and write)	4 (7.69)	1 (1.89)
Literate (can only read and write)	6 (11.51)	15 (28.81)
Fundamental (1-8)	17 (32.69)	19 (36.49)
Secondary (9-12)	17 (32.71)	11 (21.20)
Higher education	8 (15.40)	6 (11.51)
Occupation		

Business	4 (7.71)	3 (5.79)
Agriculture	2 (3.79)	1 (1.91)
Service	2 (3.81)	1 (1.89)
Homemaker	44 (84.59)	47 (90.41)
Family Monthly Income (In NRS)		
<13000	14 (26.89)	29 (55.79)
≥13000	37 (71.21)	23 (44.21)
Minimum	10000	3000
Maximum	100000	200000

The above table illustrates that a higher proportion of postnatal mothers from both home-based (32.71%) and health facility based (21.20%) had attained fundamental education. A higher proportion of postnatal

mothers from both home-based (84.59%) and health facility based (90.41%) were unemployed and were homemakers.

Table 3: Comparison of Maternal Health Service Utilization (*p-value <0.05).

Variables	No. (%), (n=52)	No. (%), (n=52)	OR (95% CI)	P-value
Blood Pressure Examination				
	Yes	No		
PNC at Home	42 (80.79)	10 (19.21)	0.65 (0.23-1.87)	0.298
PNC at Health Facility	45 (86.51)	7 (13.49) (Ref.)		
Eye Check-up for Detecting Anemia				
	Yes	No		
PNC at Home	24 (46.19)	28 (53.81)	0.35 (0.15-0.81)	0.013*
PNC at Health Facility	12 (23.09)	40 (76.91) (Ref.)		
Breast Examination				
	Yes	No		
PNC at Home	21 (40.39)	31 (59.61)	0.40 (0.17-0.94)	0.034*
PNC at Health Facility	11 (21.21)	41 (78.79) (Ref.)		
Vaginal Bleeding Assessment				
	Yes	No		
PNC at Home	44 (84.59)	8 (15.41)	0.49 (0.19-1.30)	0.150
PNC at Health Facility	11 (21.20)	14 (26.90) (Ref.)		
Leg Examination for Homan's Sign				
	Yes	No		
PNC at Home	12 (23.10)	40 (76.90)	0.52 (0.19-1.44)	0.205
PNC at Health Facility	7 (13.49)	45(86.51) (Ref.)		

The **Table 3** illustrates that more than 80% of postnatal mothers had their blood pressure examinations in both settings. Eye check-up was observed more (46.19%) in home visits, while only 23.09% had their eye checked at the health facility. Similarly, breast examination was observed more in home visits (40.39%) and 21.21% at health facility. Assessment for vaginal bleeding was done by 84.59% and 21.20% of postnatal mothers in home-based and health facility-based visits respectively. A large proportion of postnatal mothers did not have their legs examined

(home: 76.90% and health facility: 86.51%) during PNC visits. The postnatal mother's eye checkup and breast examination were significantly associated (p<0.05) with PNC visits with an odds value showing a protective effect for both variables. One of the mothers from the health facility visit said, "A sister in the health facility during the postnatal visit just asked about my vaginal bleeding and legs problem, but she didn't check the organs and I even felt difficult to tell her due to being public place."

Table 4: Mental Health, Iron, Calcium and Danger Signs Related Information of Postnatal Mothers.

Variables	No.(%), (n=52)	No.(%), (n=52)	OR (95% CI)	P-value
Mental Health History Taken				
PNC at Home PNC at Health Facility	Yes 16 (30.80)	No 36 (69.20)	0.60 (0.25-1.47)	0.263
	11 (21.19)	41 (78.81) (Ref.)		
Iron Taken				
PNC at Home PNC at Health Facility	Yes 49 (94.21)	No 3 (5.79)	3.12(0.31-31.05)	0.308
	51 (98.10)	1 (1.90) (Ref.)		
Calcium Taken				
PNC at Home PNC at Health Facility	Yes 48 (92.32)	No 4 (7.68)	0.28 (0.08-0.93)	0.030*
	40 (76.85)	12 (23.15) (Ref.)		
Counseling on Danger Signs				
PNC at Home PNC at Health Facility	Yes 26 (50.00)	No 26 (50.00)	0.58 (0.26-1.26)	0.166
	19 (36.43)	33 (63.57) (Ref.)		

*p-value <0.05

Few postnatal mothers were asked about their mental health status (Home: 30.80% and Health Facility: 21.19%). More than 90% of postnatal mothers had taken iron and calcium tablets in both settings, except only 80% of postnatal mothers for health facility visits. Counseling on maternal and neonatal danger signs was received by 50% and 36.5% mothers during home and health facility-based visits respectively. The postnatal mother's calcium taken was statistically sign-

ificant (p<0.05) with PNC visits showing an odds ratio to have a protective effect. During an interview with the postnatal mother, she said, "The health workers asked me for many things except my mental health issue. I asked about my condition of not being able to sleep; she said it to be a normal issue." Another respondent from a health facility visit said, "The iron tablets are found free of cost in the local health facility, but we need to buy calcium tablets."

Table 5: Comparison of Neonatal Health Service Utilization (*p-value <0.05).

Variables	No.(%), (n=52)	No.(%), (n=52)	OR (95% CI)	P-value
Baby Temperature Checked				
PNC at Home PNC at Health Facility	Yes 25 (48.09)	No 27 (51.91)	0.40 (0.18-0.90)	0.026*
	14 (26.88)	38 (73.12) (Ref.)		
Baby Cord Examined				
PNC at Home PNC at Health Facility	Yes 46 (88.54)	No 6 (11.46)	1.00 (0.32-3.08)	0.77
	45 (86.50)	7 (13.50) (Ref.)		
Baby Bath 24 Hours After Birth				
PNC at Home PNC at Health Facility	Yes 47 (90.41)	No 5 (9.59)	2.10 (1.71-2.59)	0.022*
	52 (100.00)	0 (0) (Ref.)		
BCG Immunized				
PNC at Home PNC at Health Facility	Yes 47 (90.41)	No 5 (9.59)	0.24 (0.08-0.72)	0.007*
	36 (69.22)	16 (30.78) (Ref.)		

Counseling on Exclusive Breast Feeding				
	Yes	No		
PNC at Home	39 (75.00)	13 (25.00)	0.90 (0.38-2.18)	0.823
PNC at Health Facility	38 (73.10)	14 (26.90) (<i>Ref.</i>)		

The above table shows that, out of 104 postnatal mothers, 48.09% from home-based PNC visit and 26.88% from health facility-based PNC visits reported having their child's temperature checked during PNC visit at home and health facility respectively. In both settings, more than 86% of postnatal mothers reported having their baby's cord check-up during the visit. Almost all the postnatal mothers in both settings had their baby bath after 24 hours of delivery (home: 90.41%, health facility: 100%). More than 90% and 69% of postnatal mothers from home-based and health facility-based PNC visits have vaccinated their child

with BCG. The baby temperature measured and BCG immunized were significantly associated with PNC visits having an odds ratio of 0.40 and 0.24 showing protective effect respectively. Similarly, the odds of a postnatal mothers having their baby bathing after 24 hours is twice in home based setting than in a health facility setting and was found statistically significant (CI:1.71-2.59, P=0.020). *Most of the interviewed mothers in both settings said that the health workers properly checked the baby cords and provided counseling on exclusive breastfeeding during their postnatal care visit.*

Table 6: Comparison of Satisfaction Level of Postnatal Mothers.

Variables	Very Unsatisfied, No. (%)		Unsatisfied No. (%)		Neutral No. (%)		Satisfied No. (%)		Very Satisfied No. (%)		Mean± SD	
	Home	HF	Home	HF	Home	HF	Home	HF	Home	HF	Home	HF
Politeness	-	-	2(3.8)	2(3.8)	8(15.4)	18(34.6)	29(55.8)	25(48.1)	13 (25)	7(13.5)	4.02±0.75	3.71±0.75
Time provided	-	-	4(7.7)	7(13.5)	10(19.2)	20(38.5)	24(46.2)	24(46.2)	14(26.9)	1(1.9)	3.92±0.88	3.37±0.74
Response	-	-	1(1.9)	1(1.9)	17(32.7)	28(53.8)	21(40.4)	22(42.3)	13(25)	1(1.9)	3.88±0.8	3.44±0.57
Privacy	1(1.9)	-	10(19.2)	9(17.3)	14(26.9)	17(32.7)	17(32.7)	24(46.2)	10 (19.2)	2(3.8)	3.48±1.07	3.37±0.81
Information	-	-	5(9.6)	2(3.8)	19(36.5)	25(48.1)	19(36.5)	22(42.3)	9(17.3)	3(5.8)	3.62±0.88	3.50±0.67
Competency	1(1.9)	-	7(13.5)	4(7.7)	21(40.4)	25(48.1)	17(32.7)	20(38.5)	6(11.5)	3(5.8)	3.38±0.93	3.42±0.72
Family counseling	18 (34.6)	19 (36.5)	14 (26.9)	12(23.1)	8(15.4)	10(19.2)	8(15.4)	10(19.2)	4(7.7)	1(1.9)	2.35±1.31	2.27±1.21
Contraceptive advice	23 (44.2)	28 (53.8)	13 (25.0)	9(17.3)	8(15.4)	7(13.5)	6(11.5)	8(15.4)	2(3.8)	-	2.06±1.2	1.90±1.14
Counseling on exclusive breastfeeding	3(5.8)	2(3.8)	5(9.6)	8(15.4)	15(28.8)	26(50)	15(28.8)	13(25)	14(26.9)	3(5.8)	3.61±1.16	3.13±0.88
Counseling on danger signs	14(26.9)	19(36.5)	7(13.5)	8(15.4)	14(26.9)	15(28.8)	11(21.2)	9(17.3)	6(11.5)	1(1.9)	2.77±1.36	2.33±1.20
Attitude of health workers	-	1(1.9)	5(9.6)	3(5.8)	26(50)	25(48.1)	15(28.8)	17(32.7)	6(11.5)	6(11.5)	3.42±0.83	3.46±0.85
Care received	1(1.9)	1(1.9)	23 (44.2)	19 (36.5)	12(23.1)	18(34.6)	16(30.8)	14(26.9)	-	-	3.83±0.90	3.87±0.84

The above table shows five scale satisfaction levels of twelve different items with their mean and Standard Deviation (SD). Large numbers of postnatal mothers were satisfied with politeness (55.8%), the time provided by health workers (46.2), and response received (40.2%) for home-based PNC. Large numbers of postnatal mothers were unsatisfied with family counseling (home-based: 34.6%, health facility based: 36.5%), contraceptive advice (home-based: 44.2%,

health facility based: 53.8%), counseling on danger signs (home-based: 26.9%, health facility based: 36.5%) and care received (home-based: 44.2%, health facility based: 36.5%) for both settings. A mother who had the experience of a health facility visit at the time of her first child and home-based visit at the time of her second child said, *"The service being provided by health workers at home is very easy and satisfying for*

me as I do not have to carry my new-born child to health facility for check-ups."

Overall satisfaction was seen higher in a home-based setting where 76.90% of postnatal mothers were satisfied. Similarly, 65.40% of postnatal mothers in health

facility-based setting were satisfied with overall care received. However, the mean score illustrates that the satisfaction level was above average i.e. 36 for both settings.

Table 7: Comparison of Overall Satisfaction for PNC Service.

Variable	Home Based, n=52		Health Facility Based, n=52	
	Percentage	Mean Score	Percentage	Mean Score
Overall Satisfaction	76.90	41.82	65.40	38.61

Table 8: The Difference in Item Wise Satisfaction between Home based and Health facility based PNC.

Variables	Mean Ranks		Mann-Whitney U test	
	Home n=52	HF n=52	U-test	P-value
How satisfied are you with politeness of health worker?	58.48	46.52	1041.00	0.027*
How satisfied are you with the time provided by health worker for PNC checkup?	61.90	43.10	863.00	0.001*
How satisfied are you with the response you received for your questions?	60.44	44.56	939.00	0.004*
How satisfied are you with the privacy received during PNC checkup?	54.31	50.69	1258.00	0.521
How satisfied are you with the information you received from the providers?	54.52	50.48	1247.00	0.462
How satisfied are you with the competency of health worker for PNC?	52.01	52.99	1326.50	0.859
How satisfied are you with the family counseling provided by health worker?	53.10	51.90	1321.00	0.834
How satisfied are you with the contractive advice provided by health worker?	54.59	50.41	1243.50	0.449
How satisfied are you with counseling provided by health worker on exclusive breastfeeding?	59.63	45.38	981.50	0.012*
How satisfied are you with counseling provided by health worker on danger signs?	59.79	45.21	1106.50	0.011*
How satisfied are you with the attitude of health workers towards you?	53.54	51.46	1298.00	0.704
How satisfied are you with the overall care you received during PNC visit?	61.11	43.89	904.50	0.002*

*p-value <0.05

There was a significant difference in the item-wise satisfaction in 6 out of 12 parameters. Mean ranks for all the satisfaction parameters in home-based postnatal care are higher than the health facility-based postnatal care except for the competency of a health worker for PNC. The satisfaction amongst postnatal mothers at home visits on the politeness of health workers (U = 1041, p=0.027), time provided by health workers (U=863, p=0.001), the response received by postnatal mothers (U=939, p=0.004), counseling on exclusive breastfeeding (U=981.50, p=0.012), counseling on danger signs (U=1106.50, p=0.011) and overall care received (U=904.50, p=0.002) was statistically signi-

ficantly higher than the postnatal mothers in health facility-based PNC visit. A mother from a home-based setting said, "The auxiliary midwife visiting my home was very polite, giving enough time, providing good counseling, and responding to all the questions my family asked about our health issues." A mother from health facility-based settings said, "The health worker didn't have enough time for checking my baby. I felt so useless while traveling a long way to the health post. They were in rush and my checkup was escaped. When I even switched the health worker to get an answer to my question, I got a rude answer"

Table 9: Difference in Time Spent for PNC Visit.

Variable	Setting	<30 Min.	≥30 Minutes	Chi-Square (x ²)	p-value
Time spent for PNC visit	Home, n=52	22 (42.32)	30 (57.68)	21.67	<0.001**
	Health Facility, n=52	2 (3.84)	50 (96.16)		

**p-value <0.001 denotes statistical significance between home and health facility at 95% CI.

Table 10: Comparison of Time and Incurred Expenses of Postnatal Mothers during PNC Visit.

Variable	Home, n=52				Health Facility, n=52				t-value	p-value
	Min.	Max.	Mean	SD	Min.	Max.	Mean	SD		
Travel Cost (NPR)	-	-	-	-	0	2500	463.46	529.9	-	-
Time spent (in minutes)	5	60	25.23	16.31	15	480	97.31	81.9	-3.3	0.001*
Medicine Expenditure (NPR)	0	3500	458.65	690.5	0	5000	646.44	747.7	-1.3	0.186

* P-value <0.001 denotes statistical significance at 95% CI

The results showed that there was a statistically significant difference in the time spent by postnatal mothers for PNC visits at a home and health facility. A higher proportion of postnatal mothers from home-based PNC (42.32%) spent less than 30 minutes, while only 3.84% of postnatal mothers in health-facility PNC spent 30 or more minutes for PNC check-ups. A respondent from a health facility setting said, "I didn't have my postnatal checkup because I didn't have any serious illness and it would be difficult to travel to a health facility with my baby."

Travel cost for health facility PNC visit is minimum no cost and maximum NPR. 2500 and no cost for home-based PNC visits. Similarly, a health facility-based PNC visit requires almost twice the time required home-based PNC visit. The expenditure on medicine was seen higher in health facility-based PNC than home-based PNC (health facility: NPR. 646, home: NPR. 459). Likewise, the entire monetary value for time spent during a PNC visit was almost twice (44.52) in health facility-based PNC than in home-based PNC (32.21). A mother who visited health facility for postnatal checkup said, "I spent money during travel to health facility and in medicine more than I earned last month."

DISCUSSION:

This study shows the proportion of maternal health services utilization including checking for heavy bleeding, blood pressure measured, the temperature measured, family planning counseling, and counseling

on danger signs to be 84.6%, 86.5%, 48.1%, 21.4%, and 50% respectively. A community-based study in Ethiopia shows that in mothers who received postnatal home visits, 39.4% of mothers were checked for heavy bleeding, 6.5% measured their blood pressure, 11.2% measured their temperature, 20% counseled about the family planning, 44% were advised about their postnatal danger signs, 16.5% counseled on the newborn danger signs at home (Tesfau et al., 2020). A study conducted in Western Australia shows that majority of women were satisfied with the components of physical care (Fenwick et al., 2010). In all the services related to maternal health, this study shows a higher proportion than the study conducted in Ethiopia. The reason for variation in the proportion of physical examination can be due to variation in sample size taken in a different context. This study has a small sample size, while the study in Ethiopia has a larger sample size.

This study shows proportion for child health services including baby temperature measured, baby cord examined and child immunization has a higher proportion in home-based PNC visits. However, a variable-baby bath after 24 hours shows a higher proportion of health facility-based PNC visits. A study indicated that home-based PNC visits can reduce neonatal mortality by 24% and suggested that frequent home visits, home visits by community health workers, and community mobilization efforts with home visits, to have better neonatal survival (Tiruneh et al., 2019). Both studies suggest that neonatal services through home visits can

have more utilization of services and hence reduce neonatal mortality. This study's Cronbach's alpha for satisfaction level questionnaire is 0.808, suggesting that the variables have relatively high internal consistency. Tool adopted and contextualized for the study retrieved from factors determining satisfaction among facility-based maternity respondents (Cronbach's alpha=0.74) and Client satisfaction with existing postnatal care and associated factors (Cronbach's alpha=0.86) (Adane *et al.*, 2020). The tools adopted from proven findings can have more reliability. This study shows that postnatal mothers have a higher level of satisfaction for a time provided by health workers on home-based PNC (Mean score: 40.8), while postnatal mothers visiting health facilities were not satisfied (Mean score: 35) during PNC visit. The level of satisfaction amongst postnatal mothers from home-based PNC was statistically significant with time provided by health workers and responses received from a health worker. In addition, time spent by postnatal mothers for PNC checkups was statistically significant. A study conducted in 13 districts for measuring maternal service satisfaction showed that longer waiting times, and not responding to respondents increase the possibility of dissatisfaction (Mehta *et al.*, 2017). Both the studies suggest that time have a significant role in maternal satisfaction during PNC visit. Health workers in the health facility have many clients for checkups, so this may be the reason for not providing enough time during PNC visits.

Overall satisfaction in home-based PNC was higher (mean score: 41.8) than in health facility-based PNC (mean score: 38.6), however, the overall satisfaction level was above the cut-off point for both settings. This study also shows that postnatal mothers were more satisfied with the politeness of the health worker, the response received, the attitude of the health worker, and overall care received during the home visits than in health facility visits with statistically significant of these variables. Postnatal mothers from the home-based visits were more satisfied in 11 out of 12 items listed. A study conducted in the Western Australia showed that home visit postpartum care was found significantly ($p \leq 0.002$) better than the health facility and the care was rated very positively by health care receivers (Fenwick *et al.*, 2010). Another

study done in Greek shows that the time provided to clients and professional support was most correlated with general satisfaction (Panagopoulou *et al.*, 2018). All the studies mentioned postnatal mothers are more satisfied with the services received at their homes than from the health facilities.

This study illustrates to have postnatal mothers from home visits are more satisfied with exclusive breastfeeding counseling than postnatal mothers from health facility visits ($U=981.50$, $p=0.012$). The pooled analysis showed that the odds of exclusive breastfeeding practice of mothers in the home visit group were about three times higher than in the routine care group [OR: 2.88; 95% CI:1.57–5.29] (Tiruneh *et al.*, 2019). A study conducted also showed that respondents who received advice on exclusive breastfeeding are more satisfied (Mehta *et al.*, 2017). Postnatal mothers in home-based PNC visits tend to receive exclusive breastfeeding counseling with comfort from their homes, which can help in behavior change for postnatal mothers to exclusively breastfeed their child. This study also shows that counseling on family planning was very low in both home-based PNC (mean score: 21.4) and health facility-based PNC (mean score: 19.8). A survey of Greek women's satisfaction with postnatal care showed that the lower satisfaction score was seen in contraceptive advice. Family planning counseling may not be feasible at home due to the availability of their family members, which can break their privacy. This study suggests that family planning counseling should be focused in both settings.

This study shows that a higher proportion of postnatal mothers from home-based PNC (42.3%) spent less than 30 minutes, while only 3.84% of mothers in health-facility PNC spent less than 30 minutes for PNC check-ups. The result shows time to be statistically significant with postnatal care. A prospective cohort study done in Ethiopia showed that a walking distance of more than 60 minutes to access healthcare was the major factor for not utilizing the services. The reason for taking less time to reach a health facility in our study may be due to the geographical setting and availability of transportation to reach the health facility. This study shows that travel cost for health facility PNC visit was minimum no cost and maxi-

imum NPR. 2500 and no cost for home-based PNC visits. Similarly, the expenditure on medicine was seen as higher in health facility-based PNC than in home-based PNC (HF: NPR. 646, home: 459). Likewise, the entire monetary value for time spent during a PNC visit was almost twice (44.52) in health facility-based PNC than in home-based PNC (32.21). The findings of research comparing the incremental costs associated with the provision of home-based vs. hospital-based support show that home-based care seems to have low out-of-pocket expenditure than hospital-based support (Heyi *et al.*, 2018). Overall expenses during health facility visits seem to hike more than in home-based visits. During the first days of delivery, it would be difficult for families to travel from one place to another, and it is better to receive relevant care at home.

As women do not return to the facility for PNC, home base PNC is essential. The main aim of home visits by the service provider in the early postnatal period is early detection of a sick newborn with danger signs and maternal complications. Treat, if possible, immediately and refer or facilitate referral at once to an appropriate level of care (Family Welfare Division, 2020). Some countries with low resource settings (Madagascar, Kenya, Zambia), Iran, and Ethiopia have already initiated home-based PNC visits and the interventions are being successful in improving the quality of the postnatal care (Warren *et al.*, 2018; Mirmolaei *et al.*, 2014; Tesfau *et al.*, 2020). A field trial study suggests a need for postpartum home care as this is a new and useful method for the health system and supports improving maternal knowledge on maternal and neonatal health (Mokhtari *et al.*, 2018). Midwifery care at home was rated very positively and significantly better than hospital care ($p \leq 0.002$). Based on outcomes resulting from various research, home-based PNC has been proven to be effective. Currently implementing home-based PNC as a pilot program, which can be a proven milestone toward reducing maternal and neonatal health and achieving the Sustainable Development Goal.

CONCLUSION:

A home visit for postnatal care by health workers is found more client-friendly service delivery approach. Overall satisfaction of postnatal mothers in home-
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based settings is higher as compared to health facility settings. The home-based service delivery approach is found effective in improving maternal and newborn health services even in countries with low resource settings. Home-based PNC visits have a higher proportion of service utilization as compared to health facility-based PNC visits. Maternal and neonatal health services show higher utilization as compared to health facility-based PNC. Overall expenses during health facility visits seem to hike more than in home-based visits. Time spent during PNC has a significant role in maternal satisfaction during PNC visits. There is a need to provide family planning counseling in both settings. The study recommends research from the supply side for measuring additional effectiveness and national economic burden versus benefit.

Implications of the Study

- 1) This study might be a representative study to know the comparison between home-based and health facility-based PNC in the Terai community.
- 2) Governmental and Non-governmental organizations that are working in this area can use these findings for further planning and implementation.
- 3) This study, done in the pilot program district, can be used as a source of reference or base-line information for future researchers on a large scale.
- 4) This study might be useful for policymakers to enhance home-based PNC care through community health nursing programs in each ward.

Limitations of the Study

This study analyses from the perspective of the postnatal mother's side.

Recommendations for Further Study

This study is analyzed from the postnatal mothers (demand side). A study from the supply side should be done to compare the cost-benefit analysis including cost-effectiveness and the economic burden of the program.

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CONFLICTS OF INTEREST:

The author confirms that have no conflict of interest.

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