Targeted Postnatal Care Implementation for Mothers in Selected Health Facilities in Western Kenya

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Received October 24, 2024, accepted January 23, 2025, published April 1, 2025.

ABSTRACT

Context: Postnatal care (PNC) is essential in improving maternal health and reducing maternal mortality, especially in low-resource settings. Targeted Postnatal Care (TPNC) is an approach to postnatal care for mothers and newborns that involves a set of assessments and interventions given in four scheduled visits from birth to 6 months postpartum. The goal is to improve outcomes for these mothers and babies.

Aim: This study aimed to assess the implementation of targeted postnatal care interventions for mothers and their variation across four scheduled visits at selected health facilities in Kakamega County, Western Kenya.

Methods: This was a cross-sectional study conducted in the Maternal and Child Health (MCH) units of selected public health facilities in Kakamega County, a county in the Western region of Kenya. It employed quantitative methods in data collection using a combined tool containing a questionnaire and observation schedule. Data collected from 160 mothers was descriptively analyzed, where the mean, median, and standard deviation were computed and compared across the visits. Analysis of variance (ANOVA) was used to measure the significance of the variations in implementation across the various visits.

Results: The study highlighted significant variations in the provision of maternal care between different visits, with the implementation of TPNC interventions highest within the first 48 hours after delivery (66.62%) and declining at subsequent visits 47.38% at 2-4 weeks, reaching 51.98, at 4-6 weeks, and 50% at 4-6 months. Despite the World Health Organization's recommendations for comprehensive postnatal assessments, the findings reveal gaps in care delivery, such as low rates of health education about maternal HIV testing (20%) within 48 hours and 21.25% at 2-4 weeks, physical examinations (46.88%) at 2-4 weeks and 27.5% at 4-6 months visits, mental health assessments (6.88%) at 2-4 weeks and STI screening at 4-6weeks was 16.10%. There were inconsistent reports on the implementation of key interventions such as early breastfeeding initiation, vital sign checks, and postpartum family planning.

Conclusion: These results demonstrate suboptimal implementation of TPNC for mothers, which can frustrate efforts in achieving sustainable development goals. There was a significant decrease in implementation between the first and second visits and a significant increase from the second to third visits. Considerations should be made to make the second visits convenient for the mothers through community midwifery to ensure that mothers do not miss out on these important interventions. The third visit could be more comprehensive if a room and staff could be allocated to postnatal care and not assumed as a family planning room.

Keywords: Mothers, target postnatal care, Western Kenya

Citation: *Shitabule, R. M., Morema, E. N., Sum, T. P., Shisanya, M. S., & Kibai, E. K. (2025).* Targeted postnatal care implementation for mothers in selected health facilities in Western Kenya. *Evidence-Based Nursing Research, 7*(2), 32-39. https://doi.org/10.47104/ebnrojs3.v7i2.386

1. Introduction

Postnatal care is a key component of maternal care, maintaining and promoting the health of the woman and equally fostering an environment that helps and supports the extended family *(World Health Organization (WHO), 2022).* This period, in particular, will determine mothers' long-term health and well-being. However, many midwives neglect this period and rarely give it the recommended attention *(Kebede et al., 2021).*

Globally, more than 60% of all maternal deaths occur during the postnatal period; 45% of these deaths occur within 1 day of delivery, approximately 65% occur within 1 week, and about 80% occur within two weeks *(Symonds et al., 2023).* In Africa, 34% of maternal deaths are associated with substandard postnatal care *(Waruiru et al., 2022).*

Access to and quality of services around the maternal continuum of care must be addressed to attain the third Sustainable Development Goal (SDG). To reduce mortality and enhance the health and survival of mothers, targeted high-quality and effective postnatal care (PNC)

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with essential interventions is critical. These interventions include immediate examination of the mother, breastfeeding, danger signs awareness, family planning, HIV/STI, and other services *(Zhao et al., 2023)*.

WHO recommends targeted postnatal care (TPNC), a comprehensive postnatal package comprising four focused and personalized assessments from birth to at least 6 months *(WHO, 2010*). In Kenya, the visits are scheduled within 48 hours after birth, 1-2 weeks, 4-6 weeks, and 4-6 months *(Ministry of Health, Republic of Kenya (2016).* Implementation of targeted maternal PNC has been estimated at 16.95% for all interventions in Africa in a systematic review *(Adams et al., 2023).*

2. Significance of the study

Kenya is currently recording a Maternal Mortality Rate (MMR) of 530/100,000 live births, with the majority of these mortalities happening in the postnatal period *(World Health Organization, 2022).* Kakamega County was ranked fifth highest of fifteen counties in Kenya *(Kakamega County Maternal, Newborn, and Child Health Civil Society Organizations Alliance, (2020).* Similarly, implementation of targeted postnatal care is at 25%, with Kakamega County at 60.8%, but the variations across the four postnatal visits have not been documented *(Kenya National Bureau of Statistics, 2022).*

This implementation rate is extremely low, yet these interventions are intended to improve maternal outcomes post-delivery. Providing optimal postnatal care (PNC) prevents maternal deaths, in addition to the prevention of long-term complications *(Kebede et al., 2021).* Thus, there was a need to measure the implementation of this care in the current setting to inform context-specific strategies aimed at changing the status and contributing to the achievement of sustainable development goal 3 *(Unites Nations, Department of Economic and Social Affairs (2024).* Further, understanding the variations across the four visits will provide guidance to ensure optimum use of resources and inform strategies to enhance this care.

3. Aim of the study

This study aimed to assess the implementation of targeted postnatal care interventions for mothers and their variation across four scheduled visits at selected health facilities in Kakamega County, Western Kenya.

3.1. Operational definition

In this study, *targeted postnatal care* was defined as the care interventions given to the mother immediately after the birth of the placenta and for the first six months post-delivery. It comprised four scheduled visits 48 hours before discharge, at 2-4 weeks, 4-6 weeks, and 4-6 months. The mother and newborn guidelines by the Ministry of Health of Kenya, based on the WHO recommendations, specify certain procedures/interventions to be done for the mother. Generally, these interventions include various assessments to detect any deviations from the normal, actions to counter these, and other preventive measures.

4. Subjects & Methods

4.1. Research Design

This study employs a cross-sectional descriptive study done in Kakamega using quantitative data collection methods. This particular design was ideal since the research entailed collecting and comparing data at one point in time on the implementation of targeted postnatal care in health facilities. The data was collected using a combined tool with elements of a questionnaire and an observation schedule based on the mothers' records.

4.2. Study setting

The study was conducted in Kakamega, a county in western Kenya with a population of 1,867,579. Kakamega has level 2, 3, and 4 public facilities with one county referral hospital (Kakamega County General Teaching & Referral Hospital). The county has different staffing levels per cadre depending on the facility levels, with medical doctors only at level four and five facilities, while midwives are found across the board. Maternity services are provided at all levels of care, with differences in the complexity of the interventions.

4.3. Subjects

The study population was mothers within 48 hours up to 6 months post-delivery who sought postnatal care (PNC) at the postnatal ward and Maternal and Child Health (MCH) clinics in the selected public health facilities. The study employed multistage sampling. Facilities were first clustered according to levels. High volumes facilities were selected from each level (2, 3, 4 & 5). The sample size of 160 mothers, derived using the corrected Fishers' formula, was proportionately distributed per facility based on the number of deliveries in a month. All mothers who consented and were in the service provision areas in the various facilities during the data collection month had their records checked and responded to questions about the care instituted by health care providers.

4.4. Tools of data collection

4.4.1. Structured Interview Questionnaire

Quantitative data was collected using a combined tool with elements of interviewer-administered questionnaire and file audit. It was based on the list of assessments and interventions in the targeted postnatal guidelines provided by the *Ministry of Health, Republic of Kenya (2016)*, and this ensured content validity. These interventions include complete physical assessment, HIV/STI testing, and mental health assessment.

The tool was pretested in a facility in the neighboring county of Bungoma. The tool measured the implementation of targeted postnatal care interventions for the mother through four assessment visits 48 hr (before discharge), 2-4 weeks, 4-6 weeks, and 2-4 months. The tool was in English, but Kiswahili was used when necessary, especially while verifying with the mothers to confirm that the records reviewed were correct.

The tool had prompts that were responded to as 'YES' if an intervention was done and 'NO' if the opposite. The total 'yes' responses for each intervention were calculated as a percentage of the sample size n=160. This percentage represented the level of implementation for each intervention. Then, the mean of all the interventions gave the overall targeted postnatal care implementation for the mothers.

4.5. Procedures

Ethical considerations were duly followed, and clearance was sought from the Institutional Ethical Review Committee of Masinde Muliro University of Science and Technology. The research permit was obtained from the National Commission for Science, Technology, and Innovations (NACOSTI) as required by law in Kenya. Permission to conduct the study was sought from Kakamega County Referral and Teaching Hospital and the other selected facilities within the county.

On the data collection days, mothers in the postnatal ward and maternal and child health clinics (MCH) were identified and sought informed consent with comprehension affirmation. The research assistants then interviewed them based on the tool and, where necessary, checked the mother-child booklets and the clinic records to confirm the services provided.

4.6. Limitations of the study

The cross-sectional study involved asking mothers about previous experiences, which could have resulted in a recall bias. A prospective study may demonstrate a more accurate account of care provision across the 4 visits.

4.7. Data analysis

The tools were administered on the m-Health platform tool (Kobo collect), and the data were exported to SPSS version 25 for analysis. Descriptive statistics were used to summarize the respondents' sociodemographic characteristics. An analysis of variance was used to demonstrate the significance of the differences in the levels of implementation across the four visits.

5. Results

Figure 1 represents the overall implementation of targeted postnatal care for mothers. The overall implementation of TPNC for the mothers was suboptimal at 53.99% with an SD of ±16.58. It was higher on the first visit (66.62%) and lowest on the second (47.38%).

Figure 2 illustrates the first visit (within 48 hours). The mean percentage level of implementation for immediate PNC for mothers was calculated at 65.09%, with a standard deviation of ±16.99. Only 20% of the mothers reported getting health education on HIV testing immediately after childbirth, while almost all mothers had their vitals measurements taken. About 96.25% of the mothers had their blood pressure taken and documented. A good number of mothers (71.88%) were assessed for postpartum bleeding, with 78.75% of them receiving advice on the importance of regular bladder emptying. Approximately 56.88% reported performing uterine palpation to aid in assessing uterine involution and postpartum recovery.

Figure 3 illustrates the mean percentage level of care administered to mothers for 2-4 weeks visit of 47.38%, with a standard deviation of ±16.58. The interventions performed included taking vital signs (80.63%), conducting physical examinations (46.88%), assessing for lochia loss (81.25%), evaluating HIV status (21.25%), and performing mental status assessments (6.88%).

Figure 4 documented the third visit (within 4-6 weeks). The mean percentage level of care implementation for mothers on this third visit was 51.98%, with a standard deviation of ±16.55. About 38.13% of mothers had physical examinations conducted, and 68.13% reported taking vital signs. Family planning choices were offered by 91.88% of midwives, with only 10% screening for sexually transmitted infections (STIs).

Table 1 demonstrates the fourth visit (within 4-6 months). The mean percentage level of care administered to mothers during this visit was calculated at 50.00%, with a standard deviation of ±22.09. Approximately 27.5% of nurses conducted complete physical examinations, while vital signs, including blood pressure and pulse rate, were taken by 61.25% of nurses. Counseling on complementary feeding was provided by around 78.13% of nurses, and 53.75% offered counseling for continued exclusive breastfeeding. The general health of the mother was assessed by 29.38% of nurses.

Table 2 reveals the analysis of variance in the implementation of TPNC interventions for different TPNC periods. The analysis of variance (ANOVA) conducted involved pairwise comparisons of TPNC interventions across scheduled postnatal visits. The aim was to assess the variations in implementation levels between visits and ascertain significant implementation differences over time. By comparing implementation levels at various postnatal care visits, the study sought to provide insights into the consistency.

Immediately after birth, the mean difference (MD) in implementation between the immediate postnatal period and the 2-4 weeks postnatal care (PNC) visit portrayed a significant difference in means (MD: 19.24, 95% CI: 16.78-21.71, $p<0.0001$). Similarly, significant differences are observed between the immediate postnatal period and both the 4-6 weeks PNC visit (MD: 14.64, 95% CI: 12.29-16.99, $p<0.0001$) and the 4-6 months TPNC visit (MD: 16.62, 95% CI: 13.79-19.45, $p<0.0001$).

At the 2-4 weeks PNC visit, a significant mean difference in implementation is observed when compared to the 4-6 weeks PNC visit (MD: -4.6, 95% CI: -7.18-

-2.03, $p=0.001$). However, no significant difference is observed when comparing implementation at the 2-4 weeks TPNC visit to the 4-6 months PNC visit $p= 0.071$. Similarly, no significant difference is found between implementation at the 4-6 weeks TPNC visit and the 4-6 months TPNC visit $p= 0.163$.

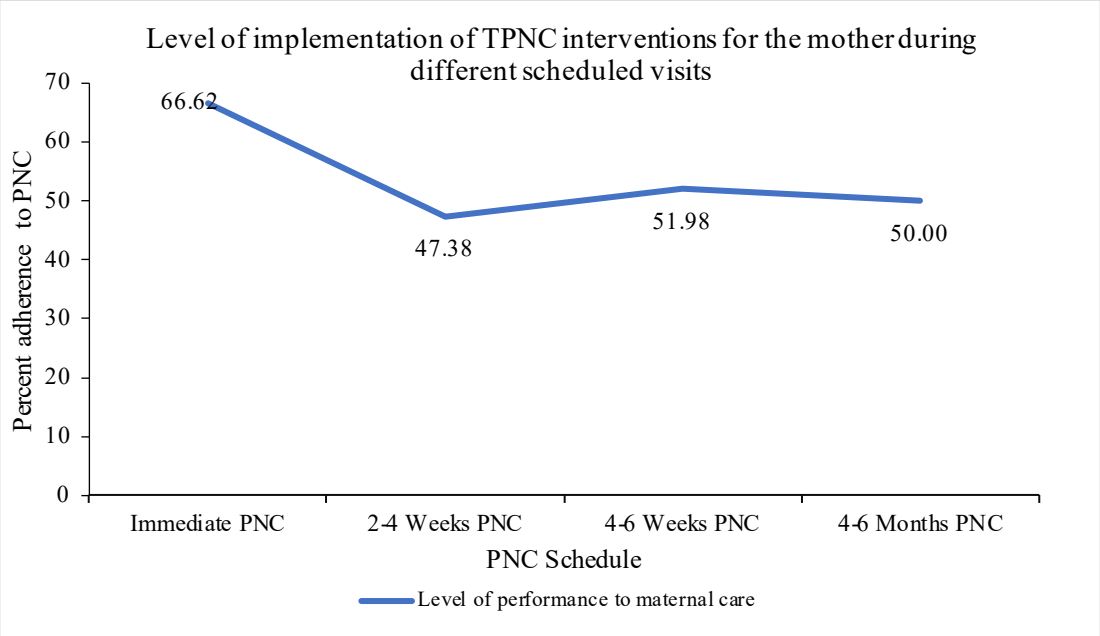

Figure (1): Overall implementation of targeted postnatal care for mothers (n=160).

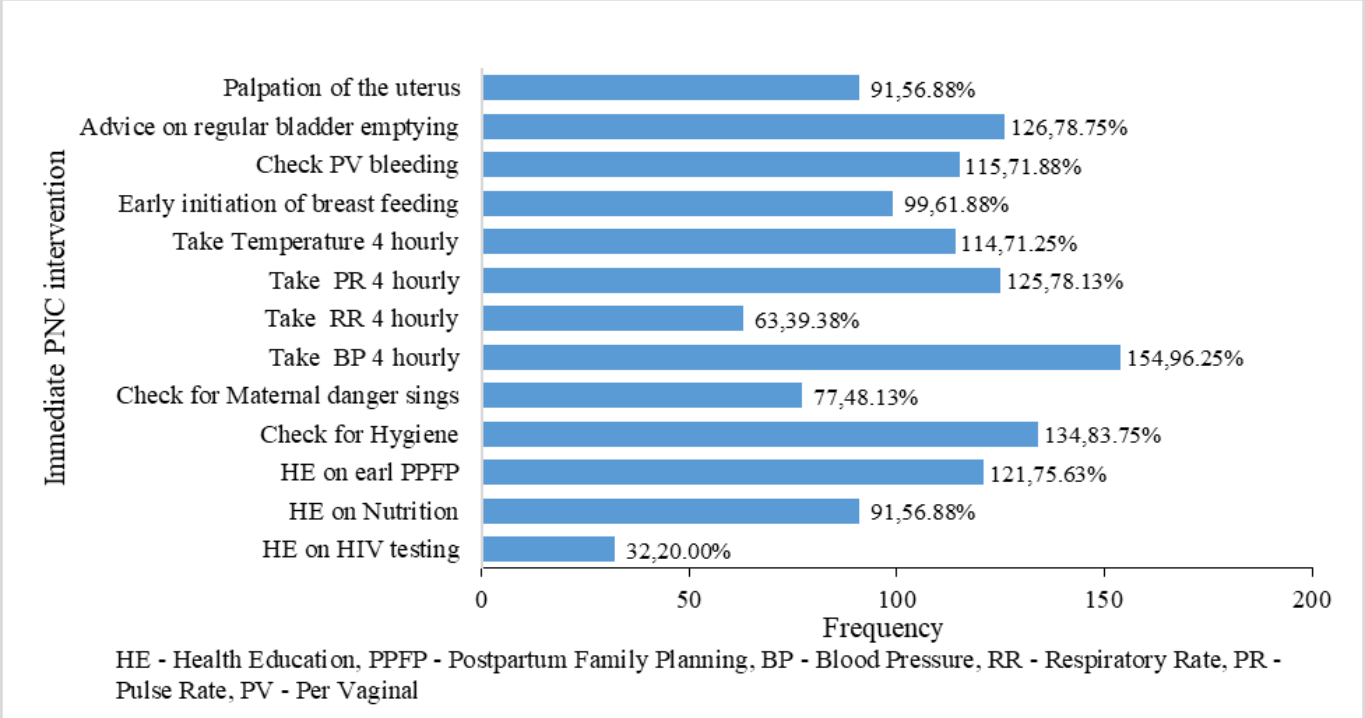

Figure (2): Immediate postnatal care (PNC) to Mothers (within 48 hours) (n=160).

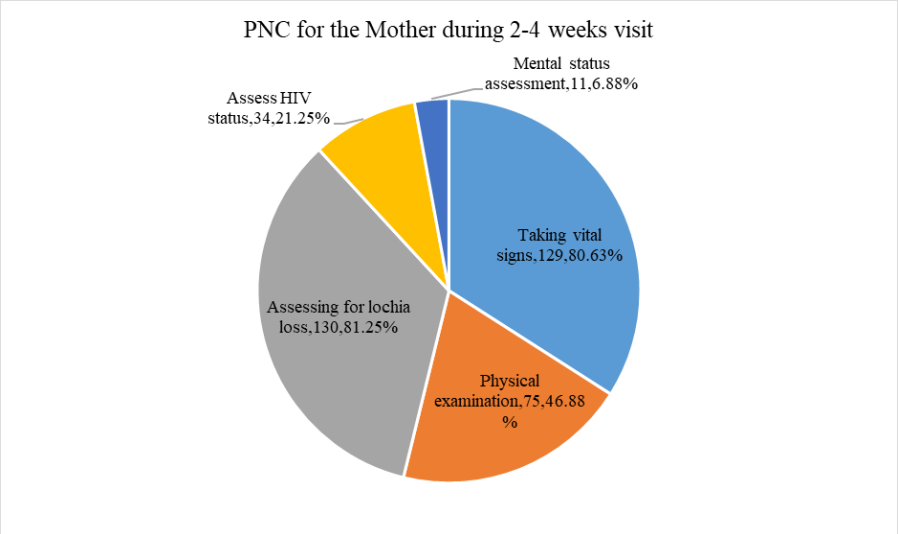

Figure (3): Postnatal care (PNC) for the other during 2-4 weeks visit (n=160).

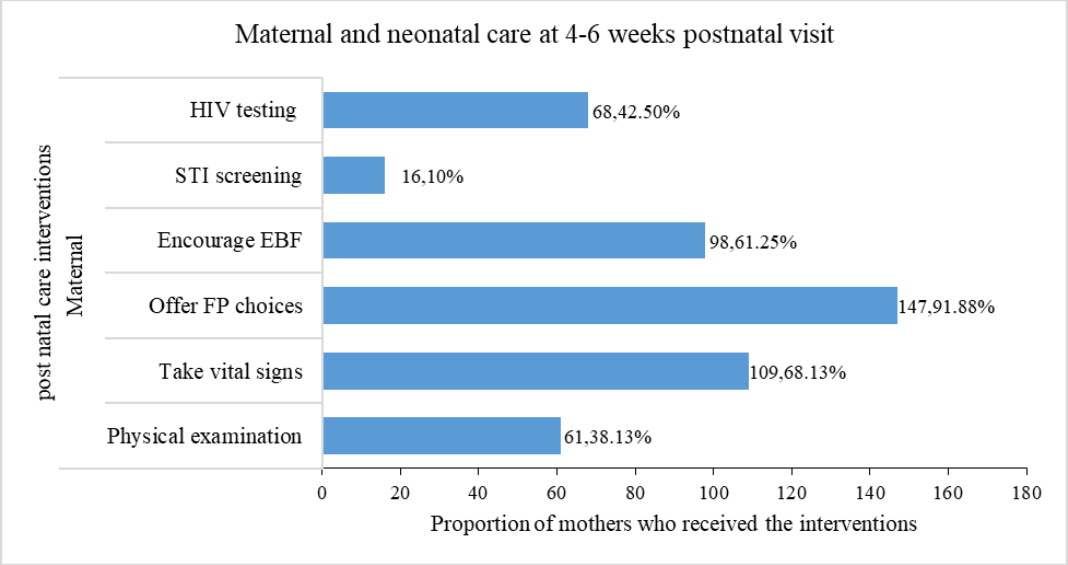

Figure (4): Postnatal care for mother during 4-6 weeks visit (n=160).

Table (1): Frequency and percentage distribution of postnatal care for the mother at 4-6 months PNC visit (n=160).

Interventions	Frequency	Percent
Do a complete physical examination	44	27.5
Take vitals	98	61.25
Counsel on complementary feeding	125	78.13
Counsel for continued exclusive breastfeeding	86	53.75
Assess the general health of the mother	47	29.38
The mean percentage level of care given to mothers 4-6 months PNC	50.00±22.09	

Table (2): Pairwise comparisons of implementation of interventions during different visits.

Maternal care (A)	Maternal care (B)	Mean difference (A-B)	95% CI	*P*-Value
Immediately after birth	2-4 weeks PNC	19.24	16.78-21.71	<0.0001
	4-6 weeks PNC	14.64	12.29-16.99	<0.0001
	4-6 months PNC	16.62	13.79-19.45	<0.0001
2-4 weeks PNC	4-6 weeks PNC	-4.6	-7.18- -2.03	0.001
	4-6 months PNC	-2.63	-5.47-0.22	0.071
4-6 weeks PNC	4-6 months PNC	1.98	-0.81-4.77	0.163

ANOVA for Pairwise comparison based on estimated marginal means in implementation of maternal TPNC. Mean implementation of maternal TPNC interventions immediately after birth = 66.62%, 2-4 weeks PNC = 47.38%, 4-6 weeks PNC = 51.98%, and 4-6 months PNC1 = 50.00%. p<0.05

6. Discussion

In this discussion, we interrogated the above results and compared and contrasted them with previous studies in the same area. Our study sought to estimate the overall level of implementation of TPNC and the levels of implementation for each scheduled visit and to determine the significance of the differences in implementation between the visits.

The overall implementation was found to be suboptimal at 54%. The highest level of implementation was noted in the first visit, which could relate to the fact that mothers who had hospital deliveries had a higher chance of receiving postnatal care interventions since they were already accessible within a care facility. This finding agrees with a study reported in Uganda on the uptake of immediate postnatal care *(Ndugga et al., 2020).* This finding is similar to a pooled magnitude of postnatal care utilization in sub-Saharan African countries at 52.48% *(Tessema et al., 2020).* While, another study reported it much lower at 35% *(Zeleke et al., 2021).* However, this latter study focused on the care provided within 2 months postdelivery and did not include the 4-6 months visits.

The level of implementation in the first visit was found to be highest across the four visits at 66.6%. While it is fair, it is not commensurate with the expectations. In Kenya, all mothers who deliver in the health facilities are expected to be given all the interventions intended for the first visit before discharge at 48 hours postnatally. These interventions do not always occur, especially in lower-level facilities with limited spaces to accommodate these mothers after 24 hours of delivery. Furthermore, some clients are referred to higher facilities for specialized care and thus miss the 48-hour visit. Lastly, some have to stay in the health facilities for a longer period than the expected 48 hours due to conditions like preterm birth, or caesarian sections.

These results are unlike those of *Pindani et al. (2020),* who reported the implementation of immediate TPNC maternal interventions at 37.8%. Similarly, the current study reported a very high percentage of mothers having had their blood pressure measured and recorded, unlike the aforementioned study, which reported a rate as low as 62.2% for the same intervention at this first visit *(Pindani et al., 2020). Adams et al. (2023)* reported the lowest immediate postpartum care at 16.95%. It further showed that only temperature measurement was well implemented.

The Kenya demographic health survey reported a much higher rate of 78%, where women aged 15-49 with a live birth in the 2 years before the survey received a postnatal checkup within 2 days of delivery, but only 20% received all the checks by 41 days of delivery *(Kenya National Bureau of Statistics. (2022).* Thirty-five percent of women who had a postnatal checkup had their blood pressure checked in this national survey, which contrasted with the current study. The differences could be attributed to the geographic locations, sample size, and passage of time from the last births to the time of data collection, resulting in reporting bias.

There was a significant decline in the second visit which is expected between 2 to 4 weeks. Implementation of targeted postnatal care interventions in the second visit was at its lowest, with very few mothers having received any intervention at this point in time. This decline in the implementation of care may relate to the failure of the clients to seek care at this particular point in time. The tendency to not take this visit may be because the visit comes too close after they have left the hospital and may be still adjusting to the new responsibilities. The visit may also not be convenient because the care during this visit focuses on the assessment for complications with minimal interventions in terms of service or commodities, and thus, the clients never see the need to take it. Community-based interventions have been reported to improve the implementation of care, especially during these visits where specialized care is not required; thus, services can be provided by lay health promotors *(Kamau et al., 2024).*

The measurement of vital signs remained the most implemented service in this second visit, as in the case of the previous visit. Similarly, HIV care is being dismally implemented. Of interest is the mental health assessment, which was rarely done, yet it is very key in this visit to rule out any postpartum depression or psychosis whose occurrence is common during this period. This finding may imply that the midwives do not consider this service important or are overwhelmed with work and may not focus on services requiring more time. Gaps in mental health service delivery have been reported in several other settings in Kenya as a consequence of the stigma associated with mental illness, leading to poor social support. This finding was unlike *Pindani et al. (2020),* where 91.3% of health providers never considered maternal emotional and psychological concerns.

There was an increase in performance for the third visit. Almost all mothers sought this particular visit, among the key services provided during this visit is family planning (FP) services. Most mothers received counseling for FP, and the eligible and willing ones were given a method. Other services were not adequately implemented to include HIV care and sexually transmitted infections screening and treatment. This finding could relate to the fact that the maternal and child health clinic includes antenatal and family planning rooms, not postnatal ones. This unit design brings laxity and less attention to the other interventions targeted for this visit.

The fourth visit was seldom made unless complications arose. Mothers seen at the clinic were there for the well-child services; most reported being counseled on complementary feeding, and a few were examined physically. Within the scope of our literature search, no study had reported findings for this fourth visit, so we could not make comparisons. However, this points to the need to review the necessity for this particular visit.

Furthermore, it was noted that the visits were made by mothers who had complicated births, like those who delivered via the caesarian section and those who were already hospitalized, which agrees with a previous systematic review *(Symonds et al., 2023).* There was an increase in the implementation of care in the third visit. This finding may be expected, considering some family planning services and the second set of vaccines for the

babies are scheduled at this time. These two services are of more value to the clients, and most attend the visit. As expected, family planning care is the most provided service during this visit. A significant decline was noted in physical examination and vital sign assessment compared to the previous visits. Most mothers at this point do not experience lochia loss and may not be at risk for postpartum hemorrhage. With the chronic staff shortages in these regions, midwives prioritize care for only a small proportion who report ongoing lochia who are then examined. The difference in performance between the third and fourth visits was found to be insignificant. There is scanty literature on variations of care in the various visits, and thus, our study may be a reference point for future studies.

7. Conclusion

The implementation level of TPNC intervention was suboptimal across the postnatal visits, at 54%. Most interventions were done on the first visit, at 66%, while the least was done on the second, at 47%. Implementation significantly decreased between the first and second visits and increased significantly from the second to third visits. Thereafter, the differences were insignificant.

8. Recommendations

Mothers should be encouraged in hospital delivery as this significantly impacts the initiation and continuity of TPNC to prevent missed opportunities and optimize and ensure a continuum of care. Considerations should be made to make the second visits convenient for the mothers through community midwifery to ensure that mothers do not miss out on these important interventions. The third visit could be more comprehensive if a room and staff could be allocated to postnatal care and not assumed as a family planning room.

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