Midwife factors associated with targeted postnatal care implementation in health facilities across Kakamega County, Western Kenya

Ruth Shitabule

rushim2005@yahoo.com

Masinde Muliro University of Science & Technology, Kenya

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ABSTRACT

The postnatal period is a critical window for reducing maternal and neonatal morbidity and mortality; however, the quality and completeness of postnatal care remain suboptimal in many low- and middle-income countries. Targeted postnatal care (TPNC), as recommended by the World Health Organization, emphasizes structured, timely, and comprehensive interventions for both mother and newborn. Despite these recommendations, there is limited evidence on the implementation of TPNC and its influencing factors in Kenya. This study aimed to assess the level of TPNC implementation and examine midwife-related factors influencing its delivery in selected health facilities in Kakamega County. A descriptive cross-sectional study design was employed involving 160 midwives. Data were collected using structured interviewer-administered questionnaires and key informant interviews and analyzed using SPSS version 25. Descriptive statistics summarized participant characteristics and levels of TPNC implementation, while regression analysis examined associations between midwife factors and implementation outcomes. The mean age of midwives was 36.76±7.64 years, with the majority being female (76.25%) and diploma-trained (71.25%), and 62.5% having received Emergency Obstetric and Newborn Care (EmONC) training. The mean level of immediate postnatal care implementation was 65.09% (±16.99), indicating suboptimal adherence to recommended guidelines. While moderate proportions of midwives reported performing uterine palpation (56.88%) and supporting early initiation of breastfeeding (61.88%), critical gaps were observed in maternal danger sign assessment (48.13%) and provision of HIV-related health education (20%). Linear regression analysis revealed no statistically significant association between midwives' sociodemographic characteristics and TPNC implementation ($F(5,154) = 0.66$, $p = 0.650$, $R^2 = 0.021$), suggesting that individual-level factors may not adequately explain variations in care delivery. This study found that the implementation of targeted postnatal care (TPNC) among midwives in selected health facilities in Kakamega County is suboptimal, particularly in critical components such as maternal danger sign assessment and health education. The study further established that midwives' sociodemographic characteristics were not significant predictors of TPNC implementation. There is a need for the Ministry of Health and county health departments to strengthen health system capacity by addressing structural barriers such as staffing shortages, workload, and availability of essential resources.

Keywords: Health Facilities, Midwife Factors, Postnatal Care, Targeted Postnatal Care, Kakamega County, Western Kenya

I. INTRODUCTION

The postnatal period remains one of the most critical phases in the continuum of maternal and newborn care, yet it is often inadequately implemented in many low- and middle-income settings (Alkhamis et al., 2025; Yihune Teshale et al., 2025). Evidence shows that a substantial proportion of maternal and neonatal morbidity and mortality occurs within the first hours and days after birth, making timely and targeted postnatal care (TPNC) essential for early detection of complications, health education, counselling, and referral. National and international guidelines emphasize structured postnatal assessments for both mother and newborn, but actual implementation at facility level is frequently inconsistent (WHO, 2013; MOH-Kenya, 2023). In this context, midwives play a central role because they are the frontline providers responsible for most immediate and early postnatal assessments, interventions, and follow-up counselling.

Implementation of targeted postnatal care is influenced by several provider-level characteristics, including socio-demographic attributes, professional preparation, and clinical experience. Some studies suggest that older age and longer professional exposure are associated with better knowledge and performance in postnatal care implementation, likely because experience enhances clinical judgement and familiarity with recommended interventions. Training level also appears important. In Malawi, registered nurse-midwives and those trained in emergency obstetric and neonatal care (EmONC) demonstrated stronger knowledge and practice of postnatal care than less qualified or untrained cadres(Phiri, 2023). Similarly, evidence from Ethiopia indicates that inadequate pre-service preparation contributes to poor implementation of immediate postnatal care guidelines (Yihune Teshale et al., 2025). These findings suggest that differences in age, cadre, and professional training may shape how well midwives interpret and apply TPNC recommendations in routine practice.

In-service capacity building is another major determinant of implementation. EmONC and BEmONC training have been consistently linked to improved provider knowledge, confidence, and performance in maternal and newborn care. A study in Ethiopia found that providers who had received BEmONC training were significantly more likely to adhere to immediate postpartum care guidelines than those without such training (Kebede et al., 2021). Broader review evidence likewise shows that competency-based emergency obstetric care training improves provider skills and can positively influence clinical practice. However, qualitative work from Uganda and Ghana shows that training gaps persist, and some midwives report limited opportunities for continuing professional development after qualification, which undermines implementation of recommended postnatal interventions (Ameh et al., 2019).

Beyond training, implementation is also shaped by access to clinical guidelines and supportive supervision. Availability of postnatal care guidelines in facilities has been associated with higher odds of adherence to recommended care practices. Yet physical availability alone may not be sufficient; studies from Uganda found that even where hard or soft copies existed, some midwives still did not routinely use them because of workload, low reading culture, or limited familiarity with the content (Namutebi et al., 2023). Supportive supervision can help bridge this gap by reinforcing standards, identifying practice deficiencies, and providing feedback for improvement. Evidence from Uganda showed that strengthened support supervision improved maternal and newborn service delivery, while studies from Nepal and Indonesia similarly reported better performance among supervised staff (Khatri et al., 2021). Together, these findings indicate that midwives are more likely to implement TPNC effectively when guidance is both accessible and actively reinforced through mentorship and supervision.

Health facility capacity further affects whether midwives can deliver targeted postnatal care as prescribed. Staff shortages, high patient volumes, poor skill mix, and weak organization of postnatal units often constrain implementation. In Ethiopia, providers working with assistants were more likely to adhere to postpartum care guidelines, suggesting that teamwork and workload sharing improve completeness of care (Bune et al., 2023). In Ghana and Uganda, midwives reported that inadequate staffing and poorly organized maternity units forced them to omit or delay essential assessments, especially during evening and night shifts (Namutebi et al., 2023; Yevoo et al., 2020). Similar concerns have been noted in Kenya, where workforce shortages limit full implementation of recommended maternal and newborn procedures. These structural constraints suggest that midwife-related factors cannot be examined in isolation from the organizational context in which care is delivered.

Therefore, implementation of targeted postnatal care is shaped by an interplay of midwife characteristics and practice environment. Midwives' age, cadre, level of training, exposure to in-service EmONC updates, knowledge and use of guidelines, and access to supportive supervision all appear to influence the quality and completeness of TPNC delivery. At the same time, staffing levels, workload, and facility organization can either enable or constrain midwives' ability to comply with recommended standards. This evidence underscores the need to examine midwife factors affecting targeted postnatal care implementation in specific settings, since identifying modifiable provider and system barriers is essential for improving the quality of postnatal care and maternal-newborn outcomes.

1.2 Statement of the Problem

The postnatal period remains a critical yet often neglected phase in the continuum of maternal and newborn care, with a substantial proportion of maternal and neonatal morbidity and mortality occurring within the first 48 hours after childbirth (World Health Organization [WHO], 2022; United Nations Children's Fund [UNICEF], 2021). Although Kenya has adopted evidence-based guidelines for targeted postnatal care (TPNC), including structured assessments, early breastfeeding support, and health education, the implementation of these interventions within health facilities remains inconsistent (Ministry of Health Kenya, 2017). Existing evidence suggests that while access to facility-based delivery has improved, the quality and completeness of postnatal care services are still suboptimal, with key components such as danger sign assessment and counselling frequently missed (Kawuki et al., 2020; Sacks et al., 2022).

While previous studies have largely focused on maternal and health system factors influencing postnatal care utilization, there is limited empirical evidence on the role of midwife-related factors in shaping the implementation of TPNC at the facility level. Midwives are central to the delivery of postnatal services, and their competencies, training, and experience may significantly influence adherence to recommended care practices (Kebede et al., 2021). However, the extent to which these factors affect TPNC implementation in Kenyan health facilities, particularly in devolved settings such as Kakamega County, remains poorly understood. Addressing this gap is essential for informing targeted interventions aimed at improving the quality of postnatal care and ultimately enhancing maternal and newborn health outcomes.

1.2 Research Objective

1.2.1 Broad Objective

To assess the midwife-related factors associated with the implementation of targeted postnatal care (TPNC) in health facilities in Kakamega County, Western Kenya.

1.2.2 Specific Objectives

(i) To determine the level of implementation of targeted postnatal care (TPNC) among midwives in selected health facilities in Kakamega County.
(ii) To assess the sociodemographic characteristics of midwives (age, sex, level of training, and years of experience) in selected health facilities.
(iii) To determine the influence of midwives' sociodemographic and professional factors on the implementation of targeted postnatal care

II. LITERATURE REVIEW

2.1 Theoretical Literature Review

The implementation of targeted postnatal care (TPNC) can be understood through the lens of Donabedian's Quality of Care Model, which explains healthcare quality in terms of structure, process, and outcomes (Donabedian, 1988). In this framework, structure refers to the characteristics of the setting in which care occurs, including human resources, training, equipment, and organizational support. Process refers to what providers actually do in giving and receiving care, such as assessment, counselling, follow-up, and adherence to guidelines. Outcomes are the effects of care on maternal and newborn health. Applied to this study, midwife-related factors such as training level, years of experience, and competence represent structural elements that shape the processes of targeted postnatal care implementation. If midwives lack adequate preparation, skills updates, or supportive work environments, the quality and completeness of postnatal interventions may be compromised, which in turn affects maternal and neonatal outcomes.

This study is also informed by the broader concept of implementation fidelity, which refers to the extent to which an intervention or guideline is delivered as intended by its developers (Carroll et al., 2007). In the context of TPNC, fidelity means the degree to which midwives adhere to national or World Health Organization postnatal care recommendations at each scheduled visit. Implementation fidelity is influenced by provider training, understanding of protocols, motivation, and contextual facilitation. Thus, even where guidelines exist, differences in midwives' knowledge, attitudes, and work conditions may result in variation in how completely TPNC is delivered. Together, Donabedian's model and implementation fidelity theory provide a strong theoretical basis for examining how midwife factors influence the implementation of targeted postnatal care in health facilities, since they link provider characteristics to the actual delivery of care and its eventual outcomes.

2.2 Empirical Literature Review

Empirical studies have consistently highlighted the role of healthcare provider characteristics, particularly those of midwives, in influencing the quality and implementation of postnatal care services. Evidence from low- and middle-income countries indicates that midwives' level of training, professional experience, and exposure to in-service programs such as Emergency Obstetric and Newborn Care (EmONC) are critical determinants of adherence to recommended postnatal care practices. For instance, Kebede et al. (2021) found that healthcare providers who had received relevant training were more likely to comply with immediate postpartum care guidelines, including timely assessment and monitoring of mothers and newborns. Similarly, studies in sub-Saharan Africa have shown that skilled and adequately trained midwives are more likely to perform essential interventions such as early breastfeeding support, maternal danger sign assessment, and counselling (Kawuki et al., 2020). However, despite the presence of trained personnel, gaps in implementation persist, suggesting that training alone may not be sufficient to ensure comprehensive delivery of postnatal care services.

In addition to training and experience, other midwife-related factors such as workload, motivation, and supportive supervision have been shown to influence the implementation of postnatal care interventions. High patient loads and limited staffing have been associated with missed opportunities for care, particularly for non-emergency components such as counselling and health education (Kemei et al., 2021). Furthermore, supportive supervision and continuous professional development have been identified as key facilitators of improved provider performance and adherence to clinical protocols (Kisakye et al., 2017). Studies in Uganda and Ghana have also demonstrated that midwives working in environments with regular feedback and mentorship are more likely to implement recommended care practices consistently (Namutebi et al., 2023; Yevoo et al., 2020). These findings suggest that while individual competencies are important, the broader work environment and support systems play a crucial role in shaping midwives' ability to deliver high-quality targeted postnatal care but it was not known if it is the case in the current setting.

III. METHODOLOGY

3.1 Study Design

A descriptive and analytical cross-sectional study was conducted to assess the implementation of targeted postnatal care (TPNC) and its associated factors among midwives, mothers, and health facilities in Kakamega County, Kenya. The study quantitatively measured the level of TPNC implementation and associated factors, while the qualitative component explored contextual influences on implementation.

3.2 Study Setting

The study was conducted in selected public health facilities in Kakamega County, western Kenya. The county has a high burden of maternal and neonatal morbidity and mortality and comprises a network of referral and primary-level facilities offering maternal and newborn care services.

3.3 Study Population

The study population included: Midwives providing postnatal care services in selected facilities Postnatal mothers attending postnatal clinics during the study period *Eligibility Criteria: Inclusion Criteria;* Midwives actively involved in postnatal care provision Mothers attending postnatal care services at selected facilities Individuals who provided written informed consent *Exclusion Criteria;* Midwives not directly involved in postnatal care or absent during data collection Mothers who were critically ill or unable to respond

3.4 Sample Size and Sampling Procedure

A sample size of 160 midwives was determined using standard formulas for cross-sectional studies, considering population size, confidence level, and margin of error. This probability Proportionate to Population Size (PPS) formula was used where N=256 midwives in the selected facilities.

n= (Z^2 pq)/n

Where;

n= the required minimum sample size

p= estimated proportion of the target population who have the characteristics being measured

q=1-p

d=level of statistical significance sat at +or – 5% or 0.05

z=SD corresponding to 95% or Confidence level=1.96

n=((1.96)^2(0.64)(0.36))/(0.5)^2

n=354

Since the Population (N) is less 10,000, the final sample size (nf) was:

nf=n/(1+n/N)

nf=354/(1+(354/256))

nf=145

10% was added for non-response:

145×0.1= 14.5=15

Therefore, the final sample size was:

n=145+15 = 160 midwives

A multistage sampling approach was employed, where health facilities based were first stratified based on levels of service provision. Then proportionate allocation of participants across facilities was done and ultimately random sampling of eligible midwives within facilities was done

3.5 Data Collection Procedures

Data was collected using a structured interviewer-administered questionnaires for midwives. Research assistants were trained prior to data collection on study procedures, ethical conduct, and tool administration. Data collection tools were pretested in similar settings and refined accordingly. Data were collected after obtaining permission from relevant authorities and facility management and securing written informed consent from participants. Study Variables: Dependent Variable was the implementation of targeted postnatal care (TPNC), measured based on adherence to recommended postnatal care interventions at scheduled visits. While the Independent Variables included; Midwife factors: age, sex, level of training, years of experience, EmONC training, supervision

3.6 Data Analysis

Quantitative data were analyzed using SPSS version 25 where descriptive statistics (frequencies and percentages) summarized participant characteristics and TPNC implementation and multivariable logistic regression identified independent predictors of TPNC implementation. A p-value of <0.05 was considered statistically significant.

3.7 Ethical Considerations

Ethical approval was obtained from relevant institutional review bodies (MMUST/IERC/183/2023) and regulatory authorities (NACOSTI/P/23/29537). Permission to conduct the study was granted by Kakamega County health authorities and participating facilities. All participants provided written informed consent prior to participation. Confidentiality was maintained by anonymizing data and restricting access to authorized personnel only. Participation was voluntary, and respondents were free to withdraw at any time without penalty.

IV. FINDINGS & DISCUSSION

4.1.1. Sociodemographic characteristics of the midwives

The midwives' mean ages was 36.76±7.64 years, with 49.38% of the midwives aged up to 35 and 50.63% aged over 35. In terms of gender distribution, 23.75% were male, while 76.25% were female. Five percent of the midwives held a certificate level training, midwives 71.25% held a diploma, 21.88% held a degree, and 1.88% had a master's degree. Furthermore, 100 midwives (62.50%) were trained in E ergency Obstetric and Newborn Care (EMONC) with 35.63% having worked over 10 years. Table 1 presents the sociodemographic characteristics of the midwives from a descriptive analysis with frequencies representing counts and percentages representing the proportion of counts within each particular grouping characteristic.

Table 1

Sociodemographic characteristics of the midwives

Characteristics		**Frequency**	**Percent**
Age (Years)	Up to 35	79	49.38
	> 35	81	50.63
Sex	Male	38	23.75
	Female	122	76.25
Level of training	Certificate	8	5.00
	Diploma	114	71.25
	Degree	35	21.87
	Masters	3	1.88
Is EmONC trained	Yes	100	62.50
	No	60	37.50
Years worked (10.71±8.65)	Up to 10	103	64.37
	>10	57	35.63

Descriptive analysis with frequency representing the counts and percent the proportion of the counts within particular grouping characteristic

4.1.2 Immediate Postnatal Care Implementation

The mean percentage level of implementation of immediate PNC interventions for mothers was 65.09%, with a standard deviation of ±16.99. Approximately 56.88% reported performing uterine palpation to aid in the uterine involution and postpartum recovery with only 48.13% assessing for maternal danger signs within the first 48 hours post-delivery. A majority (61.88%) of the nurses reported assisting the mothers to initiate breastfeeding early. About only 20% of the nurses reported giving health education to the mothers on HIV testing immediately after childbirth. The descriptive analysis of 48-hour post-delivery care by midwifes is as shown in Figure 1.

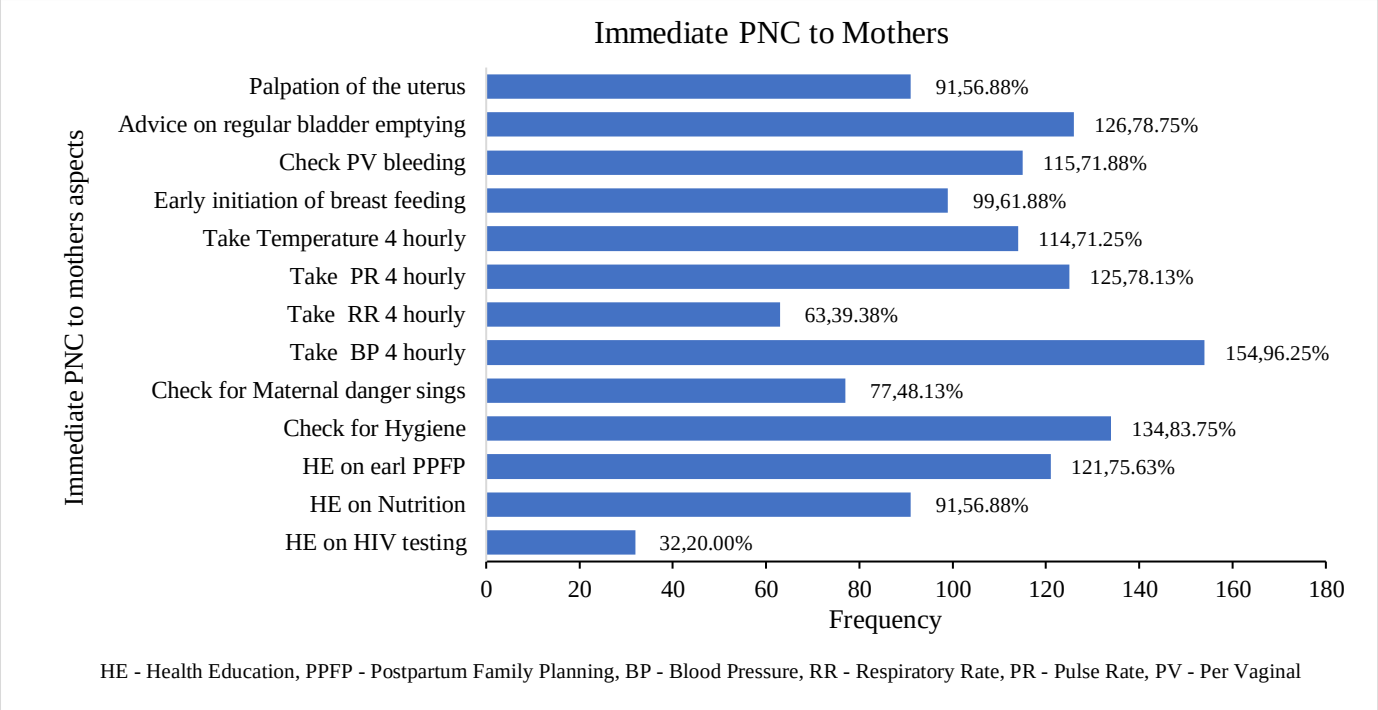

Figure 1
Immediate postnatal care implementation

4.1.3 Midwife factors influencing TPNC implementation

The linear regression analysis of staff sociodemographic factors influencing the implementation of targeted postnatal care (TPNC) did not yield statistically significant results, as presented in Table 2. The regression model was not statistically significant ($F(5,154) = 0.66$, $p = 0.650$), indicating that the included predictors did not significantly explain variation in targeted postnatal care implementation. The model accounted for only 2.1% of the variance ($R^2 = 0.021$), suggesting that the variables included have limited explanatory power. The regression coefficients and associated statistics for each sociodemographic factor are as follows; age (Years) (B: 0.72, 95% CI: -4.51 - 5.96, t = 0.27, p = 0.785), Sex (B: -1.50, 95% CI: -6.98 - 3.97, t = -0.54, p = 0.589), being EMONC trained (B: -1.90, 95% CI: -6.99 - 3.20, t = -0.74, p = 0.463), length of practice as a nurse (Years) (B: -0.04 (95% CI: -0.35 - 0.27), t = -0.25, p = 0.802), and level of training (B: 4.33, 95% CI: -1.11 - 9.78, t = 1.57, p = 0.118). None of the sociodemographic factors showed statistically significant associations with the implementation of TPNC, as indicated by their p-values, which were all greater than the threshold of 0.05. Therefore, these factors may not be significant predictors of TPNC implementation in this context. They imply that other factors, likely at the health system or facility level, may play a more substantial role in influencing TPNC implementation.

Table 2
Midwife factors influencing implementation of TPNC

Midwife factors	B	95% CI	t	P Value
Age (Years)	0.72	-4.51 - 5.96	0.27	0.785
Sex	-1.50	-6.98 - 3.97	-0.54	0.589
EmONC trained	-1.90	-6.99 - 3.20	-0.74	0.463
Length of practice as a nurse (Years)	-0.04	-0.35 - 0.27	-0.25	0.802
Level of training	4.33	-1.11 - 9.78	1.57	0.118

Linear regression analysis of staff sociodemographic factors influencing implementation of TPNC Model statistics F (5,154) =0.66, P=0.650, R^2=0.021, P<0.05, Dependent variable is Overall PNC, EmONC – Emergency Obstetric and Newborn Care)

4.2 Discussion

The findings on the sociodemographic characteristics of midwives indicate a relatively balanced age distribution with a slight predominance of those above 35 years, alongside a predominantly female workforce and a diploma-level training profile. This reflects the typical structure of the midwifery workforce in many low- and middle-income

countries, where diploma-level training remains the primary entry point into practice (Kawuki et al., 2020). The proportion of midwives trained in Emergency Obstetric and Newborn Care (EmONC) (62.5%) is encouraging, as such training is expected to strengthen competencies in maternal and newborn care. Empirical evidence suggests that training programs such as EmONC are associated with improved adherence to clinical guidelines and enhanced provider performance (Kebede et al., 2021). However, the relatively low proportion of degree and postgraduate-trained midwives suggests limited advanced clinical and critical care capacity, which may influence the quality and comprehensiveness of postnatal care services. Similar workforce profiles have been reported across sub-Saharan Africa, where shortages of highly trained personnel and skill-mix imbalances continue to affect the quality of care delivery, particularly during critical periods such as the immediate postnatal phase (Kemei et al., 2021). From a theoretical perspective, these findings align with the Donabedian model, which emphasizes that provider competencies, as part of structural inputs, are essential for enabling quality care processes (Donabedian, 1988).

The level of immediate postnatal care implementation observed in this study (mean 65.09%) indicates suboptimal adherence to recommended guidelines, particularly in essential components such as assessment of maternal danger signs and provision of health education. While practices such as early breastfeeding initiation and uterine palpation were moderately implemented, critical gaps remain in preventive and educational interventions, with only 20% of midwives providing HIV-related health education immediately after childbirth. These findings are consistent with previous studies that have documented incomplete adherence to postnatal care protocols, especially for counselling and comprehensive assessment components (Sacks et al., 2022; Yevoo et al., 2020). The low coverage of danger sign assessment is particularly concerning, given its importance in early identification and management of life-threatening complications. Such gaps may reflect competing workload demands, time constraints, and insufficient emphasis on patient education, all of which have been widely reported barriers to quality postnatal care implementation (Kemei et al., 2021). Within the framework of implementation fidelity, these findings suggest that although guidelines exist, the extent to which they are delivered as intended remains limited, highlighting gaps between policy and practice (Carroll et al., 2007).

Despite the observed variations in implementation, this study found no statistically significant association between midwives' sociodemographic characteristics and TPNC implementation. The regression model explained only a minimal proportion of variance ($R^2 = 0.021$), suggesting that factors such as age, sex, level of training, years of experience, and EmONC training alone may not adequately predict implementation outcomes in this setting. This finding may partly be explained by the restricted range of predictor variables, as many participants shared similar characteristics, thereby limiting the variability required to detect significant associations. While this contrasts with some studies that have identified training and experience as significant predictors of care quality (Kebede et al., 2021), it aligns with growing evidence that health system and contextual factors—including workload, staffing levels, supervision, and availability of resources—play a more critical role in shaping care delivery than individual provider characteristics (Kisakye et al., 2017; Namutebi et al., 2023). From a theoretical standpoint, this reinforces the Donabedian model's assertion that structural and organizational factors strongly influence care processes and outcomes, and supports the notion that implementation fidelity is shaped not only by provider competence but also by contextual enablers and constraints (Carroll et al., 2007). It is therefore plausible that facility-level constraints may override individual competencies, limiting the ability of midwives to fully implement recommended TPNC interventions. These findings underscore the need for interventions that go beyond individual capacity building to address broader system-level barriers in order to improve the quality and consistency of targeted postnatal care.

V. CONCLUSION & RECOMMENDATION

5.1 Conclusions

This study found that the implementation of targeted postnatal care (TPNC) among midwives in selected health facilities in Kakamega County is suboptimal, particularly in critical components such as maternal danger sign assessment and health education. Although some core clinical practices, including uterine palpation and early initiation of breastfeeding, were moderately implemented, essential preventive and counselling interventions were inconsistently provided. The study further established that midwives' sociodemographic characteristics were not significant predictors of TPNC implementation. This indicates that individual-level attributes alone are insufficient to explain variations in implementation, pointing instead to the likely influence of health system and contextual factors. Therefore, improving TPNC implementation requires a broader systems approach rather than focusing solely on individual provider characteristics.

5.2 Recommendations

There is a need for the Ministry of Health and county health departments to strengthen health system capacity by addressing structural barriers such as staffing shortages, workload, and availability of essential resources. Ensuring adequate staffing levels and equitable distribution of midwives across shifts will enable providers to deliver

comprehensive postnatal care as recommended. Future research should use direct observation of postnatal care (not self-report) and measure facility-level and system-level determinants of TPNC implementation, including workload, organizational culture, and service delivery models. Longitudinal and interventional studies are recommended to establish causal relationships and evaluate strategies to improve implementation.

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