# Perceived Quality of Health Care Provided to Mothers during Immediate Postpartum Period at Health Facilities in Kakamega County, Kenya

Obulemire Edriey Ronniey[1]*, James Ogutu[2], Gilbert Munyoki[3], Monicah Wambugu[4]

[1]Masters Student in the Department of Population, Reproductive Health and Community Resource Management, Kenyatta University. Bachelor of Science in Nursing Degree Holder, Kenya

[2]Department of Medical Microbiology and Parasitology, Kenyatta University, Kenya

[3]Department of Internal Medicine, Kenyatta University, Kenya

[4]Department of Population and Reproductive Health, Kenyatta University, Kenya

## Abstract

*Health care workers are essential in averting the high infant and mortality rates in Kenya. The immediate postpartum period is a delicate period when the mother and infant's health is in danger with evidence indicating the majority of deaths occurring during this period. The aim of the study was to assess mothers' perception of quality of care during the immediate postpartum period in selected facilities in Kakamega County in Kenya. Socio-demographic factors, knowledge and health services provided during the immediate postpartum period were evaluated. A cross-sectional descriptive study design to collect quantitative data was adopted. Self-administered questionnaires were utilized to collect data. The study participants were 257 postnatal mothers who were systematically sampled from facilities within Kakamega County. Quantitative data was analyzed using SPSS version 21.0. Descriptive statistics were used to present quantitative data in frequency tables, charts, and graphs. Inferential statics were done using Chi-Square tests at a 95% confidence interval (p<0.05). The results revealed majority of the women perceived the quality of postpartum care as slightly above average at 3.18(63.6%). 58.1% of participants had high knowledge on immediate postpartum care. Knowledge level (p = 0.018) had a significant association with the perceived postpartum care quality. Socio-demographic factors such as age (p=0.014), education (p=0.001), and parity (p=0.029) were associated with the perceived quality of postpartum care. Availability of family planning (p=0.050), immunization (p=0.001), and nutritional counseling services (p=0.012) was associated with the perceived quality of postpartum care. In conclusion the perceived quality of postpartum care was slightly above average with availability of health services positively influencing perception.*

*Keywords: Perception, Quality, and Immediate postpartum care.*

## Introduction

The immediate postpartum period is a delicate period when the mother and infant's health is in danger. According to [1], most infant and maternal deaths occur during the immediate postpartum period. Compared to developed countries like Singapore which in 2019 had a maternal mortality rate of 2.5 per a hundred live births [2], Kenya's maternal mortality rates are very high at 342 per a hundred thousand live births [3]. The most common causes of immediate post-partum neonatal mortalities are birth asphyxia, preterm birth, and neonatal sepsis. The predominant cause of maternal deaths within the first twenty four hours was found to be postpartum hemorrhage. If proper interventions are instituted within these first twenty-four hours,

maternal and neonatal deaths would significantly be reduced [4].

Kenya was ranked highest in some of the countries worldwide in infant mortality rates. [3] report of 2022 indicates that infant mortality rates stand at 31.771 deaths per 1000 live births. These figures are considerably high compared to developed countries such as Britain, which had 3.422 deaths per 10000 live births [5]. The [6] report ranked Kakamega County as the fifth highest in Kenya with high maternal mortality rates. The maternal mortalities were categorized into mortalities that occur during pregnancy, delivery, and after two months after delivery. Kakamega County came 6th nationally in maternal deaths occurring after two months' delivery with thirty six maternal deaths out of 100,000 live births occurring during the two months post-delivery.

The main objective of the study was to assess the perceived quality of healthcare provided to mothers by healthcare workers during the immediate post-partum period in Kakamega County, Kenya. The specific objectives under study were to determine the socio-demographic factors associated with perceived quality of healthcare provided to mothers during the immediate, to establish the healthcare services provided by healthcare workers to mothers during the immediate postpartum period, and to determine the knowledge level on postpartum care components among immediate postpartum mothers in Kakamega County.

## Materials and Methods

A descriptive cross-sectional study design was used. The independent variables under study were socio-demographic factors, maternal knowledge and health care services offered to mothers during the immediate post-partum period. Socio-demographic factors associated with perceived quality of postpartum care included educational level, religion, parity, income, marital status, and age measured using a checklist. The healthcare services provided to mothers in the immediate post- partum period such as family planning, nutritional counseling, breast examination and immunization were evaluated. The dependent variable was the perceived quality of postpartum care. The study was administered to women who delivered in selected public health facilities in Kakamega County within the first twenty fours following delivery. The study population included 600 mothers in the immediate postpartum period and selected during the study period from the hospital records. The study included all mothers following delivery in the first twenty-four hours at the selected health care facilities in Kakamega County and who had consented to participate in the study. Mothers who were very sick and in critical health condition and were not mentally sound to participate in the study were excluded from the study.

## Sample Size Determination

The researcher used the Fisher et al 1998 (7) formula to determine the sample size for more than 10,000 and corrected for a population less than 10,000 as:

Where:

n = desired sample when the population is more than 10,000.

N=Estimated population, which was 600.

z = is the normal standard deviation at 95% confidence interval, which is 1.96.

p = is the prevalence of the sample with desired characteristics in the study. The assumption is 50% have the desired characteristics (Mugenda & Mugenda 2003).

q = 1-p which is 0.5.

d = is the desired margin of error at a 95% confidence interval which is 0.05.

nf=desired sample when the estimated population is less than 10000.

Therefore:

=384.

Therefore, since the sample is less than 10,000, the selection was adjusted as follows:

=234. The sample was adjusted by 10% (23) to cater to the non-responses. Therefore, the sample size was **257** postpartum mothers.

Stratified sampling method was utilized to identify the tier of public health facilities in Kakamega County as per the Ministry of Health. These included level 2 facilities which are dispensaries, Level 3 facilities which are health centers, Level 4 facilities which include Sub county Health Hospitals and Level 5 facilities which comprised of County Referral Hospital. Kakamega County General Referral Hospital is the only general hospital in Kakamega County that was purposively selected. The remaining Level 2, Level 3, and Level 4 health facilities were selected using a

simple random sampling method from the master list at Kakamega County Ministry of Health Department. 5- Level two, 3 - Level three, 2 – Level four and one Level 5 facilities were randomly selected. A systematic sampling method was used to choose mothers who met the inclusion criteria from the selected health facilities. Every mother was chosen at the $n^{th}$ number from the determined interval calculated by dividing the total population by desired sample size. $2^{nd}$ postpartum mothers from each facility were included until the sample size of 257 participants was reached. The respondents selected from each facility were proportional to the number of postpartum mothers in the facility, as shown in Table 1 below.

**Table 1.** Sampling Frame

| MOH Classification levels | Master list of public facilities in Kakamega County | Facilities selected | Estimate population | Sample size |
|---|---|---|---|---|
| Level 5 | 1 | 1 | 306 | 131 |
| Level 4 | 16 | 2 | 174 | 75 |
| Level 3 | 24 | 3 | 77 | 33 |
| Level 2 | 40 | 5 | 43 | 18 |
| **Totals** | **97** | **13** | **600** | **257** |

Questionnaires were used as the primary data collection tool. The questionnaire was formulated from various policy documents and guidelines from Ministry of Health and World Health Organization. These included [8-11]. Validity of research tools was maintained through expert review of study tools by my supervisors. The study adopted sampling methods that resulted in a randomized and representative sample. Random sampling techniques and uniformity of the sampled population ensured internal validity. Many participants were randomly selected to ensure external validity [7].

The appropriate selection of research assistants ensured the reliability of research instruments. They were adequately trained and familiarized with the study area and topic of research before data collection. The research questionnaires were pre-tested at Lurambi Sub

County Hospital before the actual study and necessary amendments were done.

## Data Collection Techniques

A total of 257 questionnaires were administered to the selected participants who had consented. Regarding the perceived quality of care offered to mothers during the immediate postpartum period, the participants were given a set of ten (10) statements on a Likert score scale between 1-5, where "1" means strongly disagree, and "5" means strongly agree. These sets of statements were assessed using a 5-point Likert scale based on quality perception scores. The views were drawn from the quality indicators of tangibility, reliability, responsiveness, assurance, and empathy. The perceived quality service index was derived by summation and averaging all quality perception responses (scores) of each construct from the five quality elements of care. Data collection on

knowledge of postpartum care and its association with the perceived quality of postpartum care was graded using six (6) questions the postpartum care components. The six (6) questions on knowledge were graded from zero to six. Every right response was rated one, while an inaccurate response was rated zero. The knowledge results were then categorized into low knowledge levels (0-3 scores) and high knowledge levels (3-6 scores).

## Data Analysis and Presentation

The analysis was done by use of Statistical Package for Social Sciences version 21.0. Descriptive statistics were computed, summarized, and presented in pie charts, graphs, and frequency tables. Inferential statistics were computed with the use of chi-square tests at a ninety-five per cent confidence interval with a p-value of less than 0.05 being considered statistically significant. An association between independent and dependent variables was then made.

## Ethical Consideration

The research sought authorization from Kenyatta University Graduate School. Kenyatta University Ethics Review Committee granted ethical approval. The researcher also sought a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI). Research permission was sought from the Kakamega County government through the Ministry of Health. Approval was sought through the hospital administrators in the specifically selected hospitals within the county. Informed consent from respondents was sought before obtaining information from them. The confidentiality of respondents was protected through non-disclosure of their identity throughout the study.

## Results

A total of 257 questionnaires were administered to selected mothers in postnatal wards during the immediate postpartum period in selected health facilities in Kakamega County, Kenya. Appropriately filled questionnaires were considered for analysis. 241 questionnaires denoting a 93.77% response rate were found suitable for analysis.

**Table 2.** Distribution of Socio-Demographic Characteristics among Participants (N=241)

| Variable | Respondent response | Frequency (N) | Percentage (%) |
|---|---|---|---|
| Age in years | ≤ 19 | 34 | 14.1 |
| | **20-29** | **86** | **35.7** |
| | 30-39 | 72 | 29.9 |
| | 40-49 | 49 | 20.3 |
| Marital status | Single | 53 | 22.0 |
| | **Married** | **164** | **68.0** |
| | Divorced/Widowed | 24 | 10.0 |
| Religion | **Christians** | **227** | **94.2** |
| | Muslims | 14 | 5.8 |
| The highest level of education attained | Primary | 48 | 19.9 |
| | **Secondary** | **136** | **56.4** |
| | Tertiary | 57 | 23.7 |
| Parity | 1 | 81 | 33.6 |
| | **2-3** | **92** | **38.2** |
| | > 3 | 68 | 28.2 |
| Income | ≤ 10,000 | 73 | 30.3 |

| | 10,001-20,000 | 77 | 32.0 |
|---|---|---|---|
| | 20,001-30,000 | 58 | 24.1 |
| | ≥ 30,001 | 33 | 13.7 |

**Table 3.** Influence of Socio-Demographic Factors on Perceived Quality of Postpartum Care

| Independent variable | Respondent response | Perceived quality of postpartum care | | Percentage (%) |
|---|---|---|---|---|
| | | Low (N=105) | High (N=136) | |
| Age in years | ≤ 19 | 16(47.1%) | 18(52.9%) | $\chi^2$=10.567 |
| | 20-29 | 50(58.1%) | 36(41.9%) | df=3 |
| | 30-39 | 29(40.3%) | 43(59.7%) | p=0.014 |
| | 40-49 | 10(20.4%) | 39(79.6%) | |
| Marital status | Single | 38(71.7%) | 15(28.3%) | $\chi^2$=6.491 |
| | Married | 54(32.9%) | 110(67.1%) | df=2 |
| | Divorced/Widowed | 13(54.2%) | 11(45.8%) | p=0.079 |
| Religion | Christians | 100(44.1%) | 127(55.9%) | $\chi^2$=11.475 |
| | Muslims | 7(50.0%) | 7(50.0%) | df=1 |
| | | | | p=0.051 |
| Highest level of education attained | Primary | 15(22.3%) | 52(77.6%) | $\chi^2$=13.610 |
| | Secondary | 51(37.5%) | 85(62.5%) | df=2 |
| | Tertiary | 39(81.3%) | 9(18.7%) | p=0.001 |
| Parity | 1 | 45(55.6%) | 36(44.4%) | $\chi^2$=11.478 |
| | 2-3 | 39(42.4%) | 53(57.6%) | df=2 |
| | > 3 | 19(27.9%) | 49(72.1%) | p=0.029 |
| Income | ≤ 10,000 | 32(44.4%) | 41(55.6%) | $\chi^2$=4.047 |
| | 10,001-20,000 | 39(50.6%) | 38(49.4%) | df=3 |
| | 20,001-30,000 | 24(41.4%) | 34(58.6%) | p=0.256 |
| | ≥ 30,001 | 10(30.3%) | 23(69.7%) | |

The study determined the influence of socio-demographic factors on the perceived quality of postpartum care provided to mothers during the immediate postpartum period. The results showed that most 39(79.6%) of the respondents aged between 40-49 years perceived the quality of postpartum care as high. There was a significant statistical association between maternal age (p=0.014) and perceived immediate postpartum quality of care provided to mothers was identified. Most of the single mothers 38(71.7%), perceived the quality of care during the postpartum period to be low. However, no significant statistical association between marital status and perceived quality of care during the immediate postpartum period (p=0.079) was found.

The findings revealed that 39(81.3%) of the participants who had tertiary as their highest level of education attained perceived the quality of care provided in the immediate postpartum period as low. A significant statistical association between the highest level of education achieved (p=0.001) and the perceived quality of care provided to mothers during their immediate postpartum period was found.

Concerning the parity of the participants, the results further revealed that 49(72.1%) of the participants who had more than three children perceived the quality of care during the immediate postpartum period to be high. Parity and perceived quality of care provided during the immediate postpartum period was found to be statistically significant among participants (p=0.029).

**Table 4.** Provision of Immediate Postpartum care Services among Participants (N=241)

| Variable | Respondent response | Frequency (N) | Percentage (%) |
|---|---|---|---|
| Family planning counseling and initiation within 24 hours | Yes | 141 | 58.5 |
| | No | 100 | 41.5 |
| Provision of immunization to the newborn within 24 hours | Yes | 188 | 78.0 |
| | No | 53 | 22.0 |
| Breast examination by caregivers within 24 hours | Yes | 131 | 54.4 |
| | No | 110 | 45.6 |
| Blood pressure monitoring within 24 hours | Yes | 101 | 41.9 |
| | No | 140 | 58.1 |
| Lochia monitoring within 24 hours | Yes | 158 | 65.6 |
| | No | 83 | 34.4 |
| Counseled on nutritional components needed during the immediate postpartum period | Yes | 121 | 50.2 |
| | No | 120 | 49.8 |

Significant gaps in health service provision in the immediate post-partum period such as lack of breast examination in 45.6% (no= 110), lack of blood pressure monitoring in 58.1% (no=140), lack of lochia monitoring in 34.4 % (no=83) and lack of nutritional counseling in 49.8% (no=120).

**Table 5.** Association between Healthcare Services Provided and Perceived Quality of Postpartum Care among Participants (N=241)

| Variable | Respondent response | Perceived quality of postpartum care | | Statistical significance |
|---|---|---|---|---|
| | | Low(N=105) | High (N=136) | |
| Family planning counseling and initiation within 24 hours | Yes | 54(38.3%) | 87(61.7%) | $\chi^2$=3.839 |
| | No | 51(51.0%) | 49(49.0%) | df=1 |
| | | | | p=0.050 |
| Provision of immunization to the newborn within 24 hours | Yes | 71(37.8%) | 117(62.2%) | $\chi^2$=19.534 |
| | No | 34(64.2%) | 19(35.8%) | df=1 |
| | | | | p=0.001 |
| Breast examination by caregivers within 24 hours | Yes | 41(31.3%) | 90(68.7%) | $\chi^2$=11.708 |
| | No | 64(58.2%) | 46(41.8%) | df=1 |
| | | | | p=0.001 |
| Blood pressure monitoring within 24 hours | Yes | 57(56.4%) | 44(43.6%) | $\chi^2$=2.504 |
| | No | 48(34.3%) | 92(65.7%) | df=1 |
| | | | | p=0.113 |
| Lochia monitoring within 24 hours | Yes | 74(46.8%) | 84(53.2%) | $\chi^2$=1.750 |
| | No | 31(37.3%) | 52(62.7%) | df=1 |
| | | | | p=0.186 |
| Counseled on nutritional components needed during immediate postpartum period | Yes | 42(34.7%) | 79(65.3%) | $\chi^2$=6.375 |
| | No | 63(52.5%) | 57(47.5%) | df=1 |
| | | | | p=0.012 |

Provision of health services had a positive influence on the perceived quality of immediate postpartum care among participants.

## Perceived Quality of Postpartum Care

Regarding the perceived quality of immediate postpartum care, the respondents were given a set of ten (10) statements with Likert scale rating between one to five, where "one" means strongly disagree, and "five" means strongly agree. These sets of statements were assessed using a 5-point Likert scale based on quality perception scores. The statements were drawn from the quality indicators of tangibility, reliability, responsiveness, assurance, and empathy. The perceived service quality index was derived by summation and averaging all quality perception responses (scores) of each construct from the five elements of the quality of care.

The results revealed that the overall perceived quality of immediate postpartum care was 3.18(63.6%). This is as shown below:

**Table 6.** Perceived Quality of Postpartum Care among Respondents

| Quality dimension | Quality construct | Perception score | Mean perception score | Perceived quality score (%) |
|---|---|---|---|---|
| Tangibility | The facility has readily available essential drugs for postpartum care | 3.38 | 3.25 | 65.0% |
|  | The facility has adequate staff to attend to postpartum mothers | 3.11 |  |  |
| Reliability | The healthcare providers always keep you informed | 2.55 | 2.72 | 54.4% |
|  | There is the timely provision of services in this facility | 2.89 |  |  |
| Responsiveness | The care providers always allow you to ask questions | 2.59 | 3.02 | 60.4% |
|  | The care providers always listen to my complaints | 3.45 |  |  |
| Assurance | Care is always provided in a safe manner | 3.58 | 3.58 | 71.6% |
|  | The care providers maintain privacy during care provision | 3.57 |  |  |
| Empathy | Healthcare workers are sensitive and understanding | 3.04 | 3.33 | 66.6% |
|  | Healthcare workers always give you advice | 3.61 |  |  |
| **Perceived Service Quality Index** |  |  | **3.18** | **63.6%** |

Respondents' Knowledge of Postpartum Care

**Table 7.** Responses on Knowledge of Postpartum Care Among participants (N=241)

| Variable | Participants response | Frequency (N) | Percentage (%) |
|---|---|---|---|
| Recognition of maternal postpartum danger signs within 24 hours | Correct | 141 | 58.5 |
| | **Wrong** | **100** | **41.5** |
| Recognition of danger signs in new-born within 24 hours | Correct | 149 | 61.8 |
| | **Wrong** | **92** | **38.2** |
| Type of immunization provided to new-born children within 24 hours | Correct | 168 | 69.7 |
| | Wrong | 73 | 30.3 |
| Knowledge of family planning types and their importance | Correct | 152 | 63.1 |
| | Wrong | 89 | 36.9 |
| Demonstration of how to breastfeed new-born babies | Correct | 182 | 75.5 |
| | **Wrong** | **59** | **24.5** |
| Knowledge of cord care management | Correct | 125 | 51.9 |
| | **Wrong** | **116** | **48.1** |

## Level of Knowledge on Postpartum Care

This segment involved findings of knowledge on immediate postpartum care among the participants. A total of six questions on knowledge were asked with scores ranging from 0-6 marks. Every correct response was given a score of 1, while a wrong response was given a zero (0) score. Knowledge scores were further categorized into low knowledge levels 0-3, while high knowledge levels 3- 6 scores. The findings showed:
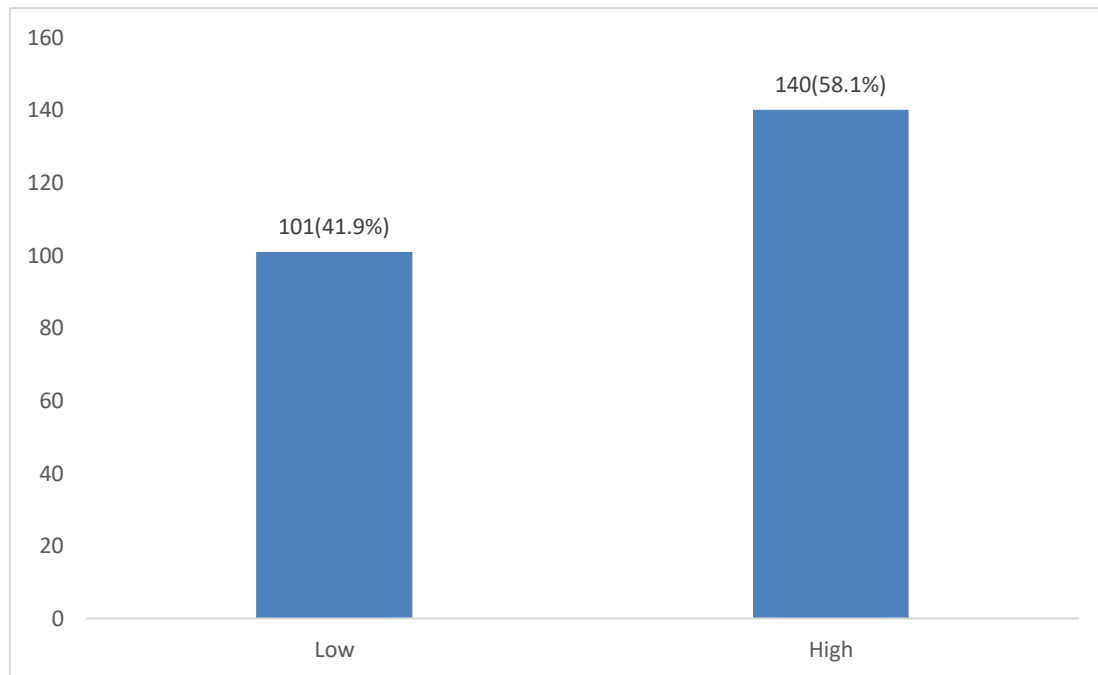


**Figure 1.** Level of Knowledge on Postpartum Care

## Influence of Knowledge on the Perceived Quality of Postpartum Care

The majority 70(69.3%) of mothers with low knowledge level perceived the quality of care provided during the immediate postpartum period to be of high quality.

**Table 8.** The Level of Knowledge and its Association with the Perceived Quality of Postpartum Care among Participants (N=241)

| Independent variable | Participants response | Perceived quality of postpartum care | | Statistical significance |
|---|---|---|---|---|
| | | Low (N=105) | High (N=136) | |
| Knowledge level on postpartum care | Low | 31(30.7%) | 70(69.3%) | $\chi^2$=5.620 |
| | High | 74(52.9%) | 66(47.1%) | df=1 |
| | | | | p=0.018 |

## Discussion

### Socio-Demographic Factors

This study revealed that most respondents were aged between ages 20 to 29 years 86 (35.7%). These findings agree with [12] Kenya Demographic Health Survey 2014 findings that the age-specific fertility rate has increased, with most women giving birth between the ages of 20 to 29 years.

The study findings also concur with [13] findings that showed most women with standard normal delivery belonged in the age bracket 20 to 35 years 1074 (84.9%).

### Influence of Socio-Demographic Factors on the Perceived Quality of Postpartum Care

Of the respondents who had attained tertiary education, 39 (81.3%) perceived the quality of care offered in the immediate postpartum period as low. This factor may be associated with their ability to read and infer from guidelines and standards found in print and electronic media compared to their counterparts who lacked formal schooling. This thinking agrees with the findings of [14] that showed daily listening to radio by women resulted in them reporting low-quality scores of obstetric care offered. These findings concur with [15] that attainment of formal education positively correlates with utilization of postnatal care and that women who have higher educational attainment have an ability to make appropriate judgments of the quality of care provided.

### Provision of Postpartum Services

A slight majority of the respondents, 140 (58.1%), reported that blood pressure had not been taken on them within the first 24 hours after delivery. This report indicates that blood pressure monitoring during the immediate postpartum period should be strengthened, considering that most deaths and morbidities occur during this period [9, 10, 11, 16, 17].

Blood pressure monitoring enables prompt identification of postpartum haemorrhage, hypotension, hypertension, renal failure, ischemic stroke, and pulmonary edema, to mention a few [1, 10, 11, 17]. Blood pressure monitoring is one of the best ways to identify and promptly manage the above complications [1, 9, 10, 11, 18].

These study findings agree with [19] that there is a need to improve vital signs monitoring for obstetric hospitalizations with his study revealing that less than one per cent of post-partum mothers had received high-quality monitoring in the initial four hours post-delivery.

Another study by [20] showed that vitals monitoring was suboptimal for post-natal mothers thus agreeing with this study's findings

that more needs to be done to improve this indicator.

Lochia monitoring during the immediate postpartum was done in 65.6% of the women, and it is a good practice that enables early detection and management of postpartum hemorrhage.

Women who are experiencing heavy bleeding can easily be identified and prompt actions taken. Abnormal postpartum haemorrhage may indicate retained products of conception; hence women can benefit from uterine evacuation and curettage [16]. Experiences such as passing heavy clots frequently, bleeding increasing rather than decreasing, lochia that smells highly unpleasant, accompanied by fevers, frequent dizziness, increased heartbeat, frequent chills, and intense pain indicate that action must be taken by a health care provider. However, despite this, a significant population of 34.4 % is still not monitored. This percentage may justify why postpartum hemorrhage continues to be a big concern of maternal mortality in Kenya.

A significant portion of the women, 45.6% (n= 110), had not done a breast examination despite being an essential indicator in identifying challenges that may occur when breastfeeding, such as engorged breasts, and cracked painful nipples that may pose enormous difficulties with breastfeeding. Nutritional counselling was not done in almost half of the patients 49.8% (n=120).

This percentage may justify why stunting, wasting, and underweight continue to be prevalent in infants in Kenya, with protein-energy malnutrition being the highest as per [21-23] research studies. The findings of lack of nutritional counselling in 49.8% of the respondents disagree with [13] study findings that showed 93.65% of the women in the immediate post-partum period were done nutritional counseling and commenced breastfeeding within the first hour after delivery.

## Influence of Postpartum Services on the Perceived Quality of Postpartum Care

The study findings showed that the availability and provision of services such as family planning services, immunization to the newborn, physical breast examination, and nutritional counselling remarkably affect the perceived quality of health services offered. Provision of the above services improves the perceived quality of care and ultimately has a bearing on better clinical outcomes of both the mother's and infant's health.

## Perceived Quality of Postpartum Care Services Provided

The respondents perceived the availability of essential drugs for postpartum at 65% (3.38 out of 5). This report implies that 35 % of the respondents perceived essential medicines as being in shortage. This percentage is very high considering that this is significantly likely to negatively impact the maternal health services quality resulting in maternal and infant mortalities and morbidity. Shortage of essential drugs and medical supplies is a challenge and was equally identified by [24].

The acute shortages of emergency obstetric care drugs were also noted by [24] it negatively affected staff morale and often created a challenging working environment for healthcare workers.

Study findings by [25] concur with these study findings since the majority of the district hospitals in South Africa lacked essential medical supplies and assistive devices. The perceived quality of services provided to mothers and neonates during the immediate post-partum period was at 63.6 %. The findings are like [26] study findings that found the perceived quality of basic emergency and newborn care services in Ethiopia to be at 66.7%, which is poor as per recommended standards. Inadequacy of drugs and equipment being a major concern was also found to be a major concern in both studies.

Lack of essential drugs for postpartum care at 35% may likely contribute to delays in providing timely health care services as a significant population at 42.2% of the respondents felt the provision of convenient health services was delayed. More factors need to be looked into that may be contributing to delays in the provision of timely health services. A significant population of 45.6% felt that the health care providers did not adequately educate them on postpartum care components.

These findings agree with [27] study findings that showed there is a need to strengthen maternal health education in the immediate postpartum period, with his findings showing as high as 65.5% of the sampled 510 mothers had inadequate knowledge of essential newborn care. Both studies identified knowledge gaps in cord care, thermal care, and breastfeeding. A significant number of mothers sampled 45.6 % felt that they were not adequately empowered with knowledge regarding postpartum care components. These findings agree with [28, 29] study findings that postnatal mothers had insufficient and inappropriate information knowledge on postnatal care components. [29] The study further reveals that mothers had insufficient knowledge of danger signs indicative of breathing, jaundice, dehydration, fistula, and jaundice in children and challenges with self-care pre-discharge. Most of the women, 66.6%, felt that the healthcare workers were sensitive and understanding, safely provided care 71.6%, and always kept them informed 54.4%. These findings are recommendable because open lines of communication before, during, and post-discharge improve and optimize patient experiences and improve patient self-care. Many problems reported after delivery, such as difficulty with breastfeeding, urinary tract infection, painful perineum, headache, faecal incontinence, abnormal bleeding, and illness, can be detected and managed early reducing the risk of re-hospitalizations [1, 4, 30].

## Respondents' Knowledge of Postpartum Care

Concerning recognizing danger signs in newborn babies within 24 hours, a significant population of 92(38.2%) could not identify infant danger signs justifying why infant mortalities in Kenya are still high at 32.9 per 1000 live births. A significant population of 100 (41.5%) were not able to recognize maternal postpartum danger signs. This report indicates that healthcare workers require more effort to strengthen education on maternal danger signs. Also [31] study concurs with these study findings that most mothers are unable to identify neonatal danger signs such as difficulty in breathing, convulsions, lethargy, and inability to breastfeed. The findings of [32] agreed with the two studies above, with more than half of the women in his study having low knowledge levels of neonatal care.

Concerning respondents' knowledge of cord care and management, a significant population, 116 (48.1%), could not explain how to manage cord care, which is a likely indicator of why neonatal sepsis remains the foremost cause of neonatal mortality and morbidity in Kenya. Detection of wet cords with pus or blood, infection, and other danger signs was equally identified to be very low by [21] in Nairobi County with a low proportion (20%) of the mothers being able to identify these danger signs.

Findings revealed poor cord care practices were high, with an array of substances such as the application of charcoal powder, shells, banana steam, and fishbone and saliva being high [33]. These findings agree with this study's findings because a high population of 116 (48.1%) of the sampled population did not know about cord care and hence needed to strengthen cord care management among mothers pre-discharge.

The respondents were also requested to demonstrate how to breastfeed their newborn babies. The results showed that 182(75.5%) of the respondents scored correctly while the rest,

59(24.5%), were wrong. These findings disagree with the conclusions from [34] that identified a tiny proportion of mothers at 29% had the correct breastfeeding technique in which the baby's chin touches the breast during breastfeeding while the lower lip turned outward. In addition, [34] findings revealed that the correct positioning and breastfeeding attachment technique was found only in 7.5% of the mothers, unlike this study in which 185 (75.5%) had the proper technique.

Found that the position of mother and infant during breastfeeding was more flawed among 38.1% of women visiting a health facility in Areka in Southern Ethiopia [35]. The findings are consistent with these study findings that show a significant population of 59 (24.5%) have poor knowledge of positioning and attachment during breastfeeding.

## Conclusions

1. Socio-demographic factors such as advanced maternal age, low education attainment, and high parity positively impact the maternal perception of the quality of immediate postpartum care.
2. Several gaps in service provision such as lack of blood pressure monitoring, lochia monitoring, breast examination and nutritional counseling services were not provided in a substantial population of mothers in the immediate postpartum period.
3. Post-partum services such as immunization of the newborn, physical examination, blood pressure monitoring, family planning, lochia monitoring and nutritional counselling positively influence the

perceived quality of immediate post-partum care provided during the immediate postpartum period.
4. The research study revealed that respondents with low knowledge levels perceived the quality of immediate post-partum care to be of high quality. The study also found that a significant population of mothers could not recognize maternal danger signs, infant danger signs, and safe cord care practices at 41.5%, 38.2% and 48.1% respectively.

## Acknowledgement

## Ethical Approvals

The research sought authorization from Kenyatta University Graduate School. Kenyatta University Ethics Review Committee granted ethical approval. The researcher also sought a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI). Research permission was sought from the Kakamega County government through the Ministry of Health. Approval was sought through the hospital administrators in the specifically selected hospitals within the county. Informed consent from respondents was sought before obtaining information from them. The confidentiality of respondents was protected through non-disclosure of their identity throughout the study.

## Conflict of Interest

No conflict of interest to declare.

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