Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

East African Journal of Health and Science
eajhs.eanso.org
Volume 7 Issue 1, 2024
Print ISSN: 2707-3912 | Online ISSN: 2707-3920
Title DOI: https://doi.org/10.37284/2707-3920

EAST AFRICAN NATURE & SCIENCE ORGANIZATION

Original Article

An Investigation into how Primary Care Nurses Practices affect clinical competence in Emergency Maternal Obstetric and Newborn Care skills in Nakuru County

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Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

Date Published:

20 August 2024

Keywords:

Primary Care Nurses' Practices, Competence in EMONC Skills, Neonatal Care, Maternal Care.

ABSTRACT

To reduce the risks of maternal morbidity, mortality and newborn death worldwide, the use of high-quality emergency obstetric and new born care (EMONC) was proposed to ensure women and their babies receive high-quality care. The government of Kenya with non-profit health programs have jointly invested resources with the aim of achieving SDG's goal of zero rating maternal and neonatal death cases in the country. Despite these efforts, maternal and neonatal death cases have not reduced significantly. Most of the contributing factors to the deaths occur in the lower levels of the health care delivery system. Majority of the health care providers at these levels are the primary care nurses. It is on this background that the study sought to investigate how primary care nurses practice affect clinical competency in emergency maternal, obstetric, and new born care skills in Nakuru county. Madeleine Leininger's Transcultural Theory of Nursing anchored the study. It deployed correlational cross-sectional survey design, targeting midwives and nurses in 184 KEPH level II and III facilities in all the 11 sub counties in Nakuru County. The study used stratified sampling technique to sample 126 health facilities distributed in every Sub County. A sample size of 196 primary health care nurses from the sampled facilities were involved. Key informant interview and questionnaires were used to collect both qualitative and quantitative data. To analyze data, SPSS version 26 was used to generate inferential and descriptive statistics, correlation analysis was carried using multiple regression model to ascertain the relationship between dependent and independent variables. Results found that Maternal and newborn care practice was found to have a significant positive relationship with competence in EmONC skills. ($P<0.05$). This was achieved through clean and safe delivery, thermal care and cord care which were carried out in KEPH level II and III facilities. It was concluded that maternal and neonatal care practices had positive significant relationship with competent EmONC. The study advised that the practice of fundamental maternal and newborn care has to be improved. The primary care nurses should be culturally competent in engaging the community members. Through community-based health care efforts, mothers need to be sensitized about delayed bathing, umbilical cord care,

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

feeding, and thermal care for newborns. Further, County Government of Nakuru should support programs that enable primary health care nurses pursue maternal and neonatal care courses. County Government of Nakuru should ensure ambulance services are easily accessible to all, equipment availability at all time, consistent supply of all drugs needed and the need to create awareness among women, family and community members on newborn and early neonatal care.

APA CITATION

Kerich, C. C., Mutungi, A. & Kubende, P. (2024). An Investigation into how Primary Care Nurses Practices Affect Clinical Competence in Emergency Maternal Obstetric and Newborn Care skills in Nakuru County *East African Journal of Health and Science*, *7*(1), 365-382. https://doi.org/10.37284/eajhs.7.1.2123.

CHICAGO CITATION

Kerich, Clara Chepwogen, Alice Mutungi and Phidelis Kubende. 2024. "An Investigation into how Primary Care Nurses Practices Affect Clinical Competence in Emergency Maternal Obstetric and Newborn Care skills in Nakuru County". *East African Journal of Health and Science* 7 (1), 365-382. https://doi.org/10.37284/eajhs.7.1.2123.

HARVARD CITATION

Kerich, C. C., Mutungi, A. & Kubende, P. (2024) "An Investigation into how Primary Care Nurses Practices Affect Clinical Competence in Emergency Maternal Obstetric and Newborn Care skills in Nakuru County", *East African Journal of Health and Science*, 7(1), pp. 365-382. doi: 10.37284/eajhs.7.1.2123.

IEEE CITATION

C. C., Kerich, A., Mutungi & P., Kubende, "An Investigation into how Primary Care Nurses Practices Affect Clinical Competence in Emergency Maternal Obstetric and Newborn Care skills in Nakuru County", *EAJHS*, vol. 7, no. 1, pp. 365-382, Aug. 2024.

MLA CITATION

Kerich, Clara Chepwogen, Alice Mutungi & Phidelis Kubende. "An Investigation into how Primary Care Nurses Practices Affect Clinical Competence in Emergency Maternal Obstetric and Newborn Care skills in Nakuru County". *East African Journal of Health and Science*, Vol. 7, no. 1, Aug. 2024, pp. 365-382, doi:10.37284/eajhs.7.1.2123.

INTRODUCTION

Reducing maternal and newborn mortality and morbidity is a top priority for the achievement of the Sustainable Development Goals (SDG) in every nation in the world. Countries have come together behind the goal of accelerating the reduction in maternal mortality by 2030. The SDG goal is to reduce maternal death rates worldwide to less than 70 per 100,000 live births, with no countries rate exceedingly twice the global average. The global MMR in 2020, from World Health Organization (WHO), was 223 per 100 000 live births. A rate reduction of 11.6% each year is required to achieve a worldwide MMR of 70 or less by 2030. At the national level, this figure has hardly ever been reached, although the majority of maternal deaths can be avoided thanks to scientific and medical advancements. The Sustainable Development Goals (SDGs) have seven years left; therefore, it is time to step up a coordinated group effort through mobilization to reaffirm regional, national, and local communities' efforts toward the reduction of mortality and morbidity (WHO, 2019).

Through the use of clinical vignettes, Khan *et al*., (2019), evaluated the capability of maternal and neonatal health (MNH) professionals at district and sub-district-level health institutions in Northern Bangladesh to manage pregnant and newborn problems, it was established that, their competence level was low. Despite the MNH practitioners' generally low proficiency, exposure to more obstetric situations at work was related to their competency. A workable strategy to increase MNH workers' understanding and competency in obstetric and neonatal care like scheduling of regular skill-based and drill-based in-service training sessions in close-by healthcare institutions with high patient volume was recommended to be the panacea.

Background of the Study

In Nepal, Panday, *et al*., (2019), established that poor quality care and potential negative maternal and newborn outcomes were caused by a lack of key logistics supply and provider competency in some care components. In the course of providing care for newborns and mothers, there were

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

indications of disdain for women that point to rights violations, hence undesirable health results for the mother and the unborn child.

A thorough analysis of the literature was conducted by Geleto *et al*., (2018) to explore the utilization of EmONC in facilities of health in sub-Saharan Africa, the outcome showed that obstructions to the fight against child mortality and morbidity include illiteracy, poor use of health service, younger age, poorer income, unemployment, a lower assertiveness level among women, cultural beliefs, and a lack of awareness of obstetric risk signals. Dahab and Sakellariou (2020), discovered that inadequately educated workers, high costs, ineffective management of the delivery of emergency obstetric care, and a lack of emergency obstetric care services and supplies, protracted waiting times, poor referral practices, and a lack of coordination of staff were found to be factors that contribute to an increase in cases of mortality and morbidity.

The effectiveness of EmONC and newborn care provided to mothers in countryside in Ghana was examined by Ayawine and Atinga (2023). The quality of care was found to be impacted by a number of factors, including a lack of adherence to best practices, insufficient monitoring, and substandard treatment techniques, a lack of essential care requirements, and pedestrian health practitioners and relationship behaviors. Providing outstanding emergency obstetric and infant care was also made more challenging by the lack of available equipment, medication and basic healthcare supplies. In conclusion, in rural Ghana, poor maternal and neonatal consequences were caused by logistics that is inadequate and skill deficiencies among health workers in numerous maternity and newborn care apparatuses. There are signs of disrespect for women that point to the violations of their rights when providing care for mothers and their newborns.

Findings in research done in Western part of Kenya by Hirai *et al*., (2020), showed that factors such as lack of necessary medicines, outdated equipment, and a significant workload have been found to be detrimental in the efforts to achieve SDG goals on maternal and neonatal reduction. This is because of the midwives' use of crude management techniques and their failure to use anesthetics to relieve pain, women received detrimental care. The aforementioned actions portrayed a picture of poor medical care due to the possibility of negative health outcomes for both the mother and the unborn child, inadequate care is considered a violation of the rights of women on reproduction.

Maternal, neonatal, and child health (MNCH) statistics in North Eastern Kenya have persistently been poor, (Kisiangani *et al*., 2020). At the structural, individual, and community levels, sociocultural norms firmly enshrine barriers to MNCH service access and consumption. A set of initiatives with the goal of raising the demand for services was developed and put into place in the Garissa sub-county. CHVs received training to increase community demand for and accessibility to MNCH care, and healthcare professionals received training to provide services that are culturally competent and sensitive. In order to create demand and hold service providers accountable, community leaders and other social actors were involved. The majority of participants stated they would use the intervention health facilities' services again, and they were generally happy with them. Between the intervention and control locations, there were notable changes in attitudes toward the use of services such expert delivery attendance and postnatal care. The gender of the service provider, poverty, a lack of transportation, insecurity, the distance to a health facility, a lack of data, a shortage of staff, particularly at night, and the standards of maternity care are just a few of the factors that Ayodo *et al*., (2021) identified as remaining barriers to using MNCH services in Kenya.

In order to address any potential difficulties that can endanger life, Kaur *et al*., (2021) claim that emergency maternal obstetric and newborn care (EmONC) is the bare minimum care package needed during pregnancy and childbirth. The concept of competence in quality Maternal and New Health (MNH) care according to the World Health Organization (2018), is based on the

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

technical and professional skills of the care provider and also include the application of a human-rights-based strategy that tries to ensure that women and babies reach the best degree of health and well-being possible. To ensure a healthy and satisfying labour and delivery process, competent EmONC practitioners support physiological processes during labour and delivery and provide excellent, socio-culturally aware, human rights-based, evidence-based, and dignified care (Fornah, 2022). In all situations, they offer all women and their families support for mourning/care for bereavement services, family planning and contraception advice and assistance, and awareness of gender-based violence (Khan *et al*., 2019). There was need for the current study to be undertaken to establish the impact of maternal and neonatal Practice on clinical competence in Emergency Maternal Obstetric and newborn Care skills in Nakuru County.

Statement of the Problem

Providing high-quality emergency obstetric and neonatal care (EmONC) lowers the risk of morbidity and mortality in both mothers and unborn children, globally lowering maternal, neonatal, and morbidity rates continues to be a top target for development and health agendas worldwide. The risk of maternal and perinatal morbidity and mortality is decreased by providing high-quality emergency obstetric care (EmONC). In order to lower maternal mortality, more than 50% of maternal health programs should focus on expanding access to EmONC. Despite efforts to reduce morbidity and mortality cases, rates of neonatal and maternal morbidity and mortality have continued to rise, making them a public health concern.

Most cases, or 99% of all deaths resulting from maternal deaths, take place in third-world nations, with Sub-Saharan Africa accounting for the most with more than 800 maternal deaths per 100,000 births and 1:26 highest lifetime risk of maternal mortality. Kenya's maternal pregnancy rate is still high, at 362 cases per 100,000 live births (KDHS, 2014). The major factors contributing to maternal deaths occur as a result of the first delay which essentially is the primary care level of the service delivery (CEMD, 2017). To determine whether the interventions that are available can significantly stop or reduce these deaths, it is necessary to evaluate the competencies in EmoNC skills offered by the Primary Care Nurses. This study on the influences of maternal and neonatal on clinical competence in emergency maternal, obstetric, and neonatal care skills in Nakuru County is important to help in identifying gaps and interventions that will help address the unacceptable burden of maternal and perinatal deaths as well as near misses in the county. The study concentrated on maternal and neonatal care practices.

LITERATURE REVIEW

Theoretical Framework

Madeleine Leininger and the Transcultural Theory of Nursing

Created in the 1950s, though the Transcultural Nursing Theory made its debut in Leininger's Culture Care Diversity and Universality, which was published in 1991. At the 1950s, Madeleine Leininger worked at a child guidance home, where she realized how important it was to prioritize care and was shocked to observe the plain differences in young children's behavioral patterns according to their ethnic backgrounds. Leininger was able to fill a gap in healthcare at the time by enhancing nurse' knowledge and awareness of various cultures because of the philosophy she developed in response to her findings. Her efforts to improve patient care and wellbeing through culturally sensitive nursing education led to the development of the "Transcultural Theory of Nursing" (Bush, 2015). Based on this perspective, it is easier to establish the expectations of the nurse-patient relationship because the nurse is ultimately the one who carries out therapy and is by the patient's side for the majority of the time they are being treated Liu *et al*., (2019) opine that the theory's goal was to have nurses participate in culture education and use a style of treatment that was in line with what the patient thought was appropriate in light of cultural standards. The United States is frequently praised

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for its improvements in health care, and nurses play an important part in providing such great care to their patients, who hold various values, convictions, and lifestyles. Given the internationalization of health care and the focus on nursing professionalism, Leininger's theories and studies on comparative human care have a significant place in health care that provide congruency in the recipient's beliefs and cultural value.

Therefore, the theory sheds light on a condition of well-being that is culturally defined, valued, and practiced (FinkelLétourneau *et al*., 2022). It is true in the clinical context for the authors, who continue to be alert to the multitude of cultural needs in the nurse-patient relationship as they remain attentive to Leininger's emphasis on cultural competence. Leininger's suggestions for nursing care put the patient first, but this approach to patient care also benefits the nurse. Nurses continue to make up the majority of those who give globally. Through gaining an understanding of unfamiliar cultures and assisting patients with their unique lifestyles and environments, nurses can distinguish themselves as a demographically and culturally sensitive group of healthcare professionals (Mitchell, 2018). In Nakuru County, patients and clients seeking maternal and neonatal care come from diverse backgrounds, competent primary care nurses having such understanding as the theory portends will be able to understand and appreciate the diversity of the clients they receive and serve at the lower level of the health care system. This theory embraces objectives of this study as it links with demographic characteristics, client referral and maternal and neonatal care practices which are the foundation of the culturally competent services offered in all levels of care, with primary care nurses being in charge.

Empirical Review

Maternal and Neonatal practices and Competent Emergency maternal and newborn care

Villar *et al*., (2021), opine that maternal and neonatal care practices should focus on thermal care, which includes immediate drying and wrapping, skin-to-skin contact right after birth, delayed bathing, sanitary cord management, and early nursing.

Descriptive cross-sectional research was employed by Arfin *et al*., (2023) to evaluate the influence of factors and neonatal care practices on newborn health in the rural areas of India's Bareilly district. Mothers who had a baby during the preceding six months were used to choose study participants. The mothers who gave birth within six months were surveyed using a semi-structured questionnaire. SPSS 2021 for Windows was used to analyze data and the outcome was that 78 (52.3%) of mothers who started breastfeeding at 24 to 29 years old were found to do so more frequently than 48 (32.3%) of mothers at 30 to 35 years old hence the difference was statistically significant ($p<0.05$). 29 (30.8%) of the 30-35-year-olds and 125 (70.1%) of the 24-29-year-olds had delayed bathing, respectively. Although the difference was statistically minor, harmful cord care practices were more common in 8 (53.4%) nuclear families than in 7 (46.6%) combined homes. In conclusion, there is a need to increase awareness among women and family members about newborn and early neonatal care difficulties, such as promoting exclusive and early breastfeeding initiation and practice of delayed bathing. The practice of fundamental newborn care in Bareilly also has to be improved. The previous study was done in India, and it focused on mothers who breastfeeding at the time of data collection, while the current study was done in Kenya, Nakuru County, with the aim of soliciting information from midwives and primary care health nurses.

Bee *et al*., (2018), embarked on a systematic review of data from sub-Saharan Africa, which was both quantitative and qualitative, on the prevalence of important immediate neonatal care behaviors and the factors influencing. It requires browsing relevant databases and websites, getting in touch with regional and worldwide academics and implementers, and manually reading through reference lists of published works and studies that are included. If it met the criteria for quality, English-language literature from January 2001 to

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

May 2014 was considered primary data. Using deductive coding, emerging motifs within each care practice were found. Quantitative prevalence data were retrieved, summarized, and put through thematic analysis. A framework method was deployed to pinpoint dominant and contrasting ideas. In addition to DHS data from 33 countries, which could only be accessed for early breastfeeding practices, 42 studies were included. Unless there is skin-to-skin contact immediately after birth which was often uncommon, the prevalence of the earliest baby care methods varied widely among countries. Results exhibited that the significance of keeping infants warm was widely acknowledged, despite sub-optimal thermal care procedures. Comparable factors had an impact on practices in various nations applying medicines on the cord to speed up cord dehiscence, putting off drying and wrapping while the nurse attended to the mother, washed the babies right away to get rid of the blood and dirt, and more and postponing breastfeeding due to a perceived milk scarcity, the infant's need for relaxation after delivery, or the fact that the baby is not displaying any symptoms of hunger. In the end, articles from 5 states; Malawi, Tanzania, Ethiopia, Ghana, and Uganda made up the majority of those that were reviewed. It suggested that further research be done from a larger geographical perspective, as well as more investigation into the procedure's hospitals use to care for babies and standardization of neonatal care practice measurement. The study's findings might help shape behavior modification tactics to promote the use of quick newborn care methods. The reviewed study was comparative study which excluded Kenya, while the current study kept it focus on Kenya alone, specifically Nakuru County.

Sharkey, *et al*., (2017), performed a mixed-methods research of four impoverished districts in Sierra Leone to examine maternal and neonatal care practices. For the home cluster survey-based investigation, women aged 15 to 49 who had ever given birth provided information on their pregnancy and newborn care practices. Each of the four districts' two villages hosted in-depth interviews and focus groups. Participants included expectant mothers, young mothers caring for their children, dads, elderly caregivers, Community Health Volunteers (CHVs), Traditional Birth Attendance (TBAs), and medical professionals. It looked at individuals' experiences with and viewpoints of pregnancy, childbirth, postpartum duration and customs of the society. Dedoose was used to thematically evaluate qualitative data, whereas STATA was engaged in quantitative data analysis. Due to distance, transportation, and societal conventions that prevent care-seeking before pregnancy is obvious, the results indicated that antenatal care was high but not timely, especially in communities that were poorer. There was fewer expert delivery, particularly in areas where TBAs are supposedly successful. Inadequate procedures for clean cord care, postponing initial washes, and early breastfeeding were seen in all districts. Newborns of hospital-born mothers typically received timely postnatal checkups. Less frequently than for their newborns, postnatal visits were made to women who gave birth at home. A wide range of actions are influenced by traditional beliefs, and traditional birth attendants and practitioners are trustworthy service providers. Conclusion: Obstacles to service delivery during the Ebola Virus Disease pandemic in 2014–2016 likely made the problems with mother and newborn health in Sierra Leone worse. It is important to look into the reasons for present behaviors in order to create effective strategies to boost mother and baby survival. The reviewed study was biased as it considered only the impoverished districts where cases of morbidity and mortality could be high due to poverty in Sierra Leone, while the current study will focus on all level II and III in Nakuru County.

Bekele *et al*., (2022) used a community-based cross-sectional design to study the practice of providing maternity care and related characteristics among mothers of children aged 0 to 6 months in Ethiopia between September 2019 and June 2020. The basic neonatal care package indicators of the World Health Organization (WHO) were used to assess newborn care

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practices. Throughout the study period, 245 mothers in total practiced good newborn care. Poor neonatal care practices were indicated by a lack of appropriate knowledge, postnatal care (PNC), living in an urban location, and antenatal care (ANC) follow-up. The study's sample size was 607, additionally, the study respondents were chosen using a multi-stage cluster sampling technique. Based on relevant research on neonatal care practices, a structured questionnaire was created. SPSS 24.0 was used to perform analysis. The descriptive data's frequency and percentages and to explore the variable, multivariate logistic regression was utilized and components were considered statistically associated if their p-value was less than 0.05. The findings showed that 245 women overall (62.0%) had good infant care habits. Mothers reported that 364 (92.2%) births involved newborns being wrapped, whereas 302 (76.5%) births involved newborns being dried and/or cleansed before placenta delivery. 188 (47.59%) mothers covered their new born before delivering the placenta, and most of them used dry, sterile towels. Regarding cord care, 182 (46.1%) of the births utilized a fresh string or thread as the main material to knot the cord. In contrast, seven (1.77%) of the 16 respondents used a scissor to cut the cord following their most recent delivery, whereas the majority of respondents (4.05%) used a blade. Out of all respondents, only 204 mothers (51.6%) reported nursing their infants in the first hour after delivery. This was followed by 73 (18.5%) in the next six hours, 62 (15.7%) in the following 24 hours, and 56 (14.2%) after that. Over 258 (65.3%) women reported taking their newborn for their first shower 24 hours after giving birth. Of the women who responded, 269 (68.1%) said their children received BCG and Polio-0 vaccinations on the first day of life. In conclusion, the comparison group's urban women had a higher likelihood of supporting their infants. Urban mothers were 5.5 times more likely to provide good newborn care than mothers in the countryside. The previous study was investigated in Ethiopia, it used multistage sampling to identify its sample, on the contrary the current study was done in Kenya, and purposive sampling was utilized to select respondents, a technique which allow the researcher to only choose respondents who believe to be having the required information.

Cross-sectional inquiry by Komakech, *et al*., (2020) investigated the practices of critical newborn care and its determinants among mothers of children aged 0 to 6 months residing in refugee settlements in the Adjumani region of Uganda by using systematic sampling, 561 new mothers were selected from the families. Information was acquired using a semi-structured survey. Infant feeding, thermal care, and cord care were combined to create a composite outcome variable called vital newborn care operation. The variables that indicated the requirement for critical infant care were identified using multiple logistic regression analysis. In accordance to the inquiry, over fifty percent of the mothers breastfed babies within an hour. The umbilical cords of the neonates were cleaned by half of the mothers. Only 17% of the infants immediately received the best thermal care. Compared to mothers in other jobs, subsistence farmers and mothers between the ages of 20 and 24 were less likely to provide their children with the required care. In conclusion, neonatal care was poor in this refugee camp. Through community-based health efforts, mothers need to be trained about delayed bathing, umbilical cord care, feeding, and thermal care for newborns. The previous study investigated what determines newborn care practices in Uganda, targeting 561 new mothers, and data sought using only questionnaires, on the other hand the study at hand used a mixed method of data collection.

The examination of the impact of midwives' ongoing professional development on critical maternal and newborn care skills on maternal and neonatal mortality in Embu County was the main topic of Gitonga (2016). It examines training in essential maternal and newborn care skills for midwives and its impact on lowering maternal and neonatal mortality in Kenya. The interventional non-randomized pretest-posttest trial design included midwives who had received training from the Ministry of Health in 2010 on critical maternity and newborn care skills. At level five hospitals in Embu, the anticipated targets were 60

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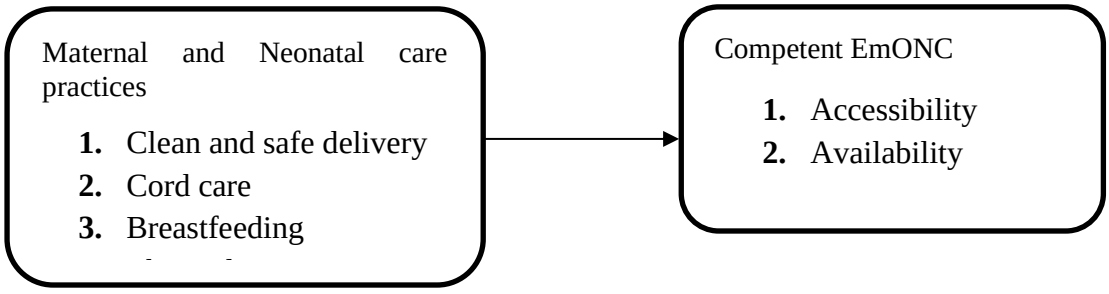
nurses who worked in the delivery ward. Phase one involved using a questionnaire to conduct an environmental scan of the factors that support effective performance at work, and stage two involved evaluating the impact by testing hypotheses with data from surveys, evaluation checklists, and chart audits. Percentages and frequency tables were utilized to show the results of the qualitative content analysis that was performed on the data. The dependent variables used were maternal and neonatal mortality. The chi-square test and correlation analysis were used to show the association between these two variables. The chi-square test yielded 2 = 14.143, df = 9, and 0.357 as findings. Because these two variables are almost entirely independent of one another, the presence of one does not necessarily imply the presence of the other or lower maternal and neonatal mortality rates in Kenya. This coefficient, which is larger than the p-value at alpha 0.05, indicating that it is not significant, demonstrates that the vital skills in maternal and newborn care do not lead to a decrease in mortality. The previous study focused on examination of the impact of midwives' ongoing professional development on critical maternal and newborn care skills on maternal and neonatal mortality in Embu County.

Seven community units were evaluated for their newborn care procedures using a cross-sectional study design by Kumola (2015) to determine how postpartum mothers in Garissa County, Kenya, care for their newborns with dependent variables being; thermal care, cord care, and breastfeeding. The study's 421 respondents were a sample of postpartum women who had given birth within the previous year and were selected at random. Key Infomart Interview (KII), semi-structured surveys, and focused group discussions were employed to collect the d. STATA was used to examine the data and to conclude whether there is a relationship between the various explanatory factors and the neonatal care practices, chi-square and logistic regression were utilized. KII, semi-structured surveys, and focused group discussions were employed to collect the data. With regard to the three newborn care practices, depraved newborn care practices were recognized in 14% of the respondents based on the outcome; more specifically, poor breastfeeding, cord care, and thermal care practices were identified respectively. Poor neonatal care procedures were strongly correlated with the following factors: The time of the first ANC visit and place of delivery were significantly correlated across all three newborn practices, according to the logistic regression analysis. From FGD and KII results, it was discovered that negative customs including applying cow dung to a stump, bathing a newborn right away, and feeding pre-lacteals meals were still being carried out. Traditional values served as the motivation for this. This study suggests that mothers who want to give birth in a medical setting should be encouraged to do so and start getting antenatal care at a young age. Further investigation was suggested evaluating neonatal care practices among healthcare professionals at the facility level.

Conceptual Framework

Figure 1; shows the direct relationship between independent and dependent variables, that is maternal and neonatal care and competent EmONC.



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RESEARCH METHODOLOGY

Research Design

Research design is the strategy used by the researcher to generate and address the research questions over the course of the study (Sileyew, 2019). A research design is a comprehensive strategy that a researcher chooses to bring the study's components together more logically and coherently in order to guarantee that the research issue is adequately addressed (Dannels, 2018). This study used correlation research survey designs because the designs was exploratory, as it permit comparisons and analysis of the research findings, as well as allowing the researcher to gather, summarize, present, rate, and analyze the data in a more straightforward and clear manner, made it the favored choice (Rassel *et al*., 2020). Further, it aided researchers in identifying traits that make up the target group or market. Hence helping in decision-making, as the traits in the population sample can be found, observed, and assessed.

Target Population

The target population, according to Mugenda and Mugenda (2013), is the entire group that a researcher is interested in or the group from which the researcher seeks to draw conclusions of. The study targeted all the primary health care nurses and midwives in the 184 level II and III Health facilities in the 11 Sub Counties in Nakuru County.

Table 1: Target population

Sub County	Number of KEPH level II and III facilities	Target Respondents
Naivasha	19	38
Gilgil	24	48
Subukia	11	22
Bahati	16	32
Nakuru Town East	4	8
Nakuru Town West	11	22
Rongai	25	50
Njoro	22	44
Molo	14	28
Kuresoi North	15	30
Kuresoi South	23	46
Total	184	368

Source; Kenya Health Information System (2023)

Sampling Technique and Procedure

A member of a targeted group that has been arbitrarily selected to represent the overall population in research, its results can be used to make an inference of the entire population according to Ragab and Arisha (2018) is the sample size. Sampling entails selecting carefully representative individuals from a population. According to Asenahabi (2019), a suitable sample size should be dependable, adaptable, and efficient and should not be excessively huge or tiny. KEPH level II and III facilities made up the study's sample and the sample selected using a stratified random selection technique. Respondents were chosen from each of the health facility using the same sampling method since stratified sampling approach divides the population into various strata, hence appropriate. Purposive sampling, a technique that enables the researcher to personally select who to include in the study based on the expertise and knowledge they possess on the study topic, the primary care nurses and midwives, was applied to choose the study's participants.

Sample size Determination

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The following Yamane Taro formula (1967) computation determines the sample size, as illustrated.

$n=N/1+N(e)^2$

Where n= sample size, N is the target population, e is the level of precision (0.05).

Table 2: Sample size frame for level II facilities

Sub County	Target number of KEPH level II and III	Sample size
Naivasha	19	13
Gilgil	24	16
Subukia	11	8
Bahati	16	11
Nakuru Town E	4	3
Nakuru town W	11	8
Rongai	25	17
Njoro	22	15
Molo	14	9
Kuresoi North	15	10
Kuresoi South	23	16
Total	184	126

Source: Researchers' computation (2023)

Table 3: Sample distribution for the Respondents per Sub County

Sub County	Target number of Respondents	Sample size
Naivasha	38	20
Gilgil	48	25
Subukia	22	12
Bahati	32	17
Nakuru Town East	8	4
Nakuru Town West	22	12
Rongai	50	27
Njoro	44	23
Molo	28	15
Kuresoi North	30	16
Kuresoi South	46	25
Total	368	196

Source; Researcher's computation (2023)

A total number of 126 KEPH level II and III facilities were eligible to participate in the study after the sampling as indicated in tables 2 and 3, respectively, 196 of the 368 respondents included in the study after calculating using the same sample size formula above.

Research Instruments

According to Sadan (2017), research instruments are tools used in data collection. Considering they offer a rapid, efficient, and economical approach to gather a lot of data from large sample sizes, questionnaires are the method of choice. Additionally, Mishra and Alok (2022) noted that the tool is highly helpful in evaluating the participants' actions, preferences, intentions, attitudes, and viewpoints. KII on the other hand used to take into account nonverbal cues, irrational emotions, and emotional responses; this allows the researcher to gather rich data and draw more conclusive conclusions than other research methods, filling in the gaps left by questionnaires. KII was administered by the researcher to the senior most medical officer at the KEPH level II and III facility. The method favoured researchers to gather information on a variety of topics, including products and services, beliefs, and perceptions, in order to reveal the attitudes and opinions of respondents. To gather qualitative data and comprehensive insights, interviews and

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

focus group discussions are used (McGrath *et al*., 2019).

Validity

According to Cohen *et al*., (2017) validity shows whether an instrument, given the context in which it is used, measures what it is meant to measure. The supervisor was provided with the questionnaires and KII guide developed in accordance with the study's objectives for review and guidance in order to determine their content and face validity. To ensure that all study goals are achieved, the instruments' content was altered if the supervisor recommended it.

Reliability

It was crucial to confirm the dependability and reliability of the devices used to collect the data in order for the research findings to be correct. As a result, a tool's level of measurement reliability is predicated on its ability to consistently generate the same score when used several times, according to Hajjar (2018), who also claims that consistency of measures is reliability. The questionnaires used in this study were developed with the supervisors' suggestions and constructive criticism. Reliability was established using the test-retest method, which focuses on evaluating the appropriateness and clarity of the questions on the instruments designed, the applicability of the information sought, the appropriateness of the language used, and the reliability of the instruments based on the responses given. The study also evaluated the internal consistency of the questionnaire using Cronbach's alpha. A value of >0.7 will be utilized for each data set to indicate that the data is sufficiently dependable for the item being examined through a pretest.

Pilot Study

Pilot study was performed in the neighboring Bomet County in order to ascertain reliability of the measuring instruments in which 10% of the sample size was used as recommended by Mugenda and Mugenda (2013), the questionnaires used in the pilot study were excluded in the final analysis.

Data Analysis

Both quantitative and qualitative data were collected; the numeric data were analysed using descriptive and inferential statistics like regression models, while the qualitative data was analysed using content analysis. Cross-checking was done after data collection of data was finished to make sure all questionnaires were returned. After compiling the questionnaires, they were sorted, arranged, and checked for completeness before being coded into SPSS 27 for analysis. From quantitative descriptive and inferential statistics generated. Generation of descriptive statistics like mean, standard deviation, frequencies, and percentages was performed. Regression and correlation analysis used in inferential statistics. Frequency tables were used to present the conclusions from the inferential and descriptive analyses. Regression equation was as shown below;

$Y=a+b_1X_1$

Where;

Y= Dependent variable (Competent EmONC)

$X_{4=}$ Maternal and neonatal care practices

b_4= independent variables coefficient

e=Error term.

RESEARCH FINDINGS AND DISCUSSION

Response Rate

A response rate of 87% was attained, where 171 out of the 196 questionnaires distributed was retrieved from the respondents, but only 170 was coded for analysis, one questionnaire during data cleaning and checking for completeness was partially filled and hence it was not included in the calculation of the response rate. The response rate of 87% was found to be sufficient to enable analysis carried out as Mugenda and Mugenda (2013) opine that a response rate of 80% is excellent for analysis.

Reliability was tested to ascertain the consistency of the instrument and the results were as shown in table 4

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Table 4: Reliability Test

Variable	Cronbach Coefficient	Items
Maternal and Neonatal care	0.713	5
Competent EmONC	0.712	5
Aggregate	0.718	5

Source; Research Data (2024)

The findings indicated that maternal and neonatal care and competent EmONC were reliable as it had a Cronbach Alpha that was above 0.7. Therefore, reliability of data was found to be within the threshold as it had an aggregate of 0.718.

Descriptive statistics for Maternal and Neonatal care

Participants for the study were examined on the influence of maternal and neonatal practices on clinical competencies in Emergency maternal and newborn care using a Likert scale of 5-1 where; SA– Strongly Agree, A–Agree–U-Undecided–D-Disagrees–SD- Strongly Disagree and their outcome was as shown in table 1.5.

Table 5: Descriptive statistics for Maternal and Neonatal care

	SA 5	A 4	U 3	D 2	SD 1	Mean	Std. Deviation
Warm chain for the newborns is practiced in our facility	28 22.4%	96 56.5%	3 1.8%	40 11.8%	13 7.6%	3.7412	1.15797
Partograph is utilized in this facility	51 30%	92 54.1%	3 1.8%	14 8.2%	10 5.9%	3.9412	1.08626
AMSTL is practiced in the delivery room	45 26.5%	97 57.1%	7 4.1%	15 8.8%	6 3.5%	3.9412	0.98933
PPFP services are offered in this facility	37 21.8%	88 51.8%	7 4.1%	27 15.9%	11 6.5%	3.6647	1.17138
Client/patient is educated on danger signs	49 28.8%	106 62.4%	4 2.4%	10 5.9%	1 0.6%	4.1294	0.76597
Birth notification done in this facility	49 28.8%	102 60.0%	2 1.2%	12 7.1%	5 2.9%	4.0471	0.92187
Follow up of patient/ client is done in this facility	50 29.4%	102 60%	8 4.7%	8 4.7%	2 1.2%	4.1176	0.79065
Maternal and perinatal immunization services is offered in this facility	71 41.8%	93 54.7%	0.0%	6 3.5%	0.0%	4.3471	0.66405
The facility observes IPC when handling patients and clients.	62 36.5%	100 58.8%	1 0.6%	5 2.9%	2 1.2%	4.2647	0.72605
The staff ensure that the neonatal and prenatal unit is clean to reduce sepsis.	57 33.5%	97 57.1%	3 1.8%	6 3.5%	6 3.5%	4.3765	0.65315

Source; Research Data (2024)

Table 5 indicated that 28 (22.4%) and 96 (56.5%) of the respondents satisfactorily agreed that warm chain for the neonates was practiced in their facilities in Nakuru county, this inferred that in KEPH level II and III facilities, the procedure is carried out to minimize heat loss in all newborns mean (3.7412) and low variation standard deviation (1.15797). Nonetheless, other results were; undecided 3 (1.8%), disagree 40 (11.8%) and strongly disagree 13 (7.6%). These results were similar with results from, Bee *et al*., (2018) in a study in sub-Saharan Africa region which found that the significance of keeping infant warm was widely acknowledged. Comparable factors had an impact on practices in various nations applying medicines on the cord to speed up cord dehiscence, putting off drying and washing the babies right away to get rid of the blood and dirt

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

and postponing breastfeeding due to a perceived milk scarcity, the infant's need for relaxation after delivery.

There were 51 (30%) and 92(54.1) respondents who strongly agreed and agreed that Partograph was being utilized in the facilities in the county, nevertheless, 3 (1.8%) were undecided, 14 (8.2%) disagreed and 10 (5.9%) strongly disagreed. The findings implied that use of Partograph a low-tech paper form that has been praised as a useful tool for identifying problems with the mother and fetus early in the birthing process in all health facilities was common (mean 3.9412), the same opinion was similarly held across all the respondents (standard deviation 1.08626). AMSTL was practiced in the delivery room as was revealed by 45 (26.5%) who strongly agreed and 97 (57.1%) agreed, though 7 (4.1%) were undecided, 15 (8.8%) disagreed and 6 (3.5%) strongly disagreed, the mean of 3.9412 infers that AMSTL was a common exercise in the delivery room in all KEPH level II and III facilities, standard deviation of 0.98933 indicated there was variation in opinions across the respondents. PPFP services were offered in facilities in Nakuru County, as indicated by 37 (21.8%) and 88 (51.8%) who strongly agreed and agreed respectively, them mean was (3.6647) which means that PPFP was carried out to women in prevention of unintended pregnancies and closely spaced pregnancies, the variation in opinion according to standard deviation of (1.17138) affirmed the findings, however, 7 (4.1%) were undecided, 27 (15.9%) disagreed and 27 (15.9%) strongly disagreed. The varied opinions revealed that PPFP was carried out in facilities in Nakuru. Client or patients was satisfactorily educated on danger signs during pregnancy and after in KEPH level II and III facilities, as was indicated by 49 (28.8%) and 106 (62.4%) who strongly agreed and agreed of the respondents. A mean of (4.1294) established that patients were guided and advice through counselling session on the danger signs that might crop up and the low variation revealed by standard deviation of (0.76597) showed variation of opinion. Nevertheless, 4 (2.4%) were undecided, 10 (5.9%) disagreed and 1 (0.6 %) strongly disagreed indicating varied opinions on the responses. Notification of birth was done in the facilities as was shown by 49 (28.8%) and 102 (60.0%) who strongly agreed and agreed respectively, however 2 (1.2%) were neutral, 12 (7.2%) disagreed and 5 (2.9%) strongly disagreed. This was an indication of a varied opinion as shown by standard deviation of (0.92187). A mean of 4.0471 supported the findings that notification of birth was performed in KEPH level II and III facilities in Nakuru County.

Further, Maternal and perinatal immunization services are offered in facilities (Mean 4.3471), this finding was also shown by majority of the respondents as the statistical outcome was; strongly agreed 71 (41.8%), 93 (54.7%) agree, 6 (3.5%) disagree none of the respondents chose undecided and strongly disagreed. The low variation as evident from a standard deviation of 0.66405 also supported that immunization schedule was vital in maternal and neonatal care. The findings concur with Bekele *et al*., (2022) in Ethiopia, studied the practice of providing maternity care and related characteristics among mothers of children aged 0 to 6 months in Ethiopia between September 2019 and June 2020, found that newborn received BCG and Polio-0 vaccinations on the first day of life. Facilities' health workers observe Infection prevention and control (IPC) when handling patients (mean (4.2647), this result was indicated by 62 (36.5%) strongly agreed, 100 (58.8%) agreed though, 1 (0.6%) undecided, 5 (2.9%) disagreed and 2 (1.2%) strongly disagreed. The minimum variation in opinion (standard deviation 0.72605) showed that observation of IPC was crucial in ensuring safety of the workers and patients hence ensuring that neonatal and prenatal units are clean to reduce sepsis was indicated by 57 (33.5%) who strongly agreed and 97 (57.1%) who chose the agreed category. Mean 4.3765 affirmed the results that the staff ensured that the neonatal and prenatal unit were clean to reduce sepsis as was indicated by minimum variation (standard deviation 0.65315). Nevertheless, 3 (1.8%), 6 (3.5%) and 6 (3.5%) undecided, disagreed and strongly disagreed respectively.

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

Results from KII indicated majority of the respondents agree that all newborn care practices are safe except for those mothers from conservatism communities who belief in-home care, use of cow dung to smear cords, all other practices of maternal and neonatal was followed, higher number of women seek the services of modern hospital for delivery, on the question "*how is warm chain undertaken*?'. The responses were that room care was ensured using space heaters. This response concurs with Komakech *et al*., (2020) who investigated the practices of critical newborn care and its determinants among mothers of children aged 0 to 6 months residing in refugee settlements in the Adjumani region of Uganda. In accordance to the inquiry, over fifty percent of the mother breastfed babies within an hour. The umbilical cords of the neonates were cleaned by half of the mothers, infants immediately received the best thermal care.

Descriptive statistics for competent EmONC

Respondents were examined on competent EmONC using a likert scale to show extent to which they agreed with the provided statement. Their responses are shown in Table 1.6.

Table 6: Descriptive Statistics for Competent EmONC

	SA 5	A 4	U 3	D 2	SD 1	Mean	Std. Deviation
There is availability of skilled health care providers who provide EmONC services to client/patients	41 24.1%	102 60%	5 2.9%	18 10.6%	4 2.4%	3.929 4	0. 95196
EmONC services are available in this facility	27 15.9%	106 62.4%	9 5.3%	22 12.9%	6 3.5%	3.741 2	0. 99291
EmONC services are accessible to patients	35 20.6%	105 61.8%	8 4.7%	18 10.6%	4 2.4%	3.876 5	0. 93709
EmONC standards are adhered to in the facility	29 17.1%	112 65.9%	7 4.1%	17 10%	5 2.9%	3.841 2	0. 92536

Research Data (2024)

The findings on Table 6 revealed that 41 (24.1%) and 102 (60%) of the respondents strongly agreed and agreed respectively that there is availability of skilled healthcare providers who provide EmONC services to patients in KEPH level II and III facilities in Nakuru, the mean was 3.9294 which implies that opinion clustered around the agreed category. The low variation as indicated by standard deviation of (0.95196) also affirmed the findings, nonetheless, 5(2.9%), 18 (10.6%) and 4 (2.4%) were undecided, disagree and strongly disagreed. Of the participants, 27 (15.9%) strongly agreed and 106 (62.4%) agreed, that EmONC services are available in this facility, this means that in KEPH level II and III facilities the services were available, though 9 (5.3%), 22 (12.9%) and 6 (3.5%) chose the contrary opinion. The mean was (3.7412) and (standard deviation 0.99291). EmONC services were accessible to patients in all facilities in Nakuru, mean (3.8765) and standard deviation (0.93709), results were; strongly agreed, 35 (20.6%), agreed 105 (61.8%), undecided 8 (4.7%), disagreed 18 (10.6%) and strongly disagreed 4 (2.4%). Facilities adhere to EmONC standards as revealed by mean and standard deviation 3.8412 and 0.92536 respectively, of the participants those who strongly agreed were 29 (17.9%), agreed 112 (65.9%), undecided 7 (4.1%), disagree 17 (10%), and strongly agree 5 (2.9%). This implies that respondents satisfactorily agreed that in KEPH level II and III facilities that primary health care nurses follow EmONC standards in their line of duty.

Correlation Analysis

Relationship between variables was tested using correlation analysis, the variables was maternal and neonatal care and competent EmONC, the findings was presented in table 7.

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

Table 7: Correlation Analysis

		Maternal and neonatal care	Competent EmONC
Maternal and Neonatal care (MNC)	Pearson Correlation	1	.436**
	Sig. (2-tailed)		.000
	N	170	170
Competent EmONC	Pearson Correlation	.436**	1
	Sig. (2-tailed)	.000	
	N	170	170

Research Data (2024)

Table 7: indicates that Maternal and neonatal care has positive strong relationship with competent EmONC (R= 0.291, P<0.05).

Regression Analysis

The relationship was determined using a multiple linear regression model, and the results were displayed using the model summary, ANOVA, and coefficients. Table 8 gives the model summary.

Table 8 indicated that 31% of the variation of competent EmONC was maternal and neonatal care (R Square = 0.310). There exists a strong positive relationship between maternal and neonatal Practice and competent EmONC (R=0.557). Hence, there is a positive relationship between maternal and neonatal care and competent EmONC.

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.557a	.310	.293	.70361

a. Predictors: (Constant), Maternal and neonatal care,
b. Dependent Variable: Competent EmONC

Source; Research Data (2024)

Table 9: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	36.712	4	9.178	18.539	.000b
	Residual	81.686	165	.495		
	Total	118.399	169			

a. Dependent Variable: Competent EmONC
b. Predictors: (Constant), Maternal and neonatal care,

Source; Research Data (2024)

Table 1.9 revealed there is a significant relationship between maternal and neonatal care and competent EmONC (P< 0.05).

Table 10: Regression Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.405	.430		.942	.348
	Maternal and Neonatal care	.311	.089	.259	3.495	.001

Dependent Variable: Competent EmONC

Source; Researcher's Data (2024)

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

The regression result in table 10 revealed maternal and neonatal care has positive significant relationship with competent EmONC ($P<0.05$).

The regression model given was; $Y=a+b_1X_1+e$, where; Y= Dependent variable (Competent EmONC), a= constant, $X_{1=}$ Maternal and neonatal care practices, b_1= independent variables coefficient, e=Error term. The equation now was $Y= 0.\ 405+b_1\ 0.311+e$ and b1, maternal and neonatal care. This implies that a unit change in maternal and neonatal care will result in a unit change in 0.311-unit change in Competent EmONC.

Summary

Demographic characteristics were examined and it revealed that there were more health care female workers than male in level two and three health facilities in Nakuru County, this implies that male nursing students experienced a higher attrition rate than female students, and male practicing nurses were more likely to quit than female practitioners (Boniol *et al.*, 2019; Mao *et al*., 2021; Zhang & Tu, 2020). The results also revealed that largest respondents had attained university degree followed by those who had attained other category and the least group among the primary health care nurses were those who had diploma education. The inference for this is that primary health nurses in the county was made up of a knowledgeable population hence revealing higher literacy level in Nakuru County, further responses showed that majority of nurses had stayed in the facility for a reasonable number of years hence the responses were sought from a group who understood the study topic. The primary health care nurses were regularly trained to equip them with the needed skills on EmONC.

Maternal and Neonatal care

Warm chain for the neonates was practiced in the facility to minimize heat loss in all newborns, ((3.7412) and standard deviation (1.15797). Partograph was being utilized in the facilities in the county, to keep data records and for identifying problems with the mother and fetus early in the birthing process in all health facilities (mean 3.9412) and standard deviation (1.08626). In Nakuru County, AMSTL was practiced in the delivery room (mean 3.9412) and standard deviation (0.98933) which consists of steps, which should be followed in ruling out presence of a second twin, giving uterotonic medication; controlling cord traction; massaging the uterus after placenta delivery; assessing the placenta for completeness; and inspecting the vaginal area for lacerations and active bleeding. Findings also revealed that PPFP was a carried out in facilities in Nakuru (mean 3.6647). Client or patients was satisfactorily educated on danger signs during pregnancy and after facilities as well as immunization services. Facilities' health workers observed Infection prevention and control (IPC) when handling patients (mean of (4.1294) and standard deviation of (0.76597), observation of IPC was crucial in ensuring safety of the workers and patients hence ensuring that neonatal and prenatal unit is clean to reduce sepsis.

CONCLUSION

It was concluded that maternal and neonatal care had a positive and significant relationship with competent EmONC. In Level II facilities warm chain for the neonates was practice to minimize heat loss in all newborns. Utilization of the partograph to monitor the progress of labour was evident in facilities. AMSTL was practiced in the delivery room. Additionally, PPFP services provided to women for prevention of unintended pregnancies and also birth spacing. Clients were health educated on danger signs for both mother and baby. Maternal and perinatal immunization services were available, and the primary care nurses observed infection prevention and control (IPC) measures when providing the EMONC Services.

Recommendation

The practice of fundamental maternal and newborn care has to be improved. The primary care nurses should be culturally competent in engaging the community members appropriately. Through community-based health efforts, mothers need to be sensitized about delayed bathing, umbilical cord care, feeding, and thermal

Article DOI: https://doi.org/10.37284/eajhs.7.1.2123

care for newborns. This study suggests that mothers be encouraged to start antenatal care in the early trimesters of pregnancy. Equipment need should be availed and power system have a backup in case of power outage.

Recommendation for Further Research

The study recommended that more studies be conducted with a broader geographic focus. There is need to further research on the innovative teaching strategies and models that supports retention of EmONC skills among primary care nurses. Also, on the key roles of the primary care nurses as players in the primary care networks and their contribution towards the improvement of the health status of the community.

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