KANGAROO MOTHER CARE PRACTICE DURING THE COVID-19 PANDEMIC AMONG POSTNATAL MOTHERS OF PRETERMS IN KENYATTA NATIONAL HOSPITAL'S NEWBORN UNIT

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DECLARATION

This dissertation is my original work and it does not include any material previo published or presented in any institution of higher learning, scientific conferences.

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APPROVAL BY THE SUPERVISORS

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DEDICATION

I dedicate this dissertation to my beloved family. To my husband, Tom Mokua, for his immense support and my children, George Sagini, Maurine Mokua and Barbra Mokua, for their prayers, encouragement and understanding throughout my studies.

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ABBREVIATIONS AND ACRONYMS

ANC	Antenatal Care
Covid-19	Coronavirus disease 2019
HCPs	Health Care Providers
HCWs	Health Care Workers
IPC	Infection Prevention and Control
KNH	Kenyatta National Hospital
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
LMICs	Low- And Middle-Income Countries
PNC	Postnatal Care
MCH	Maternal and Child Health
MERS	Middle East Respiratory Syndrome
NBU	Newborns Unit
SARS	Severe Acute Respiratory Syndrome
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SPSS	Statistical Package for Social Sciences
SSC	Skin-To-Skin Contact
UNICEF	United Nations Children's Fund

WHO World Health Organization

DEFINITION OF TERMS

COVID-19: The name of the illness caused by the coronavirus SARS-CoV-2.

Epidemic: A situation where more cases of disease than expected happen in a given area or to a group of people.

Pandemic: A global outbreak of disease. Pandemics happen when a new disease spreads to many countries around the world.

Preterm infant: An infant born before 37 completed weeks of gestation.

Low birth weight infant: An infant with a birth weight lower than 2500g regardless of gestational age.

Postnatal period: Refers to the first six weeks after birth.

OPERATIONAL DEFINITIONS

Kangaroo mother care: A method of care for newborns especially premature and low birthweight infants that involves infants being carried, usually by the mother, with skin-to-skin contact.

Postnatal care: This is the care provided to meet the needs of a mother and her newborn baby for the first six weeks of life following childbirth.

Postnatal mothers: Refers to those mothers who have given birth in the health facility.

Proportion: Means part of a larger group

Utilization: This means the use of

Perception: Refers to the mothers' views or opinions about the KMC practice

ABSTRACT

Background: Kangaroo mother care (KMC) is a sound intervention for the care of premature infants. However, evidence indicates that country-level adoption and implementation of KMC, across the globe, remained sub-optimal. Covid-19 pandemic is a rapidly evolving situation and its effects on utilization of essential maternal and child health care services across the globe remained unclear.

Objective: To assess the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in KNH's Newborn Unit.

Methodology: This was a cross sectional mixed-methods study conducted at KNH's Newborn Unit. The study population consisted of 120 postnatal mothers of preterms admitted in the unit and 30 nurses working at the Newborn Unit. The study sample size consisted of 91 postnatal mothers of preterm babies who were selected using systematic sampling method and the 30 nurses working in the unit selected using census method. A researcher-administered questionnaire and an interview guide were used as the data collection instruments. The research instruments were pre-tested at Mama Lucy Kibaki Hospital using 10% of the study sample size. The quantitative data generated from the closed-ended questions was analyzed using descriptive statistics with Statistical Package for Social Science (SPSS, version 24) and presented as percentages and frequencies. The qualitative data generated from the interviews was analyzed thematically using content analysis.

Results: Of the 62 mothers that practiced KMC, most (80.6%) were practicing intermittent form of KMC while 24.4% did not practice KMC. Most (85.4%) of the mothers and all (100%) of the nurses were in support of KMC practice during the prevailing Covid-19 pandemic on account of its significant benefits to the infants. However, 86.6% of the mothers perceived Covid-19 pandemic as a serious threat to their babies in the context of KMC practice. Further, fear of contracting Covid-19 - 85.4%; fear of the baby contracting Covid-19 - 85.3%; inadequate KMC rooms/spaces - 100%; lack of KMC appropriate clothing - 74.4% and lack of/inadequate support from family - 62.2% were the leading factors impeding the mothers' practice of KMC during the ongoing Covid-19 pandemic. The need for more KMC rooms; provision of KMC appropriate clothing; strict application of Covid-19 prevention guidelines and need for greater support of KMC practice from the family were the suggestions given for enhancing the mothers' KMC practice.

Conclusion: Mothers of preterms at KNH had a positive perception towards practice of KMC during the Covid-19 pandemic, though they considered Covid-19 pandemic as a serious threat to their babies in the context of KMC practice.

Recommendation: There is need for reinforcement among mothers of preterms at KNH on the need for continued practice of KMC during the Covid-19 pandemic

period and to allay any concerns that the mothers have over practicing KMC during the Covid-19 pandemic.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

This is the introductory chapter of the study and includes the background of the study, the problem statement, study justification, research questions, research objectives, hypothesis and the study's conceptual framework.

1.2 Background of the Study

According to the World Health Organization, prematurity (defined as a live birth before 37 completed weeks of pregnancy) is a major cause of neonatal and under-five deaths. The World Health Organization (WHO) estimates that every year, about 15 million babies are born preterm worldwide, indicating a global preterm birth rate of about 11%. With one million children dying due to preterm birth before the age of 5 years, preterm birth is the primary cause of death among neonates, with a prevalence of 18% among all deaths among children aged under 5 years and as much as 35% of all deaths among newborns (aged <28 days). The bulk of these deaths occur in low- and middle-income countries, especially those in Southeast Asia and sub-Saharan Africa. Preterm infants who survive the neonatal period are more likely to experience neonatal morbidities including the acute respiratory, gastrointestinal, immunologic, central nervous system, hearing and vision problems than term infants (WHO, 2020).

According to the World Health Organization (WHO), countries can reduce their neonatal and infant mortality rates by improving the care for the mother during pregnancy and childbirth and that of premature infants. Experience from developed and low- and middle-income countries has clearly shown that appropriate care of premature infants, including their feeding, temperature maintenance, hygienic cord and skin care, and early detection and treatment of infections and complications including respiratory distress syndrome can substantially reduce mortality. One such intervention that helps promote positive neonatal health outcomes for preterms is kangaroo mother care (WHO, 2020).

Kangaroo mother care (KMC) has been defined as early, continuous, and prolonged skin-to-skin contact (SSC) between the mother and preterm babies; exclusive breastfeeding or breast milk feeding; early discharge after hospital-initiated KMC with continuation at home; and adequate support and follow-up for mothers at home (WHO, 2020). On their part, Boundy et al. (2016) define KMC as the early, prolonged, and continuous skin-to-skin contact between the mother (or substitute) and her baby, both in hospital and after early discharge, with support for positioning, feeding (ideally exclusive breastfeeding), and prevention and management of infections and breathing difficulties. Currently, KMC is identified by UNICEF as a universally available and biologically sound method of care for all newborns, particularly for premature and low birthweight infants in both developed and developing countries (Moore et al., 2016).

Existing evidence indicates that KMC has multipronged benefits for the parents, preterm infants, health institutions, and the community. For the parents, KMC promotes parent-child attachment and bonding, improves parental confidence as caregivers, and promotes infant nutrition (Boundy et al., 2016; Norén et al., 2018). The preterm infants receiving KMC, experience more normalized vital signs (temperature, heart rate, respiratory rate, and oxygen saturation), increased weight gain, and fewer hospital-acquired or nosocomial infections (Campbell-Yeo et al., 2015; Uwaezuoke, 2017). Other reported health benefits to the preterm infants include improved cognitive development, normalized growth, reduced pain responses, and positive effects on motor development, as well as improvement of sleep patterns and amelioration of colic (Chan et al., 2016; Zirpoli et al., 2019).

The health institutions benefits of KMC include reduced need for the more expensive conventional neonatal care of preterms and increased parental involvement and opportunities for health education, while the larger community stands to benefit from the reduction in hospital-associated costs and reduced neonatal mortality and morbidity as pointed by Lawn et al. (2010). In general, there is evidence that kangaroo mother care, when compared to conventional neonatal care in resource-limited settings, significantly reduces the risk of mortality in clinically stable

premature infants (Conde-Agudelo & Díaz-Rossello, 2016). Consequently, the WHO recommends KMC for the routine care of premature newborns, adding that KMC should be initiated in healthcare facilities as soon as the newborns are clinically stable. Further, premature infants should be provided as close to continuous kangaroo mother care as possible and that intermittent kangaroo mother care, rather than conventional care, is recommended for premature newborns if continuous kangaroo mother care is not possible (WHO, 2020).

The COVID-19 pandemic caused by the novel coronavirus 2 (SARS-CoV-2) is a rapidly evolving health condition that has caused worldwide concern as it threatens global human health and public safety (Wang et al., 2020). The disease is a highly transmissible and pathogenic coronavirus that emerged in late 2019 in Wuhan China and now it has become a global pandemic. It has overwhelmingly surpassed earlier reported respiratory syndromes including SARS and MERS in terms of both the number of infected people and mortality and continues to pose an extraordinary threat to global public health (He, Deng & Li, 2020).

SARS-CoV-2 is spread primarily via respiratory droplets during close face-to-face contact. The infection can be spread by asymptomatic, pre-symptomatic, and symptomatic carriers. The average time from exposure to symptom onset is 5 days, and 97.5% of people who develop symptoms do so within 11-14 days (Tang et al., 2020). The most common symptoms are fever, cough, sore throat, fatigue and shortness of breath. Treatment for individuals with Covid-19 includes best practices for the supportive management of acute hypoxic respiratory failure (Rabi et al., 2020). Recently, effective vaccines have become available though the primary methods to reduce the spread of the infection/disease are face masks, hand-washing (or sanitizing), social distancing and contact tracing (Chatterjee et al., 2020).

Beyond the direct impacts of Covid-19, the pandemic has triggered a crisis in global health systems, severely undermining the effective delivery of health care services throughout the world. This reality shows that health care services and systems matter more, during pandemics than ever (Singhal, 2020). It is not surprising that the additional burden of planning and responding to the Covid-19 pandemic runs the risk

of overwhelming health systems, leaving ongoing preventive care, such as maternal and child health services, severely disrupted (Singh et al., 2020). Therefore, whilst efforts to curb the spread of the Covid-19 pandemic must be scaled up, it is also imperative that the provision of essential health services continues (Wang et al., 2020).

Notwithstanding the attention and resources that the fight against the Covid-19 pandemic requires, the WHO acknowledges that it is important for governments and their partners world over to ensure critical maternal and child health care services continue to receive the attention they require (Ongole et al., 2020). This has been particularly challenging in resource-constrained settings where the need to meet the demands of Covid-19 management while simultaneously ensuring the continued provision of essential maternal and child health services has proved a difficult task (Singh et al., 2020). There is a need therefore for governments' Ministries of Health and health institutions that support them around the world to prioritize the appropriate and safe management of existing health care services and structures (Cheng & Shan, 2020). In addition, efforts must be made to continue strengthening the capacity of health services now and in the future to ensure that national and global health systems not only withstand pandemics but also deliver on basic health care needs continuously regardless of emerging challenges (Lone & Ahmad, 2020).

Despite strong evidence in support of KMC leading to infant mortality and morbidity reduction, particularly in low resource settings, and its endorsement from the World Health Organization as a sound intervention for the care of premature infants, there is evidence that country-level adoption and implementation of KMC, across the globe, is limited (Boundy et al., 2016). The Covid-19 pandemic is a rapidly evolving situation whose effects on health care services delivery across the globe remains unclear. In light of this, the current study sought to illuminate light on the practice of KMC during the Covid-19 pandemic period among postnatal mothers of preterms in a local context.

1.3 Statement of the Problem

The ongoing Covid-19 pandemic is a clear threat to the progress that health systems have made in the Global South in recent years. As governments around the world focus on their Covid-19 response, the magnitude of the impact the pandemic has had, and still has, on essential health services is beginning to unfold (Singhal, 2020). There is strong evidence that the Covid-19 pandemic has significantly contributed to a decline in the uptake of various maternal and child health services including interventions for the care of preterms such as kangaroo mother care, due to its disruption of routine health care services (Chatterjee et al., 2020). For mothers of premature and low birth weight infants, the fear of skin-to-skin contact as a possible mechanism of Covid-19 transmission remains a real dilemma. Hence, unless urgent action is taken, the Covid-19 pandemic could invariably dent the utilization of routine and essential maternal and child health services for the long term (Ongole et al., 2020).

In her nursing practice at Kenyatta National Hospital's Newborn Unit, the researcher had observed a significant drop in the number of postnatal mothers of premature infants practicing kangaroo mother care. This was also evidenced by the facility's postnatal care review records which acknowledged that the number of postnatal mothers of preterms practicing continuous form of KMC at KNH had fallen by over 70% since the start of the Covid-19 pandemic (KNH PNC Records, 2020). This raises concern as KMC is universally acknowledged as a biologically sound method of care for all premature infants in all settings due to its multipronged benefits for mothers and their preterm babies. Consequently, this study sought to assess the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit.

1.4 Study Justification

This study sought to contribute to knowledge on the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in the country. This was by assessing KMC practice during the Covid-19 pandemic among postnatal

mothers of preterms in KNH's NBU. This was in appreciation of the fact that appropriate care of premature infants was critical given that premature infant who survived the neonatal period were more likely to experience neonatal morbidities including the acute respiratory, gastrointestinal, immunologic, central nervous system, hearing and vision problems than both term and normal-weight infants. It was also in recognition of the fact that kangaroo mother care has been shown to promote positive neonatal health outcomes, particularly for premature infants in both developed and developing countries. In light of the significant disruptions, occasioned by the prevailing Covid-19 pandemic, on delivery of essential healthcare services in the country, it is hoped that this study's findings may inform development of necessary policies and interventions to enhance the practice of kangaroo mother care among mothers of premature infants at KNH during the ongoing Covid-19 pandemic era.

1.5 Research Questions

1. How did postnatal mothers of preterms in KNH perceive the practice of kangaroo mother care in the Covid-19 pandemic period?

2. What were the factors affecting the utilization of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in KNH?

1.6 The Study Objectives

1.6.1 Broad Objective

To assess the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit.

1.6.2 Specific Objectives

1. To determine the perceptions of postnatal mothers of preterms in KNH towards kangaroo mother care practice during the Covid-19 pandemic period.

2. To establish the factors affecting utilization of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in KNH.

1.7 Research Hypothesis

The study tested the null hypothesis that there was no difference in kangaroo mother care practice among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit between pre- and post-Covid 19 pandemic periods.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of previous literature according to the study objectives. It begins with an overview of kangaroo mother care. The chapter also contains an empirical review on kangaroo mother care utilization during the Covid-19 pandemic. The chapter also contains an empirical review on postnatal mothers' perceptions towards KMC practice during the Covid-19 pandemic; factors affecting the mothers' utilization of kangaroo mother care during the pandemic and possible interventions to enhance the mothers' KMC practice during the Covid-19 pandemic period. The chapter point out the research gaps in the literature reviewed and ends with a description of the study's theoretical framework.

2.2 An Overview of Kangaroo Mother Care

In low-income countries, preterm births and low birth weight are major causes of newborn deaths, accounting for 60-80 per cent of these deaths (Kimani et al., 2020). Consequently, both pre-term and LBW infants require specialized care to improve their chances of survival and long-term health progress (Abdela et al., 2020). Given the high cost of incubators and their associated operational and programmatic challenges, making incubator care available and accessible to the majority of families of pre-term and LBW babies is simply not an option in most of the low-income countries (Jagadale & Salunkhe, 2017). Fortunately, kangaroo mother care offers an alternative low-cost and easy adopt solution to improving the health and survival rates of these newborns that is both effective and affordable (Uwaezuoke, 2017).

Kangaroo mother care is a method of care strongly recommended for premature and LBW infants that involve infants being carried in an upright position between the mother's breasts, under her clothes, with skin-to-skin contact (Norén et al., 2018). Key components of kangaroo mother care, according to the WHO, are kangaroo position (prolonged skin-to-skin contact between the mother and infant), exclusive breastfeeding whenever possible, and early discharge with adequate follow-up and support, with KMC being initiated in the facility and continued at home (WHO,

2020). World Health Organization's 2015 guidelines advise that the baby should be placed skin-to-skin in an upright position against the mother's chest, which is essential to keep the baby warm. The baby should then be secured with a binder or wrapper, which helps mothers hold their babies safely close to their chest. This helps the mother to use her hands and to move around easily while carrying the baby skin-to-skin. Approval from significant others is important to practice KMC successfully, both in hospital and at home after discharge (Boundy et al., 2016).

As observed by Campbell-Yeo et al. (2015), the immediate effect of KMC is to prevent prolonged separation of the mother and her premature or LBW infant which can contribute to an increase in morbidity, insufficient breast milk volume, poor growth and poor mother-to-infant bonding. In low-income countries, KMC is recognized as a necessary intervention to promote positive neonatal health outcomes under adverse conditions (Moore et al., 2016). Kangaroo mother care is therefore an effective way to help meet a premature baby's basic needs for warmth, nutrition, stimulation, and protection from infection (Boundy et al., 2016). In effect, KMC reduces the need for expensive conventional medical care, improves neonatal survival, improves parental involvement in care provision, promotes mother-child attachment and offers opportunities for health education (Akbari et al., 2018; Zirpoli et al., 2019).

2.3 Kangaroo Mother Care Utilization during the Covid-19 Pandemic

According to studies carried out by the World Health Organization on kangaroo mother care practice during the Covid-19 pandemic, the findings revealed that the Covid-19 pandemic is severely affecting the quality of care given to small and sick newborns, and particularly the KMC intervention, resulting in unnecessary suffering and deaths (WHO, 2020). The WHO's review also noted that, in many settings, if Covid-19 infection was confirmed or suspected, newborn babies were being routinely separated from their mothers, putting them at higher risk of death and lifelong health complications. Hence Covid-19 pandemic was worsening these risks and more so in the poorest countries where the greatest number of preterm births and infant deaths occur. The review concluded by noting that decades of progress in reducing infant and

children's deaths would be jeopardized unless immediate actions were taken to protect and improve the quality-of-care services for mothers and newborns through the continued expansion of the coverage of lifesaving interventions such as kangaroo mother care (WHO, 2020).

Minckas et al. (2021) analyzed the benefits of kangaroo mother care on survival among preterm neonates compared with the risk of Covid-19 infection acquired from infected mothers/caregivers in selected low- and middle-income countries (LMICs). The results indicated that, in the worst-case scenario, 100% transmission could result in 1,950 neonatal deaths from Covid-19. Conversely, 125,680 neonatal lives could be saved with universal KMC coverage. Hence, the survival benefit of KMC far outweighs the small risk of death due to Covid-19. As such, policymakers and healthcare professionals need to protect KMC services and ensure clearer messaging to keep mothers and newborns together, even in the face of the Covid-19 pandemic.

The United Nations Children's Fund (UNICEF) recently reviewed maternal and newborn health since the beginning of the pandemic. The results showed that before the onset of the Covid-19 pandemic, a good number of LMICs had achieved significant improvements in access to quality, affordable health services, as well as, progress on critical indicators for reducing maternal and child mortality and morbidity, as evidenced by increasing numbers of women who were giving birth safely and accessing the lifesaving services needed before and after childbirth. The review observed that, during the Covid-19 pandemic, routine essential health services for women, infants and children are being diverted and deprioritized with a potentially devastating impact on maternal and child health. Consequently, the international community must respond quickly and decisively to save lives and protect the delivery of these essential services as part of a robust recovery from the pandemic (UNICEF, 2020).

Recently, Okereke et al. (2021) evaluated the impact of the COVID-19 pandemic on access to healthcare in LMICs as well as plausible strategies that can be put in place to ensure that the delivery of essential healthcare services was not halted. The study observed that the covid-19 pandemic continues to be a major public health threat

globally and more so in low- and middle-income countries. The study noted that the impact of the COVID-19 pandemic is far-reaching in many areas and particularly on the continued delivery of routine, essential healthcare services such as antenatal and postnatal care services. It further reported that to mitigate the devastating effect of the COVID-19 pandemic on the already weak health systems in LMICs, these countries need to reinforce and scale up interventions and proactive measures that will ensure that access to healthcare is not disrupted even in course of the pandemic.

A study carried out in Qatar evaluated the impact of COVID-19 on preventive care services. The study performed a retrospective data analysis on utilization of all the preventive care services on offer across 27 selected public health facilities between 2017 and the close of 2020. Results of the study revealed that MCH services including kangaroo mother care intervention were the most impacted by the COVID-19 pandemic, recording a reduction of over 60%, in the post-COVID-19 period. Worryingly, the study projected that utilization of these services was likely to further decline unless urgent measures were taken to restore and safeguard these routines and essential health care services. The study called for concerted efforts aimed at improving the continued delivery of all essential MCH services during the current pandemic (Al-Kuwari et al., 2021).

A similar study done in Mozambique sought to assess the impact of COVID-19 on access to maternal and child health services in Nampula. Study data were retrieved retrospectively through a review of patient visits documentation, comparing pre- and post-covid 19 access rates of MCH services. This data was complemented by one gathered through interviews performed among health professionals, traditional birth attendants and patients. Both descriptive and inferential statistics were used to analyze the data. Results from the study indicated that there were significant reductions in the utilization of various maternal and child health services in the post-COVID-19 era. According to the study, utilization of kangaroo mother care was one of the infant care interventions that were adversely impacted by the COVID-19 pandemic. Hence, the results of the study demonstrated negative collateral effects of COVID-19 on matemal

and child health access in Mozambique. The study called for further research into the lasting effects of Covid-19 on essential MCH services (das Neves Pires et al., 2020).

Kimani et al. (2020) undertook a study on maternal and newborn care in Kenya during the COVID-19 pandemic. From the findings, it was evident that the Covid-19 pandemic has disrupted essential maternal and newborn care services, which could lead to an increase in maternal and neonatal mortality and morbidity. The study reported that the lockdowns, curfews and increased risk for contracting Covid-19 affected the health-seeking behaviors of pregnant women. The study also noted that the Covid-19 virus containment measures required a community-centered approach and not just hospital-based interventions. Consequently, the study recommended the need for the adoption of new strategies to prevent the effects of the pandemic on maternal and child health outcomes in an already strained health system.

2.4 Postnatal Mothers' Perception towards KMC practice during the Covid-19 Pandemic

Chou et al. (2020) did a study on the impact of Covid-19 on maternal and child health, with a focus on postnatal mothers' perception towards kangaroo mother care during the Covid-19 pandemic. The study sought to describe the mothers' experiences of providing their preterm infants with kangaroo mother care during the Covid-19 pandemic. Thirty mothers of preterm infants were interviewed about KMC and the interviews were recorded and transcribed. Data were analyzed using qualitative content analysis. According to the findings, the mothers described the skin-to-skin contact with, and closeness to, the preterm infant as something they valued, and involuntary physical separation, due to the Covid-19, as something they had to accept and adapt to. The study concluded that mothers want to stay close to their preterm infants, but Covid-19 is a major impediment to attaining this desire.

Similarly, Busch-Hallen et al. (2020) also undertook a study to assess the impact of Covid-19 on maternal and child health. As part of the study, the researchers evaluated the attitude of postnatal mothers of low birth weight and preterm babies towards KMC before and after the emergence of the Covid-19 pandemic. The results revealed

significant changes in the mother's perceptions and attitudes towards KMC between the two periods. While a majority of the mothers felt that KMC was beneficial not only to their babies but to them as well, and were freely willing to practice it before the Covid-19 pandemic, a significant proportion of them were reluctant to practice KMC in the post-Covid-19 period, for fear of their babies' contracting the infection. The study concluded that Covid-19 adversely affected the maternal perceptions and attitudes towards KMC implementation.

In another study, Stuebe (2020) looked at whether infants should be separated from mothers with Covid-19. The study reviewed 89 mothers of preterm infants, diagnosed with Covid-19, to determine their perception towards KMC during the pandemic. The mothers were queried regarding their feelings, fears and concerns regarding offering KMC to their babies despite being Covid-19 positive. According to the results, positive feelings like closeness to the baby and a sense of goodness were noted amongst the mothers. However, a significant proportion of the mothers expressed reservations about offering KMC while having the Covid-19 infection. The majority of them expressed fear that they could infect their babies and this could lead to serious adverse neonatal outcomes. The study, thus, concluded that the mothers perceived KMC favorably but were anxious about offering it for fear of transmitting Covid-19 to their infants.

Karkee and Morgan (2020) undertook a study in Nepal to review the experiences of mothers concerning kangaroo mother care during the Covid-19 pandemic. The study was performed among 120 mothers who were visiting two local hospitals in the Kathmandu area during the time of the study. Data was collected via researcher-questionnaires and was analyzed descriptively. The study established that the majority of the mothers favorably perceived kangaroo mother care and did support it. The study also established that the mothers preferred KMC to incubator care. However, most of the mothers were unwilling to practice KMC during the current pandemic for fear that their vulnerable babies could get the infection in case the mothers were infected. The study's key conclusion, therefore, was that the Covid-19 pandemic adversely impacted the perception of postnatal mothers regarding KMC.

Similarly, Rao et al. (2021) performed a thematic analysis of health care providers' voices and experiences on small and sick newborn care during the Covid-19 pandemic. Data was collected through unstructured questionnaires and interview guides and analyzed both descriptively and qualitatively. The survey established that most of the HCPs had a negative perception towards KMC practice during the Covid-19 pandemic. From the feedback received, most of the HCPs indicated strong reluctance towards mothers' practice of KMC during the Covid-19 pandemic due to the perceived risk of mother-infant transmission of the infection and its potential to greatly injure the health of both the mother and infant. The study called for awareness creation among HCPs on how to safely guide the administration of KMC during the Covid-19 pandemic.

A study was carried out in Ghana to investigate preterm infants' mothers' perception of KMC in the care of their premature babies during the Covid-19 pandemic. A total of 60 mothers and 5 key informants constituted the study respondents. Questionnaires and interview guides were utilized to gather the study data. From the findings, before the Covid-19 pandemic, a majority of the mothers found KMC acceptable and were eager to practice it, despite not having adequate knowledge of KMC. However, their outlook of KMC significantly changed in the advent of Covid-19, owing to the fear that it increased the risk of transmission of the infection to their premature babies. The study concluded that correct messaging and information about Covid-19 and its risk during KMC practice should be expended to the mothers (Oke et al., 2020).

Similarly, Temesgen et al. (2021) assessed the utilization of maternal health care services amidst the Covid-19 pandemic in Ethiopia. The study was conducted among postnatal mothers of preterm and low birth weight babies in two local public hospitals between July and December 2020. Data were collected using a pretested questionnaire and analysis of the data was done using SPSS version 20. From the findings, the acceptability and attitude towards KMC during the Covid-19 pandemic emerged as one of the dominant subjects of interest in the study. It was established that, while the majority of the mothers held positive views of kangaroo mother care for it improved thermal regulation, increased mother-infant attachment and improves the growth of

their small babies; a significant proportion of the mother's expressed reservation about offering KMC to their babies during the Covid-19 period due to fear of the risk of Covid-19 transmission. Fear of Covid-19 transmission was thus an impediment to the mother's practice of KMC.

2.5 Factors affecting utilization of KMC during Covid-19 pandemic

In a global review of the effects of the ongoing Covid-19 pandemic on women's access to routine essential health services across the world, the WHO has observed significant reductions in utilization of these services in many countries. Several factors have been singled out as curtailing the effective utilization of the various routine and essential maternal and child health services. In various settings, shutdowns of public transport, curfews, unclear public health messaging about Covid-19 and decreased prioritization of routine MCH services have been seen to discourage women from accessing facility-based health care services. Further, WHO has observed that, in many countries, frontline health workers are left exposed to the virus due to the lack of personal protective equipment and other essential medical supplies. Consequently, health care workers are also fearful for their safety as they are forced to work without proper protection contributing to their reluctance to effectively offering the basic MCH services. WHO thus recommends that governments must address these grave Covid-19 disruptions to secure continued delivery of essential MCH care interventions to the communities (WHO, 2020).

A study was carried out to review reported disruptions to small and sick newborn care throughout the world from the healthcare providers' perspective. The study collected data on levels of Covid-19 preparedness, effects on health personnel and newborn care services, including kangaroo mother care, as well as disruptors and solutions. Results of the study revealed that the HCPs' preparedness for Covid-19 was suboptimal in terms of guidelines and availability of personal protective equipment. More than 85% of the health personnel feared for their health and suffered increased stress. Newborn care practices were disrupted both due to reduced care-seeking and a compromised workforce. Follow-up care was disrupted primarily due to families' fear of visiting hospitals. There was thus an urgent need to protect life-saving

interventions, such as KMC, that are threatened by the Covid-19 pandemic (Rao et al., 2021).

According to a study on the impact of Covid-19 on maternal and child health, it was observed that reductions in KMC practice, during the Covid-19 pandemic, will invariably occur due to limitations in the provision and use of health services and due to Covid-19 related disruptions to the enabling environment. Some of the factors that could lead to reductions in the use of KMC for the care of small infants include limitations in the availability of skilled health workers and increased reluctance by women to use the health system. Evidence from the study suggested that some health facilities were even inappropriately separating newborn babies from mothers and discouraging breastfeeding because of unfounded fears of transmission of Covid-19 through breastmilk. This analysis highlights the need for continued support from governments to promote essential infant care interventions such as KMC during the Covid-19 pandemic (Busch-Hallen et al., 2020).

A prospective observational study carried out in India assessed the effects of the COVID-19 pandemic on obstetric care and outcomes. The study included all antenatal and parturient women admitted to a local hospital between April and August 2020. The study aimed at assessing the reasons for inaccessibility of health care and the findings were compared with the data obtained during the pre-pandemic period between October 2019 and February 2020. Results demonstrated a significant drop in uptake of several essential MCH care services including ANC visits, institutional deliveries and KMC practice. The main reasons for delayed health-seeking were lockdowns and fear of contracting the Covid-19 infection. The study concluded that, although COVID-19 did not have direct effects on pregnancy outcomes, it had caused significant effects on maternal and child health, which required urgent attention (Goyal et al., 2020).

Similarly, another empirical review was conducted to assess the effects of the COVID-19 pandemic on access to maternal health services in India. The review relied on information extracted from national and international reports on maternal health services during Covid-19, along with relevant journal articles. Findings from the

review showed that many women preferred not to seek healthcare due to the fear of themselves being infected with the virus or transmitting it to their unborn babies. Additionally, movement restrictions had made it difficult for many women to access health care facilities. Even those who managed to reach the health facilities, most reported not receiving timely care, as most of the health care workers had been reassigned to the fight against Covid-19. The covid-19 pandemic has highlighted the importance of health preparedness with special attention to vulnerable groups like pregnant women and preterm neonates (Pant et al., 2020).

Hailemariam et al. (2021) explored Covid-19 related factors influencing uptake of antenatal care services in rural Ethiopia. The study was conducted among selected pregnant women residing in rural districts of Bench-Sheko Zone, and HCPs working in the local health care facilities. The data was collected using focus group discussions and in-depth interviews and later analyzed thematically using content analysis. From the findings, the Covid-19 related factors that influenced the uptake of ANC services during the pandemic included health facility-related barriers such as inadequacy of health personnel, perceived poor quality of care during the pandemic, government measures against Covid-19 including lockdowns, anxiety related to the pandemic, and risk minimization tendencies. The study closed by noting that preserving essential health care service was critical to preventing avoidable losses of maternal and child lives during the Covid-19 pandemic period.

Kimani et al. (2020) explored maternal and newborn care in Kenya during the Covid-19 pandemic. It was evident from the study's findings that the Covid-19 pandemic has disrupted essential maternal and newborn care services, and has led to an increase in maternal and neonatal mortality and morbidity rates. In this prolonged health crisis, postnatal mothers deserve a safe and humanized environment where they can effectively care for their babies. The key factors leading to low utilization of essential infant care interventions include lockdowns, curfews, income losses, overwhelmed health systems, health facilities' capacities taken up by patients undergoing management for Covid-19, redeployment of HCWs to COVID-19 care-related efforts

led to increased risk for contracting Covid-19. These affected how women access health care services.

2.6 Possible Interventions for Enhancing KMC practice during Covid-19 pandemic

Menendez et al. (2020) provided suggestions on some interventions to help safeguard the continuity of essential maternal and child health services in the face of the Covid-19 pandemic. This was in appreciation of the fact that strong health systems remained the bedrock of a robust response to the Covid-19 pandemic. The suggested interventions included the need to prioritize essential MCH services and adapting them to changing contexts and needs; the need to optimize service delivery settings and platforms; establishing safe and effective patient flow at all levels during the pandemic and rapidly optimizing health workforce capacity to help them cope with the intense needs of the pandemic while delivering the essential MCH services. The study also added that by improving the equity and flexibility of their health systems, all countries can mitigate the impacts of Covid-19 in the short term and build better health systems in the longer term.

Similarly, Paul and Mondal (2021) suggested some possible interventions on safeguarding maternal and child healthcare services in India during the Covid-19 pandemic. The study argued that, at the national level, fiscal space for health should be rapidly increased to enable increased investment in medical and protective equipment to protect health workers in rural and hard-to-reach areas. The study also noted that service delivery to vulnerable groups such as displaced people, the elderly, women and children should be prioritized, as they are likely to suffer the most during the Covid-19 lockdowns. The study also suggested that the Indian government should consider contracting the private sector to provide both Covid-19 and other essential MCH services to help alleviate capacity constraints in the public health sector during the pandemic.

Similar views were expressed by Budhathoki and others who in a retrospective study on maternal health care services utilization amidst the Covid-19 lockdowns

highlighted several suggestions that could help safeguard the continued delivery of essential maternal healthcare services during the pandemic. These included expanding hospital infrastructure to accommodate Covid-19 cases and other patients at the same time; introducing community-based care utilizing community health workers to deliver the maternal health services, thus minimizing service interruptions and integrating community care networks with primary health systems to ensure continued delivery of the services. The study noted that the Covid-19 pandemic offers an opportunity to reinvigorate health systems to strengthen efforts that prioritize decentralized, community-based and client-focused mechanisms for delivering health services and information (Budhathoki et al., 2020).

Okereke et al. (2021) in a review of current evidence regarding the impact of covid-19 on access to healthcare in LMICs suggested various proactive measures to ensure continuity of essential health services delivery in these countries during the pandemic. These included early isolation of infected persons, cross-border knowledge sharing, effective contact tracing, standard reporting and reliable surveillance system, increased testing capacity, cross-border cooperation and collaboration in LMICs, effective community engagement and infection prevention and control measures, including maintaining physical distance and proper hand and cough etiquette/respiratory hygiene should continue to be prioritized in LMICs. These measures would offer the countries the opportunity to respond adequately to the unprecedented Covid-19 pandemic and still ensure that healthcare delivery is not disrupted.

Similarly, some recommendations were generated in a review examining what should be done concerning KMC during the Covid-19 pandemic. These included that existing health facilities should maintain and promote essential, evidence-based maternal and newborn health services such as KMC during the pandemic; the health facilities should emphasize strict observance of issued IPC guidelines in all their departments and wards during care delivery; encourage mother-baby contact instead of isolation where the mothers are encouraged to breastfeed and practice KMC for low birth weight/preterm babies while following the appropriate protective measures; and

engaging mothers and communities to understand their needs, questions and fears about the access of essential MCH services during the Covid-19 pandemic. The key being to embed IPC protocols/measures into the delivery of maternal and child health services (Hakimi, 2020).

The impact of the Covid-19 pandemic on MCH was recently reviewed by Oke et al. (2020) and who noted that the greatest challenge facing governments' world-over currently is how to sustain the administration of essential health services amidst the Covid-19 pandemic. The study noted that there is an urgent need to adapt the modes of healthcare delivery to prevent further disruptions occasioned by the Covid-19 pandemic. To safeguard the continued delivery of essential maternal and child health services during the Covid-19 pandemic, the study suggested that governments and health policy makers should maintain the availability of essential medications, equipment and supplies in all public health facilities.

Some of the other suggestions highlighted in the study included that governments and health policy makers should fund public health and remove financial barriers to access; strengthen communication strategies to support the appropriate use of essential services; strengthen the monitoring of essential health services and should use digital platforms to support the delivery of essential health services. Further, adherence to Covid-19 prevention guidelines issued by the ministry of health is critical during the provision of all forms of health services. Additionally, media platforms and various modes of communication should be leveraged to raise awareness about the importance of accessing maternal and child health services during the pandemic period (Oke et al., 2020).

Kimani et al. (2020) in a study on maternal and newborn care during the Covid-19 pandemic in Kenya, proposed for the integration of community-based MCH services to avoid unnecessary travels, reduce the burden on hospitals, and minimize the danger of Covid-19 infection among mothers and their newborns. On their part, Abdela et al. (2020) argued that additional investments in health systems must be made to enable countries to both adequately respond to the pandemic and ensure the continuity of critical maternal and newborn health services and supplies. Further, to avoid crowding

of higher-level health facilities, MCH services such as family planning, antenatal care, postnatal care and well-baby/child visits can be redirected to lower-level health services, where possible. Outreach mechanisms to deliver essential MCH services could also be considered when needed (Abdul-Mumin et al., 2020).

2.7 Literature Gaps

The reviewed empirical studies pointed to a general agreement that the Covid-19 pandemic continued to be a major public health risk throughout the world and had caused significant disruption on the provision of essential health services including maternal and child health services across the globe. The empirical literature also pointed to a decline in utilization of kangaroo mother care among postnatal mothers of low birth weight and premature infants during the pandemic period, especially when compared to the pre-COVID-19 era. The empirical literature review also suggested that a wide range of Covid-19 related factors had an effect on the utilization of kangaroo mother care among the postnatal mothers of preterms during the pandemic. A wide range of possible interventions were suggested to safeguard the continued delivery of routine, essential maternal and child health services even as countries strive to contain the Covid-19 pandemic.

However, most of the studies reviewed in the literature were largely done in developed countries whose healthcare settings and systems differed from that of Kenya. From the empirical literature, it was clear that there were limited local empirical studies on kangaroo mother care practice during the Covid-19 pandemic among postnatal mothers of preterms in the country which denoted need for the current study. The findings from this study may inform interventions that could be adopted to enhance kangaroo mother care practice among postnatal mothers of preterms at Kenyatta National Hospital during the Covid-19 pandemic.

2.8 Theoretical Framework

The theoretical framework for this study was based on Dorothea Orem's Nursing Systems Theory developed in 2001. The theory integrates three other theories, namely, the self-care theory, the self-care deficit theory and the nursing systems

theory, and the three correlate to give full meaning to the nursing systems theory (Karkee & Morgan, 2020). Under the self-care theory, self-care is defined as the individual's ability to perform actions for his/her benefit. Consequently, when one's demands are not completely accomplished or when the demands exceed the individual's basic skills concerning the activities, self-care deficit is characterized by consequent demand for nursing action (Almeida et al., 2020).

The Nursing Systems Theory exposes nursing actions according to patient's needs. Under this theory, nursing actions are grouped into three classifications: *compensatory system* - when the patient depends completely on the nurse's actions; *partially compensatory system* - when the patient is partially dependent, showing partial ability to develop some actions that provide them with self-care; and *support-education system* - when the patient can carry out self-care, the role of the nurse is to educate the patient on recommended guidelines regarding the condition in question (Al-Kuwari et al., 2021).

Applying this theory to the current context of the Covid-19 pandemic, individuals can be viewed as being under any of the 3 nursing actions classifications. Under the support-education system category, the nurse can offer guidance by training the individual on the following types of care: frequent hand washing or when it is impossible to wash using an alcohol-based hand sanitizer; respiratory protocol when sneezing or coughing - covering mouth and nose with tissue paper or with the inner side of the arm; avoiding touching the face, especially eyes, nose and mouth; and keeping a distance of at least one and a half to two meters from other people especially those coughing or sneezing (Goyal et al., 2020).

If an individual becomes mildly sick with Covid-19 infection, it demands action under the partially compensatory system. Here, the nurse offers some form of assistance, and, concomitantly, the patient can also perform some actions that show a certain degree of independence in self-care. The nurse may guide the patient on aspects such as management of home isolation; the importance of restricting the patient to a room in the house and, if it is not possible, that the patient continuously wears a surgical

mask; and effective daily cleaning of the house, especially frequently touched places and items, among others (Pant et al., 2020).

Regarding the individual who worsens in the manifestations of the Covid-19 disease, characterized mainly by the severe acute respiratory syndrome, this situation calls for nursing assistance that fits with the compensatory system. In this context, nurses develop their clinical practice in line with the demands of high complexity care, providing constant care, because many patients, at this level of complication, are unable to perform any self-care action that brings them any benefit (Menendez et al., 2020). This theory was therefore relevant to the current study as it highlighted the three stages that individuals could be in concerning the Covid-19 disease and outlined the kinds of nursing actions required under each phase to complement individual self-care where possible. The theory also offered a framework for the conscious, critical and reflective application of the nursing process, during this pandemic period, making the provision of quality care possible.

2.9 Conceptual Framework

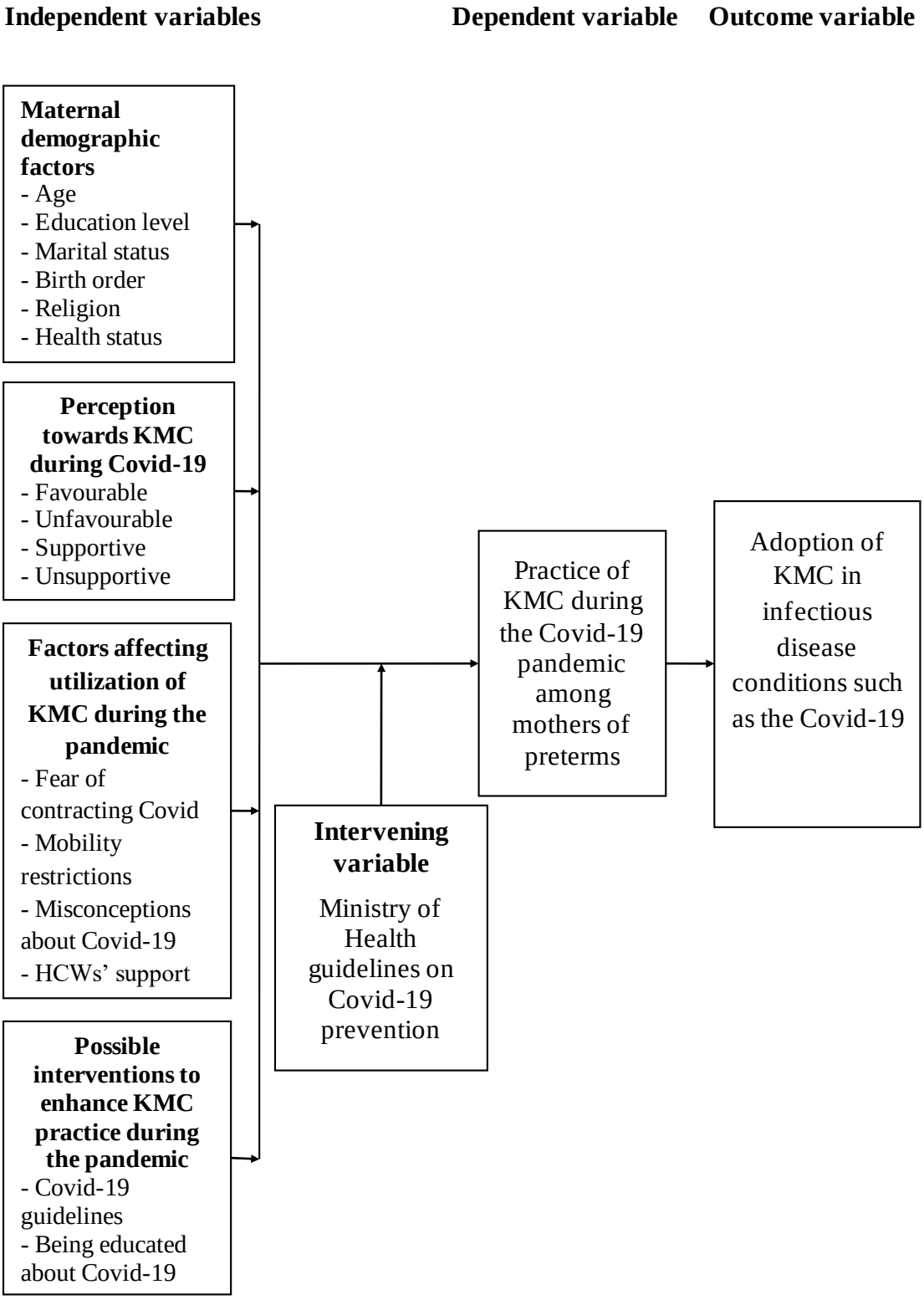


Figure 2.1 Conceptual framework showing study variables

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the framework of the study and the methodology that was adopted in the study. It covers key areas in this study including; the study design, study area, target population, sample size and sampling techniques, the study inclusion and exclusion criteria, data collection instruments and procedures, pilot testing, validity and reliability of research instrument, data analysis and ethical considerations.

3.2 Study Design

The study adopted a cross-sectional descriptive study design to assess the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit. It was also a mixed-methods study as it utilized both quantitative and qualitative data. As observed by Creswell (2012), a mixed-methods research design was a procedure for collecting, analyzing, and "mixing" both quantitative and qualitative research methods to understand a research problem. This method was preferred as it allowed the researcher to use both quantitative and qualitative data to better understand the subject under study (Kothari, 2004).

3.3 Study Area

The study was carried out in the Newborn Unit of Kenyatta National Hospital. Kenyatta National Hospital (KNH) is the country's largest public hospital, located about four kilometers from the Nairobi city Centre, off Ngong road along Hospital Road. The current bed capacity of the hospital is about 2,000. The facility offers a wide range of specialized in and out-patient health care services. The specialized health-care services provided at KNH include radiotherapy, heart surgery, neurosurgery, oncology, diabetic, renal dialysis and kidney transplant operations, plastic and reconstructive surgery, orthopedic surgery and burns management among others. The hospital also facilitates medical training and research and participates in

national healthcare planning. The Newborn Unit (NBU) at the Kenyatta National Hospital is located on the first floor, parts of the second floor and third floor and has a bed capacity of 60 for the infants. The unit admits newly born infants and it is where the preterm infants are cared for and closely monitored after delivery. This setting provided a good platform for evaluating kangaroo mother care practice, during the covid-19 pandemic, among the postnatal mothers of preterms admitted in the hospital.

3.4 Target Population

The population of this study was postnatal mothers of preterm babies admitted in KNH's Newborn Unit. On average, 120 cases of premature infants were handled in KNH's Newborn Unit every month and this constituted the study's population. In addition, the study population also included the 30 nurses who worked in KNH's Newborn Unit.

3.5 Inclusion and Exclusion Criteria

The study included all postnatal mothers of preterm infants admitted in KNH's Newborn Unit during the study period and who consented to take part in the study. The study also included all the nurses working in KNH's NBU and who consented to be part of the study. The study excluded postnatal mothers of preterms who were critically ill as well as nurses on leave during the study period.

3.6 Sample Size Determination

The study sample size, for the postnatal mothers of the preterms, was calculated using the Fishers et al. (1998) formula as follows:

$$n = [z^2pq/d^2]$$

Where;

n =desired sample size (if the population was greater than 10,000).

Z = Standard normal deviation at the required confidence interval, 95%. In this case, it was 1.96

p = the proportion of the population with desired characteristics set at 0.5.

q = (1-p) = 1 - 0.5 = 0.5

d = the level of significance, set as 0.05.

Hence, $n = (1.96^2 \times 0.5 \times 0.5) / 0.05^2$

n = 384

Given that the population for the study (that is, 120) was less than 10,000, the sample size was moderated for using the Finite Population Correction formula as recommended by Fishers et al. (1998) as follows;

$n_f = n / [1 + n/N]$

Where n_f = desired sample size when the total population was less than 10,000

n = estimated sample size when the total population (N) was greater or equal to 10,000

N = estimated total population

Therefore, 384 / (1 + [384/120]) = 384/4.2 = 91.4.

Hence, the study sample size comprised of 91 postnatal mothers of preterms in KNH's Newborn Unit.

In addition, the 30 nurses who worked in KNH's Newborn Unit also formed part of the study's sample.

3.7 Sampling Technique

To obtain the study's sample size of the 91 postnatal mothers of preterms at KNH's NBU, the researcher used systematic sampling method. Using the average number of premature births cases recorded weekly in KNH in 2019 which was 30 and the desired sample size of 91, the sampling interval (k) was calculated as follows:

k = n/s = 91/30 = 3.03 Where n was the sample size and s was the average number of preterm births cases recorded weekly in KNH in 2019.

Consequently, every 3rd mother of a preterm baby admitted to KNH's Newborn Unit, who met the inclusion criteria, was recruited into the study.

Additionally, no sampling was done for the nurses as they were few. Hence, census technique was applied in their selection. Kothari (2004) postulated that a sample of 100% of the target population was used when the target population was small. Thus, the study sample size also comprised of the 30 nurses who worked in KNH's Newborn Unit as respondents.

3.8 Data Collection Instruments

The study instruments were a researcher-administered questionnaire (Appendix 5) and an interview guide (Appendix 7). The questionnaires were administered among the postnatal mothers of preterms while the interview guide was administered among the nurses working in KNH's Newborn Unit with the view of obtaining every nurse's experience of KMC practice during the pandemic.

The reason for choosing the questionnaire as the primary data collection instrument was mainly due to its practicability, applicability to the research problem and the size of the population. It was also cost-effective (Denscombe, 2014). The questionnaire included both close-ended and open-ended questions. The questionnaire was structured into 5 parts as follows: Section A - demographic information of the mothers; Section B - the mothers' KMC practice during the Covid-19 pandemic; Section C - the mothers' perceptions towards KMC during the Covid-19 pandemic; Section D - factors affecting the mothers' utilization of KMC during the Covid-19 pandemic and Section E - possible interventions to foster KMC practice during the Covid-19 pandemic.

On its part, the interview guide sought to gather the opinions and perceptions of the nurses working in KNH's New-born Unit regarding the administration of kangaroo

mother care to mothers of preterms in the facility during the Covid-19 pandemic period.

3.9 Data Collection Procedures

Following ethical clearance by the KNH-UoN Ethics and Review Committee and approval by the KNH's pediatrics department, both the questionnaires and the interview guides were administered to the study participants by the principal investigator after explaining to them the intention of the study and obtaining their informed consent. The data collection exercise involved the investigator asking the participants the questions as contained in the research tools and documenting their responses. The principal researcher did note-taking during the interviews with the nurses. The interviews were held in a confidential reception office located within the NBU.

Due to the prevailing COVID-19 pandemic in the country and to help limit the risk of Covid 19 transmission, the researcher ensured that the Ministry of Health's protocols on Covid-19 prevention were strictly adhered to during the data collection exercise. These included; putting on a face mask, ensuring adequate hand washing with soap and running water or sanitizing using alcohol-based sanitizer with 70% concentration; avoiding shaking hands with the participants during the interview process and adhering to recommended social distancing of 1.5 meters during the interviews.

The respondents were given ample time to answer the questions, as contained in the study tools, without interfering with their responses. Once the study participants responded to the research instruments, the researcher scrutinized them for completeness. To ensure confidentiality, the filled-in questionnaires and interview guides were stored safely under lock and key in readiness for data entry and analysis. The data collection exercise took four weeks.

3.10 Pretesting of Study Tools

Pretesting of the study tools was carried out at Mama Lucy Kibaki Hospital a week before the conduct of the main study, where 9 questionnaires and 3 interview guides,

representing 10% of the study sample were used. Mugenda and Mugenda (2003) asserted that 10% of the sample size was adequate for purposes of pre-testing the research tools. Upon completion of pretesting, the study tools were modified where applicable and a final form of the study tools was made.

3.11 Validity and reliability of the research instrument

Validity refers to the degree to which an instrument measures what it is supposed to measure (Kothari, 2010) or whether the findings obtained from the analysis of the data represent the phenomena under study (Denscombe, 2014). The study tools were availed to the supervising lecturers and peers who helped establish their content and construct validity to ensure that the items were adequately representative of the study subject.

Reliability is the ability of a research instrument to produce consistent findings after repeated trials (Nsubuga, 2006). Using data from the study tool's pre-testing, the reliability of the questionnaire was estimated using the Cronbach's Alpha Coefficient; findings of at least 0.70 were accepted. In case a low coefficient level was recorded, the researcher would have adjusted it to improve the reliability of the research tool.

3.12 Data Analysis

This study utilized the Statistical Package for Social Science (SPSS, version 24) as the data analysis software. Coding of the data and data entry preceded the analysis of the data. The quantitative data obtained from the closed-ended questions were analyzed with descriptive statistics using SPSS version 24 and presented as percentages and frequencies. Evaluation of the study hypothesis was done using chi-square tests at a significance level of 5%. The study findings were presented in form of tables, graphs and charts.

Qualitative data generated from interviews were analyzed thematically using content analysis and presented in narrative form.

3.13 Dissemination of Study Findings

The study results shall be disseminated by submitting a copy of the final report of the thesis to the University of Nairobi's Library, via publication in a high impact journal and via presentation in organized seminars, workshops and conferences.

3.14 Ethical Considerations

The permission to carry out the study was obtained from the KNH-UoN Ethics and Review Committee. Permission to collect data was also sought from the head of department and units in-charges at Kenyatta National Hospital. All participants were required to give written consent before they participated in the study. Confidentiality was maintained throughout the study for all information obtained. In addition, anonymity was achieved by coding all questionnaires and by not indicating the names or any other form of personal identification on the questionnaires and ensuring that all information given was used strictly for research purposes only. Participation in the study was voluntary and the participants were free to withdraw from the study at any time without victimization. The participants were not coerced or given rewards to join the study. There were no associated risks to the study respondents from their participation in this study.

3.15 Study Limitations

The study was based on results gathered from a single hospital in the country. Thus, the findings may not be generalized to all other hospitals in the country due to differences in sizes, geographical location and institutional set up. To counter this limitation, a recommendation for similar studies in other hospitals in the country to allow for comparison and generalization of the study findings has been made.

3.16 Study Assumption

The study was based on the assumption that the respondents gave honest answers.

3.17 Study Delimitations

The study was carried out in the Newborn Unit of KNH and involved postnatal mothers of preterms admitted in the Unit and nurses working in the Unit as respondents. The study reviewed kangaroo mother care practice during the Covid-19 pandemic among the postnatal mothers of preterms with the main focus being the postnatal mothers' perceptions towards KMC practice during the Covid-19 pandemic period and establishing the factors affecting utilization of kangaroo mother care during the Covid-19 pandemic among the postnatal mothers of preterms in KNH.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter presents the study results as set out in the research methodology. The results were presented on the practice of kangaroo mother care during the covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit. The chapter begins with highlighting the response rate and then provides results on the respondents' demographic characteristics before outlining the findings based on the research objectives.

As for the study's response rate, 91 postnatal mothers of preterms in KNH and 30 nurses who worked in KNH's Newborn Unit were targeted as respondents. From the questionnaires administered among the preterms' mothers, the researcher was able to obtain adequate responses from 82 of the postnatal mothers of preterms translating into a response rate of 90.1%. In addition, from the interviews held among the nurses working in KNH's Newborn Unit, the researcher was able to obtain adequate responses from 26 of the sampled nurses translating into a response rate of 86.7%. These response rates were considered sufficient and representative and conform to Mugenda and Mugenda (2003) stipulation that a response rate of 50% was adequate for analysis and reporting; a rate of 60% was good while a response rate of 70% and over was excellent.

4.2 Demographic Characteristics of the Respondents

The study sought to establish the demographic profile of the mothers of preterms as study participants. The demographic attributes considered were age, education level, marital status, number of children, religion and health status during pregnancy. The findings were as presented in Table 4.1.

Table 4.1 Demographic characteristics of the postnatal mothers

		Frequency	Percent
Age	18 - 29 years	31	37.8
	30 - 39 years	39	47.6
	40 - 49 years	12	14.6
	Total	**82**	**100.0**
Education level	No formal education	1	1.2
	Primary	9	11.0
	Secondary	40	48.8
	Tertiary	32	39.0
	Total	**82**	**100.0**
Marital status	Single	15	18.3
	Married	63	76.8
	Separated	2	2.4
	Divorced	1	1.2
	Widowed	1	1.2
	Total	**82**	**100.0**
Number of children	One child	37	45.1
	2 - 3 children	37	45.1
	4 - 6 children	8	9.8
	Total	**82**	**100.0**
Religion	Christian	76	92.7
	Muslim	6	7.3
	Total	**82**	**100.0**
Any pre-existing illness at the time of pregnancy	Yes	19	23.2
	No	63	76.8
	Total	**82**	**100.0**
Currently practicing KMC?	Yes	62	75.6
	No	20	24.4
	Total	**82**	**100.0**

From the findings shown in Table 4.1 above, it was evident that the respondents were all adults most of whom were aged between 18 and 39 years (85.4%, n = 70); most had attained basic education level (Secondary - 48.8%; Tertiary - 39%); most were married (76.8%, n = 63); most had 1 - 3 children (90.2%, n = 74); most were

Christians (92.7%, n = 76); most did not have any pre-existing illness during their pregnancy (76.8%, n = 63) and most were currently practicing kangaroo mother care for their babies (75.6%, n = 62).

This implied that the postnatal mothers of preterms who constituted the study respondents were largely 18 - 39 years olds with a sound education background, were married and with 1 - 3 children, professed the Christian faith, had no pre-existing medical conditions during their pregnancy and were currently practicing KMC.

4.3 Demographic Characteristics of the Nurses

The study sought to establish the demographic profile of nurses working in KNH's Newborn Unit as respondents. The demographic attributes considered included gender, age and duration worked in the Newborn Unit. The results were as depicted in Table 4.2.

Table 4.2 Nurses' demographic characteristics

		Frequency	Percent
Gender	Male	5	19.2
	Female	21	80.8
	Total	**26**	**100.0**
Age	18 - 29 years	4	15.4
	30 - 39 years	11	42.3
	40 - 49 years	6	23.1
	50 years & above	5	19.2
	Total	**26**	**100.0**
Duration worked in the Newborn Unit	1-5 years	8	30.8
	6-10 years	8	30.8
	Over 10 years	10	38.5
	Total	**26**	**100.0**

As to the nurses' gender, most (80.8%, n = 21) of the nurses were female while 19.2% (n = 5) were male. As to the nurses' age, 42.3% (n = 11) were aged 30 - 39 years; 23.1% (n = 6) were aged 40 - 49 years; 19.2% (n = 5) were aged 50 years and above

while 15.4% (n = 4) were aged 18 - 29 years. Further, 38.5% (n = 10) had worked in the Newborn Unit for over 10 years while 30.8% (n = 8) of the nurses had worked in the Newborn Unit for 6 - 10 years and for 1 - 5 years.

This implied that the nurses who constituted the study participants were largely female, aged 30 years and above and had worked in the Newborn Unit for a considerable period.

4.4 Kangaroo Mother Care Practice during the Covid-19 Pandemic

The study explored the postnatal mothers' awareness of kangaroo mother care, their awareness about Covid-19 pandemic and whether there was shift in the form of KMC practiced by the mothers in light of the prevailing Covid-19 pandemic. Results were as described herein;

4.4.1 Awareness of Kangaroo Mother Care among the Mothers

Findings on the mothers' awareness of kangaroo mother care were as depicted in Figure 4.2.

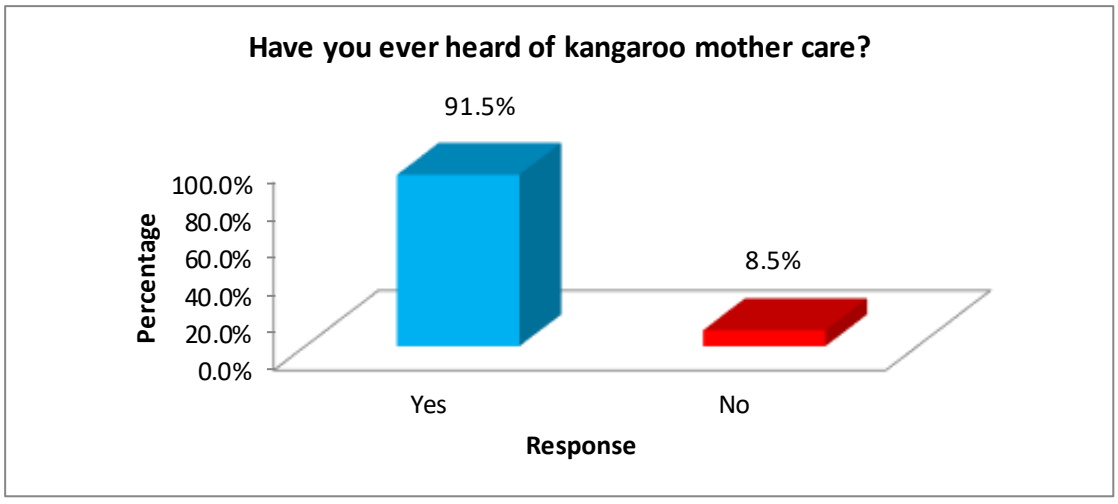


Figure 4.2 Whether the mothers were aware of kangaroo mother care

From the findings, most (91.5%, n = 75) of the mothers had heard of kangaroo mother care. According to the findings, the mothers understood kangaroo mother care as skin to skin contact between the mother and the baby and were of the view that it was

important as it promoted bonding between the mother and the baby, it helped keep the baby warm and also promoted breastfeeding. This denoted that the mothers had good awareness of kangaroo mother care.

4.4.2 Awareness of Covid-19 pandemic among the Mothers

The mothers were queried on whether they had heard about Covid-19 pandemic. The findings were as presented in Table 4.3.

Table 4.3 Mothers' awareness of Covid-19 pandemic

		Frequency	Percent
Heard about Covid-19 pandemic?	Yes	81	98.8
	No	1	1.2
	Total	**82**	**100.0**
Correctly identified how Covid-19 pandemic was transmitted [n = 81]	Yes	73	90.1
	No	8	9.9
	Total	**81**	**100.0**
Correctly identified the symptoms of Covid-19 infection [n = 81]	Yes	77	95.1
	No	4	4.9
	Total	**81**	**100.0**

From the findings, almost all (98.8%, n = 81) of the mothers acknowledged that they were aware of Covid-19 pandemic. Further, of the 81 mothers who had heard of Covid-19 pandemic, most (90.1%, n = 73) were able to correctly identify how Covid-19 pandemic was transmitted, that is, through coming into contact with infected respiratory secretions/droplets from an infected person. In addition, most (95.1%, n = 77) of the mothers were able to correctly identify the symptoms of Covid-19 infection as including headache, fever, coughing, sore throat, fatigue, body ache and difficulty in breathing/shortness of breath and were clear that nose bleeding and body rash were not symptoms of Covid-19 infection. This denoted that the mothers were fairly knowledgeable of the Covid-19 pandemic.

4.4.3 Shift in Form of KMC Practiced by the Mothers due to Covid-19 Pandemic

Findings on changes in the form of KMC practiced by the postnatal mothers of preterms due to the prevailing Covid-19 pandemic were as shown in Table 4.4 below.

Table 4.4 Changes in the mothers' practice of KMC due to Covid-19 pandemic

		Pre Covid-19 pandemic period		During Covid-19 pandemic period	
		Freq.	**%**	**Freq.**	**%**
Those practicing KMC	Yes	82	100.0	62	75.6
	No	0	0.0	20	24.4
	Total	**82**	**100.0**	**82**	**100.0**
If yes, form of KMC they were practicing [n = 62]	Continuous	80	97.6	12	19.4
	Intermittent	2	2.4	50	80.6
	Total	**82**	**100.0**	**62**	**100.0**
Aggregate decline in application of continuous form of KMC				N	68
				%	78.2

From the findings, the following observations were made;

On aggregate, the proportion of mothers who practiced kangaroo mother care declined from 100% in the pre Covid-19 pandemic period to 75.6% during the Covid-19 pandemic period.

Secondly, there was a major shift in the form of KMC practiced by the mothers as a result of the ongoing Covid-19 pandemic. Prior to Covid-19 pandemic, majority (97.6%, n = 80) of the mothers practiced continuous form of KMC, which is the most preferred and recommended form of KMC. However, this proportion decreased to 19.4% (n = 12) during the Covid-19 pandemic, with most (80.6%, n = 50) of the postnatal mothers opting for intermittent form of KMC during the Covid-19 pandemic.

Therefore, on aggregate, the proportion of postnatal mothers of preterms at KNH practicing the recommended form of KMC (that is, continuous KMC) had declined by

78.2% in the current Covid-19 pandemic period compared to the pre Covid-19 pandemic period, denoting a major decline in the practice of continuous form of kangaroo mother care among the study respondents. This implied that most of the mothers were not practicing the recommended form of KMC, which was continuous KMC.

Further, mothers currently practicing KMC were queried on reasons for practicing kangaroo mother care. The mothers indicated that they practiced kangaroo mother care as it promoted mother-baby bonding, it promoted infant breastfeeding, it helped keep the infant warm, it enhanced mothers confidence in infant caregiving, it helped infants gain weight and improved infant's sleep patterns.

In addition, mothers who were currently not practicing kangaroo mother care were requested to indicate reasons for their non-practice of KMC. According to the findings, the mothers' reasons for non-practice of kangaroo mother care at the time of the study included lack of awareness about kangaroo mother care, fear of the baby contracting Covid-19 infection, the baby being unwell, perceiving the baby as being too vulnerable and inadequate support from the healthcare providers.

These sentiments were also shared by the nurses working in KNH's Newborn Unit, majority (92.3%, n = 24) of whom concurred that Covid-19 had affected practice of kangaroo mother care among mothers of preterms and LBW infants in the hospital, as enumerated in the following verbatim;

Nurse respondent 004 pointed that:

> "----------many mothers' fear of contracting Covid-19 and/or transmitting it to the infant."

Nurse respondent 010 added that:

> "The number of mothers practicing KMC during the prevailing Covid-19 pandemic has gone down due to fear of contracting Covid-19 among the mothers and their fear that the infant could also contract Covid-19."

Nurse respondent 016 averred that:

> "Compared to pre-Covid-19 period, lesser number of women are now able to practice continuous KMC due to social distance restrictions and fear among the mothers of contracting the infection and possible transmission to the infant."

Nurse respondent 022 noted:

> "Anxiety of handling the preterms during this Covid-19 period is high especially in light of the infants' low immunity. As such, more mothers are wary of practicing KMC in this period."

Nurse respondent 025 noted:

> "Continuous KMC was stopped for some time and it has just been re-started due to fears of Covid-19 transmission among the mothers and their infants."

4.5 Perceptions towards Kangaroo Mother Care Practice during the Covid-19 Pandemic among the Mothers

The study explored the perceptions towards KMC practice during the Covid-19 pandemic among postnatal mothers of preterms in KNH.

4.5.1 Whether the Mothers were In Support of KMC Practice during the Covid-19 Pandemic Period

On whether the mothers supported KMC practice during the prevailing Covid-19 pandemic period, the findings were as shown in Figure 4.3.

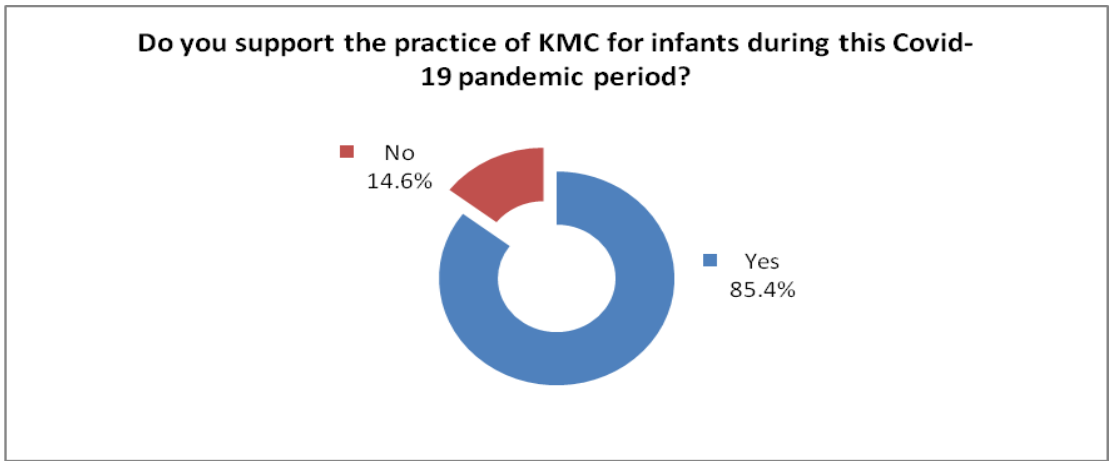


Figure 4.3 Mothers' support of KMC practice during Covid-19 pandemic

From the findings, most (85.4%, n = 70) of the mothers indicated that they were in support of the practice of KMC during the Covid-19 pandemic period on account of its significant benefits to the infants.

Similarly, the nurses working in KNH'S Newborn Unit unanimously agreed that they would advise the mothers to practice KMC during the Covid-19 pandemic period provided the mothers observed the stated Covid-19 infection prevention measures. This was as captured in the following excerpt;

Nurse respondent 001 said:

> "Yes, KMC should be continued as long as the mothers observe the issued Covid-19 related IPC measures."

Nurse respondent 007 said:

> "Indeed, my view is that KMC should be continued even during the current pandemic provided the mothers strictly observe the issued Covid-19 related IPC measures."

Nurse respondent 010 opined:

> "Yes, as long as they keenly observe Covid-19 prevention guidelines as they do KMC."

Nurse respondent 012 pointed:

> "Yes, as KMC is a good intervention for the preterm infants. If Covid-19 prevention measures are adhered to, risk of Covid-19 transmission during KMC practice is minimal."

Nurse respondent 015 pointed:

> "Yes, as KMC's benefits to the infant far outweigh Covid-19 risks. However Covid-19 prevention guidelines should be strictly observed during KMC practice."

Nurse respondent 026 pointed:

> "Yes, as the benefits of KMC outweigh the risks of Covid-19, more so when necessary Covid-19 prevention guidelines are observed when performing KMC."

4.5.2 Whether the Mothers were Scared of Practicing KMC during the Covid-19 Pandemic

The mothers were queried on whether they were scared of practicing kangaroo mother care during the Covid-19 pandemic. Figure 4.4 below contains the findings.

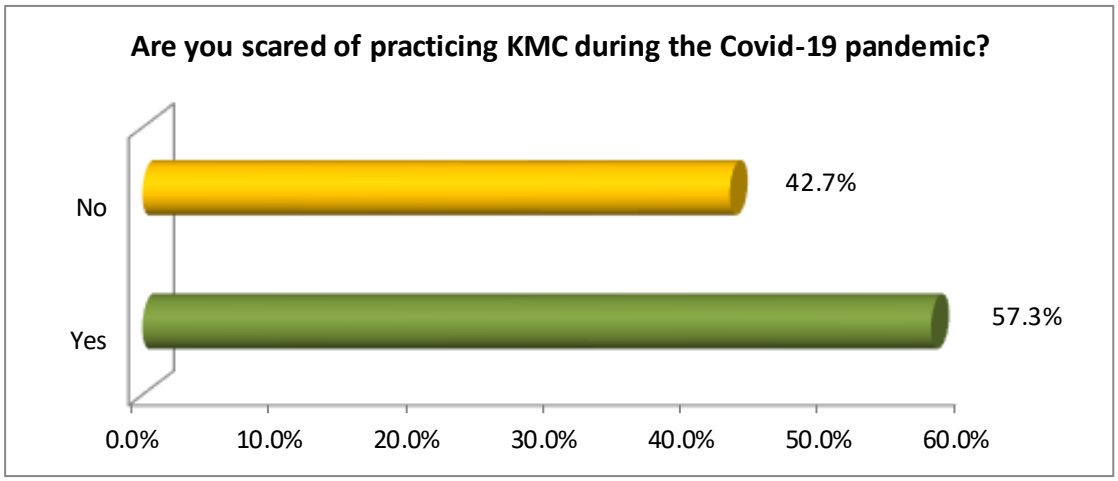


Figure 4.4 Whether the mothers were scared of practicing KMC during the Covid-19 pandemic

From the findings, most (57.3%, n = 47) of the mothers indicated that they were scared of practicing kangaroo mother care during the Covid-19 pandemic while 42.7% (n = 35) indicated that they were not scared of practicing kangaroo mother care during the Covid-19 pandemic.

The reasons for being scared of practicing kangaroo mother care during the Covid-19 pandemic as cited by the 47 mothers included the feeling that the baby was too vulnerable; fears that the baby could contract Covid-19 infection; fears that they too could contract Covid-19 infection, low awareness among the mothers as to how Covid-19 could affect the baby, lack of guidance as to how to perform KMC in light of Covid-19 and general fear over the health and wellbeing of the baby in the face of the Covid-19 pandemic. This denoted that there were concerns among most of the mothers over possible effects of Covid-19 on their own health and that of their babies.

4.5.3 Perception of Covid-19 as a Threat to the Infant during KMC Practice

The mothers were asked on whether they perceived Covid-19 as a serious threat to their infants in the context of KMC practice. The findings were as illustrated in Figure 4.10.

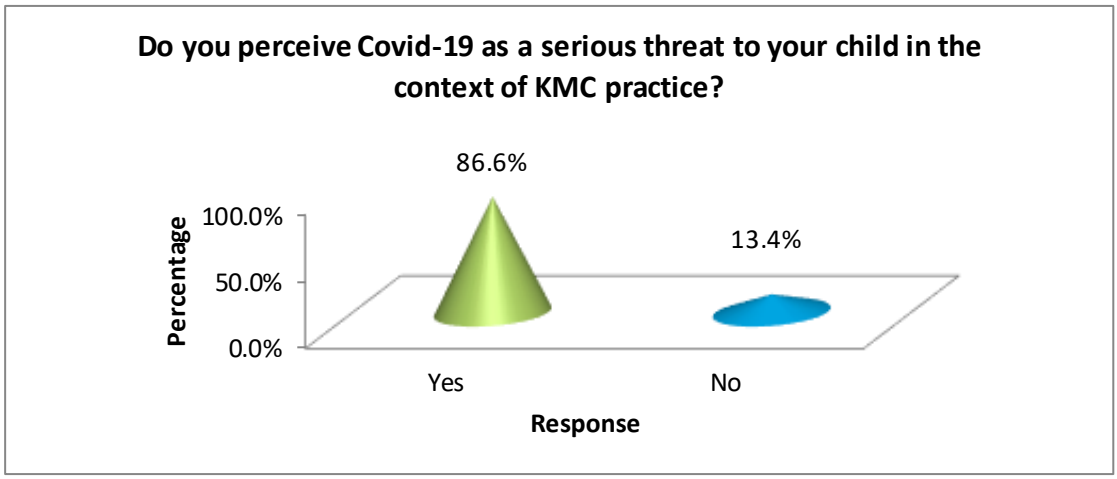


Figure 4.5 Covid-19 perceived as a threat to the infant during KMC practice

From the findings, most (86.6%, n = 71) of the mothers concurred that they perceived Covid-19 as a serious threat to their babies in the context of KMC practice. They attributed their concern over the possible adverse effects of Covid-19 infection on their babies' survival and health status especially in view of the babies' delicate health status/low immunity.

4.5.4 Concerns over KMC Practice during the Covid-19 Pandemic

The mothers were asked to cite any major concerns they had over practice of KMC during the prevailing Covid-19 pandemic period. According to the findings, the most cited concern was fear over the baby contracting Covid-19. Other major concerns that the mothers had were fear of coming into contact with contaminated services, fear that they could contract Covid-19 and pass the same to the infant, not knowing the Covid-19 status of the healthcare providers who interacted with the infants and lack of awareness about the potential effects of Covid-19 on infants, denoting that mothers of

preterms at KNH had concerns over practice of KMC during the ongoing Covid-19 pandemic.

In contrast, a large proportion of the nurses had no any reservations about the mothers' practice of kangaroo mother care during the Covid-19 pandemic period as long as the mothers observed the issued Covid-19 prevention guidelines during KMC practice. Few of the nurses with reservations about KMC practice during the ongoing Covid-19 pandemic cited increased risk of Covid-19 transmission among the mothers and possible transmission to the infants as their main reservation of KMC practice during the ongoing Covid-19 pandemic.

4.6 Factors Affecting the Mothers' Utilization of KMC during the Covid-19 Pandemic

The study also sought to establish the factors affecting utilization of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in KNH.

To achieve this objective, the mothers were requested to indicate the extent to which a list of identified factors affected their utilization of kangaroo mother care during the ongoing Covid-19 pandemic. The mothers' responses were rated on a scale of 1 - 5 where, 1 - to no extent; 2 - to a little extent; 3 - to a moderate extent; 4 - to a great extent and 5 - to a very great extent. The results were as shown in Table 4.5 below.

Table 4.5 Factors affecting utilization of KMC during the Covid-19 pandemic among the mothers

Factors	No extent		Little extent		Moderate extent		Great extent		Very great extent	
	F	%	F	%	F	%	F	%	F	%
Physical movement restrictions	51	62.2	17	20.7	5	6.1	5	6.1	4	4.9
Fear of contracting Covid-19	9	11.0	1	1.2	2	2.4	14	17.1	56	68.3
Fear of the baby contracting Covid-19	6	7.3	3	3.7	3	3.7	7	8.5	63	76.8
Instructions against KMC from HCWs	59	72.0	9	11.0	7	8.5	4	4.9	3	3.7
Low awareness level about Covid-19	63	76.8	13	15.9	3	3.7	1	1.2	2	2.4
Mixed messages about Covid-19 transmission	39	47.6	30	36.6	6	7.3	3	3.7	4	4.9
Personal stress	10	12.2	8	9.8	11	13.4	23	28.0	30	36.6
Financial barriers/families' economic shocks due to loss of livelihood	9	11.0	8	9.8	23	28.0	11	13.4	31	37.8
Social distancing restrictions	6	7.3	3	3.7	0	0.0	13	15.9	60	73.2
A low number of health care staff available to offer support on KMC due to Covid-19 redeployments	22	26.8	11	13.4	20	24.4	16	19.5	13	15.9
Health facilities being overwhelmed by large numbers of Covid-19 patients needing management and treatment	64	78.0	5	6.1	2	2.4	2	2.4	9	11
Lack of/inadequate support from family	15	18.3	6	7.3	10	12.2	21	25.6	30	36.6
Lack of/inadequate support from HCWs	43	52.4	10	12.2	9	11.0	9	11.0	11	13.4

From the findings shown in Table 4.5 above, the factors identified by the mothers as affecting their utilization of kangaroo mother care during the Covid-19 pandemic to a great extent included fear of contracting Covid-19 (great extent - 14 [17.1%]; very great extent - 56 [68.3%]); fear of the baby contracting Covid-19 (great extent - 7 [8.5%]; very great extent - 63 [76.8%]); personal stress (great extent - 23 [28%]; very great extent - 30 [36.6%]); families' financial/economic shocks due to loss of livelihood (great extent - 11 [13.4%]; very great extent - 31 [37.8%]); social distancing rules for Covid-19 prevention (great extent - 13 [15.9%]; very great extent - 60 [73.2%]) and lack of/inadequate support from family (great extent - 21 [25.6%]; very great extent - 30 [36.6%]). The rest of the factors as cited in Table 4.5 affected the mothers' utilization of KMC during the ongoing Covid-19 pandemic to a low extent.

Other factors cited by the mothers as impeding their utilization of kangaroo mother care during the ongoing Covid-19 pandemic included lack of KMC appropriate clothes for the baby such as a tying ' lessos'; inadequate KMC rooms/spaces especially in light of the social distancing requirement for Covid-19 transmission prevention; limited time allocated for performing KMC; sitting chairs being uncomfortable; KMC rooms being located far from the nursery; security concerns at night; general body exhaustion among the mothers; infant being unwell and lack of support from spouses/significant others with respect to practice of KMC. This denoted that a wide range of factors did impede the mothers' practice of KMC during the prevailing Covid-19 pandemic period.

Similar observations were made by nurses working in KNH's Newborn Unit concerning factors impeding the mothers' practice of KMC during the prevailing Covid-19 period, as illustrated in the following few verbatim excerpts;

Nurse respondent 002 noted:

> "..... mothers' fatigue, inadequate time allocated for KMC and inadequate support to the mothers from their husbands and close relatives."

Nurse respondent 003 noted:

> "…. the infants' mothers getting infected with Covid-19 infection, lack of enough KMC spaces, mothers' lack of family support and the mothers' inadequate knowledge on whether to proceed with KMC during the Covid-19 pandemic,….."

Nurse respondent 009 noted:

> "…… is their fear of contracting Covid-19, fear of their babies contracting Covid-19, social distancing challenges due to inadequate KMC spaces and lack of appropriate linen to perform KMC."

Nurse respondent 014 noted:

> "Isolation of the mothers for testing Covid-19 positive, inadequate and poorly equipped KMC rooms, the mothers' lack of KMC appropriate clothes and security concerns over visiting the KMC rooms alone at night ….."

Nurse respondent 017 noted:

> "The infant being in unstable health condition, inadequate time and spaces for KMC practice, not having the right clothing needed for KMC practice, exhaustion on the part of the mothers and fear of contracting Covid-19 or the baby acquiring the infection ……'

Nurse respondent 019 noted:

> "Anxiety over the delicate status of the infant, inadequate support from immediate family, fear over contracting Covid-19 and passing the same to the infant and KMC spaces that are not enough especially due to need for social distancing ……."

Nurse respondent 024 noted:

> "Mothers' lack of needed clothing for KMC, limited KMC rooms and fear of contracting Covid-19 …."

4.7 Possible Interventions to Foster the Mothers' Practice of KMC during the Covid-19 Pandemic

The study also sought to identify possible interventions to foster the postnatal mothers' kangaroo mother care practice during the Covid-19 pandemic period.

To achieve this objective, the mothers and nurses were requested to offer suggestions on possible interventions that may be adopted to foster their practice of kangaroo mother care during the ongoing Covid-19 pandemic period.

From the study findings, four major themes emanated from the mothers' and nurses' responses which were: need for more KMC rooms; provision of KMC appropriate clothing; need for strict application of Covid-19 prevention guidelines and need for greater support of KMC practice from the family.

These were as outlined in the following select verbatim excerpts;

Intervention 1: Creation of more rooms for KMC

This was as illustrated by the following verbatim;

Participant 011 noted:

> "KNH should create more rooms for KMC as currently available spaces are inadequate."

Participant 036 espoused:

> "The available KMC spaces are insufficient especially now that we have keep social distance while practicing KMC. There's need for more rooms for mothers who wish to practice KMC."

Participant 042 averred that:

> "More KMC rooms are indeed needed."

Participant 057 also noted:

> "In light of the social distancing rule for prevention of Covid-19 transmission, the hospital should create more rooms for KMC and they should have more comfortable sits."

Participant 065 also averred that:

> "It has been very difficult to do KMC while observing social distancing rule during this Covid-19 period. Some more KMC rooms would do us a lot of good at such a time."

Nurse respondent 007 also noted:

> "The available spaces for KMC are inadequate especially at a time the mothers are required to observe social distancing to prevent Covid-19 transmission. There's need for more KMC rooms with comfortable chairs and a TV."

Nurse respondent 015 also noted:

> "My view is that more rooms for KMC are needed as the available spaces for KMC are inadequate especially now with Covid-19 and the need to maintain social distancing."

Nurse respondent 021 also observed:

> "The hospital should explore ways of increasing KMC spaces/rooms as available ones are hugely insufficient more so in light of the social distancing rule for prevention of Covid-19 transmission."

Intervention 2: Provision of KMC appropriate clothing

This was as illustrated by the following verbatim;

Participant 026 noted:

> "KNH should provide mothers with KMC appropriate clothes such as offering lessos and baby caps for use during KMC."

Participant 044 also averred that:

> "It's difficult to practice KMC without appropriate clothes. For instance, I wish they would provide us with lessos for tying the baby."

Participant 073 also averred that:

> "My KMC experience would be more desirable if I were offered KMC appropriate clothing."

Nurse respondent 012 also averred that:

> "The hospital should consider providing KMC appropriate clothing to the mothers for their easier practice of this crucial intervention."

Nurse respondent 019 also pointed that:

> "Mothers of preterms need to be supported with KMC appropriate clothing to enhance their KMC experience."

Intervention 3: Strict application of Covid-19 prevention measures

This was as outlined in the following verbatim;

Participant 030 espoused that:

> "In light of the ongoing Covid-19 pandemic, KMC practice is only plausible only if we mothers can ensure we strictly adhere to the issued Covid-19 prevention guidelines throughout our interactions with our preterm babies."

Participant 048 also averred that:

> "Strict observance of Covid-19 prevention guidelines is paramount for successful KMC practice in these times especially in light of my baby's delicate health status."

Participant 061 also noted:

> "I fear that my baby could contract Covid-19 during KMC practice. More stringent enforcement of mothers' adherence of Covid-19 prevention measures is needed to keep our babies safe."

Participant 072 also noted:

> "KMC practicing mothers' adherence of Covid-19 prevention measures is paramount. It's the surest way to keep our babies safe during KMC practice."

Nurse respondent 002 pointed that:

> "The mothers should continue with KMC practice. However, this should be done in strict adherence to issued Covid-19 prevention measures to avoid any risks of Covid-19 transmission among them."

Nurse respondent 006 averred that:

> "To safeguard the health and wellbeing of the infants, authorities at KNH should ensure strict observance of issued Covid-19 prevention measures among all KMC practicing mothers."

Nurse respondent 011 suggested that:

> "There has to be full adherence to issued Covid-19 prevention measures by all concerned mothers if KMC is to be safely practiced during this difficult period of Covid-19 pandemic."

Nurse respondent 025 opined that:

> "Mothers' adherence to issued Covid-19 prevention guidelines is the only way to ensure safe KMC practice during this pandemic period."

Intervention 4: Need for greater support of KMC practice from the family

This was as illustrated by the following verbatim;

Participant 007 noted:

> "I wish other members of my family were allowed to assist me to perform KMC as sometimes I just feel very exhausted."

Participant 021 also noted:

> "I would be very glad if my close relatives and particularly my spouse supported me in undertaking KMC practice."

Participant 034 also averred that:

> "Maybe the hospital should consider allowing our relatives to help us in KMC. This would be desirable as sometimes I get overly exhausted."

Participant 080 also noted:

> "Family participation in KMC would be great. It's not just a mother's responsibility to care for the infant. Other members of the family have a role to play too."

Nurse respondent 013 opined that:

> "We should consider incorporating other members of the family to support the mothers in KMC practice."

Nurse respondent 020 noted that:

> "Mothers' practice of KMC could be enhanced through greater support of the mothers by their families."

4.8 Results on Study Hypothesis Testing

The study's null hypothesis was that there was no difference in kangaroo mother care practice among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit between pre- and post-Covid 19 pandemic periods. This was evaluated for using Chi-square statistic at 95% confidence level on the basis of statistics on proportion of postnatal mothers of preterms that practiced continuous KMC prior to and during the Covid-19 pandemic.

The findings on the hypothesis testing were as summarized in Table 4.6.

Table 4.6 Hypothesis tests results

Hypothesis	Chi-sq. p value	Sig. Value	Result	Decision
H_o	0.012	0.05	0.012<0.05	H_o: rejected

The study established that, at 95% confidence level, the null (H_o) hypothesis yielded a chi-square p-value of < 0.05, and hence it was rejected. Consequently, its alternate hypothesis (H_1) that there was a significant difference in kangaroo mother care practice among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit between pre- and post-Covid 19 pandemic periods was accepted. It was clear that Covid-19 pandemic had significantly disrupted application of continuous form of KMC among the postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit. As such, efforts to curb transmission of Covid-19 infection in the hospital, were instrumental for the mothers to be able to effectively practice kangaroo mother care.

CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents discussion of findings, conclusions and recommendations of the study in line with the study objectives. The study sought to assess the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit.

5.2 Discussion

5.2.1 Kangaroo Mother Care Practice during the Covid-19 Pandemic

According to this study, most of the mothers of preterms at KNH were aware of kangaroo mother care and understood it as the skin-to-skin contact between the mother and the baby. The mothers were of the view that kangaroo mother care was important as it promoted bonding between the mother and the baby, it helped keep the baby warm, it promoted breastfeeding, it enhanced mothers' caregiving experience, it helped infants gain weight and improved their sleeping patterns. Similar findings were reported in studies by Boundy et al. (2016) and Norén et al. (2018)., in which participating mothers were found to be fairly knowledgeable of KMC, particularly with respect to what KMC was and its benefits to the mother and the infant, an observation also made in the study by Abdul-Mumin et al. (2020). In contrast, gaps in postnatal mothers' awareness of kangaroo mother care especially as to why it was a critical intervention were noted in studies by Uwaezuoke (2017) and Chan et al. (2016).

The study also established that mothers of preterms at KNH were fairly knowledgeable of the Covid-19 pandemic as they were able to correctly identify how Covid-19 pandemic was transmitted, that is, through coming into contact with infected respiratory secretions/droplets from an infected person. They were also able to correctly identify the symptoms of Covid-19 infection as including headache, fever, coughing, sore throat, fatigue, body ache and difficulty in breathing/shortness of

breath. Similar results were reported in studies by Goyal et al. (2020) and Singh et al. (2021) where the participants, who were postnatal mothers, were found to be adequately aware about the ongoing Covid-19 pandemic including basic information relating to the Covid-19 infection, sentiments also shared by Paul and Mondal (2021) and Minckas et al. (2021). In contrast, low awareness about Covid-19 pandemic was reported among postnatal mothers in studies by das Neves Pires et al. (2020) in Mozambique and Hailemariam et al. (2021) in Ethiopia.

The study also established that most of the mothers of preterms at KNH were practicing intermittent form of kangaroo mother care while others did not practice KMC. Further, the mothers as well as nurses working in KNH's Newborn Unit were in agreement that the prevailing Covid-19 pandemic adversely affected the mothers' practice of kangaroo mother care largely due to fears of Covid-19 transmission among the mothers and the possible transmission of the infection to their babies more so in light of the baby's delicate health status.

In reviews by WHO (2020) and UNICEF (2020) on effects of Covid-19 pandemic on utilization of MCH services, Covid-19 pandemic was found to have disrupted utilization of essential newborn care services including KMC. Disruptions of Covid-19 pandemic on utilization of various essential maternal and newborn care services including kangaroo mother care among postnatal mothers were also reported in studies by Kimani et al. (2020) and das Neves Pires et al. (2020). Similarly, in studies by Okereke et al. (2021) and Al-Kuwari et al. (2021), mothers' use of kangaroo mother care was significantly hindered by the ongoing Covid-19 pandemic.

5.2.2 Perceptions towards Kangaroo Mother Care Practice during the Covid-19 Pandemic among the mothers

According to this study, most of the mothers of preterms at KNH were in support of the practice of kangaroo mother care during the prevailing Covid-19 pandemic on account of its significant benefits to the infants. Similarly, all of the nurses that participated in the study unanimously agreed that they would advise the mothers to practice KMC during the Covid-19 pandemic period provided the mothers observed

the stated Covid-19 infection prevention measures. The nurses held the view that the benefits of KMC outweighed the risks of Covid-19, more so when necessary Covid-19 prevention guidelines were observed when performing kangaroo mother care.

The study, however, also established that the mothers of preterms at KNH were scared of Covid-19 pandemic and perceived it as a serious threat to their babies in the context of KMC practice. The concerns that the mothers had over practice of KMC during the prevailing Covid-19 pandemic period were fear that they could contract Covid-19, fear of their babies contracting Covid-19, a feeling that the babies were too vulnerable in the face of Covid-19 pandemic, low awareness among the mothers as to how Covid-19 could affect the baby and general lack of guidance as to how to conduct KMC in light of Covid-19.

This agreed with Busch-Hallen et al. (2020), who in a study of Covid-19's impact on MCH, reported that while majority of the mothers positively perceived KMC, a significant proportion of them were reluctant to practice KMC during the Covid-19 pandemic period for fear of their babies' contracting the infection. Similarly, in a study by Stuebe (2020), a significant proportion of mothers expressed reservations about practicing KMC during the Covid-19 pandemic period despite their favorable perception of KMC. The findings also concurred with Karkee and Morgan (2020), who observed that majority of mothers favorably perceived KMC and did support it, but were hesitant to practice it during the current Covid-19 pandemic for fear that their vulnerable babies could get the infection in case they were infected.

Similar observations were made in a study by Oke et al. (2020) in which a majority of the mothers found KMC acceptable and were eager to practice it. However, their outlook of KMC significantly changed in the advent of Covid-19, owing to the fear that it increased the risk of transmission of the infection to their premature babies. In Ethiopia too, Temesgen et al. (2021) reported that majority of mothers held positive views of kangaroo mother care for its benefits to their babies. However, a significant proportion of the mothers expressed reservation about practicing KMC during the Covid-19 pandemic period due to fear of the risk of Covid-19 transmission.

5.2.3 Factors Affecting the Mothers' Utilization of KMC during the Covid-19 Pandemic

According to this study, a number of factors were found to affect the mothers' utilization of kangaroo mother care during the prevailing Covid-19 pandemic. These were: fear of contracting Covid-19; fear of the baby contracting Covid-19; inadequate KMC rooms/spaces especially in light of the social distancing requirement for Covid-19 transmission prevention; lack of KMC appropriate clothing such as a tieing lesso; limited time allocated for performing KMC; sitting chairs in the KMC rooms being uncomfortable; KMC rooms being located far from the nursery; personal stress; families' financial/economic shocks due to loss of livelihood; general body exhaustion among the mothers; infant being unwell and lack of/inadequate support from family. This denoted that a wide range of factors did impede the mothers' practice of KMC during the prevailing Covid-19 pandemic period.

This concurred with Goyal et al. (2020) who in a study done in India reported a significant drop in mothers' practice of KMC during Covid-19 pandemic period which was attributed to social distancing challenges owing to inadequate hospital spaces for conducting KMC and the mothers' fear of contracting Covid-19 infection and the possible transmission of the infection to their babies during KMC. Similarly, fear of mothers' and/or their infants contracting Covid-19 infection was a leading contributor to their reluctance to practice KMC in an Indian study by Pant et al. (2020). Similarly, Rao et al. (2021) reported that mothers' practice of KMC was impeded by their fear of contracting Covid-19 and possible transmission of the infection to their babies, insufficient spaces for performing KMC, inadequate support from family, lacking KMC appropriate clothing and poor health status of the infants.

Busch-Hallen et al. (2020) observed that reductions in KMC practice, during Covid-19 pandemic, were unavoidable due to Covid-19 related disruptions and restrictions with social distancing challenges owing to inadequate KMC spaces, lack of KMC appropriate clothing; limited time allocated for performing KMC and fears of the mothers and infants contracting Covid-19 being major impediments to KMC practice during the current pandemic. Similar observations were made in studies by Kimani et

al. (2020) and Hailemariam et al. (2021) in which inadequate KMC rooms/spaces, inadequate KMC appropriate clothing, family income losses, fatigue on the part of the mothers and inadequate family support were cited as the leading factors impeding utilization of kangaroo mother care by postnatal mothers during the ongoing Covid-19 pandemic.

5.2.4 Possible Interventions to Foster the Mothers' Practice of KMC during the Covid-19 Pandemic

According to this study, regarding possible interventions that may be adopted to foster the mothers' practice of KMC during the Covid-19 pandemic, four major themes emanated from the mothers' and nurses' responses which were: need for more KMC rooms; provision of KMC appropriate clothing; need for strict application of Covid-19 prevention guidelines and need for greater support of KMC practice from the family.

These were as depicted in the following select excerpts;

Need for more KMC rooms

Participant 057 also noted:

> "In light of the social distancing rule for prevention of Covid-19 transmission, the hospital should create more rooms for KMC and they should have more comfortable sits."

Nurse respondent 015 also noted:

> "My view is that more rooms for KMC are needed as the available spaces for KMC are inadequate especially now with Covid-19 and the need to maintain social distancing."

Provision of KMC appropriate clothing

Participant 073 also averred that:

> "My KMC experience would be more desirable if I were offered KMC appropriate clothing."

Nurse respondent 012 also averred that:

> "The hospital should consider providing KMC appropriate clothing to the mothers for their easier practice of this crucial intervention."

Need for strict application of Covid-19 prevention guidelines

Participant 048 also averred that:

> "Strict observance of Covid-19 prevention guidelines is paramount for successful KMC practice in these times especially in light of my baby's delicate health status."

Nurse respondent 011 suggested that:

> "There has to be full adherence to issued Covid-19 prevention measures by all concerned mothers if KMC is to be safely practiced during this difficult period of Covid-19 pandemic."

Need for greater support of KMC practice from the family

Participant 007 noted:

> "I wish other members of my family were allowed to assist me to perform KMC as sometimes I just feel very exhausted."

Nurse respondent 020 noted that:

> "Mothers' practice of KMC could be enhanced through greater support of the mothers by their families."

The findings agreed with Menendez et al. (2020) who argued that, in the face of the ongoing Covid-19 pandemic, there was need to prioritize essential MCH services such as kangaroo mother care and adapting them to changing contexts and needs. (Budhathoki et al., 2020) were of the view that there was need to expand available hospital infrastructure to accommodate Covid-19 cases and other patients at the same time and that disruptions in utilization of KMC could be reduced through postnatal mothers' strict adherence to issued Covid-19 transmission prevention guidelines. Similarly, Okereke et al. (2021) and Hakimi (2020) were categorical that the key to addressing Covid-19 pandemic disruptions on delivery of services such as KMC was to embed Covid-19 IPC protocols/measures into the delivery of maternal and child

health services. according to Oke et al. (2020) and Abdela et al. (2020), in addition to putting greater emphasis on observance of issued Covid-19 infection prevention guidelines among mothers during practice of KMC, the mothers' practice of KMC could also be enhanced through creation of ample spaces/rooms for KMC, ensuring mothers are adequately equipped with KMC appropriate clothing and advocating for greater support of KMC practice from the mothers' families/close relatives.

5.3 Conclusions

Based on the findings of the study, the researcher drew the following conclusions:

Most of the mothers of preterms at KNH had good awareness of KMC as well as Covid-19 pandemic and practiced intermittent form of KMC during the Covid-19 pandemic period.

Mothers of preterms at KNH had a positive perception towards practice of KMC during the Covid-19 pandemic, though they considered Covid-19 pandemic as a serious threat to their babies in the context of KMC practice.

A wide range of factors affected the mothers' utilization of kangaroo mother care during the prevailing Covid-19 pandemic. This related to inadequacy of available KMC rooms, inadequacy of KMC appropriate clothing, prevention of Covid-19 transmission and inadequacy of support from the mothers' families.

Need for more KMC rooms; provision of KMC appropriate clothing; need for strict application of Covid-19 prevention guidelines and need for greater support of KMC practice from the family were the suggested possible interventions to foster the mothers' practice of kangaroo mother care during the Covid-19 pandemic.

5.4 Recommendations

There is need for awareness creation among mothers of preterms at Kenyatta National Hospital on the need for continued practice of kangaroo mother care during the Covid-19 pandemic period and to allay any concerns that the mothers have over practicing KMC during the Covid-19 pandemic.

Greater emphasis on strict observance of issued Covid-19 prevention measures during KMC practice among mothers of preterms at Kenyatta National Hospital is needed so as to significantly reduce any risks of contracting Covid-19 by the mothers and/or their infants.

Efforts should be made by the hospital's management to increase rooms/spaces for kangaroo mother care and ensure that the rooms are adequately equipped for the comfort of the mothers during their practice of KMC. The mothers should also be adequately supplied with KMC appropriate clothing.

Families of mothers with preterm infants should be encouraged to take an active role in supporting the mothers' practice of KMC. Mechanisms for greater family participation in caring for the preterm infants should be explored.

5.5 Suggested Areas for Further Studies

Since the current study explored the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit; a wider study involving other Level 5 and Level 4 hospitals in the country is hereby recommended. This will facilitate a broader comparison and generalization of the study findings. Further, an investigation of the possibility of home-based KMC practice as well as of challenges experienced by mothers of preterms in practice of kangaroo mother care would equally be informative.

REFERENCES

Abdela, S. G., Berhanu, A. B., Ferede, L. M., & van Griensven, J. (2020). Essential healthcare services in the face of COVID-19 prevention: Experiences from a referral hospital in Ethiopia. *The American Journal of Tropical Medicine and Hygiene*, *103*(3), 1198-1200.

Abdul-Mumin, A., Agbozo, F., Abubakari, A., & Jahn, A. (2020). Maintaining quality newborn care in Ghana amid the COVID-19 pandemic. *The Pan African Medical Journal*, *35*(2), 65-71.

Akbari, E., Binnoon-Erez, N., Rodrigues, M., Ricci, A., Schneider, J., Madigan, S., & Jenkins, J. (2018). Kangaroo mother care and infant biopsychosocial outcomes in the first year: a meta-analysis. *Early Human Development*, *122*, 22-31.

Al-Kuwari, M. G., Abdulmalik, M. A., Al-Mudahka, H. R., Bakri, A. H., Al-Baker, W. A., Abushaikha, S. S., ... & Gibb, J. (2021). The impact of the COVID-19 pandemic on the preventive services in Qatar. *Journal of Public Health Research*, *10*(1), 1-12.

Almeida, I. J. S. D., Lúcio, P. D. S., Nascimento, M. F. D., & Coura, A. S. (2020). Coronavirus pandemic in light of nursing theories. *Revista Brasileira de Enfermagem*, *73*(2), e20200538.

Boundy, E. O., Dastjerdi, R., Spiegelman, D., Fawzi, W. W., Missmer, S. A., Lieberman, E., ... & Chan, G. J. (2016). Kangaroo mother care and neonatal outcomes: a meta-analysis. *Paediatrics*, *137*(1), 1-16.

Budhathoki, S., Adhikari, B., & Ramtel, R. (2020). Maternal health care services utilization amidst Covid-19 lockdown: a retrospective study. *International Multispecialty Journal of Health (IMJH)*, *6*(9), 1-9.

Busch-Hallen, J., Walters, D., Rowe, S., Chowdhury, A., & Arabi, M. (2020). Impact of COVID-19 on maternal and child health. *The Lancet Global Health*, *8*(10), e1257.

Campbell-Yeo, M. L., Disher, T. C., Benoit, B. L., & Johnston, C. C. (2015). Understanding kangaroo care and its benefits to preterm infants. *Pediatric health, medicine and therapeutics*, *6*(1), 15-32.

Chan, G. J., Labar, A. S., Wall, S., & Atun, R. (2016). Kangaroo mother care: a systematic review of barriers and enablers. *Bulletin of the World Health Organization*, *94*(2), 130.

Chatterjee, P., Nagi, N., Agarwal, A., Das, B., Banerjee, S., Sarkar, S., ... & Gangakhedkar, R. R. (2020). The 2019 novel coronavirus disease (COVID-19) pandemic: A review of the current evidence. *The Indian journal of medical research*, *151*(2-3), 147-155.

Cheng, Z. J., & Shan, J. (2020). 2019 Novel coronavirus: where we are and what we know. *Infection*, *48*(2), 155-163.

Chou, V. B., Carter, E. D., & Sawadogo-Lewis, T. (2020). Impact of COVID-19 on maternal and child health - Authors' reply. *The Lancet Global Health*, *8*(10), e1260.

Conde-Agudelo, A., & Díaz-Rossello, J. L. (2016). Kangaroo mother care to reduce morbidity and mortality in preterm infants. *Cochrane database of systematic reviews*, 2(8), CD002771.

das Neves Pires, P., Macaringue, C., Abdirazak, A., Mucufo, J., Mupueleque, M., Siemens, R., & Belo, C. (2020). Covid-19 Pandemic Impact on Maternal and Child Health Services Access in Nampula, Mozambique: A Mixed Methods Research. *BMC Health Services Research*, *9*(1), 41-46.

Goyal, M., Singh, P., Singh, K., Shekhar, S., Agrawal, N., & Misra, S. (2020). The effect of the COVID-19 pandemic on maternal health due to delay in seeking health care: Experience from a tertiary Centre. *International Journal of Gynecology & Obstetrics*, *152*(1), 231-235.

Hailemariam, S., Agegnehu, W., & Derese, M. (2021). Exploring COVID-19 Related Factors Influencing Antenatal Care Services Uptake: A Qualitative Study among

Women in a Rural Community in Southwest Ethiopia. *Journal of Primary Care & Community Health*, *12*(1), 1-8.

Hakimi, S. (2020). The COVID-19 pandemic and kangaroo mother care: What should we do? *European Journal of Midwifery*, *4*(1), 93-98.

He, F., Deng, Y., & Li, W. (2020). Coronavirus disease 2019: What we know? *Journal of Medical Virology*, *92*(7), 719-725.

Jagadale, S., & Salunkhe, J. (2017). To evaluate the effectiveness of kangaroo mother care on low-birth-weight babies. *International Journal of Scientific Research*, *3*(8), 2319.

Karkee, R., & Morgan, A. (2020). Providing maternal health services during the COVID-19 pandemic in Nepal. *The Lancet Global Health*, *8*(10), e1243-e1244.

Kimani, R. W., Maina, R., Shumba, C., & Shaibu, S. (2020). Maternal and newborn care during the COVID-19 pandemic in Kenya: re-contextualising the community midwifery model. *Human Resources for Health*, *18*(1), 1-5.

Lawn, J. E., Mwansa-Kambafwile, J., Horta, B. L., Barros, F. C., & Cousens, S. (2010). 'Kangaroo mother care' to prevent neonatal deaths due to preterm birth complications. *International journal of epidemiology*, *39*(suppl_1), i144-i154.

Lone, S. A., & Ahmad, A. (2020). COVID-19 pandemic–an African perspective. *Emerging microbes & infections*, *9*(1), 1300-1308.

Menendez, C., Gonzalez, R., Donnay, F., & Leke, R. G. (2020). Avoiding indirect effects of COVID-19 on maternal and child health. *The Lancet. Global Health*, *8*(7), e863.

Minckas, N., Medvedev, M. M., Adejuyigbe, E. A., Brotherton, H., Chellani, H., Estifanos, A. S., ... & Lawn, J. E. (2021). Preterm care during the COVID-19 pandemic: A comparative risk analysis of neonatal deaths averted by kangaroo mother

care versus mortality due to SARS-CoV-2 infection. *EClinicalMedicine*, *33*(1), 100733.

Moore, E. R., Bergman, N., Anderson, G. C., & Medley, N. (2016). Early skin-to-skin contact for mothers and their healthy newborn infants. *Cochrane Database of Systematic Reviews*, *11*(1), CD003519.

Norén, J., Nyqvist, K. H., Rubertsson, C., & Blomqvist, Y. T. (2018). Becoming a mother–Mothers' experience of kangaroo mother care. *Sexual & reproductive healthcare*, *16*(1), 181-185.

Oke, G. I., Elebesunu, E. E., & Ihekweazu, V. (2020). Impact of COVID-19 pandemic on maternal and child health. *Modern Care Journal*, *17*(4), e110808.

Okereke, M., Ukor, N. A., Adebisi, Y. A., Ogunkola, I. O., Favour Iyagbaye, E., Adiela Owhor, G., & Lucero-Prisno III, D. E. (2021). Impact of COVID-19 on access to healthcare in low-and middle-income countries: current evidence and future recommendations. *The International Journal of health planning and management*, *36*(1), 13-17.

Ongole, J. J., Rossouw, T. M., Fourie, P. B., Stoltz, A. C., Hugo, J., & Marcus, T. S. (2020). Sustaining essential healthcare in Africa during the COVID19 pandemic. *Int J Tuberc Lung Dis*, *24*(6), 643-645.

Pant, S., Koirala, S., & Subedi, M. (2020). Access to maternal health services during COVID-19. *Europasian Journal of Medical Sciences*, *2*(2), 48-52.

Paul, P., & Mondal, D. (2021). Maternal and child healthcare in India during the COVID-19 pandemic. *Midwifery*, *92*(1), 102865

Rabi, F. A., Al Zoubi, M. S., Kasasbeh, G. A., Salameh, D. M., & Al-Nasser, A. D. (2020). SARS-CoV-2 and coronavirus disease 2019: what we know so far. *Pathogens*, *9*(3), 231-37.

Rao, S. P., Minckas, N., Medvedev, M. M., Gathara, D., Prashantha, Y. N., Estifanos, A. S., ... & Lawn, J. E. (2021). Small and sick newborn care during the COVID-19 pandemic: a global survey and thematic analysis of healthcare providers' voices and experiences. *BMJ Global Health*, *6*(3), e004347.

Safer, M.P. (2017). Neonatal and perinatal mortality. *Paediatrics*, *7*(3), 73-81.

Singh, A. K., Jain, P. K., Singh, N. P., Kumar, S., Bajpai, P. K., Singh, S., & Jha, M. (2021). Impact of COVID-19 pandemic on maternal and child health services in Uttar Pradesh, India. *Journal of Family Medicine and Primary Care*, *10*(1), 509-514.

Singhal, T. (2020). A review of coronavirus disease-2019 (COVID-19). *The Indian Journal of Pediatrics*, *87*(4), 281-286.

Stuebe, A. (2020). Should infants be separated from mothers with COVID-19? First, not harm. *Breastfeeding Medicine*, *15*(5), 351-352.

Tang, S., Brady, M., Mildenhall, J., Rolfe, U., Bowles, A., & Morgan, K. (2020). The new coronavirus disease: what do we know so far? *Journal of Paramedic Practice*, *12*(5), 193-201.

Temesgen, K., Wakgari, N., Debelo, B. T., Tafa, B., Alemu, G., Wondimu, F., … & Soboka, B. (2021). Maternal health care services utilization amidst COVID-19 pandemic in West Shoa Zone, central Ethiopia. *Plus, one*, *16*(3), e0249214.

UNICEF (2020). *Maternal and newborn health and COVID-19*. UNICEF Publications

Uwaezuoke, S. N. (2017). Kangaroo mother care in resource-limited settings: implementation, health benefits, and cost-effectiveness. *Research and Reports in Neonatology*, *7*(2), 11-18.

Walani, S. R. (2020). Global burden of preterm birth. *International Journal of Gynecology & Obstetrics*, *150*(1), 31-33.

Wang, C., Horby, P. W., Hayden, F. G., & Gao, G. F. (2020). A novel coronavirus outbreak of global health concern. *The Lancet*, *395*(10223), 470-473.

WHO (2020). *Preterm births factsheet*. Geneva: World Health Organization Publications

WHO (2020). *Kangaroo mother care: Practical guide*. Geneva: World Health Organization Publications

WHO (2020). *Kangaroo mother care practice during the Covid-19 pandemic*. WHO Publications.

Zirpoli, D. B., Mendes, R. B., Barreiro, M. D. S. C., da Silva Reis, T., & Menezes, A. F. (2019). Benefits of the Kangaroo Method: An Integrative Literature Review. *Revista de Pesquisa, Cuidado é Fundamental Online*, *11*(2), 547-554.

APPENDICES

Appendix 1: Participants' Information Document

Title of Study: Kangaroo mother care practice during the Covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit

Principal Investigator\and institutional affiliation: Beatrice Afande Mukhola, University of Nairobi

Supervisors: Dr. Lucy K. Bitok & Dr. Angeline Kirui, University of Nairobi

Introduction

My name is Beatrice Afande Mukhola, I am a student at the University of Nairobi pursuing a Master of Science Degree in Nursing (Paediatric). I am conducting a study on 'kangaroo mother care practice during the covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit'.

Purpose of the study

The purpose of the study is to assess the practice of kangaroo mother care during the Covid-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit. I would like to request your inputs in this study by giving me your views and opinions concerning the study subject. If you opt to take part, the researcher will ask you several questions that seek to gather information relating to your practice of kangaroo mother care during the covid-19 pandemic, your perceptions towards kangaroo mother care practice during the Covid-19 pandemic, factors affecting your utilization of kangaroo mother care during the Covid-19 pandemic and on any possible interventions to foster the postnatal mothers' kangaroo mother care practice during the Covid-19 pandemic period, the session will take about 15 minutes.

Confidentiality

All the responses that you will provide will be treated with the utmost confidentiality and will only be used for this research. Your identity will not be revealed anywhere in the study.

Voluntary participation

Your participation in this study will be voluntary. There will be no penalties for declining to participate in the study and you are free to withdraw at any stage of the study with no penalties.

Benefit

It is hoped that, in light of the significant effects that the on-going COVID-19 pandemic has on health services delivery in the country, the findings of this research study will inform the development of necessary policies and interventions to enhance the practice of kangaroo mother care among mothers of premature infants at Kenyatta National Hospital in the COVID-19 pandemic era.

However, there will be no monetary gains or any other form of payment to the participants for taking part in the study.

Risks

There will be no harm to you, your family or the infant as a result of your participation in this study. However, in light of the prevailing Covid 19 pandemic in the country, the researcher will strictly adhere to the Ministry of Health's issued Covid 19 prevention guidelines during the data collection exercise to limit the risk of Covid 19 transmission.

Contacts

For any queries regarding this study, kindly contact;

Principal researcher: Beatrice Afande Mukhola, Cell: 0724 878 096, Email: mokuabeatrice71@gmail.com

OR

Secretary, Ethics and Research Committee of KNH/UON, Telephone: 020-2726300

Appendix 2: Maelezo Kuhusu Utoaji wa Idhini

Kichwa cha Utafiti: Huduma ya utunzaji ya watoto ya kangaroo katika kipindi cha janga la Covid-19 baina ya kina mama wenye watoto wa mapema katika kitengo cha watoto wachanga Hospitali Kuu ya Kenyatta

Mtafiti mkuu\na taasisi shiriki: Beatrice Afande Mukhola, Chuo Kikuu cha Nairobi

Wasimamizi: Dkt Lucy K. Bitok na Dkt Rajula E., Chuo Kikuu cha Nairobi

Utangulizi

Jina langu ni Beatrice Afande Mukhola, mwanafunzi katika Chuo Kikuu cha Nairobi. Ninashiriki katika masomo ya Shahada ya Uzamili ya Sayansi ya Uuguzi (kwa watoto). Ninafanya utafiti kuhusu huduma ya utunzaji ya watoto ya kangaroo katika kipindi cha janga la Covid-19 baina ya kina mama wenye watoto wa mapema katika kitengo cha watoto wachanga Hospitali Kuu ya Kenyatta.

Lengo la utafiti

Lengo la utafiti huu ni kuangazia huduma ya utunzaji ya watoto ya kangaroo katika kipindi cha janga la Covid-19 baina ya kina mama wenye watoto wa mapema katika kitengo cha watoto wachanga Hospitali Kuu ya Kenyatta. Ningetaka kuomba maoni yako kuhusiana na utafiti huu. Hivyo basi, ikiwa utakubali kushiriki katika utafiti huu, mtafiti mkuu atapata kukuuliza maswali kuhusiana na jinsi unavyoitekeleza huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19, mtazamo wako kuhusu huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19, mambo yanayoadhiri utekelezaji wako wa huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19 na hatua zozote ambazo zinaweza kuchukuliwa ili kuboresha utekelezaji wako wa huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19. Majadiliano yetu yatachukua takriban dakika 15.

Usiri

Taarifa zote na majibu yote utakayotoa yatatumiwa kwa usiri na kwa lengo la utafiti huu peke yake. Pia elewa kuwa katika utafiti huu hautahitajiwa kuandika jina lako au kupeana habari yoyote ambayo inaweza kukutambulisha kwa njia yoyote kwenye dodoso.

Uhuru wa kushiriki

Tafadhali, elewa kuwa kushiriki katika utafiti huu ni kwa hiari yako binafsi. Ikiwa utabadilisha kauli na uamue kutoendelea kushiriki, uko huru kusitisha kushiriki wakati wowote na hutaathiriwa vibaya kwa njia yoyote. Unaweza pia ruka au ukose kujibu maswali mengine au usitishe kushiriki kwa wakati wowote.

Faida ya utafiti huu

Kutokana na athari kali za janga la COVID-19 kwenye utoaji wa huduma za afya nchini, inatumainika kuwa matokeo ya utafiti huu yatasaidia katika uundaji wa sera na hatua muhimu za kuboresha huduma ya utunzaji ya watoto ya kangaroo baina ya kina mama wenye watoto wa mapema katika hospitali kuu ya Kenyatta wakati wa kipindi hiki cha janga la COVID-19.

Hata hivyo, hakutakuwa na kufaidika kifedha au malipo yoyote kwa kushiriki katika utafiti huu.

Hatari/madhara

Hakuna hatari au madhara yoyote itakayokupata wewe, familia yako au mtoto wako kwa kushiriki katika utafiti huu.

Hata hivyo, ili kujilinda na maambukizi yaliopo nchini ya Covid 19, mtafiti atazingatia kwa makini miongozo ya kinga ya Covid 19 iliyotolewa na Wizara ya Afya wakati wa zoezi la ukusanyaji wa taarifa za utafiti huu.

Mawasiliano

Ukiwa na maswali yoyote kuhusiana na utafiti huu, tafadhali wasiliana na;

Mtafiti mkuu: Beatrice Afande Mukhola, Simu: 0724 878 096, Barua pepe: mokuabeatrice71@gmail.com

Au

Katibu, kamati ya maadili na utafiti ya Hospitali Kuu ya Kenyatta na Chuo Kikuu cha Nairobi, Simu: 020-2726300

Appendix 3: Consent Form

Respondent's Declaration

I have been explained about the nature of the study, I have been informed about the benefits, and understand that there are no risks involved. I hereby give my consent to take part in this study.

Signature of participant ……. Date …….

Researcher's Declaration

I have fully given out all the relevant information concerning the conduct of this study to the study respondent.

Signature of researcher  Date: 05/08/2021.

Appendix 4: Fomu ya Idhini

Azimio la mshiriki

Nimejulishwa kikamilifu kuhusiana na utafiti huu. Nimefahamishwa kuhusu faida za utafiti huu na naelewa kuwa hakuna madhara yoyote ya kushiriki. Hivyo basi, natoa idhini yangu ya kushiriki katika utafiti huu.

Sahihi ya mshiriki ……. Tarehe …….

Azimio la mtafiti

Nimetoa maelezo yote muhimu kuhusiana na utafiti huu kwa mshiriki.

Sahihi ya mtafiti  Tarehe: 05/08/2021.

Appendix 5: Questionnaire for the Mothers

Title of the study: Kangaroo Mother Care Practice during the Covid-19 Pandemic among Postnatal Mothers of Preterms in Kenyatta National Hospital's Newborn Unit

Date: ……. **Code:** ……..

Instructions:

a) Do not write your name on the questionnaire.

b) Tick ALL appropriate responses in the spaces provided in each question.

c) Feel free to respond to ALL the questions.

d) You are, however, free to skip questions you find uncomfortable to answer.

Section A: Demographic information of the mothers

1. How old are you? ……

2. What is your level of education?

No formal education ( ) Primary ( )

Secondary ( ) Tertiary ( )

Other (specify)……..

3. What is your marital status?

Single ( ) Married ( ) Separated ( )

Divorced ( ) Widowed ( )

4.

a. Is this your first child?

Yes ( ) No ( )

b. If No, this child is what number among your children? ……..

5. What is your religious denomination?

Christian ( ) Muslim ( ) Hindu ( )

Other (specify) ……

6. Do you have any pre-existing illness, now or during your pregnancy?

Yes ( ) No ( )

If yes, which one? ……

Section B: Kangaroo mother care practice during the Covid-19 pandemic

7. Have you ever heard of kangaroo mother care?

Yes ( ) No ( )

If yes, what is kangaroo mother care and why is it important?

……
……
…….

8. Have you heard about the Covid-19 pandemic?

Yes ( ) No ( )

If yes, how is Covid-19 transmitted?

……
……
…….

If yes, the following are the common symptoms in persons with Covid-19 infection **except**?

Headache ( ) Fever ( ) Coughing ( ) Nose bleeding ( ) Sneezing ( ) Difficult in breathing ( ) Body ache ( ) Shivering ( ) Body rash ( )

9. a) Are you currently practicing kangaroo mother care for your baby?

Yes ( ) No ( )

b) If yes, which form of kangaroo mother care:

Continuous ( ) Intermittent ( )

c) If yes, why do you practice KMC?

To promote mother-baby bonding ( ) To promote infant breastfeeding ( )

To keep the infant warm ( ) To help the infant better sleep ( )

Any other(s) (specify)

……
……
…….

d) If No, why are you not practicing KMC?

Lack of awareness about KMC ( )

Lack of support from health care providers ( )

Fear of the baby contracting Covid-19 ( )

I have a skin disease and worry I could infect the baby ( )

The baby is unwell ( )

Any other(s) (specify)

……
……

Section C: Perceptions towards KMC during the Covid-19 pandemic

10. Do you support the practice of KMC for infants during this Covid-19 pandemic period?

Yes ( ) No ( )

11. Are you scared of practicing KMC during the Covid-19 pandemic?

Yes ( ) No ( )

If yes, why?

I feel the baby is too vulnerable ( )

Fear of contracting Covid-19 ( )

Fear of the baby contracting Covid-19 ( )

Have received instructions against KMC from the health care workers ( )

Low awareness about Covid-19 and how it may affect the baby ( )

Lack of guidance of how to do KMC in light of Covid-19 ( )

Any other(s) specify

……
……

12. Do you perceive Covid-19 as a serious threat to your child in the context of KMC practice?

Yes ( ) No ( )

If yes, why?

……
……
……

If No, why?

……
……

13. What are your major concerns for KMC practice during this Covid-19 pandemic period?

The baby contracting Covid-19 ( )

Lack of awareness as to whether the skin-to-skin contact in KMC can lead to Covid-19 transmission ( )

Lack of awareness as to whether Covid-19 is transmittable through breast milk or breastfeeding ( )

Lack of awareness as to the HCWs' status of Covid-19 ( )

Coming into contact with contaminated services ( )

Others indicate;

……
……
……

Section D: Factors affecting the mothers' utilization of KMC during the Covid-19 pandemic

14. To what extent do the following factors affect your utilization of kangaroo mother care during the Covid-19 pandemic? Use a scale of 1 - 5 were, 1 - to no extent; 2 - to a little extent; 3 - to a moderate extent; 4 - to a great extent and 5 - to a very great extent. [Tick appropriately]

Factors	**1**	**2**	**3**	**4**	**5**
Physical barriers due to movement restriction					
Fear of contracting Covid-19					
Fear of the baby contracting Covid-19					
Instructions against KMC from the health care workers					
Low awareness level about Covid-19					
Mixed messages about the transmission of Covid-19					
Personal stress					
Financial barriers/families' economic shocks due to loss of livelihood					
Social distancing rules for Covid-19 prevention					
A low number of health care staff available to offer support on KMC due to C0vid-19 redeployments					
Health facilities being overwhelmed by large numbers of Covid-19 patients needing management and treatment					
Lack of/inadequate support from family					
Lack of/inadequate support from the health care workers					

15. What other aspects impede your utilization of kangaroo mother care during this period of the Covid-19 pandemic?

……

……..……

……..……

…….

Section E: Possible interventions to foster KMC practice during the Covid-19 pandemic

16. In your own opinion, what measures can be adopted to foster your practice of kangaroo mother care during the Covid-19 pandemic period?

……
……
……
……

Thank you for your participation

Appendix 6: Dodoso ya Kina Mama

Kichwa cha Utafiti: Huduma ya utunzaji ya watoto ya kangaroo katika kipindi cha janga la Covid-19 baina ya kina mama wenye watoto wa mapema katika kitengo cha watoto wachanga Hospitali Kuu ya Kenyatta

Tarehe: ……. **Faharisi:** ……..

Maagizo:

a) Usiandike jina lako kwenye dodoso.

b) Jibu maswali visahihi kwa kuweka alama kwenye nafasi zilizoachwa.

c) Jiskie huru kuyajibu maswali yote

d) Hata hivyo, una uhuru wa kutojibu maswali yanayokupa wasiwasi kuyajibu.

Sehemu ya A: Taarifa za kibinafsi za kina mama

1. Umri wako, kwa miaka, ni? ……

2. Kiwango chako cha elimu ni?

Sina elimu ( ) Elimu ya msingi ( )

Elimu ya Sekondari/upili ( ) Elimu ya Chuo ( )

Elimu ingine yeyote (taja)……..

3. Hali ya ndoa

Sijaolewa ( ) Nimeolewa ( ) Separated ( )

Nimetalakiwa ( ) Mjane/Nimefiwa ( )

4.

a. Je, huyu ni mtoto wako wa kwanza?

Ndio ( ) La ( )

b. Ikiwa La, huyu mtoto ni wa ngapi? .....

5. Je, dini yako ni gani?

Mkristo ( ) Muislamu ( ) Hindi ( )

Zingine (taja) ……

6. Je! una ugonjwa wowote, kwa sasa au wakati wa uja uzito?

Ndio ( ) La ( )

Ikiwa ndio, ugonjwa upi? ……

Sehemu ya B: Utekelezaji wa huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19

7. Je, umewahi kusikia kuhusu utunzaji wa watoto kwa kutumia mfumo wa kangaroo?

Ndio ( ) La ( )

Ikiwa ndio, mfumo huu ni upi na kwa nini ni muhimu?

……
……
……

8. Je, umesikia kuhusu janga la Covid-19?

Ndio ( ) La ( )

Ikiwa ndio, Covid-19 inaambukizanwa ki vipi?

……
……
……

Ikiwa ndio, zifuatazo ni dalili za kawaida kwa watu walio na maambukizi ya Covid-19 **isipokuwa**?

Maumivu ya kichwa ( ) Joto ( ) Kukohoa ( ) kutoa damu puani ( ) Kuchemua ( ) Ugumu wa kupumua ( ) Maumivu ya mwili ( ) Kutetemeka ( ) upele kwa mwili ( )

9. a) Je, unautumia mfumo wa kangaroo kwa mtoto wako kwa sasa?

Ndio ( ) La ( )

b) Ikiwa ndio, unatumia aina gani ya mfumo huu wa kangaroo:

Kila wakati ( ) Mara kwa mara ( )

c) Ikiwa ndio, ni sababu zipi unautumia mfumo huu wa kangaroo kwa mtoto wako?

Kuimarisha uhusiano wa karibu baina ya mama na mtoto ( )

Kuboresha unyonyeshaji wa mtoto ( ) Kumfanya mtoto apate joto ( )

Kumsaidia mtoto kulala vizuri ( )

Sababu zingine zozote (taja)

……
……
……

d) Ikiwa La, kwa nini hutumii mfumo wa kangaroo kwa mtoto wako?

Ukosefu wa ufahamu juu ya mfumo wa kangaroo ( )

Kukosa usaidizi kutoka kwa wahudumu wa afya ( )

Kuogopa mtoto kupata maambukizi ya Covid-19 ( )

Nina ugonjwa wa ngozi na naogopa kuambikiza mtoto ( )

Mtoto hajiskii vizuri au ni mgonjwa ( )

Sababu zingine zozote (taja)

……
……

Sehemu ya C: Mtazamo kuhusu huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19

10. Je, unaunga mkono utekelezaji wa huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19?

Ndio ( ) La ( )

11. Je, waogopa kutekeleza huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi hiki cha janga la Covid-19?

Ndio ( ) La ( )

Ikiwa ndio, kwa nini?

Nahisi mtoto yuko hatarini sana ( )

Naogopa kupata maambukizi ya Covid-19 ( )

Naogopa mtoto apate maambukizi ya Covid-19 ( )

Nimepokea maagizo dhidi ya kutekeleza huduma hii wakati huu kutoka kwa wahuduma wa afya ( )

Ukosefu wa ufahamu kuhusu maambukizi ya Covid-19 na jinsi inaweza kuathiri mtoto ( )

Ukosefu wa mwongozo wa jinsi ya kufanya huduma ya kangaroo wakati wa maambukizi ya Covid-19 ( )

Sababu zingine zozote (taja)

……
……

12. Je! Unaona maambukizi ya Covid-19 kama tishio kubwa kwa mtoto wako katika muktadha wa zoezi la huduma ya kangaroo?

Yes ( ) No ( )

Ikiwa ndio, kwa nini?

……
……
……

Ikiwa La, kwa nini?

……
……

13. Je, ni mambo yepi inakutia wasiwasi mkubwa kuhusu utekelezaji wa huduma ya kangaroo kwa mtoto wako katika kipindi hiki cha Covid-19?

Mtoto kupata maambukizi ya Covid-19 ( )

Ukosefu wa ufahamu ya jinsi mfumo wa kangaroo unavyoweza kuchangia usambazaji wa maambukizi ya Covid-19 ( )

Ukosefu wa ufahamu kuhusu iwapo maambukizi ya Covid-19 inaweza kusambazwa kupitia unyonyeshaji mtoto ( )

Kutojua hali ya Covid-19 baina ya wahudumu wa afya ( )

Kuguza sehemu zilizochafuliwa ( )

Zinginezo, taja;

……
……
……

Sehemu ya D: Mambo yanayoadhiri utekelezaji wa huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19

14. Je, ni kwa kiwango kipi mambo yafuatayo yanaadhiri utekelezaji wako wa huduma ya utunzaji ya watoto ya kangaroo wakati huu wa kipindi cha janga la Covid-19? Tumia kiwango cha 1 hadi 5 ambapo, 1 - sio kwa kiwango chochote; 2 - kwa kiwango kidogo; 3 - kwa kiwango cha kadri/wastani; 4 - kwa kiwango kikubwa na 5 - kwa kiwango kikubwa zaidi [Jibu visahihi]

	1	**2**	**3**	**4**	**5**
Vizuizi vitokanazo na kusitishwa kwa usafiri					
hofu ya kupata maambukizi ya Covid-19					
Hofu ya mtoto kupata maambukizi ya Covid-19					
Kupokea maagizo dhidi ya kutekeleza huduma hii wakati huu kutoka kwa wahuduma wa afya					
Ukosefu wa ufahamu juu ya Covid-19					
Taarifa zinazokanganya kuhusu usambazaji wa maambukizi ya Covid-19					
Dhiki za kibinafsi					
changamoto za kifedha /matatizo ya kiuchumi katika familia kutokana na kupoteza ajira					
Sheria za kukaa kwa umbali ili kuzuia usambazaji wa Covid-19					

Idadi ndogo ya wahudumu wa afya ilioko kusaidia kina mama kutekeleza huduma ya kangaroo huku wengi wakiwekwa kwenye shughuli za kupigana na Covid-19					
Vituo vya afya kuzidiwa na idadi kubwa ya waadhiriwa wa Covid-19 wanaohitaji matibabu					
Usaidizi hafifu au usioridhisha kutoka kwa familia					
Usaidizi hafifu au usioridhisha kutoka kwa wahudumu wa afya					

15. Je, ni mambo mengine yepi ambayo yanaadhiri utekelezaji wako wa huduma ya utunzaji ya watoto ya kangaroo wakati huu wa kipindi cha janga la Covid-19?

……
……
……
……

Sehemu ya E: Hatua zinazoweza kuchukuliwa ili kuboresha utekelezaji wa huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19

16. Kwa maoni yako mwenyewe, je, ni hatua zipi ambazo zinaweza kuchukuliwa ili kuboresha utekelezaji wako wa huduma ya utunzaji ya watoto ya kangaroo wakati wa kipindi cha janga la Covid-19?

……
……
……

Asante kwa kushiriki katika utafiti huu

Appendix 7: Interview Guide for the Nurses

Title of the study: Kangaroo Mother Care Practice during the Covid-19 Pandemic among Postnatal Mothers of Preterms in Kenyatta National Hospital's Newborn Unit

Section A: Demographic information of the nurses

1. What is your gender: Male ( ) Female( )

2. What is your age in completed years? ……

3. How long have you worked in the New Born Unit?

1 - 5 years ( ) 6 - 10 years ( )

Over 10 years ( )

4. Have the mothers of preterms and LBWs been affected by Covid-19?

Yes ( ) No ( )

If yes, in which ways?

……
……
……..

Section B: Kangaroo mother care and Covid-19

1. Would you advise mothers of preterms to practice KMC during this period of the Covid-19 pandemic?

If Yes, elaborate

……
……
…….

If No, elaborate

……
……
…….

2. Do you have any reservations about the practice of kangaroo mother care among mothers of preterms during this period of the Covid-19 pandemic? If so, elaborate on your concerns?

……
……
…….

3. What factors act as a barrier to the mothers' utilization of KMC during the Covid-19 pandemic period?

……
……
…….

4. What factors act as facilitators to the mothers' utilization of KMC during the Covid-19 pandemic period?

……
……
…….

5. Are there gaps in current hospital policies regarding KMC practice during the Covid-19 pandemic period?

Yes ( ) No ( )

If yes, elaborate

……
……
……

6. In your own opinion, what measures and interventions should be adopted to foster the practice of kangaroo mother care among mothers of preterms during the Covid-19 pandemic period?

……
……
……

Thanks for your feedback

Appendix 8: Letter to the Ethical and Research Committee

Beatrice Afande Mukhola,

Reg. No. H56/34405/2019,

School of Nursing Sciences,

College of Health Sciences,

The University of Nairobi.

The Secretary,

KNH/UoN - Ethics and Research Committee,

P.O. Box 20723-00202,

Nairobi.

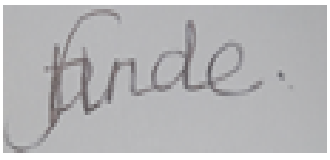
Dear Sir/Madam,

RE: <u>Approval To Conduct A Research Study</u>

My name is Beatrice Afande Mukhola, I am a student at the University of Nairobi, School of Nursing Sciences pursuing Masters of Science Degree in Nursing (Paediatrics). I would like to request your approval to carry out a research study on "Kangaroo mother care practice during the COVID-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit", as a requirement for the examination of the award of the said degree.

Thank you in advance.

Yours faithfully,



Beatrice Afande Mukhola.

Appendix 9: Letter to the Head of Department - Paediatric Unit of KNH

Beatrice Afande Mukhola,

Reg. No. H56/34405/2019,

School of Nursing Sciences,

College of Health Sciences,

The University of Nairobi.

The Head of Department,

Paediatric Unit – KNH,

Nairobi.

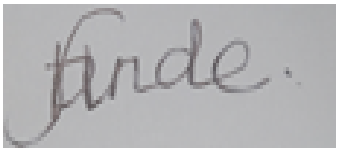
Dear Sir/Madam,

RE: <u>REQUEST FOR PERMISSION TO CARRY OUT A RESEARCH STUDY AT KNH</u>

My name is Beatrice Afande Mukhola, I am a student at the University of Nairobi, School of Nursing Sciences pursuing Masters of Science Degree in Nursing (Paediatrics). I would like to request your approval to collect data for a study on "Kangaroo mother care practice during the COVID-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital's Newborn Unit", as a requirement for the examination of the award of the said degree.

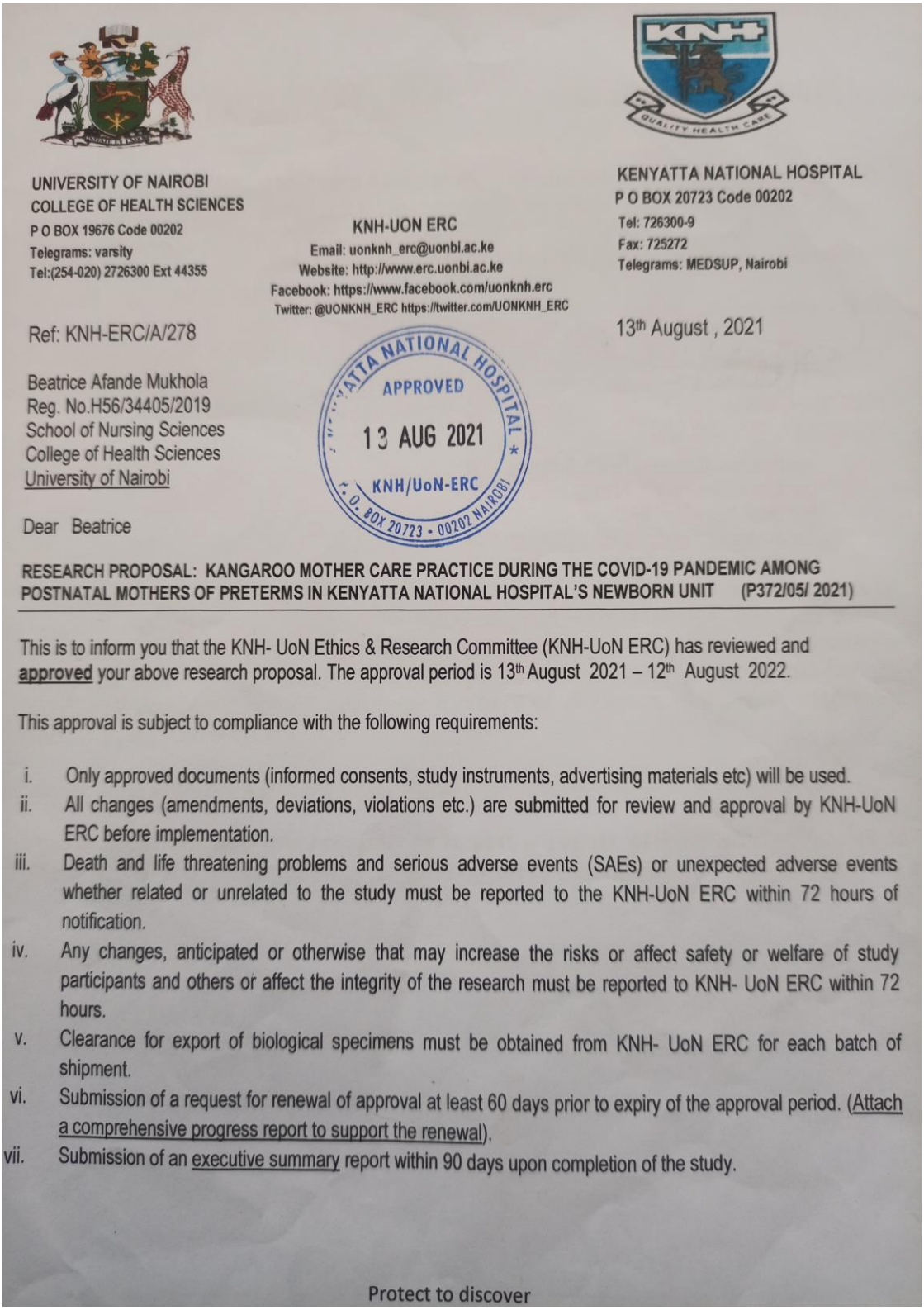
Thank you in advance.

Yours faithfully,



Beatrice Afande Mukhola.

Appendix 10: Approval Letter from KNH-UoN Ethics and Research Committee



UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/278

13th August , 2021

KENYATTA NATIONAL HOSPITAL
APPROVED
13 AUG 2021
KNH/UoN-ERC
P. O. BOX 20723 - 00202 NAIROBI

Beatrice Afande Mukhola
Reg. No.H56/34405/2019
School of Nursing Sciences
College of Health Sciences
University of Nairobi

Dear Beatrice

RESEARCH PROPOSAL: KANGAROO MOTHER CARE PRACTICE DURING THE COVID-19 PANDEMIC AMONG POSTNATAL MOTHERS OF PRETERMS IN KENYATTA NATIONAL HOSPITAL'S NEWBORN UNIT (P372/05/ 2021)

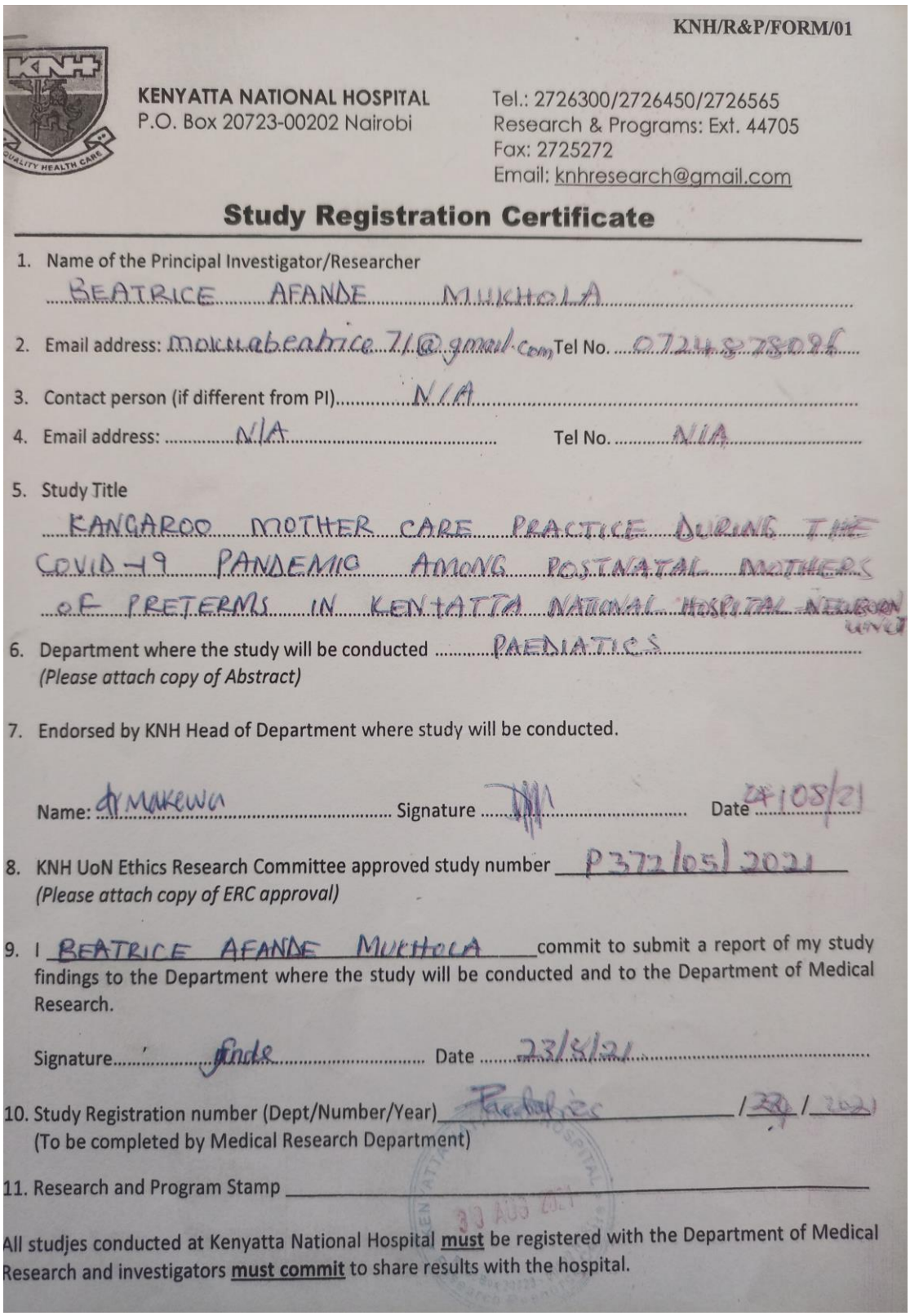
This is to inform you that the KNH- UoN Ethics & Research Committee (KNH-UoN ERC) has reviewed and **approved** your above research proposal. The approval period is 13th August 2021 – 12th August 2022.

This approval is subject to compliance with the following requirements:

i. Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
ii. All changes (amendments, deviations, violations etc.) are submitted for review and approval by KNH-UoN ERC before implementation.
iii. Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
iv. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
v. Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (Attach a comprehensive progress report to support the renewal).
vii. Submission of an executive summary report within 90 days upon completion of the study.

Protect to discover

Appendix 11: Approval Letter from Kenyatta National Hospital



KNH/R&P/FORM/01

KENYATTA NATIONAL HOSPITAL
P.O. Box 20723-00202 Nairobi

Tel.: 2726300/2726450/2726565
Research & Programs: Ext. 44705
Fax: 2725272
Email: knhresearch@gmail.com

Study Registration Certificate

1. Name of the Principal Investigator/Researcher
   BEATRICE AFANDE MUKHOLA
2. Email address: makwabeatrice.71@gmail.com Tel No. 0724878096
3. Contact person (if different from PI) N/A
4. Email address: N/A Tel No. N/A
5. Study Title
   KANGAROO MOTHER CARE PRACTICE DURING THE COVID-19 PANDEMIC AMONG POSTNATAL MOTHERS OF PRETERMS IN KENYATTA NATIONAL HOSPITAL NEWBORN UNIT
6. Department where the study will be conducted PAEDIATICS
   (Please attach copy of Abstract)
7. Endorsed by KNH Head of Department where study will be conducted.
   Name: dr MAKEWA Signature ..... Date 24/08/21
8. KNH UoN Ethics Research Committee approved study number P372/05/2021
   (Please attach copy of ERC approval)
9. I BEATRICE AFANDE MUKHOLA commit to submit a report of my study findings to the Department where the study will be conducted and to the Department of Medical Research.
   Signature ..... Date 23/8/21
10. Study Registration number (Dept/Number/Year) Paed/22 / 22 / 2021
    (To be completed by Medical Research Department)
11. Research and Program Stamp

All studjes conducted at Kenyatta National Hospital **must** be registered with the Department of Medical Research and investigators **must commit** to share results with the hospital.

Appendix 12: Approval Letter from Head of Department - Paediatrics, KNH

KENYATTA NATIONAL HOSPITAL
P.O. BOX 20723, 00202 Nairobi

Tel.: 2726300/2726450/2726550
Fax: 2725272
Email: knhadmin@knh.or.ke

Ref: KNH/PAEDS-HOD/48 Vol.II

Date: 24th August 2021

Beatrice Afande Mukhola
School of Nursing Sciences
College of Health Sciences
University of Nairobi

Dear Beatrice

RE: AUTHORITY TO COLLECT DATA IN PAEDIATRICS DEPARTMENT

Following approval by the KNH/UON-Ethics & Research Committee for your Research Proposal and subsequent filing of the Study Registration Certificate, this is to inform you that authority has been granted to collect data in ***Paediatrics Department, Newborn Unit*** on your study titled ***"Kangaroo mother care practice during the COVID-19 pandemic among postnatal mothers of preterms in Kenyatta National Hospital, Newborn Unit".***

Kindly liaise with the Assistant Chief Nurse Incharge, Newborn Unit for facilitation.

Please note that you are required to submit a report of your study findings to the office of the undersigned after completion of your study.

Dr. Douglas Makewa
HEAD OF DEPARTMENT, PAEDIATRICS

Cc. ACN Incharge, NBU

Appendix 13: Work Plan

Activity	2021									
	Jan	Feb - May			Jun	Jul	Aug	Sep	Oct	Nov
Concept development										
Proposal writing and presentation to faculty										
Submission of proposal to Ethics Board										
Pretesting the instrument										
Data collection and analysis										
Report writing and corrections										
Presentation of the findings										
Project findings dissemination										

Appendix 14: Budget

Item	**Quantity**	**Unit Cost**	**Total Cost**
Pencils	20	@ Ksh.35.00x20	Ksh. 700
Pens	10	@ Ksh.20.00x10	Ksh.200
Foolscaps	1 ream	@ Ksh.500.00	Ksh. 500
Printing papers	2 reams	@ Ksh.1,000.00x2	Ksh. 2,000
Note books	10	@ Ksh.500.00x4	Ksh. 2,000
Proposal writing			
Fair copies printing	3 copies, 100 pgs	@Ksh.(5per page x 100)3	Ksh. 1500
Final copy printing	2 copies, 100 pgs	@ Ksh.(5 per page x100)2	Ksh. 1,000
Final copies photocopy	4 copies, 100 pgs	@Ksh.(5 per page x100)4	Ksh.2000
Binding	6 copies	@ ksh. (1,000 per copy)6	Ksh. 6000
Project Writing			
Data analysis statistician	1	@Ksh 100,000	Ksh.100,000
Fair copies printing	2 copies, 100 pgs	@ Ksh.(5 per page x100)2	Ksh. 1,000
Final copy printing	4 copies, 100 pgs	@Ksh.(5 per page x100)4	Ksh.2000
Binding	3 copies	@ ksh. (1000 per copy)3	Ksh. 3,000
Transport cost	1 person for 21 days	@ Ksh 500 x 21 days	Ksh. 10,500
Meals	@1000 per day	@1000 x 21 days	Ksh. 21,000
Tape Recorder		@Ksh. 10,000	Ksh. 10,000
Project findings dissemination			
Publication in a peer-reviewed journal		@Ksh. 40,000	Ksh. 40,000
		Sub-total	**Ksh. 203,400**
Miscellaneous	10%		20,340
		Grand Total	**Ksh. 223,740**