



UNIVERSITY *of*
RWANDA

**FATHER'S INVOLVEMENT IN THE CARE OF PRETERM NEWBORN
HOSPITALISED IN NEONATAL INTENSIVE CARE UNIT AT
SELECTED HOSPITAL IN RWANDA**

BY

Diane UWAJENEZA

223006115

MASTERS OF NURSING IN NEONATOLOGY

June, 2025



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**A Dissertation Submitted in Partial Fulfillment of the Requirements for the
College of Medicine and Health Sciences**

Degree of

Masters of Science in Nursing Neonatology

School of Nursing and Midwifery

June, 2025

DECLARATION

I, UWAJENEZA Diane, do here by declare that this research thesis titled “Father's involvement in the care of preterm newborn hospitalized in neonatal intensive care unit at selected hospital in Rwanda” submitted in partial fulfillment of the requirements for the degree of Masters of Sciences in Neonatology nursing at the University of Rwanda/ College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere.

Also, I do declare that a complete list of references is provided indicating all the sources of information quoted or cited.

Signature



Date:

25/06/2025

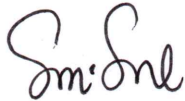
UWAJENEZA Diane

APPROVAL SHEET

I, UWAJENEZA Diane do here by declare that this research thesis titled “Father's involvement in the care of preterm newborn hospitalized in neonatal intensive care unit at selected hospital in Rwanda” submitted in partial fulfillment of the requirements for the degree of Masters of Sciences in Neonatology at the University of Rwanda/ College of Medicine and Health Sciences, is my original work and has not previously been submitted elsewhere.

Supervisor: Dr. Thierry Claudien UHAWENIMANA

Signature:



Date:

25/06/2025

Co-Supervisor: Mrs. Rose MUKARUBAYIZA

Signature:.....



Date:

26/06/2025

DEDICATION


I dedicate this work, To almighty God for his protection to my family, my workmates for their support, relative and friends for their emotional support and encouragement. Your love, support, patients helped me throughout this Master's program.

DECLARATION

I, UWAJENEZA Diane, do hereby certify that this thesis with title “Father's involvement in the care of preterm newborn hospitalized in neonatal intensive care unit at selected hospital in Rwanda” submitted in partial fulfillment of the requirement for the degree of masters of science in nursing Neonatology at the University of Rwanda, College of medicine and health science, is my original work and has not previously been submitted anywhere.

UWAJENEZA Diane

Date: 25/06/2025

Signature: 

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I would like to thank the Almighty God who created us and enabled us to finish our studies; also, this thesis could not have happened without contribution of the following people who contributed emotionally, morally, professionally toward the completion of this work.

My supervisor Dr. Thierry Claudien UHAWENIMANA and co-supervisor Mrs. Rose MUKARUBAYIZA understanding, assistance, engagement and guidance that allowed me to finish this research on time.

My acknowledgement also goes to my beloved family, patience and encouragement during my studies and all of you who assisted me in different way toward the completion of my master's.

Be blessed.

LIST OF ACRONYMS AND ABBREVIATIONS

%:Percentage

CHUK: University teaching Hospital of Kigali

CINAHL: Cumulated Index to Nursing and Allied Health Literature

CMHs: College of Medicine and Health Sciences

IQ: Intellectual Quotient

IRB: Institutional Review Board (IRB)

NICU: Neonatal Intensive Care Unit

NVivo: Non-Versioned Information, Versatile Outcomes.

SSA: Sub-Saharan Area,

UR: University of Rwanda

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ABSTRACT

Background: Preterm birth remains a global health challenge with the highest burden in South Asia and sub-Saharan Africa where Rwanda is located. Despite the growing evidence that father involvement in neonatal intensive care units improves outcomes for preterm newborn such as enhanced bonding, feeding, psychomotor-development and reduced mortality, father involvement remains limited in many low-resource settings. Cultural norms, institutional barriers, lack of knowledge and emotional distress contribute to low father engagement. Addressing these challenges is essential for promoting family-centered neonatal care and improving survival and development of preterm newborns.

Purpose: To explore factors influencing father's involvement in the care of preterm newborn hospitalized in neonatal intensive care unit at selected hospital in Rwanda.

Methodology: A descriptive qualitative research design was used among fathers having preterm newborn hospitalized in neonatology at CHUK between February and March 2025. fathers whose preterms babies were admitted in the NICU who were stable were included. Data was collected using an in-depth interview guide on 18 fathers conveniently recruited and Data was analyzed using manual thematic analysis.

Results: Through thematic analysis of interviews records on three key themes emerged preterm newborn-related, personal and environmental factors. This study identified factors influencing fathers' involvement in preterm care such as fear of the status of the babies, emotional distress and cultural or socioeconomic barriers. The participants also stated that their involvement improved with support, education and inclusive healthcare practices. Findings highlight the need for father-friendly policies, flexible visitation, culturally sensitive education, and institutional support to enhance paternal engagement in neonatal care.

Conclusion and Recommendations: The study effectively responded to research questions by exploring key barriers to fathers' involvement in NICU care. However, findings imply a critical need for inclusive health system approaches that position fathers as active caregivers. Interventions such as father-focused education, communication and support groups are recommended to enhance

engagement. Further research is needed to evaluate the impact of these interventions across diverse healthcare settings.

Key words: Care of preterm new born, fathers' engagement, neonatal intensive care, facilitators, barriers.

CHAPTER ONE: INTRODUCTION

Fathers' involvement in the care of preterm newborns provides newborns' positive behavioral and psychological outcomes(1). Caring preterm newborn is not only practiced by mothers but also fathers' involvement can be beneficial to the young baby development(2). This is because fathers play a major role in making home decision regarding development. In Rwanda, caring of newborn culturally restricted to the role of mothers who breastfeed the babies and other needs.

This chapter delves into exploring the available literatures to provide background information on fathers' involvement in caring of preterm newborn. This chapter, building from the data obtained from the background, statement of problem and is presented with a purpose of defining the practice and research gaps under study. The following section proceeds with the presentation of main purpose and specific objectives of the study, scope of the study, significance of the study and organization of the whole thesis

Background

Globally, approximately 13.4 million babies were born preterm less than 37 weeks of gestation in 2020(3) . Preterm birth varies widely across countries, the global estimates found higher rates in low-income countries compared to high income countries at 16 % and 9% respectively with majority 65% in south Asia and sub-Saharan Africa where Rwanda is located(3). In Rwanda, the prevalence of preterm rate is quite unknown nationwide; However, there is data available from hospitals(4). Preterm NICU admissions remain a significant global health issue, which need emergency attention(5). Global estimates found that prematurity is the primary leading cause of NICU admission including Rwanda(5). Rising NICU utilization in many regions, particularly the United state of America and other developing countries for substantial improvements in outcomes for preterm infants, however, Southern Asia and sub-Saharan Africa bear the highest burden(6).

Various clinical, community, and home-based interventions for preterm babies have been created to improve and predict the outcomes of preterm care(7). Studies found that kangaroo care, breastfeeding, skilled healthcare, family centered care and psychosocial support are associated with better preterm outcomes. There has been a clear shift in recent decades toward recognizing and integrating fathers as essential caregivers, especially in NICU settings to participate in skin-to-skin contact, feeding, bathing and emotional support of both mother and infant. Involvement of

fathers in the care of preterm newborns in NICUs has been increasingly recognized as crucial for the emotional, developmental and physiological well-being of both the infant and the parents(6).

A systematic review study showed that when fathers are actively involved in NICU care, it leads to improved bonding and attachment, enhanced infant outcomes, including weight gain, shorter hospital stays and better neurodevelopment(5). Fathers' involvement in preterm care varies significantly across countries and is often limited in sub-Saharan Africa due to intersecting newborn, paternal and environmental factors. Cultural norms assigning caregiving roles primarily to mothers, combined with fathers' limited knowledge, emotional distress, and fear of harming fragile infants, reduce paternal engagement(5).

Institutional barriers such as restrictive visitation policies, non-inclusive NICU environments, and lack of encouragement from healthcare providers further hinder active father participation(6). Fathers' involvement in preterm care is more advanced in high-income countries like the USA and Europe, where supportive policies, NICU access and parental leave promote active participation in neonatal care(8). In high-income countries such as the USA and much of Europe, father involvement in NICU care is increasingly recognized and facilitated through family-centered care policies, 24/7 NICU access, and parental leave benefits. Fathers are encouraged to participate in kangaroo care, feeding and decision-making, which has been shown to enhance bonding and improve neonatal outcomes.(9).

In contrast, in many African contexts, fathers' involvement remains limited due to traditional gender roles, lack of supportive infrastructure, restrictive hospital policies, and limited paternal education on neonatal care(10). Fathers often feel excluded or underprepared to engage in the care of their preterm infants. Despite growing global recognition of the importance of paternal involvement, regional disparities persist, with Europe leading in family-integrated NICU models, the USA making progress but challenged by unequal access and paid leave gaps, and African countries working to adapt culturally responsive, inclusive care models in systemic barriers(11). A qualitative study in Uganda reported that while fathers cared about their preterm infants, cultural norms and lack of support limited their physical involvement in NICU(11) Fathers participation in feeding and preterm care giving promote adequate nutrition and care and is crucial for their growth and recovery(12).

Findings from population based cohort study showed that father involvement in newborn care has been linked to better health outcomes for both newborn and fathers as it enhance father-newborn relationship which is essential in cognitive and physical development of newborn and associated to stress reduction (13).

However, father involvement in caring preterm newborn babies can be significantly affected by socio-demographic factors(14). Several factors influence both the capacity and willingness of fathers to engage in preterm care, including age, education, employment, marital status, cultural background, experience (parity), and proximity to health facilities(14). A qualitative study showed that younger, less educated, single, or unemployed and those constrained by cultural norms not felt motivated to involve in preterm care, while older, educated, married fathers with prior parenting experience are generally more confident and involved(15).

Furthermore, fear of some fathers, status of the baby and attachment to the baby have been found as barriers to fathers' involvement in preterm care. Health facility factors including hospital's policies, individual staff attitudes and physical setting also were identified as barriers to father involvement (16). The qualitative study in Kenya reported that, gender roles and socio-cultural beliefs, social support and baby's physical appearance are factors influencing father involvement in caring of preterm new born which is similar to our context where gender norms can limit male involvement in maternal and newborn health, including neonatal care(17).

Hospital's physical environment and provision of basic needs also are barriers and facilitator of father involvement in caring of preterm new born caring (18). Moreover, father involvement in caring of preterm new born can lessen the workload on mothers and prevent the mothers from feeling overwhelmed(19). However, fathers already in shock from an unexpected preterm birth, frequently find the NICU environment overwhelming, due to seeing their infant connected to wires, electrodes and intravenous lines and the unfamiliar equipment such as an incubator, cardiac monitor and ventilator(20).

Fathers often have feelings of helplessness due lack adequate knowledge of how to care hospitalized preterm newborn. This is due to the other commitments that prevent them from being in the NICU, such as caring for other children at home, having work responsibilities, or living far

from the NICU(10). A study by Byiringiro et al. showed that fathers felt significant stress and emotional distress when their newborns were admitted to the NICU. This was especially due to a lack of understanding about their baby's condition, limited communication and interaction with healthcare providers and other parents, strict policies that restricted fathers' and families' access, and the high financial cost of NICU care(21). Fathers stressful conditions can be minimized through financial support and psychological support through counselling as well as health education.

1.3 Statement of the problem

The birth of a preterm newborn is a stressful experience for both parents and for evidence fathers are less participate in caring new born care compared to the mothers(22) . However, fathers often play a smaller role in neonatal caregiving especially in low- and middle-income countries(6). In higher-income countries and some developing countries, hospitals support father involvement in NICU through family-centered care policies which enable fathers to practice kangaroo care, feeding and hygiene care which have been linked to better neonatal outcomes, stronger parent-infant bonding and lower maternal stress and anxiety(23).

In low-income countries especially in sub-Saharan Africa where Rwanda is geographically located, fathers are less involved in preterm care and maternal and neonatal health(21). This is due to strong socio-cultural norms, lack of awareness, emotional unpreparedness and institutional barriers like strict NICU policies and limited family-inclusive infrastructure(24). Participation of fathers in caring preterm newborn can produce positive outcome including well-being of a child and mothers.

Many studies have been globally conducted to identify factors influencing father involvement in preterm. However, studies conducted in Rwanda have mostly focused on parent education and maternal experiences in NICUs, highlighting knowledge and attitudes about preterm care(25). Few have looked into the experiences of fathers or the specific personal, environmental, and systemic factors that affect their engagement in NICU care.

Therefore, this study aims to explore preterm related, fathers' related and environment related factors that influence father involvement in the care of preterm newborns hospitalized in the NICU at CHUK-Rwanda.

1.4 Purpose of the study

This study is aimed to identify the factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda

1.5 Objectives of the study

- a) To explore preterm newborn related factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda.
- b) To explore personal factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda.
- c) To explore environmental factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda.

1.6 Research questions

- a) What are preterm newborn related factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda?
- b) What are personal factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda?
- c) What are environmental factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda?

1.7 Scope of the study

1.7.1 Time scope

This research took place over a long time, starting in July 2024 and ending in May 2025. This time frame allowed for thorough data collection and deep interaction with participants at different stages of the study

1.7.2 Content scope

This study focused on identifying and understanding the factors that affected father involvement in caring for their newborns in the NICU. It aimed to help health facilities encourage and support fathers in caring for preterm newborns. The study also looked at current practices and policies in

health facilities related to encouraging fathers in preterm care. Additionally, it evaluated how healthcare professionals viewed the importance of father involvement in caring for preterm newborns. The study further explored the barriers and challenges that health facilities faced in promoting father participation in preterm newborn care.

1.7.3 Geographical scope

This study was conducted in hospital located in Kigali City and it will focus on fathers whose preterm newborn were admitted in Intensive Care Unit (ICU).

1.8 Significance of the study

1.8.1 To the community

Results from this study help healthcare providers to develop strategies to optimize father participation in caring their preterm newborn within health facility settings, the findings also will help the community to understand current practices, attitudes, and barriers related to this important aspect of newborn care within the entire family unit. This study will help the fathers to know their role in early development of children.

1.8.2 To the researcher

This study will improve new knowledge about the understanding on factors that influence health facilities in their efforts to encourage and facilitate father participation. It will also help the researcher to identify the best strategies for newborn care engagement.

1.8.3 To the scholars

Because of the geographical scope of this study, the findings from it was used as baseline information for further investigations of a similar nature in other settings and conduct big researches across the country.

1.9. Organization of the Study

This research proposal will have three chapters. The first chapter is the introduction to the study with subsections such as the background, problem statement, aim of the study, research objectives, research questions, significance of the study, definition of concepts, structure of the study, and conclusion of chapter 1. Chapter two was entailed an exploration of literature related to this study. It is composed of an introduction, theoretical literature, empirical literature, critical review, research gap identification, and conceptual framework and conclusion of chapter two. Chapter

three is the methodology chapter with an introduction, research design, research approach, research setting, and population, sampling, and sampling strategy, sample size, data collection, data analysis, ethical considerations, data management, data dissemination, limitations, and challenges.

CHAPTER TWO: LITERATURE REVIEW

This chapter covers literature search strategies about fathers' involvement in caring preterm newborn, critical review and research gap identification of regarding father's role in caring preterm babies, theoretical literature about father involvement, empirical literature of qualitative and quantitative articles published between 2019 and 2024, and the conceptual framework adopted from unitary human beings by Martha E. Rogers.

To define the scope of our literature review, we included studies on preterm newborn, role of fathers in caring their preterm babies focusing on both high-income and low-income countries to understand global, regional and local practices and challenges. We used multiple academic databases such as Pub Med, CINAHL, Scopus, and Google Scholar for search strategy and we use a list of key words including "father's involvement," "preterm newborn," "intensive care unit," "worldwide," "Rwanda," "sub-Saharan Africa.

The criteria for including studies in this review were: studies published in peer-reviewed journals from 2019 to 2024, articles written in English, and research that specifically focuses on fathers' involvement in caring for their preterm newborns. Studies involving low-income and developing countries, especially in sub-Saharan Africa. While exclusion criteria were as follow: Studies not specifically addressing father's involvement in caring preterm newborn. Articles in languages other than English and papers published more than 5 years ago.

2.1 Definition of key terms

Father: the father, or paternal figure, in the context of newborn care, refers to the male parent or primary caregiver who plays a significant role in the physical, emotional, and social development of the infant(10). In this study on father involvement in preterm care in the NICU, a father is defined as the biological father, legal guardian, or male caregiver. This person takes on a parental role and is actively or potentially involved in the care, decision-making, and emotional support of a preterm newborn during hospitalization.

Newborn: A newborn, medically known as a neonate, is an infant in the first 28 days of life, characterized by physiological adaptations from intrauterine to extra-uterine life, including transitioning to independent breathing, circulation and temperature regulation (26).

Preterm: Preterm birth is when a baby is born before 37 weeks of pregnancy are completed. It is divided into three categories based on gestational age: extremely preterm (less than 28 weeks), very preterm (28 to less than 32 weeks), and moderate to late preterm (32 to less than 37 weeks). Preterm birth is a major cause of health problems and deaths in newborns around the world(27). In this study, Preterm was defined as any infant born alive before reaching 37 weeks of gestation. This definition applies no matter the infant's chronological age when we collected the data.

Neonatal Intensive Care Unit (NICU): A neonatal intensive care unit (NICU) is a hospital intensive care unit that specializes in looking after babies who are born sick or having congenital conditions. In this study, ICU refers to the specialized room in neonatology in which young babies aged below 28 days are hospitalized(28).

2.2. Theoretical literature

2.2.1 Theoretical framework

The theoretical review section examines relevant theoretical frameworks that underpin the study of father involvements in caring newborn preterm babies in Rwanda. Drawing from established theories in nursing and healthcare management, this section discusses their applicability to understanding role of father in caring newborn preterm babies. There are several theories and conceptual models that can apply in studying fathers' involvement in neonatal care including involved fatherhood model, "family-centered care," and the "theory of planned behavior.

In this study, the socio-ecological model considers the influence of multiple factors at different levels, including individual, interpersonal, community, and societal(6). It helps understand how factors like fathers' beliefs, family dynamics, community support, and societal norms affect father involvement in caring preterm new born(29). In the context of father involvement in caring preterm newborn care, the socio-ecological model provides a framework for understanding how individual, interpersonal, community, and societal factors influence this process(19).

At the individual level, fathers' psychological factors such as their attitudes, beliefs, and emotional well-being play a significant role in caring of newborn preterm new born. Interpersonal factors include the quality of the relationship between the father and the infant, as well as the support the father receives from his partner and family members. Community factors encompass the

availability of support services and resources for fathers, while societal factors include cultural norms and expectations regarding fatherhood(30).

The Heuristic model of the dynamic of parental behavior and influence on children over time can be used to describe factors associated with father involvement in the NICU(31) .Furthermore, the importance of the father's participation during the gestational period can be analyzed through an integrative review method, which identifies challenges, implications, and benefits of paternal involvement in prenatal care. By considering these theoretical frameworks, researchers can gain insights into the various aspects of father involvement in the care of preterm babies. The theoretical models highlight the importance of father involvement in improving cognitive development, breastfeeding exclusivity, and sleep patterns of infants in the NICU. However, these models do not highlight the father-newborn interaction in cognitive and growth.

2.3. Empirical review

Empirical research on Father's involvement in caring of preterm newborns in Rwanda is essential for understanding the factors influencing fathers' involvement in caring premature newborn in development and growth of them. This section reviews relevant empirical studies that investigate variables such as personal, environmental factors that influence father participation in caring premature newborn

2.3.2 Importance of father involvement in caring preterm newborn

Father's involvement in caring of preterm newborns is a critical aspect of early childhood development, with profound effects on cognitive, emotional and social well-being(32). Research conducted in USA by Sarkadi et al. (2008) showed association between fathers caring his newborn exhibit enhanced cognitive development, including improved problem-solving skills and higher IQ scores(33). However, the study used a longitudinal cohort design based on self-reported paternal involvement, which may have introduced reporting bias. Moreover, these findings came from a Western context with more support for father involvement.

This limits their direct applicability to low- and middle-income countries like Rwanda, where cultural and systemic barriers are quite different. The lack of similar studies in sub-Saharan African NICU settings highlights a gap in understanding how father involvement may affect cognitive

development outcomes in preterm infants. Furthermore, the observational study conducted in Europe region showed the association between paternal involvement in care giving activities such as feeding, bathing and playing and improved emotional outcomes. It has been linked to positive emotional outcomes in newborns, including greater emotional stability and resilience(34). However, the findings were largely based on observational, which may be subject to social desirability and recall biases.

This study also did not disaggregate results based on factors such as the age of the child, preterm status and the sociocultural environment, which limits the generalizability of the findings to different settings, including sub-Saharan Africa. The absence of similar research in neonatal intensive care units within low-resource settings further underscores the need for context-specific investigations that consider systemic and cultural influences on paternal engagement.

Additionally, father-infant interaction plays a significant role in shaping social development, as fathers often serve as role models for social behavior, teaching infants' important social skills and helping them form secure attachments with others. Moreover, the involvement of fathers in care giving has been shown to have a positive impact on maternal and child health outcomes. Studies have found that fathers who are actively involved in newborn care often provide greater support to the mother, leading to reduced maternal stress levels and improved maternal mental health(13).

This, in turn, can have a positive effect on child health outcomes, as maternal stress during the postpartum period has been linked to adverse effects on infant development additionally, fathers who are actively involved in care giving are more likely to adhere to health recommendations, leading to better overall health outcomes for both the mother and child(12).

2.3.3 Preterm newborn factors influencing fathers involvement in caring preterm newborn

Father involvement in caring preterm newborn babies can be affected by newborn related factors including, status of the baby, appearance and congenital malformation. A cross-sectional nationwide study in Japan about factors associated with father infant bonding during the COVID-19 pandemic revealed that a total of 1055 men were included in the analysis. This study revealed that fathers' mental health, relationship with the partner and family members, abusive behavior towards children, wanted pregnancy and the youngest child's NICU admission history were

associated with father infant bonding. Regarding factors related to COVID-19, caring for the child while the partner is at home has a negative impact on bonding, while fear related to infection with COVID-19 has no negative impact on bonding(35). Although the large sample size adds to the study's credibility, it relied on self-reported data which may be linked to recall bias, which may introduce social desirability and recall bias. In addition, cultural norms in Japan, might restrict how generalizable the findings are to other contexts, particularly low- and middle-income countries. The study's design prevented it from drawing direct cause-and-effect conclusions, and since the focus was bonding, not direct caregiving behaviors, it too suggests the need for more research on different contexts in the NICU.

This is particularly critical in sub-Saharan Africa where fathers' roles may vary widely. An observational qualitative study done in Vietnam and Japan on the role of fathers in caring of preterm newborn showed that infant factors such as physical appearance, health status, and feedback from the baby influence fathers' involvement in care. The findings from the current study suggest that physical appearance and fragile- looking skin impeded fathers' involvement since they feared they could harm the baby(12),(12). Although this cross cultural approach provide valuable insights, This study lack crucial information like how participants were chosen, when data saturation occurred. Also, differences in healthcare systems and cultural norms between the two countries may limit how applicable the findings are to other low-income settings like Rwanda. These limitations highlight the need for local qualitative studies that look into how social and cultural factors affect fathers' involvement in neonatal care.

A study cross-sectional observation qualitative study conducted in Iran on factors associated with father involvement in caring preterm babies showed that feeling encouraged by babies' developmental improvements and the feedback helped them deal with their fears and get more involved in care. Positive paternal attitudes towards breastfeeding were significantly associated with increased likelihood of breastfeeding (36). While this study provides helpful insights into the emotional reasons for father involvement, it does not clearly describe how participants were chosen. Additionally, the study fails to explain how it analyzed qualitative data, such as coding methods or triangulation. This study was done in Iran, hence it is difficult to apply the results in sub-Saharan Africa, like Rwanda, where cultural norms and healthcare systems are quite different.

This highlights the need for targeted research that systematically explores both individual and systemic factors affecting father involvement in preterm care.

Providers supporting fathers in the hospitals, therefore, have a duty to help fathers understand the different non-verbal cues the baby makes so that lack of them may not act as a deterrent from involvement in care(37). A qualitative study about fathers' experiences of feeding their extremely preterm infants in family-centered neonatal intensive care in Sweden presence of multiple births had a positive influence on the fathers' involvement in the care of preterm newborns because fathers felt the mother on her own was lacking since there were two babies to be attended to and the fathers had to come in to help with caregiving activities.

Twin birth meant there was a need for more people to help with the caregiving activities and enabled the fathers to get more involved. For instance, when the mother was done breastfeeding one, the father took the responsibility of burping that one while the mother breastfed the other twin.(10). The current research highlights the necessity for culturally relevant qualitative studies about father participation during preterm care. New research must explore how hospital policies interact with cultural norms as well as staff relations with fathers' involvement. Fathers and staff need to collaborate to provide the best support to mothers during the feeding process. This study may inspire hospital staff to acknowledge and support fathers to become more involved in the oral feeding process when an infant is born extremely preterm.

A study done in Malawi about factors influencing fathers' involvement in the care of hospitalized preterm newborns revealed that preterm new born factors influencing father involvement in caring their babies are baby's physical appearance/nature and health status, feedback from the baby, multiple births, hospital's physical environment and provision of basic needs significantly affect how fathers engage in preterm care. Evidence-based interventions like education programs, training sessions and support groups can help fathers overcome barriers and promote better outcomes for infants and families (6) . However, it did not provide clear details about its methods of how participants were recruited and how data was analyzed. The authors also proposed practical solutions, including education and support groups which were not tested within the study. These emphasize the need for more thorough qualitative research to investigate specific barriers and

supports for father involvement. The study found that fathers value their involvement in caring for hospitalized preterm newborns but face barriers. Evidence-based interventions like education programs, training sessions, and support groups can help fathers overcome barriers and promote better outcomes for infants and families

2.3.4 Personal factors influencing fathers involvement in caring preterm newborn

Father involvement in caring newborn can be affected by health facility factors including hospital's policies, individual staff attitudes and physical setting (16). A review of existing studies suggests that hospital policies and physical environments may influence father involvement in newborn care. However, many of these studies do not provide detailed methods which shows the need for more qualitative research to explore how health facility factors affect fathers' engagement, especially in diverse and resource-limited settings.

A study done in Sweden showed that fathers were constantly present in the fathers' minds. The fathers' were occupied by worries and concerns, the fathers felt that they were an active partner to the professionals and getting the opportunity to take responsibility. The fathers were satisfied with the support and treatment during their infant's hospitalisation. However, there were times when they felt excluded and not fully responsible for their infant. The fathers prioritised the mother, thus ignoring their own needs. Furthermore, they worried about their infant's health and the alteration of their parental role. Neonatal home care was experienced as a possibility to regain control over family life(10). This study concluded that general structure of fathers' experiences highlights the importance of professionals becoming more responsive to fathers' needs and to tailoring support to fathers by focusing on their individual experiences and needs(22).

A study done in Switzerland showed that fathers' interventions in NICUs were limited and mainly restricted to basic skin-to-skin contact or tactile interventions(19). The interventions had similar general positive effects on mothers and fathers when it came to infant physiological and behavioural reactions(19). There was also evidence of a positive effect on the fathers, including their mental health(19). A study conducted in Denmark showed that skin-to-skin contact supported interaction between infant and father, 2) information impacted paternal experiences of stress, anxiety, and development of fatherhood, 3) fathers' relationships with the nurses oscillated between conflict and assistance were factors contributing father involvement in caring their preterm newborn(30). All these studies lacked contextual clarity and methodological evaluation,

which limited our comprehension of how and why these interventions were effective which emphasizes the necessity of additional qualitative research to contextualize and critically examine father involvement in preterm care.

A study done in Brazil showed that the importance of including the father figure in the humanized care of preterm infants. The results of this study point out to the importance of including the father figure in the humanized care of preterm infants. Professional health care team should be more aware of fathers' importance in the care of hospitalized preterm infants (30). Professional health care team should be more aware of fathers' importance in the care of hospitalized preterm infant. A study conducted in Malawi showed that the barriers and facilitators that influence a father's involvement in the care of preterm newborn babies include: perceived difficulty with care activities and benefits of involvement, gender roles and socio-cultural beliefs, work and other family responsibilities, social support(6).

These studies emphasized the importance of involving fathers in the care of hospitalized preterm infants and identified barriers such as socio-cultural norms, gender roles and competing responsibilities. However, these studies lack critical methodological appraisal like sampling strategies and analytical precision, limiting their applicability across different contexts. Hence, further context-specific qualitative research to better understand and address the complex factors influencing father involvement in preterm care.

2.3.5 Environmental factors influencing fathers involnment in caring preterm newborn

Hospital's physical environment including rooms, apperance and provision of basic needs also are barriers and facilitator of father involnment in caring of pretern new born caring (18). Father involvement in the care of preterm newborns has been observed to be both facilitated and hindered by the physical environment of the hospital, including the design of the rooms and their appearance. However, current research frequently lacks methodological transparency and contextual descriptions, which do not facilitate the readers how these environmental factors function in various contexts. This emphasizes the need for more qualitative studies that critically examine the ways in which physical infrastructure affects father involvement in neonatal critical care, especially in settings with limited resources.

According to a Rwandan study, fathers who had their babies admitted to the neonatal care unit reported emotional distress, mainly as a result of financial strains, limited access, and a lack of knowledge about the baby's condition. Although the study identified beneficial relationships with medical professionals and other parents as possible protective factors, it did not critically assess the methodology or give enough information about the study environment. The findings' applicability is restricted by the shallowness of the evaluation of institutional procedures and data gathering. This emphasizes the need for more thorough qualitative research to examine fathers' complex experiences and to guide the development of policies that encourage father participation in neonatal care in comparable contexts(21).

In Australia, a study by (36) conducted on 234 fathers found that 23% of fathers mention that availability of support services for fathers in health facilities significantly influenced the promotion of father-newborn interaction with a p-value ($p= 0.001$) indicating that facilities with more support services were more likely to promote bonding. Additionally, the study reported an adjusted odds ratio of 2.14 (95% CI: 1.45-3.17), suggesting that facilities with more support services were more than twice as likely to promote bonding compared to those with fewer services. Furthermore, this study lack appraised methods used to assess father-newborn bonding which highlights the need for further qualitative studies to explore how support services are experienced by fathers and to better understand their role in fostering Fathers' involvement, especially in diverse healthcare settings.

In Pakistan, a study by (38) identified staff attitudes as a significant factor affecting the promotion of father involvements in caring preterm new born in health facilities. The study reported a statistically significant p-value ($p= 0.005$), indicating that facilities with more positive staff attitudes were more likely to promote father preterm newborn interaction. The study also reported an adjusted odds ratio of 1.86 (95% CI: 1.27-2.72), suggesting that facilities with more positive staff attitudes were almost twice as likely to promote father and preterm newborn interaction. These study does not explore how fathers interpret or respond to staff behavior, whether positive interactions empower them to involve in the care or cultural and emotional factors influences. Therefore, qualitative research with in-depth interviews is critically needed to explore the lived experiences of fathers in preterm care settings.

In South Africa, a study by (2) found that the availability of support services for fathers significantly influenced the promotion of father-newborn interaction in health facilities. The study reported a statistically significant p-value of 0.001, indicating that facilities with more support services were more likely to promote father involvements. Additionally, the study reported an adjusted odds ratio of 2.14 (95% CI: 1.45-3.17), suggesting that facilities with more support services were more than twice as likely to promote interaction compared to those with fewer services.

In Nigeria, a study by (Oluochet *al.*, 2023) identified staff attitudes as a significant factor affecting the promotion of father involvement in health facilities. The study reported a statistically significant p-value of (p=0.005) indicating that facilities with more positive staff attitudes were more likely to promote father-newborn interaction. The study also reported an adjusted odds ratio of 1.86 (95% CI: 1.27-2.72), suggesting that facilities with more positive staff attitudes were almost twice as likely to promote interaction. Although these quantitative findings provide the useful information on organizational determinants for father involvement, they do not offer a rich understanding of father's motives, barriers and experiences in the NICU setting. Therefore, qualitative research is crucial to explore fathers' personal experiences, emotional responses, and social dynamics influencing their involvement in the care of preterm newborns.

In Ghana, a study by (31) found that the 32.4% of participants reported that physical environment of health facilities significantly influences the promotion of father involvement in caring preterm newborn. The study reported a statistically significant p-value (p=0.003) indicating that facilities with better physical environments were more likely to promote father involvement. The study also reported an adjusted odds ratio of 1.98 (95% CI: 1.32-2.98).

In Kenya, a study conducted by (39) revealed that 57.3% of fathers recognize that the availability of information and educational resources influenced the encouragement of father interaction with newborn within healthcare settings, with a p-value of 0.002, indicating that facilities offering enhanced informational and educational resources to fathers were more inclined to support bonding. Moreover, the study revealed an adjusted odds ratio of 2.21 (95% CI: 1.45-3.37). However, neither studies include thorough descriptions of their study settings and the methods utilized to examine these associations and it is not clear how variables were

operationalized which requires additional need for qualitative study to understand how specific facility-related factors influence fathers' involvement in healthcare environments like hospital.

In Ethiopia, a study by (Mohammed, 2023) found that cultural beliefs and practices significantly influenced the promotion of father participation in caring newborn in health facilities, ($p=0.004$) indicating that facilities that were more sensitive to cultural beliefs and practices were more likely to promote bonding, suggesting that facilities that were more sensitive to cultural beliefs and practices were more than likely to promote father participation in caring preterm newborn. Although the findings suggest that culturally sensitive health institutions appear more likely to encourage the father to be involved, the study does not provide a detailed contextual understanding of the different cultural norms that influence the outcome and the methodology of participants selection was not explained. These emphasize the need conducting further qualitative research on the cultural dynamics influencing father involvement in neonatal care.

In Uganda, a study done by (28) identified staff training as a significant factor affecting the promotion of father involvement in health facilities. The study reported a statistically significant ($p=0.001$) indicating that facilities with better staff training were more likely to promote father participation. The study also reported an adjusted odds ratio of 2.14 (95% CI: 1.45-3.17), suggesting that facilities with better staff training were more than twice as likely to promote father participation. However, there is methodological gaps which suggest the need for more intense qualitative research to investigate the effect that training has on the involvement of fathers in preterm neonatal care in different cultural and institutional settings.

In Rwanda, a study by (41) found that policy support significantly influenced the promotion of father participation in health facilities. The study reported a statistically significant p-value ($p=0.001$) indicating that facilities with more policy support were more likely to promote father participation in caring preterm new born. The study also reported an adjusted odds ratio of 1.61 (95% CI: 1.58-3.39), suggesting that facilities with more policy support were more likely to promote father interaction. However, the study is lacking the contextualization of the policies being examined and operationalization of father involvement which underscore the need for further qualitative research to critically examine how institution policies shape fathers' roles and reveal culturally sensitive ways to enhance father involvement in preterm care.

2.4 Conceptual framework of the study

The socio-ecological model of communication and planned behavior change is highly relevant when exploring factors that influence health facilities' encouragement of newborn father involvement in caring preterm. This model, developed through extensive research and practical scientific application, emphasizes that behavior change occurs within a complex interplay of influences at multiple levels: individual, interpersonal, organizational/ institutional (hospitals, clinics, workplace policies, practices), community(cultures, norms, values and networks), and societal(policies on parental leave, healthcare access(42).

In the context of health care application, it has been applied on focus to the communication and behavior change through its concentric circle, which focus on individual level (personal knowledge, attitudes, believes, skills and intentions. The individual level it highlights family, friends, healthcare providers and other social networks that influence behavior(43). For instance, health facilities promoting father-newborn interaction must consider not only the fathers' individual attitudes and beliefs but also the influence of their peer networks, family dynamics, community norms, societal expectations, enhance family support systems, improving healthcare provider practices and challenging policies that may limit fathers' roles in neonatal care.

Health communication strategies that incorporate this model can thus facilitate a more holistic and sustainable approach to encouraging father involvement from the earliest stages of a child's life. This model has been used to predict the factors of father involvement into preterm care(44). It has used in the study on fathers' involvement in the care of preterm to identify what shapes father's engagement. It has been also used in various studies intended to understand how to boost intentions and actual behaviors via attitudinal, normative and control-based interventions(45).

By applying this theoretical model in this study, Infant factors such as physical appearance, health status, and feedback from the baby influence fathers' involvement in care. Physical appearance and fragile- looking skin impeded fathers' involvement since they feared they could harm the baby. Fathers felt the communication and support from the health providers helped them get better engaged in care. Getting help from different individuals, sharing experiences, or talking to fellow

fathers who are having or have ever had preterm babies helped them cope with the situation and encouraged them to get more involved in care activities.

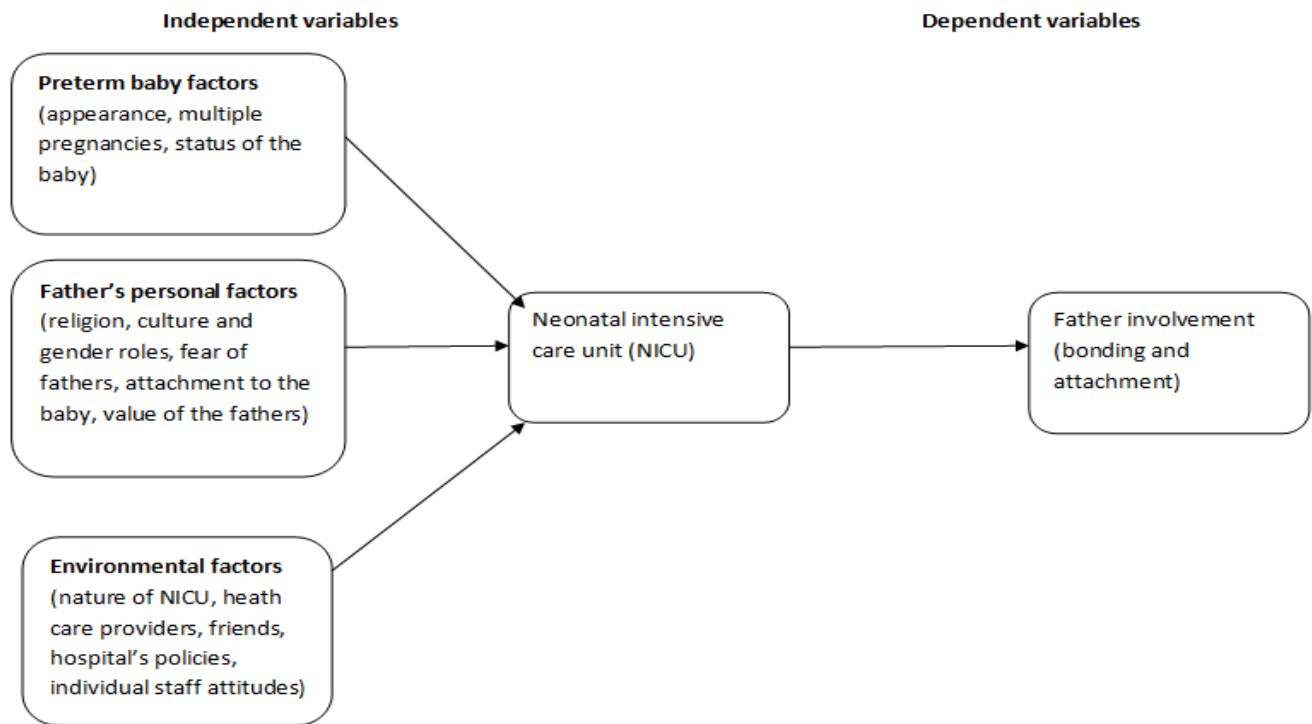


Figure 1: Conceptual framework of the study constructed based on socio-ecological and planned behavior model.

2.5 Research Gap

Despite growing recognition of the role fathers play in neonatal care, much of the existing literature comes from studies in high-income countries, especially in places like the United States, Sweden, and Switzerland. These studies usually show positive links between father involvement and newborn outcomes cognitive, emotional and social alongside maternal well-being. However, these findings often depend on self-reported data and observational methods which can be biased.

They also do not break down the data by important factors like preterm status or cultural background. As a result, these results are not easily applicable to low-middle income countries like Rwanda, where healthcare systems, family dynamics and cultural expectations vary greatly. Additionally, while some studies in low- and middle-income countries have started to look at the barriers and facilitators to father involvement, they have their own methodological issues. Many

depend on cross-sectional designs and do not conduct thorough qualitative exploration. Key studies in Africa from Malawi, Ghana, and Iran point out problems like infant fragility, social beliefs, hospital facilities and staff attitudes. However, they do not provide a deep understanding of how fathers face and react to these challenges. Without strong qualitative research, we do not fully grasp the complex motivations, fears and coping strategies of fathers, especially in areas with limited resources.

Moreover, current studies do not adequately examine how hospital policies and practices affect father engagement. Some research highlights the role of staff attitudes, policy support, physical environment, and staff training. Yet, these findings mainly come from quantitative studies and do not provide detailed accounts of how these factors work in real-life scenarios. The interaction between these institutional conditions and cultural beliefs also needs more attention.

In Rwanda, for example while some evidence suggests that policy support helps increase father participation, there is little understanding of how these policies play out in practice and how fathers view them. Overall, the literature shows a significant gap in research focused on fathers' involvement in neonatal intensive care units in sub-Saharan Africa, particularly in Rwanda. We need to examine how cultural norms, emotional readiness, systemic structures and personal interactions shape fathers' caregiving roles in the NICU while their preterm infants are hospitalized. This research will explore the factors influencing fathers' involvement in preterm care in intensive care unit at Kigali university Teaching Hospital and it is crucial for creating culturally suitable, father-inclusive neonatal care strategies that reflect the real experiences of Rwandan families.

CHAPTER 3: RESEARCH METHODOLOGY

Methodology indicates the research approach and design that was used to achieve study objectives. It also includes the study setting, study population, sample size, sampling strategy, inclusion and exclusion criteria, data collection instrument and data collection procedure, ethical considerations, data analysis, data management, data dissemination and expected limitations and challenges to this study.

3.1 Study Approach

In this study, qualitative approach was used to explore the factors influencing father involvement in caring of preterm new born.

3.2. Study Design

A descriptive qualitative research design was used in this study. In this qualitative research, the researcher seeks to understand the participants' lived experiences in a manner that would help conceptualize the experiences and increase the researcher's knowledge and understanding of human experiences(6).

3.3 Study setting

Study setting refers to the physical location and conditions in which data collection takes place(Muhammad, 2020). This study was conducted at University Teaching Hospital of Kigali (CHUK) in neonatal unit. The University teaching hospital of Kigali/CHUK is the largest hospital located in District of Nyarugenge at KN 4 Ave, Kigali City. It is also the biggest referral with the bed capacity of 483. CHUK, being among the first big public referral teaching hospital which is the receiving referral hospital for the major part of the country referrals, it handles most complexes neonatal cases including high volume of preterm births. In addition, it has a well-established NICU that provide a standards environment to examine how fathers are involved in preterm care process.

3.4. Study Population

A study population is defined as the specific group of individuals selected from a larger population who meet certain criteria who participate and provide information in a study (47). In this study, fathers whose preterm babies were admitted to the neonatology unit at the University Teaching Hospital of Kigali (CHUK) were included in the study. These were considered at CHUK in order

to better understand father involvement in the care of preterm newborns, They were chosen because CHUK is a big national referral hospital that receives a large number of high-risk and preterm births from the major part of the whole country which was the opportunity to have variations in patient volume, neonatal care level, and accessibility throughout the study period compared to other facilities in the context.

3.4.1. Inclusion Criteria

This study included the biological fathers of preterm stable babies who were admitted in NICU within 72 hours during the data collection, these were included since the unstable babies are sometimes in restricted areas, specialized intensive care and fathers are not in favor to meet their children. This study also included fathers who were willing and able to give informed consent to respect the ethical principle of voluntary participation.

3.4.2. Exclusion Criteria

This study excluded fathers of newborns with fatal conditions or palliative care; or whose preterms became critically ill during the data collection period. These were excluded due to the fact that these conditions may significantly alter patterns of care and emotional dynamics, which could hinder typical father involvement in routine NICU care. Furthermore, this study excluded fathers who are mentally incapacitated or have communication impairments that hinder interviews in order to get reliable and meaningful data collection depends on the father's ability to understand questions and provide coherent responses.

3.5 Sample size and Sampling strategy

The participants comprised of 18 fathers of preterm hospitalized in the neonatal intensive care unit (NICU) at CHUK that were purposively selected based on the variations of participants' characteristics including, education background, age, number of children, occupation. Data collection continued until data saturation was attained which was in line with qualitative research.

To recruit the study participants in the study, a purposive and convenient sampling strategy was employed for recruiting fathers who could provide rich, relevant and diverse insights into the factors influencing paternal involvement in preterm neonatal care.

Eligible participants were identified by a member of the clinical staff at CHUK based on the inclusion criteria and those who met the criteria were referred to the researcher for recruitment and consent. Data collection continued until thematic saturation was achieved, ensuring the credibility and sufficiency of the findings. The maximum variation sampling technique was used to gain greater insights from the participants.

3.6 Data Collection Instrument and Procedure

Data collection was conducted from March to April 2025 at Kigali University Teaching Hospital in Intensive care unit (NICU) by the principal investigator. A semi-structured interview guide was used to collect in-depth information from fathers of preterm newborns admitted in the NICU. The guide was developed based on literature review and expert input to ensure relevance and comprehensiveness. It included open-ended questions from socio-ecological and personal behavior change model focusing on fathers' involvement in newborn care, their experiences in the NICU and perceived barriers or facilitators to their involvement.

The adopted interview guide was undergone a back English-Kinyarwanda back translation. To ensure the robustness of the data collection process, the researcher adhered to the interview guide while allowing flexibility for participants to elaborate on their responses. Pilot testing of the interview guide was done with two participants prior to the actual data collection to refine the tool for clarity and cultural sensitivity. Fathers coming for visiting their children in the NICU department were targeted for inclusion by primary researcher. At this point, participants were given detailed clarification about the purpose of the study, benefits to participate and were explained that there is no risk associated to the research using research information sheet (Appendix I).

They were stationed in the room for triaging and possible recruitment for participation in the study, which followed by taking and signing written informed consent by interested and eligible respondents before participation in the study (Appendix II). After consent form, Interview was conducted in a private room at the hospital and the privacy, participants were allowed to be fully engaged in a comfortable conversation making it easy for them to share experiences. Interviews were recorded via field notes and to ensure the trustworthiness of the study and all ethical principles were respected.

Interviews were conducted face-to-face in a quiet, private room in the NICU department within the hospital premises to ensure comfort and confidentiality. Each interview lasted between 25-30 minutes and was conducted in Kinyarwanda, the local language to facilitate clear communication. All interviews were audio-recorded with participants' consent to ensure accuracy. The recordings were securely stored in a password-protected digital folder accessible only to the researcher. Handwritten field notes were also taken to capture non-verbal cues and contextual information. Data were collected on site three times a week from 8: am to 17: pm.

3.7 Data processing

The data processing process in this study involved transcribing, translating, organizing and analyzing qualitative interview data. All interviews were audio-recorded and transcribed verbatim in Kinyarwanda by the principal investigator to ensure the accuracy of participants' original responses. The transcripts were then translated into English for the purpose of analysis and to allow collaboration with academic supervisors. During translation, careful attention was given to preserving the meaning and cultural context of participants' expressions.

Following transcription and translation, the data were analyzed using thematic analysis. The principal investigator began by reading and re-reading the transcripts to gain familiarity with the content. She then manually coded the transcripts, identifying significant statements and labeling them with descriptive codes. These codes were later grouped into emerging themes that captured recurring ideas and patterns across the participants' narratives.

To support the data organization, NVivo software (version XX) was used to store, categorize, and retrieve coded data efficiently. After coding, a researcher conducted further analysis to refine and interpret the themes, using software like NVivo to assist in organizing and managing the data. This analysis involved comparing and contrasting themes across interviews to identify commonalities and differences in experiences among fathers.

The final stage of analysis involved comparing and contrasting the identified themes across different interviews to highlight commonalities and differences in the experiences of fathers with preterm newborns. This comprehensive process enabled the development of rich, meaningful insights into the study subject.

3.8 Data management

In this study, the information collected from the participants was not used for any purpose other than the intended objectives of the research. To prevent intentional or unintentional access by third parties, various measures were taken to ensure the security and confidentiality of the information. Hard copies of the interviews were stored in locked cabinets, accessible only to the principal investigator. Digital data derived from the interviews were stored in a password protected folder on google drive, as a backup to prevent permanent data loss in case of computer damage or theft. In accordance with the university's policy, all research documents were kept confidential for five years and were subsequently destroyed by shredding and burning, while all digital copies were permanently deleted.

3.9 Data Analysis

Data was managed using NVivo. Data collection and analysis were done concurrently. Interviews (the recordings) were transcribed verbatim in microsoft word immediately after completion of the interviews. The primary investigator performed rigorous review and quality control regularly to ensure accuracy and consistency between the transcripts or no misrepresentation of data as way of quality control. In addition to qualitative thematic analysis, triangulation was done which involved comparing findings from father of perterms and key informants. Each major theme generated was illustrated using quotation form the participants. The identity of individual study participants were masked with initials.

The researchers then examined the relationships between themes, identify connections and explore the implications of the findings to develop a coherent and comprehensive description. They were also paid attention to avoid overwrapping themes and those with minimal data to stand alone as a theme. The data analysis process was involved iterative revisits to previous steps to achieve a better representation of the findings and was encompassed multiple discussions of the results between the authors.

3.10 Ethical Considerations

The ethical clearance was obtained from the Ethical Review Board (**Appendix III**) from UR-CMHS Institutional Review Board (IRB) (**CMHS/IRB/608/2024**). The permission was also obtained from administration offices of the head of research department at CHUK, where the study was conducted to obtain permission (**EC/CHUK/211/2024**) (Appendix IV).

3.11 Participant's consent

Verbal and written informed consent (**Appendix I**) was obtained from participants after the detailed explanation on the purpose and benefits of the study right prior to the individual data collection. Various ethical principles such as voluntary participation and withdrawal, privacy were considered and all participants' responses were kept confidential and stored in the closed file to be used for study purpose.

To protect the rights of study participants, it was ensured that potential subjects are made by signing informed consent form before participating in the study. An informed consent form was used, which includes an explanation of the purpose of the research, a description of the procedures that was implemented, the duration of the participant's activities, a description of any foreseeable risks or discomforts, and benefits to the subject or to others.

In addition, data collectors explained to participants that participation is voluntary and that they have the prerogative to withdraw from the study at any time without any negative consequences. Those who a researcher re-interested in being part of the study a researcher will identify and give them consent forms to sign to participate. Participants' anonymity and confidentiality a researcher was ensured by using codes instead of names on questionnaires. All participants a researcher re treated fairly and equally.

Each participant was given an oral explanation of the study and a sheet explaining the research. The following ethical principles a researcher was considered to protect the rights of research subjects.

Informed consent means that participants have adequate information about the study, comprehend the information, and have the right of free choice, enabling them to consent to or decline participation voluntarily(48). In harmony with this principle, participants first read the consent form and then signed it voluntarily to participate in our study.

Self-determination means that prospective participants have the right to decide voluntarily whether to participate in a study without risking prejudicial treatment and the right to ask questions, refuse to answer researcher questions and drop out of the study (49). To apply this principle, it was clearly mentioned on the consent form that participation is voluntary and that the decision to withdraw from the study at any time is assured without any negative consequence.

Beneficence is an essential principle that imposes a duty on researchers to minimize harm and maximize benefits (50). Considering this principle, potential participants a researcher was assured that discomforts related to sensitive questions would be minimized by ensuring that the information provided was kept confidential and used only for the purposes of the study.

Confidentiality is the researcher's management of private information shared by a subject that must not be shared with others without the authorization of the subject(Thomson *et al.*, 2021). In this study, confidentiality was ensured by providing enough space for participants to answer questions freely. Additionally, information shared by participants was kept on a drive that will only be accessed by a researcher and will not share without authorization from research participants.

Anonymity means that even the researcher cannot link a subject's identity to that subject's individual responses (Grover, 2019). The participants' anonymity and confidentiality a researcher was ensured by using codes instead of names on questionnaires.

CHAPTER FOUR: RESULTS

The major aim of this study was to identify the factors influencing fathers' involvement in the caring preterm newborn hospitalized in NICU at Kigali university teaching Hospital. The study results are presented based on the thematic analysis which describe and reports the findings about participants, sample characteristics and thematic results from detailed interviews with fathers of preterm babies who were hospitalized in NICU. They are also for the analysis on the participants' experiences, views and understanding of caring for their hospitalized babies. Themes have been generated from the data which are representative of the participants' own words and clarify factors that participants described as affecting their engagement. Three primary themes were generated from the data included “**1: factors related to fathers' involvement in care for their preterm newborn**” which describe how fathers perceived the vulnerability, looks and concerns of their preterm newborn affected their capacity and confidence in being involved. **2: Personal factors influencing fathers' involvement**, captures fathers' own motivations, emotional responses, cultural beliefs and sense of responsibility that affected their participation in caregiving. **3: Environmental factors influencing fathers' involvement**, which outlines how fathers described hospital policies, staff attitudes, physical **access** to the neonatal unit and family support as shaping their level of engagement.

4.2 Socio-demographic characteristics

This study included 18 fathers of preterm babies that were admitted in the NICU at CHUK, the socio-demographic characteristics revealed that the majority of fathers were aged between 30-34 years (38.9%), followed by those aged 25-29 years (27.8%). Educational attainment showed that over half (55.6%) had secondary education, those in formal employment (27.8%) and self-employment (22.2%) faced work-related barriers, restricting their presence. Marital status indicated that 66.7% were married, reinforcing spousal support as a key determinant of involvement (Table 2).

Table 1: Demographic Characteristics of Fathers (n=18)

Variable	Attribute	Frequency (n)	Percentage (%)
Age	20-24 Years	2	11.1
	25-29 Years	5	27.8
	30-34 Years	7	38.9
	35 and above	4	22.2
Education Level	Primary	4	22.2
	Secondary	10	55.6
	Tertiary	4	22.2
Employment status	Formal Employment	5	27.8
	Self-employed	4	22.2
	Not employed	9	50.0
Marital status	Married	12	66.7
	Cohabiting	4	33.3
	Single	0	0.0

4.1: Coding scheme for data about fathers' involvement in the care of hospitalized preterm Newborns

Table 2: Coding scheme for data about fathers' involvement in the care of hospitalized preterm Newborns

Theme	Sub-theme	Codes	Description
Theme 1: Preterm newborn-related factors influencing fathers' involvement	Subtheme 1.1: Medical condition and fragility of the preterm newborn	A Fathers' perception of the baby's health status	Fathers' concerns regarding their newborn's condition, survival, and health prognosis.

		Fear of harming the baby due to medical vulnerability	Fathers' hesitation to engage in care due to fear of causing harm.
	Subtheme 1.2: Neonatal intensive care unit (NICU) procedures and Restrictions	Hospital policies and visitation rules affecting fathers' involvement	Impact of institutional policies on fathers' access to NICU.
		Fathers' access to training on newborn care	Whether fathers receive guidance on newborn care practices.
Theme 2: Personal Factors Influencing Fathers' Involvement	Subtheme 2.1: Fathers' Psychological Readiness and Confidence	Emotional response to preterm birth and hospital admission	Fathers' stress, anxiety, or positive adaptation to the preterm birth situation.
		Self-efficacy in providing care for a preterm newborn	Fathers' confidence and ability to participate in their newborn's care.
	Subtheme 2.2: Socioeconomic and Occupational Constraints	Work responsibilities and financial burden affecting time with the baby	How work schedules and economic needs influence fathers' NICU visits.

		Influence of education level on father's involvement in neonatal care	Relationship between fathers' education and their engagement in preterm neonatal care.
Theme 3: Environmental Factors Influencing Fathers' Involvement	Subtheme 3.1: Social and Cultural Norms	Societal expectations about fathers' roles in neonatal care	Cultural beliefs about paternal involvement in neonatal care.
		Influence of family and community support on involvement	The extent to which social networks facilitate or hinder paternal engagement.
	Subtheme 3.2: Healthcare System and Support Services	Attitudes of healthcare providers towards father involvement	Healthcare professionals' encouragement or discouragement of paternal participation.
		Availability of father-friendly policies and support programs in NICU	Institutional support measures in place to encourage paternal involvement.

4.3 Preterm newborn-related factors influencing fathers' involvement

The vulnerability and medical fragility of preterm neonates stimulate profound fathers' anxiety, impeding active involvement in care giving. Fathers exhibited pervasive anxiety, fearing inadvertent harm due to their neonate's delicate physiological state, often leading to emotional paralysis rather than engagement. Institutional barriers, including restrictive NICU policies and limited paternal education on neonatal care, exacerbated their sense of detachment. However, when healthcare professionals actively facilitated paternal participation through structured guidance and procedural training, fathers demonstrated a gradual increase in confidence. This emphasizes the necessity for inclusive neonatal policies and health workers that empower fathers, dismantle gendered care giving norms and foster an environment conducive to shared parental responsibility in preterm neonate care.

4.3 Subtheme 1: Medical condition and fragility of the preterm newborn create as feeling of fear affecting fathers' participation

On this theme, participants expressed that perceived fragility and the physical state of preterm newborns significantly affects fathers' involvement. This study revealed that fathers experience emotional distress and hesitation, fearing they might harm to the baby. Encouragement and guidance from healthcare providers play a critical role in increasing their confidence and participation.

“When I first saw my baby, I was overwhelmed with fear. He looked so tiny and fragile, with tubes everywhere. I felt helpless, as if I might hurt him just by touching him. The doctors explained that he was stable, but I still hesitated to hold him. I wanted to be involved, but I lacked confidence, fearing I might worsen his condition.”(Father, 36 years old)

“I was shocked when I saw my baby struggling to breathe in an incubator. It made me feel powerless. The nurses encouraged me to talk to him, but I was scared. Over time, I learned that my presence and voice could comfort him, so I started spending more time near his incubator, though I was still afraid to hold him.”(Father, 41 years old)

“It was overwhelming to see all the machines attached to my daughter. I wanted to help but felt powerless. My wife was more involved, and I supported her emotionally. The medical complexity made me think my role was secondary, and I felt like I lacked the skills to care for my baby properly.” (Father, 35 years old)

4.3 Subtheme 2: Neonatal intensive care unit (NICU) procedures and restrictions

Most of the fathers reported that hospital policies in the NICU department and restrictions on the visiting formalities significantly limit fathers' active participation in preterm newborn care. Furthermore, lack of training opportunities and reinforcing traditional gender roles where mothers assume primary caregiving responsibilities further discourages fathers' involvement.

“The hospital rules made it hard for me to be with my baby. I could only visit during specific hours and sometimes, due to work, I missed the visiting time. It felt like I was being pushed away, making it difficult to bond with my baby. I wanted to be there more, but the system didn't make it easy.” (Father, 35 years old)

“Initially, I wasn't aware that I could be actively involved in my baby's care. The NICU seemed intimidating and no one explained how I could help. Later, a nurse invited me to a session where they demonstrated how to change diapers and hold the baby properly, which made a big difference.” (Father, 40 years old)

4.4 Theme 2: Personal factors influencing fathers' involvement

Psychological disturbance and self-efficacy deficits emerged as barriers to fathers engagement in NICU settings. The emotional trajectory from initial shock and distress to adaptive participation highlights the need for psychological scaffolding to support fathers during this transition. Many fathers struggled with internalized notions of inadequacy, exacerbated by limited experiential exposure to neonatal care giving. Socioeconomic constraints further compounded these challenges as rigid occupational demands and financial exigencies constrained fathers' availability, diminishing their ability to actively engage in their newborns' care. Implementing paternity-inclusive workplace policies and targeted psychosocial interventions would be instrumental in mitigating these barriers and fostering sustained fathers' involvement in neonatal care.

4.4 Subtheme 1. Fathers' Psychological Readiness and Confidence

Most of the fathers in this study stated that they experience emotional distress when their preterm baby is hospitalized. They also reported that psychological impact often results in initial withdrawal but with time and support, they gradually develop the confidence to participate in care. Their initial lack of confidence in care giving hinders their involvement but proper guidance and encouragement can enhance their self-efficacy. Few also reported that they face emotional barriers, low self-efficacy and experiential learning such as hands-on care opportunities can help boost their confidence.

“At first, I avoided the NICU because I didn’t know what to expect. I thought my presence wouldn’t make a difference, but over time, I realized my support was essential. I started talking to my baby and assisting where I could.” (Father, 41 years old)

“When my baby was admitted to the NICU, I felt overwhelmed with emotions fear, sadness, and guilt. I was unsure of what I should do. I kept questioning whether I was strong enough to handle such a difficult situation. It took me time to adjust to the reality of my child's fragile condition.”(Father, 29 years old)

“I felt helpless and anxious. Seeing my baby in that state made me feel like I had failed as a father. I wanted to be strong for my wife, but inside, I was struggling. It took time for me to process everything and feel confident in getting involved.” (Father, 36 years old)

4.4 Subtheme 2: Socio-economic and occupational constraints

The results from this theme proves that financial and occupational responsibilities play a significant role in fathers’ involvement. Many of the participants reported that work constraints, work commitments, lack of workplace support, financial burdens and economic pressures limit father’s availability and often leading to emotional distress and reduced engagement in neonatal care. Few participants also expressed that educational background also plays a role as lower education levels may hinder understanding of preterm and neonatal care as whole leading to reduced engagement. Implementing policies such as paternity leave and flexible work hours can promote greater fathers ‘engagement in NICU care.

“My education helped me understand the importance of being involved in my baby’s care. However, my job demands a lot of my time. I try to balance both, but it’s not easy. If employers were more accommodating, it would be easier for fathers to participate in NICU care.” (Father, 31 years old)

“My job does not offer paternity leave, so I can only visit after work, which means I miss important updates from doctors. I feel guilty because I cannot be present as much as I want. It would help if workplaces recognized the importance of fathers’ roles in neonatal care.” (Father, 29 years old)

“My work schedule is demanding. I leave early in the morning and return late at night. This made it difficult to visit the hospital regularly. I wanted to support my wife and baby, but financial responsibilities took priority. Missing out on my baby’s early days was painful.” (Father, 36 years old)

“I have limited education, and I struggled to understand medical explanations about my baby’s condition. This made me hesitant to ask questions or participate in discussions with doctors. Sometimes, I felt that my involvement wasn’t needed since I couldn’t understand much.” (Father, 31 years old)

4.5 Theme 3: Environmental factors influencing fathers' involvement

The results from this current study revealed that cultural paradigms and systemic healthcare limitations significantly influence paternal engagement in NICU care. Traditional gender norms relegated fathers to ancillary roles, reinforcing maternal primacy in neonatal care giving and undermining paternal agency. Furthermore, healthcare professionals’ attitudes toward father involvement varied, with some inadvertently reinforcing exclusionary practices.

The absence of father-centric policies and structured support programs within NICUs further entrenched these disparities. However, when institutional frameworks proactively integrated fathers into care processes through educational programs, inclusive visitation policies, and attitudinal shifts among healthcare provider’s paternal participation markedly improved. Thus, a paradigm shift toward father-inclusive neonatal care models is imperative to optimize preterm newborn outcomes and enhance family-centered care dynamics.

4.5 Subtheme1. Social and cultural norms

The study found that cultural norms significantly influence fathers' involvement in neonatal care. Many fathers reported that societal expectations and rigid gender roles often kept them from getting directly involved in caring for their newborns. Participants reported that noted that caregiving, especially in a neonatal unit, was typically seen as a woman's job within their communities. On other hand, one father stated that he believes taking care of a newborn is a woman's job and when the man does others think it's strange or even shameful showing how traditional beliefs hinder active male participation.

Several participants stated that information, counseling, and encouragement from healthcare providers helped change their perspectives. Fathers who learned about the importance of their role in their baby's recovery were more likely to engage. Additionally, the findings suggest that advocacy and community-based education programs could help change common attitudes. Participants also stated that more social support and public messaging might help normalize fathers' involvement in neonatal care and might less stigma.

“My community expects fathers to be distant caregivers. When I started participating in my baby's care, some people viewed it as unusual. Over time, I learned that my involvement positively impacts my child's health, and that's what matters most.” (Father, 40 years old)

“In our culture, baby care is mainly a mother's responsibility. I faced criticism from some family members for spending too much time at the hospital instead of focusing on work. However, I believe both parents should be involved, so I chose to be present for my child.” (Father, 38 years old)

“In my family, men don't take care of babies. My father never did, so I feel awkward being in the NICU. But I want to be there for my child.” (Father, 38 years old)

“My family was initially skeptical about my role in my baby's care. However, after seeing how actively involved I was in the NICU, they began to support me. Now, they understand that fathers can also play a critical role in neonatal care.” (Father, 33 years old)

4.5 Subtheme 2. Healthcare system and support services

Fathers' involvement in preterm neonatal care is shaped by the combination of medical, personal, and environmental factors. Few fathers reported that the attitudes of healthcare providers greatly influence fathers' involvement while others stated that limited healthcare providers engagement and lack of father-specific support systems to encourage fathers hinder their involvement in the preterm care. Positive reinforcement encourages father's engagement while neglect or lack of father-friendly policies creates barriers for fathers to participate in neonatal care.

Addressing restrictive hospital policies, psychological barriers and cultural norms is essential in promoting active paternal participation. Integrating paternal support groups and inclusive healthcare communication strategies could enhance fathers' participation in neonatal care. Supportive healthcare environments and targeted father-inclusive programs can foster greater involvement in neonatal care.

“Some nurses were welcoming and encouraged me to take part in my baby’s care. However, others seemed indifferent. When I asked questions, I was sometimes ignored or given brief answers, which discouraged me from engaging further.” (Father, 38 years old)

“There were no specific programs tailored for fathers in the NICU. Everything was focused on mothers. If hospitals had more father-friendly policies, such as flexible visiting hours and training sessions for dads, I believe more fathers would be involved in their baby's care.” (Father, 27 years old)

“There should be more father-friendly support groups. I feel like I am navigating this experience alone” (Father, 29 years)

“I initially felt ignored by the healthcare team. Most of the communication was directed towards my wife and I had to actively ask for updates. It wasn't until I insisted on being involved that they started including me in discussions”(Father, 28 years old).

CHAPTER FIVE: DISCUSSION

The major aim of this study was to identify the factors influencing fathers' involvement in the caring preterm newborn hospitalized in NICU at Kigali university teaching Hospital.

This section provides a comprehensive discussion of the results of the current study, focusing on differences and comparisons with existing studies in different fields and clinical settings. This section describes socio-demographic characteristics of participants, preterm newborn related factors, personal related factors and environmental related factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at selected selected hospital in Rwanda.

This section compares the results of these studies with similar studies across countries, highlighting similarities and differences regarding father's involvement in caring of preterm babies worldwide. The following sections discuss the complexities of father's involvement, emphasizing the need for standard procedures and continuing education to enhance patient safety and improve health.

5.1 Preterm newborn factors influencing fathers involvement in caring preterm newborn

This study showed that perceived fragility of preterm newborns significantly affects fathers' involvement. Many fathers experience emotional distress and hesitation, fearing they might harm the baby. Encouragement and guidance from healthcare providers play a critical role in increasing their confidence and participation. This study is similar to the study conducted in Vietnam which showed that infant factors such as physical appearance, health status and feedback from the baby influence fathers' involvement in care. The findings from the current study suggest that physical appearance and fragile looking skin impeded fathers' involvement since they feared they could harm the baby(12). Similarly, a study done in Japan reported that caregivers including fathers, were afraid of holding the preterm newborns because they looked small and fragile and the caregivers feared harming them, which is consistent with findings from studies conducted in other countries. This fear made fathers unwilling to touch and hold the babies. On the other hand, fathers felt encouraged to get more involved when they heard and saw that the babies' health status was improving. This was further enhanced by the feedback they were getting from the baby when- ever they hold or talk to the baby(35).

This study is different to the study conducted in Iran showed that feeling encouraged by babies' developmental improvements, and the feedback helped them deal with their fears and get more

involved in care . On the other hand, the absence of improvement in health status and a lack of feedback from the newborn may lead to withdrawal from care by the father. Providers supporting fathers in the hospitals, therefore, have a duty to help fathers understand the different non-verbal cues the baby makes so that lack of them may not act as a deterrent from involvement in care(37). Moreover this study is similar to the study conducted in Sweden which revealed that presence of multiple births had a positive influence on the fathers' involvement in the care of preterm newborns because fathers felt the mother on her own was lacking since there were two babies to be attended to and the fathers had to come in to help with caregiving activities. Twin birth meant there was a need for more people to help with the caregiving activities and enabled the fathers to get more involved. For instance, when the mother was done breastfeeding one, the father took the responsibility of burping that one while the mother breastfed the other twin(10). A study done in Malawi showed that the preterm newborn factors influencing father involvement in caring their babies are baby's physical appearance/nature and health status, feedback from the baby, multiple births, and hospital's physical environment and provision of basic needs (6).

5.2 Personal factors influencing fathers involvement in caring preterm newborn

This study found that psychological disturbance and self-efficacy deficits emerged as formidable barriers to paternal engagement in NICU settings. The emotional trajectory from initial shock and distress to adaptive participation highlights the need for psychological scaffolding to support fathers during this transition. Many fathers struggled with internalized notions of inadequacy, exacerbated by limited experiential exposure to neonatal caregiving.

Socioeconomic constraints further compounded these challenges as rigid occupational demands and financial exigencies constrained fathers' availability, diminishing their ability to actively engage in their newborns' care. Implementing paternity inclusive workplace policies and targeted psychosocial interventions would be instrumental in mitigating these barriers and fostering sustained paternal involvement in neonatal care. This study is similar to the study conducted in Sweden which showed that fathers was constantly present in the fathers' minds. The fathers' were occupied by worries and concerns, the fathers felt that they were an active partner to the professionals and Getting the opportunity to take responsibility. The fathers were satisfied with the support and treatment during their infant's hospitalisation. However, there were times when

they felt excluded and not fully responsible for their infant. The fathers prioritised the mother, thus ignoring their own needs. Furthermore, they worried about their infant's health and the alteration of their parental role. Neonatal home care was experienced as a possibility to regain control over family life. This study concluded that general structure of fathers' experiences highlights the importance of professionals becoming more responsive to fathers' needs and to tailoring support to fathers by focusing on their individual experiences and needs (22).

Also, this study showed that financial and occupational responsibilities play a significant role in fathers' involvement. Work constraints, work commitments, lack of workplace support, financial burdens and economic pressures limit father's availability, often leading to emotional distress and reduced engagement in neonatal care. Educational background also plays a role, as lower education levels may hinder understanding of neonatal care, leading to reduced engagement. Implementing policies such as paternity leave and flexible work hours can promote greater paternal engagement in NICU care.

This study is similar to the study done in Switzerland which showed that fathers' interventions in NICUs were limited and mainly restricted to basic skin-to-skin contact or tactile interventions. The interventions had similar general positive effects on mothers and fathers when it came to infant physiological and behavioural reactions. There was also evidence of a positive effect on the fathers, including their mental health(19). A study conducted in Denmark showed that skin-to-skin contact supported interaction between infant and father information impacted paternal experiences of stress, anxiety and development of fatherhood, fathers' relationships with the nurses oscillated between conflict and assistance were factors contributing father involvement in caring their preterm new born(30).

Moreover, this study showed that many fathers experience emotional distress when their preterm baby is hospitalized. The psychological impact often results in initial withdrawal, but with time and support, they gradually develop the confidence to participate in care. Their initial lack of confidence in care giving hinders their involvement, but proper guidance and encouragement can enhance their self-efficacy. They *also* face emotional barriers and low self-efficacy. Experiential learning, such as hands-on care opportunities, can help boost their confidence. A study done in Brazil showed that the importance of including the father figure in the humanized care of preterm

infants. Professional health care team should be more aware of fathers' importance in the care of hospitalized preterm infants (51). This study is similar to the study conducted in Malawi showed that the barriers and facilitators that influence a father's involvement in the care of preterm newborn babies include: perceived difficulty with care activities and benefits of involvement, gender roles and socio-cultural beliefs, work and other family responsibilities, social support (6).

5.3 Environmental factors influencing fathers involvement in caring preterm newborn

This study showed that traditional gender norms relegated fathers to ancillary roles, reinforcing maternal primacy in neonatal care giving and undermining paternal agency. The absence of father-centric policies and structured support programs within NICUs further entrenched these disparities. However, when institutional frameworks proactively integrated fathers into care processes through educational programs, inclusive visitation policies, and attitudinal shifts among healthcare provider's paternal participation markedly improved. Thus, a paradigm shift toward father-inclusive neonatal care models is imperative to optimize preterm newborn outcomes and enhance family-centered care dynamics. This study is similar to the study conducted in Rwanda which showed that fathers reported stressful and emotional responses to having their newborns admitted particularly when they lacked clear understanding of their newborn's condition, generally positive communication and interactions with healthcare providers and other parents, policies and procedures in the NCU that contributed to stress and limited access to newborns by fathers and other family members, and stress due to the high financial burden of NCU care(21).

Furthermore, this study is similar to the study conducted in Australia, a study by (36) conducted on 234 fathers found that 23% of fathers mention that availability of support services for fathers in health facilities significantly influenced the promotion of father-newborn interaction with a p-value ($p= 0.001$) indicating that facilities with more support services were more likely to promote bonding. Additionally, the study reported an adjusted odds ratio of 2.14 (95% CI: 1.45-3.17), suggesting that facilities with more support services were more than twice as likely to promote bonding compared to those with fewer services. In Pakistan, a study by (38) identified staff attitudes as a significant factor affecting the promotion of father involvements in caring preterm new born in health facilities. The study reported a statistically significant p-value ($p= 0.005$), indicating that facilities with more positive staff attitudes were more likely to promote father –

preterm newborn interaction. The study also reported an adjusted odds ratio of 1.86 (95% CI: 1.27-2.72), suggesting that facilities with more positive staff attitudes were almost twice as likely to promote father –preterm newborn interaction.

This study revealed that fathers' involvement in preterm neonatal care is shaped by a combination of medical, personal, and environmental factors. The attitudes of healthcare providers greatly influence fathers' involvement. Limited healthcare provider engagement and lack of father-specific support systems hinder involvement. Positive reinforcement encourages father's engagement, while neglect or lack of father-friendly policies creates barriers, limiting fathers' participation in neonatal care. Addressing restrictive hospital policies, psychological barriers, and cultural norms is essential in promoting active paternal participation. Integrating paternal support groups and inclusive healthcare communication strategies could enhance fathers' participation in neonatal care. Supportive healthcare environments and targeted father-inclusive programs can foster greater involvement in neonatal care. This study is also similar to the study conducted in South Africa by (2) which revealed that the availability of support services for fathers significantly influenced the promotion of father-newborn interaction in health facilities. The study reported a statistically significant p-value of 0.001, indicating that facilities with more support services were more likely to promote father involvements. Additionally, the study reported an adjusted odds ratio of 2.14 (95% CI: 1.45-3.17), suggesting that facilities with more support services were more than twice as likely to promote interaction compared to those with fewer services.

Findings of this study is different to the study in Nigeria by (Oluochet *al.*, 2023) identified staff attitudes as a significant factor affecting the promotion of father involvement in health facilities. The study reported a statistically significant p-value of (p=0.005) indicating that facilities with more positive staff attitudes were more likely to promote father-newborn interaction. The study also reported an adjusted odds ratio of 1.86 (95% CI: 1.27-2.72), suggesting that facilities with more positive staff attitudes were almost twice as likely to promote interaction. A study conducted Ghana conducted by (31) found that the 32.4% of participants reported that physical environment of health facilities significantly influences the promotion of father involvement in caring preterm newborn. The study reported a statistically significant p-value (p=0.003) indicating that facilities with better physical environments were more likely to promote father involvement.

Furthermore, this study is similar to the study conducted in Ethiopia by (Mohammed, 2023) found that cultural beliefs and practices significantly influenced the promotion of father participation in caring newborn in health facilities, ($p=0.004$) indicating that facilities that were more sensitive to cultural beliefs and practices were more likely to promote bonding, suggesting that facilities that were more sensitive to cultural beliefs and practices were more than likely to promote father participation in caring preterm newborn. In Uganda, a study done by (28) identified staff training as a significant factor affecting the promotion of father involvement in health facilities. The study reported a statistically significant ($p=0.001$) indicating that facilities with better staff training were more likely to promote father participation. The study also reported an adjusted odds ratio of 2.14 (95% CI: 1.45-3.17), suggesting that facilities with better staff training were more than twice as likely to promote father participation.

5.4 Challenges and limitations

This study is limited by its reliance on self-reported data from parents, which may be influenced by personal biases. The focus on a single point in time through a cross-sectional design limits our ability to understand how these factors influencing father's involvement in caring preterm newborn. It has been also conducted in one teaching hospital in Rwanda, the results cannot be generalized to the whole country.

Furthermore, an urban bias exists, as this research has been carried out in tertiary hospitals located in urban areas, overlooking the experiences of fathers in rural settings where support systems and healthcare infrastructure may differ significantly. This is study focused mainly on fathers' narratives and did not incorporate the perspectives of nurses, midwives working in the NICU and others who can directly influence fathers' involvement which could not enable us to understand institutional or systemic barriers of fathers' involvement.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

The chapter six covers the summary, conclusion and recommendations of the current study done. It shows the image of this study and describes some required interventions related to the factors influencing fathers involvement in caring preterm newborn hospitalized in NICU at CHUK hospital in Rwanda

6.1 Summary

This study found that 100% of participants were interviewed. Fathers exhibited pervasive anxiety, fearing inadvertent harm due to their neonate's delicate physiological state, often leading to emotional paralysis rather than engagement. Also, many fathers experience emotional distress and hesitation, fearing they might harm the baby. Many fathers struggled with internalized notions of inadequacy, exacerbated by limited experiential exposure to neonatal care giving.

Financial and occupational responsibilities play a significant role in fathers' involvement. Work constraints, work commitments, lack of workplace support, financial burdens and economic pressures limit father's availability, often leading to emotional distress and reduced engagement in neonatal care. Cultural norms significantly shape fathers' involvement in neonatal care. Cultural norms often discourage fathers from participating in neonatal care, reinforcing traditional gender roles.

While traditional expectations often discourage active participation, awareness and education help fathers recognize the importance of their presence in their baby's recovery. Fathers' involvement in preterm neonatal care is shaped by a combination of medical, personal, and environmental factors. Limited healthcare provider engagement and lack of father-specific support systems hinder involvement. Integrating paternal support groups and inclusive healthcare communication strategies could enhance fathers' participation in neonatal care. Supportive healthcare environments and targeted father-inclusive programs can foster greater involvement in neonatal care.

6.2 Conclusion

The study findings revealed that several factors affect fathers' involvement in caring preterm babies in NICU care. These factors include is neonatal health conditions, personal readiness, socio-economic constraints, and environmental barriers. Emotional distress and fear stemming from the fragile condition of preterm newborns deter active paternal participation, exacerbated by restrictive hospital policies and lack of training opportunities. Fathers' confidence and psychological preparedness evolve with time, but work commitments and financial burdens often impede consistent involvement. Cultural norms and healthcare provider attitudes further shape paternal roles, sometimes-discouraging engagement. Additionally, cultural expectations and healthcare system inadequacies play pivotal roles in either facilitating or inhibiting paternal engagement. These factors can be eliminated when fathers are trained session, educated programs and supported groups.

6.4 Recommendations

6.4.1 Recommendations to the University Teaching of Kigali

Chuk should play a role in ensuring that more fathers participate in the care of their premature babies, as their effectiveness exceeds the cost. Fathers may be supported by educational programs, training courses, and support groups that help fathers overcome barriers and promote better outcomes for premature babies and families.

Educational programs can provide knowledge and skills related to newborns and provide the benefits of participation. Training helps fathers develop practical skills and receive feedback from healthcare service providers. Support groups can exchange emotional support, sense of community, and experiences and provide opportunities to learn from other fathers. These interventions also help to promote gender equality and common responsibility for care within the family.

6.4.2 Recommendations to the Ministry of Health Rwanda

Ministry of health should enhance father involvement in caring their preterm babies; this can be done by allowing fathers to enter in NICU. Fathers should encourage and explained the role of bonding to their preterm babies. In addition, ministry of health should provide emotional support

in terms of socio-workers and counselors to help fathers in coping and adaptation capabilities. Moreover, Ministry of Health should conduct national survey to explore the factors influencing father's involvement in caring of preterm babies in NICU.

6.4.3 Recommendations to the researchers

We recommended other research to conduct more studies rather than in this teaching hospital to find out the role of father involvement in caring of preterm babies hospitalized in NICU. We can recommend also future researches to concentrate on others hospital not rather than in teaching hospital.

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APPENDIXES

Appendix 1: Informed consent form

Title of research project: Father's involvement in the care of preterm newborn hospitalized in neonatal intensive care unit at selected hospital in Rwanda

We, UWAJENEZA Diane, a Master's graduate student in Neonatology nursing at the University of Rwanda. We are kindly requesting your time to participate voluntarily in our research and feel free to ask for any clarification for more details regarding our research. We were interested in research entitled “Father's involvement in the care of preterm newborn hospitalized in neonatal intensive care unit at selected hospital in Rwanda”. We are requesting only 20-30 minutes for answering our questionnaire made with multiple questions where you will choose and circle the correct answer on each question according to your choice.

All information of your children was kept anonymously and confidential and you will not get any benefits for any funds but you was helping the researchers which will help us to know factors influencing father involvement in caring preterm newborn at CHUK. If do not want to continue to contribute to our research, you are free with the right to withdraw from our research with no penalty whenever you wish. After answering all my queries about this research and knowing its objectives, I voluntarily choose to participate in this research project.

Names of participants.....

Signature of participant.....

Date of participation...../...../2024

Names of researchers.....

Signature of researchers.....

Thank you for your participation.

Appendix2: English version Interview guide

Part A: Socio-demographic Information

A. Introduce Yourself By

- a) Telling us yourself, who you are
- b) Your age
- c) Gender
- d) Where do you live?
- e) Whether you are single or married
- f) How many children do you have?
- g) What do you do/current occupation?
- h) What is your church/religion
- i) What is your residential area (urban, suburban, or rural)?

B. Personal factors influencing father involvement in caring preterm newborn

- a) What activities do you do with your child when you come to visit?
- b) In those activities, you are yet to do; do you intend to try to do them?
- c) How do you feel about the activities you are involved in as you provide care to the baby?
- d) How capable do you think you are in providing the care needed for your preterm baby?

C. Environmental factors influencing father involvement in caring preterm newborn

- a) How do people that are considered important to you react, as you get involved in the provision of care to your preterm baby?
- b) What factors enable you to be involved in the care of your preterm newborn?
- c) What factors make it difficult or impossible for you to be involved in the care of your preterm newborn?

APPENDIX 3: Ethical Clearance of University



UNIVERSITY of
RWANDA

COLLEGE OF MEDICINE AND HEALTH SCIENCES
DIRECTORATE OF RESEARCH & INNOVATION

CMHS INSTITUTIONAL REVIEW BOARD (IRB)

Kigali, 09/09/2024
Ref: CMHS/IRB//608/2024

UWAJENEZA Diane
Postgraduate Studies Program,
School of Nursing and Midwifery, CMHS, UR

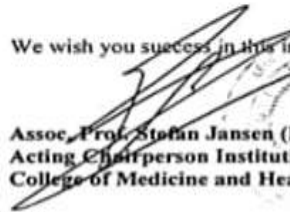
Dear UWAJENEZA Diane,

RE: ETHICAL CLEARANCE

Reference is made to your application for ethical clearance for the study entitled *"Father's involvement in the care of preterm newborn hospitalized in neonatal intensive care unit at selected hospital in Rwanda"*.

Having reviewed your application and been satisfied with your protocol, your study is hereby granted ethical clearance. The ethical clearance is valid for one year starting from the date it is issued and shall be renewed on request. You will be required to submit the progress report and any major changes made in the proposal during the implementation stage. In addition, at the end, the IRB shall need to be given the final report of your study.

We wish you success in this important study.


Assoc. Prof. Stefan Jansen (PhD)
Acting Chairperson Institutional Review Board,
College of Medicine and Health Sciences, UR

Cc:

- Principal College of Medicine and Health Sciences, UR
- University Director of Research and Postgraduate studies, UR

Email: researchcenter@ur.ac.rw

P.O Box 3286 Kigali, Rwanda

www.ur.ac.rw

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Appendix 4: Approval for data collection



Review Approval Notice

Dear Diane UWAJENEZA,

Your research project: ***"FATHER'S INVOLVEMENT IN THE CARE OF PRETERM NEWBORN HOSPITALISED IN NEONATAL INTENSIVE CARE UNIT AT SELECTED HOSPITAL IN RWANDA "***

During the meeting of the Ethics Committee of University Teaching Hospital of Kigali (CHUK) that was held on 1st Nov, 2024 to evaluate your request for ethical approval of the above mentioned research project, we are pleased to inform you that the Ethics Committee/CHUK has approved your research project.

You are required to present the results of your study to CHUK Ethics Committee before publication by using this link: www.chuk.rw/research/fullreport/?appid=1389&&chuk.

PS: Please note that the present approval is valid for 12 months.

Yours sincerely,

Dr Emmanuel Rusingiza Kamanzi
The Chairperson, Ethics Committee,
University Teaching Hospital of Kigali



Scan code to verify.

" University teaching hospital of Kigali Ethics committee operates according to standard operating procedures (Sops) which are updated on an annual basis and in compliance with GCP and Ethics guidelines and regulations "