PARENTAL SATISFACTION WITH QUALITY OF NEONATAL CARE

SERVICES PROVIDED AT KAMUZU CENTRAL HOSPITAL, ETHEL MUTHARIKA NURSERY UNIT, IN LILONGWE, MALAWI

BY

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Head of Department: Department of Midwifery, Women and Child Health

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ABSTRACT

Parental satisfaction with neonatal care is a crucial indicator of the quality of neonatal care standards. Satisfied parents comply with treatment and help reduce readmission and neonatal mortality. This study aimed to determine levels and factors associated with parental satisfaction at the Kamuzu Central Hospital, Ethel Mutharika Nursery Unit, Lilongwe, Malawi. An institution-based cross-sectional study was conducted among 250 systematically selected parents who had neonates admitted for at least 48 hours. The satisfaction was measured using an adopted EMPATHIC-N questionnaire which was translated to a local language (Chichewa) and pre-testing of the instruments was done. The collected data was exported and analyzed using SPSS version 22. Descriptive statistics were done. Chi-Square and Fisher's Exact test were used to identify factors associated with satisfaction. Finally, Multiple Binary Logistic regression analysis was used to predict the associations and Spearman Rank assessed the correlations. All statistical tests were set at 5% significance level. The research results indicates an overall parental satisfaction of 68%. The highest satisfaction was reported in the care and treatment domain 99.2%, lowest score in information domain 88.8%, parental participation and professional attitude domains both had 98.8% and organization had 98.4%. Tribe, health condition of neonate and admission ward were factors associated with parental satisfaction with neonatal care. Chewa Tribe, income below poverty line and admission in separated ward were important in predicting parental satisfaction. In conclusion, parental satisfaction with neonatal care services was recorded at 68%, reflecting a moderate level of contentment. Based on the findings, there is need to enhance communication, cultural sensitive care, equality and overall parental satisfaction levels in the neonatal unit.

Key words: Parents satisfaction, neonatal care, quality care, family centered care.

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LIST OF ABBREVIATIONS AND ACRONYMS

BScNM	Bachelor of Science in Nursing and Midwifery
CBD	Central Business District
COMREC	College of Medicine Research and Ethics Committee
EMNU	Ethel Mutharika Nursery Unit
EMPATHIC-N	EMpowerment of PArents in THe Intensive Care-Neonatology
FCC	Family-Centred Care
HSSP III	Health Sector Strategic Plan III
KCH	Kamuzu Central Hospital
KCH EMNU	Kamuzu Central Hospital Ethel Muthalika Nursery Unit
KMC	Kangaroo Mother Care
NICU	Neonatal Intensive Care Unit
NHRA	National Health Research Authority
NMR	Neonatal Mortality Rate
NSO	National Statistical Office
NSS	Neonatal Satisfaction Survey
OECD	Organisation for Economic Co-operation and Development
ODK	Open Data Kit
PICU	Pediatric Intensive Care Unit
SPSS	Statistical Package for the Social Sciences
UNICEF	United Nations Children’s Fund
UNZABREC	University of Zambia Biomedical Research Ethics Committee
USA	United States of America
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.0 Background

Parental satisfaction is an established outcome indicator and a tool for assessing a healthcare system's quality and input for developing strategies for providing proper neonatal care (Hagen et al. 2019). The World Health Organization (WHO), Organization for Economic Co-operation and Development (OECD), and the World Bank, (2018) report states that indicators of quality expressed by patients and the community must be used to gauge outcomes and experiences of patients' value towards care. Donabedian defines patient satisfaction with care as the reaction of healthcare recipients to essential aspects of their service experience (Donabedian, 1988). In addition, World Health Organization, (2020) defined quality of care as the degree to which health services for individuals and populations increase the likelihood of desired health outcomes. Therefore, clinical experts, patients and their families should measure the quality of care. Standardized tools, such as the EMpowerment of PArents in THe Intensive Care-Neonatology (EMPATHIC-N), present an excellent opportunity to obtain feedback from parents or guardians on health system performance (Latour et al., 2012).

Furthermore, evidence suggests that individual perception of quality and satisfaction with care may influence parents' ability to participate and comply with the neonatal treatment plan (Latour et al., 2012; Dall’Oglio et al., 2018; Gulo et al., 2021). In addition, Seid, Getaneh, and Shetie, 2021) state that "satisfaction of parents is an effective parameter in improving neonatal care quality." Parental satisfaction is a belief and attitude of parents towards neonatal services provided (Elfios et al., 2024). Individuals who are satisfied with the standard of treatment are more likely to have positive attitude and adhere to medical or nursing treatment guidelines more frequently than those not satisfied with care” (October et al., 2016). Therefore, compliance with neonatal treatment contributes to an increase in early detection of ailments, timely hospital visits and good prognosis following treatment. On the contrary, compromised quality of neonatal care standards may reduce parental satisfaction (Gulo et al., (2021).

Lake et al. (2020) further describe parents' satisfaction as a vital predictor of future access and ability to recommend the health facility to other parents. Similarly, Dall’Oglio, Mascolo, et al. (2018) claim that unsatisfied parents may not utilize the health facility even when need arises and rarely recommend the facility to others. It is, therefore, critical to meet parents' expectations regarding neonatal care to ensure complete satisfaction and reuse of health facilities. However, some propositions may be detrimental to neonatal well-being and require healthcare providers to use clinical judgment that promotes the best interest of the neonate. For instance, the use of the do not resuscitate policy when there is a poor prognosis or perceived poor quality of life against the parent’s wish.

Quality neonatal services are vital in reducing the high Neonatal Mortality Rate (NMR) in the world. The world NMR in 2021 was 18 deaths per 1,000 live births (WHO, 2021; United Nations Children Funds, UNICEF, 2022). The highest NMR in the world is in sub-Saharan Africa, with 27 deaths per 1,000 live births (UNICEF, 2023). Malawi's neonatal mortality is at 24 deaths per 1,000 live births (National Statistical Office (NSO), (2024). This number is more significant than the global target of 12 deaths per 1,000 live births (WHO and UNICEF, 2018). According to WHO, (2021), neonatal death is attributed to inadequate quality care within the first 28 days of birth. Improving parental satisfaction is vital in increasing the quality of care and reducing the high neonatal mortality rate (Sileshi et al., 2023; Seid, Getaneh, and Shetie, 2021).

Multiple factors such as neonatal characteristics, parents' socio-demographics, hospital environment and hospital processes may influence parental satisfaction levels with neonatal care (Alemu, 2021). Several authors have documented various causes of satisfaction with varying results based on the study settings, design and measuring instruments used. Koulierakis, (2019) denoted higher satisfaction in married couples and those whose babies had a short stay. Furthermore, increased satisfaction was reported among breastfeeding parents with a single baby admitted outside the infection isolation room (Galanis et al., 2016) and parents with premature infants (Nguyen et al., 2020). Recently, Gulo et al. (2021) reported an increase in satisfaction with increased education level, rural residence, and levels of NICU, with more satisfaction in the intermediate level compared to lower and higher level neonatal unit.

On the contrary, Seid, Getaneh, and Shetie, (2021) identified young maternal age, female gender, and increased duration of hospitalization to increase the odds of parental dissatisfaction with care. Furthermore, language differences between parents and healthcare providers were reported to reduce parent satisfaction levels, leading to miscommunication, misunderstanding, and increased stress levels (Mol, Argent, and Morrow, 2018). Compatible with these findings, Nguyen et al., (2020) asserted low satisfaction levels among parents whose neonates had a longer duration of stay, poor health status and poor parent-provider interaction. Gondwe et al., (2022) identified neonatal conditions, clinical management, family support, and neonatal care as major issues influencing maternal satisfaction with neonatal care in Malawi. However, their study utilized a qualitative method and did not measure levels of parental satisfaction.

Numerous strategies have been implemented to help improve parental satisfaction with neonatal care. Evidence shows that Family-centred care (FCC), safe, and clean environments increased parents' satisfaction levels (Segers, Ockhuijsen, Baarendse, van Eerden, et al., 2019). Similarly, Mol, Argent and Morrow, (2018) stated that FCC has moderate evidence for increasing parental satisfaction. Furthermore, Adal, Atomsa, and Tulu, (2022) documented increased satisfaction levels with competent, compassionate, and respectful neonatal care providers. Family-centred care is a healthcare practice that is compliant with and responsive to a family's needs and values. Family centred care has been proven to enhance the clinical outcomes of premature infants and the mental well-being of their parents (Ferentzi et al., 2021). The FCC approach is considered a gold standard medical concept in NICU (Hagen et al., 2019).

The FCC concept emphasizes on respect, communication, collaboration, participation in care and decision-making (Adal, Atomsa and Tulu, 2022). Evidence has demonstrated that FCC reduces stress and anxiety levels in parents, increased parent satisfaction, promoted neonatal weight gain and reduced duration of admission (Hagen et al., 2019; Ding et al., 2019). In addition, Sankar et al., (2017) reported higher parental satisfaction and lower stress levels among parents as significant determinants for prompt recovery of neonates. However, the FCC approach is rarely used and needs to be more rooted in NICUs, especially in developing countries (Hagen et al., 2019), including Malawi. Parents are not allowed to stay in the ward and may not participate in the care and decision-making of their neonate. The separation of parents and neonates is stressful and has a tremendous effect on family members (Sileshi et al., 2023).

Recent approaches in our NICU involve creating strategies to promote family-centered care. However, there are numerous challenges in implementing the FCC protocol, ranging from physical space to staff knowledge and attitude and community awareness. Ramezani et al., (2014) recommended evaluating parental satisfaction using validated instruments based on FCC principles.

Studies measuring NICU parental satisfaction have more inconsistent findings and vary from country to country. In Norway, parental satisfaction was found to be at 76 % (Hagen et al., 2019), and Sakonidou et al., (2020) reported higher parental satisfaction levels in 56% of studies in a systematic review done in London. In India, parental satisfaction was 79.57% (Taneja, Batra and Sadiza, 2020), not comforming with findings reported by Sankar et al., (2017), where 70 % of parents were dissatisfied with neonatal services in India. In South Africa, Mol, Argent and Morrow, (2018) reported high parental satisfaction with the Pediatric Intensive Care Unit (PICU). Similarly, Sri Lanka had 93.6% satisfaction with neonatal care (Jayasinghe and Abeysena, 2020).

Contrary to the findings, parental satisfaction was 42% in Addis Ababa's public hospitals and 60% in Ethiopia's Tikure Anbesa Specialty Hospital in Ethiopia (Adal, Atomsa, and Tulu, 2022). In another study in Ethiopia, Alemu, (2021) reported 47.9% parental satisfaction. The low satisfaction levels affects parental involvement and compliance to care and treatment plans. Given the subjectivity of satisfaction studies, the results vary in different settings for developed and developing countries. Majority of studies measuring parental satisfaction utilizing validated instruments were conducted in developed states, with a few in developing countries (Hagen et al., 2019). The disparities in literature review supported the need for research to measure the levels and identify factors influencing satisfaction levels at Kamuzu Central Hospital Ethel Muthalika Nursery (KCH EMNU).

In a public health facility of a developing country like Malawi, a shortage of resources, high levels of dissatisfaction, and poor standards of neonatal care are anticipated. The inconsistent findings in satisfaction levels necessitates the evaluation of parental satisfaction with neonatal care at KCH EMNU. Despite the national recommendation for patient satisfaction studies, there is little evidence of measured parental satisfaction with neonatal care in Malawi. Previous studies did not measure satisfaction with neonatal care using validated tools but used a qualitative design with a small population, which made it difficult to generalize the results (Gondwe et al., 2022).

The current study utilized a quantitative approach to measure parental satisfaction using a validated instrument. Therefore, this study assessed levels and factors associated with parental satisfaction with neonatal care at KCH EMNU in Lilongwe, Malawi.

1.1 Problem statement

The Government of Malawi, Health Sector Strategic Plan III (HSSP III) (2023-2030) reported low health facility surveys on patient/parent satisfaction for measuring quality of care in health facilities. Despite the WHO and Ministry of Health recommendations for patient satisfaction studies, there is still a need to have more knowledge of satisfaction levels, especially in developing countries (Gulo *et al.*, 2021). Poor-quality health care is a significant cause of preventable deaths, especially in low and middle-income countries (Ng'ang'a *et al*., 2022). Parental dissatisfaction during neonatal mortality may be caused by perceived neglect, poor communication, or insufficient support.

According to Valentine et al., (2020), neonatal mortality at KCH EMNU was 23.1 %, slightly higher than other African NICUs (Andegiorgish et al., 2020; Desalew et al., 2020). Mgusha et al., (2021), recorded a decrease to 20% neonatal mortality at KCH EMNU. However, records from the Sick Neonate Register and Neotree,(2024), a comprehensive database and monitoring system for neonatal health, denotes an increase in neonatal mortality which was at 22.1% from 20.2% and 19.97% in 2023 and 2022, respectively (table 1.1). Parental satisfaction is vital in reducing the higher neonatal mortality and improving standards of neonatal care (Seid, Getaneh, and Shetie, 2021). According to Sileshi *et al.,* (2023), higher parent satisfaction may reduce infant mortality globally as parents participate and comply with prescribed treatment.

Table 1.1: Neonatal Admissions, Discharge and Mortality at Ethel Mutharika Nursery Unit

Year	Admissions	Discharges	Neonatal Deaths (NND)	NND Percentage
2022	2834	2050	566	19.97
2023	3109	2123	627	20.2
2024	3015	-	665	22.1

Source: Sick Neonate register and Neo tree at Kamuzu central Hospital 2021-2024.

Parental involvement and satisfaction improves treatment compliance as parents are free to care for the sick baby (Donabedian, 1988; Hagen *et al.*, 2019). However, undocumented evidence denotes a lack of male involvement at KCH EMNU as fathers are only allowed to see their sick neonates once during hospitalization period. Dissatisafaction with neonatal care may affect parents, neonates, and the reputation of health facilities (Sileshi *et al.*, 2023). The World Health Organization, (2018) recommends using patient, family, and community feedback to ensure quality standards of health services. However, inadequate or total lack of FCC approach at KCH EMNU, may influence parental satisfaction levels and reduce standards of neonatal care (Oude Maatman *et al.*, 2020).

Parental satisfaction varies across hospitals, regions, and countries while offering information about health standards. Equally, there are inconsistent results on the factors associated with parental satisfaction levels. Although evidence for several countries exists, the researcher has yet to come across a study measuring parental satisfaction and factors associated with neonatal care provided at the study site using a validated instrument. Similar studies assessing patient satisfaction were conducted in the adult population on maternal and newborn care, family planning, cervical cancer, and stroke patients, which recorded 80 per cent and above satisfaction levels Kawaza *et al.*, (2020); Creanga *et al.*, (2017); Changole *et al.*, (2010); Maseko, Chirwa and Muula, (2014) respectively. On the contrary, Sinyiza *et al.*, (2022) identified low patient satisfaction levels (8.9%) among adult inpatients at Mzuzu Central Hospital. The results were less than the Ministry of Health's target of 80% satisfaction by 2022 (Malawi Health Network Indicators, 2018). This study assessed levels and factors influencing parental satisfaction with neonatal care services at Ethel Muthalika Nursery Unit (EMNU).

1.2 Rationale of the study

Literature indicates high neonatal mortality in Sub-Saharan Africa due to preventable deaths, especially in the first week of life (UNICEF, 2023). World Health Organization, OECD, and World Bank, (2018) proposed a series of actions involving patients, families, and communities to help end preventable deaths. Enhancing parent satisfaction is a valuable tactic for lowering newborn mortality and raising the standard of neonatal care (Alemu, 2021). Although evidence for several countries exists, the researcher has yet to come across a study measuring parental satisfaction and factors associated with neonatal care at the study site using a validated instrument.

The parents experience is an independent dimension of the healthcare quality clinical evaluation that ensures patient safety (Dall'Oglio et al., 2018). The results of the study provides insight to policy makers, healthcare managers, and healthcare providers about the unmet needs of parents and neonates and it highlights priority area to aid in increasing parental satisfaction. The findings denoted challenges with information, and organization which needs to be addressed to increase parental satisfaction. The report evaluated family-centered care services and allows program designers, stakeholders, and the general public in enhancing the quality of service in the neonatal unit, in order to reduce the neonatal mortality.

1.3 Research Objectives

1.3.1 General Objective

The aim of the study was to assess parental satisfaction with the quality of neonatal care services provided at KCH EMNU in Lilongwe, Malawi.

1.3.2 Specific Objectives

1. To assess levels of parents' satisfaction with the quality of neonatal care services.
2. To identify factors associated with parental satisfaction with the neonatal care provided.
3. To assess the association between parents' satisfaction with hospital processes, neonatal and parental characteristics.

1.4 Study Variables

1.4.1 Dependent Variable

Parental satisfaction

1.4.2 Independent Variables

- Parents' socio-demographic characteristics: -gender, age, residence, income.
- Neonatal socio-demographic/clinical factors: - gestation age, length of stay, and birth weight.
- Hospital processes: -information, care and treatment, and parental participation.
- Organization/hospital structure: **-** adequate environment**,** safety and cleanliness of the environment, healthcare workers behaviour.

1.5 Null Hypothesis

There is no association between parental satisfaction levels with neonatal and parental sociodemographic characteristics and hospital structure and processes.

1.6 Conceptual Framework

The conceptual framework was generated based on the Donabedian model of Structure, Process and Outcome, created in 1988 by Avedis Donabedian. The model analyzes health services and evaluates healthcare quality (Donabedian, 1988). The three interrelated vital components help in the comprehensive evaluation of the quality of healthcare (Haj *et al*., 2013). The model gives insights into different aspects of healthcare quality, which may contribute to satisfaction and highlight potential areas for improvement. Numerous writers indicate that variables such as institutional processes, hospital structures, parent sociodemographic and neonatal characteristics influence parental satisfaction (Jayasinghe and Abeysena, 2020; Nguyen *et al*., 2020; Alemu, 2021; Alle *et al*., 2022). The relationship between variables is depicted in Figure 1.1 below

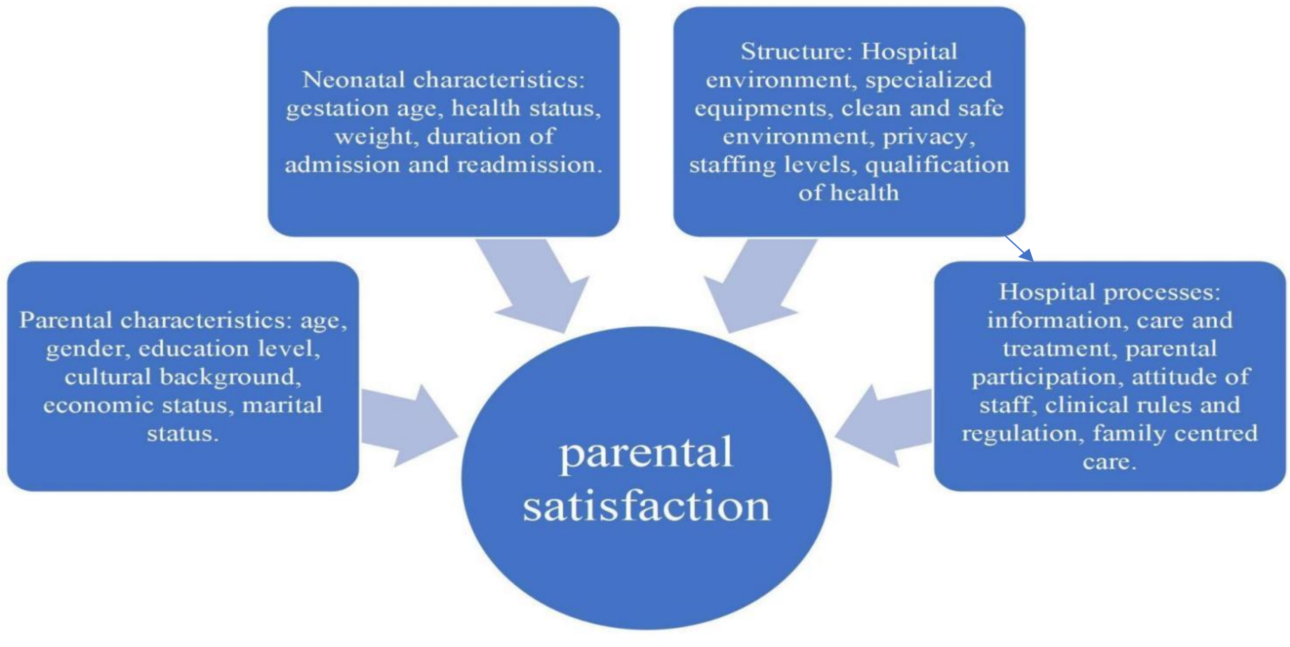

Figure 1.1: The conceptual framework adapted from Donabedian 1988 (Structure, process and outcome model).

1.6.1 Description and application of the concepts to the study

The Donabedian, (1988) model emphasizes the connection between healthcare structure, care process, and outcomes. According to Haj et al., (2013), the structural component refers to the fixed features of the caregivers and the environments in which the care is provided. It focuses on the physical and organizational aspects of care settings, including personnel, equipment, staffing levels, and worker enumerations. In neonatal care, factors like the physical environment, specialized equipment availability, staffing levels, and healthcare professionals' qualifications can influence both process (care activities) and overall parental satisfaction (Donabedian, 1988). Assessing the structure component can help identify potential barriers or facilitators for providing high-quality neonatal care, such as adequate staffing, a pleasant environment, and clinical resources.

Neonatal and parental features are included as clinical components in the care and satisfaction survey framework. Factors such as neonatal age, condition, weight, and admission duration can influence parental satisfaction. Evidence have shown that increased gestation age and birth weight can increase satisfaction with neonatal care (Alle *et al.,* (2022). Parental characteristics like age, education, income, and residence also affect parental satisfaction (Dall'Oglio, Fiori, *et al.*, 2018; Hagen et al., 2019, Nguyen *et al.*, 2020). Cultural background, racial and language differences, and ethnicity are significant predictors of parental satisfaction (Mol, Argent and Morrow, 2018). Healthcare providers should account for these discrepancies to improve parents' participation and satisfaction with neonatal care.

The process involves interactions between patients and healthcare professionals to improve health, promote recovery, and ensure satisfaction (Donabedian, 1988). It includes practitioner's actions in diagnostics and treatment plans, and patient's seeking and receiving care (Donabedian, 1988). Segers, Ockhuijsen, Baarendse, Van Eerden, et al., (2019) identified evidence between reduced hospital stay and parents' participation in neonatal care. The process is the primary focus of the component model (Donabedian, 1988). Parent-provider communication, evidence-based protocols such as male involvement, family centred care, respectful care, and participation in decision-making are crucial in enhancing parental satisfaction. Parental involvement reduces stress, increases satisfaction, and contributes to efficient communication with healthcare providers (Masumo et al., 2019). Parents' knowledge about their neonate's condition and treatment increases treatment compliance and ensures correct treatment.

The operational and financial processes in a neonatal unit can impact parent satisfaction with care. These processes directly and indirectly influence care standards. Efficient processes ensure timely treatment, effective communication, and survival, while financial processes ensure adequate hospital funds for clean environments, accommodation, advanced technology, and catering services. These factors can influence parents' satisfaction with neonatal care. Evaluating these processes requires appropriate skill to ensure quality of care.

The outcomes dimension is the measure of the impact of healthcare on the status of patients, community and families (Donabedian, 1988). This dimension estimates how healthcare interventions affect patients' health and well-being. It may include health status indicators and other indicators related to the cost of care and patient satisfaction (Haj et al., 2013). Measures such as neonatal mortality rates, the duration of hospital stay, cost of treatment, incidence of complications such as infections, and parental rating of satisfaction may help evaluate the outcome. The study measured parental satisfaction using the EMPATHIC-N questionnaire which had five dimensions.

1.7 Scope of the study

The study was conducted at a tertiary-level hospital, assessing parental satisfaction with neonatal care services among parents or primary caregivers of neonates admitted/on follow up visit during the study period. Parents whose infants had died or were in critical condition at the time of data collection were excluded. In addition, the cross-sectional design allowed for satisfaction capture at one point in time, ensuring feasibility and manageability within available time and resources

1.8 Definition of Key terms and variables

1.8.1 Conceptual Definitions

- Satisfied: Satisfied parents are the ones who will score more than or equal to the overall mean EMPATHIC-N values (Latour *et al.,* 2012).
- Dissatisfied: Dissatisfied parents are the ones who will score less than the overall mean EMPATHIC-N values (Latour *et al.,* 2012).
- Parent: is a person that has brought forth an offspring or brings up or care for a child (Merriam Weber dictionary).
- Neonate: a neonate is a baby from birth up to 28 days of life (Gardner *et al.,* 2020).

- Income per day: is a standardized metric used to evaluate and compare economic well-being across different individuals, populations and regions (World Bank, 2022).
- Below poverty line: The cost of acquiring enough basic food for adequate nutrition and basic needs calculated at less than \$1.9 per day (NSO, 2021; World Bank, 2022).
- Hospital structure refers to the fixed features of the caregivers, resources, and the environments (departments and units) in which care is provided (Haj *et al*., (2013).
- Hospital processes refers to the interactions between patients and healthcare professionals to improve patient health, promote recovery, and ensure satisfaction (Donabedian, 1988).

1.8.2 Operational Definitions

- Satisfied: Satisfied parents are the respondents whose scores were equal to or more than 3 of the 2 questions which had an overall of 6 and also those with a score of 5 and above of the remaining 2 questions which had an overall of 10 and were used to assess the overall satisfaction .
- Dissatisfied: Dissatisfied parents are the ones whose scores were less than 3 of the 2 questions which had an overall of 6 and also those with a score less than 5 on the remaining 2 questions assessing overall satisfaction and had a total score of 10.
- Parent: any person or relative who has consistently cared for a sick neonate admitted to the unit for at least 48 hours.
- Neonate: a baby who is still admitted in the nursery unit despite the chronological age.
- Income per day: The amount of money that the family is able to raise in a day without considering number of people in the household.
- Below poverty line: Parent's total daily income of less than \$1.9 per day.
- Hospital structure involve the organization of NICU environment and health care workers behaviour depicted in the EMPATHIC-N questionnaire which directly influence neonatal care and parental satisfaction such as cleanliness, noise, space, privacy,etc
- Hospital processes refers to all items depicted under communication, care and treatment, parental participation in the EMPATHIC-N questionnaire

Table 1.2 Variables, indicators, cut-off points and scale of measurement

Variables	Indicators	Cutoff points	Scale of measure	Question #
Dependent variables				
Satisfaction	Satisfied	Above mean	Dichotomous	76-79
	Dissatisfied	Below the mean		
Independent variables				
Parent	Father	Male caregiver biological/surrogate	Nominal	4
	Mother	Female caregiver biological/surrogate		
Age of parent	15-24	Young aged parent	Continuous	1
	25-39	Middle aged parent		
	≥40	Elderly parent		
Residence	Rural	15km fron CBD	Nominal	6
	Urban	Within 15km from CBD		
Education	Uneducated	Standard 2 drop out	Ordinal	7
	Primary	Standard 8 drop out		
	Secondary	Form 1-4 droput		
	Tertiary	Diploma, Bachelors, Masters above		
Income/day	>poverty line	≥ $1.9 per day	Ordinal	8
	<poverty line	≤$1.9 per day		
Ethnic group	Chewa	Dominant tribe	Nominal	9
	others	Non-dominant		
Marital Status	Married	Formal or informal married	Nominal	3
	Single parent	Single, widowed or divorced		
Gestation age	Preterm	Less than 37 weeks	Continuous	11
	Term	More than 37 weeks		
Birth weight	Low weight	<2500 grams		10
	Normal weight	>2500 grams		
Length of stay	Short	2<7 days	Ordinal	14
	Prolonged	More than 7 days		
Health status	Improving	Good	Ordinal	12
	No change	Neutral		
	Deteriorating	Poor		
Hospital structure	Satisfied	Score of 4-6 on likert scale	Nominal	57, 58, 60-63
	Disatisfied	Score of 1-3 on likert scale		
Hospital processes	Satisfied	Score of 4-6 on likert scale	Nominal	19-56, 59, 64-75
	Disatisfied	Score of 1-3 on likert scale	Nominal	

1.9 Ethical Consideration

The ethical Approval was obtained from UNZABREC (REF. No. 5215-2024), and COMREC (REF. No P.07/24-0930). Permission to conduct the study was obtained from the Hospital Director through the Research and Ethics Committee at KCH (See appendix). The study's purpose, confidentiality, and anonymity were explained to the respondents and upheld throughout the study. After that, voluntary consent was obtained from parents. Participants were assured of their privacy, and right to withdraw from the study. Only those participants who gave consent by signing the consent form proceeded with the interview. The research team ensured that participants' autonomy was respected. The participants were informed that there were not going to face any consequences even when they withdraw from the study. Additionally, measures were implemented to protect participants from physical and psychological harm. Measures included support by referring participants who may be experiencing depression or significant stress to appropriate healthcare professionals or counselling services. The collected data was securely stored, encrypted, password protected and regularly backed up to prevent easy access. Data security was maintained behind closed doors.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter presents a literature review relevant to parental satisfaction with neonatal care. The review was conducted to identify the gap in generating knowledge and understanding of studies related to parental satisfaction with neonatal care. The literature search used numerous databases such as Research for Life, Cochrane Library, Pub Med, Open Access, Google Scholar, Kamuzu University of Health Science Nkhokwe and University of Zambia Library. Articles from peer-reviewed journals were also used. Search queries included parental satisfaction OR caregivers' satisfaction AND neonatal intensive care, parent's experiences AND neonatal intensive care admission, parental satisfaction AND neonatal care, family-centred care AND parental satisfaction. The literature review discussed the integrated theme highlighted in the conceptual framework and the EMPATHETIC-N questionnaire. This chapter gives an overview of parental satisfaction, factors affecting parental satisfaction levels; neonatal and parental socio-demographics, hospital processes and organization/hospital environment.

2.1 Overview of parent satisfaction

Parent satisfaction reflects on the level of contentment, approval, and overall positive evaluation that parents experience about the care provided to their newborn in a neonatal care setting (Hagen *et al.*, 2019). Parents' satisfaction is the measure of neonatal patient satisfaction with standards of neonatal care (Lake *et al.*, 2020). Neonatal care is care provided to newborns within 28 days after delivery, with more focus on premature babies or sick neonates (Sileshi *et al.*, 2023). The World Health Organization categorizes neonatal care into levels, ranging from level 1 to level lV demarcate the care according to the services being offered. Parental satisfaction also reflects on parent's perception of quality, effectiveness, and support received in medical and nursing care, communication, emotional support, participation in decision-making, and the overall experience. Users' and patients' experiences can be used to monitor hospital services and enhance healthcare delivery (Hagen *et al.*, 2019). According to Donabedian, (1988), higher satisfaction levels enhance treatment compliance and uptake of health services.

2.2 Levels of Parental satisfaction

There are differences in levels of parent satisfaction due to diverse factors influencing it. Many studies have been conducted in developed countries, with few in the developing states. According to the evidence, parental satisfaction was 48.7% in Greece (Galanis *et al.*, 2016), 88% in Germany (Jannes *et al.*, 2020), 76% in Norway (Hagen *et al.*, 2019), and 95% in the United States of America (USA) (Lake *et al.*, 2020). Multiple authors have identified different factors influencing parent satisfaction levels and there is an inconclusive association between parent satisfaction and the contributing factors (Mol, Argent and Morrow, 2018; Hagen *et al.*, 2019; Lake *et al.*, 2020; Nguyen *et al.*, 2020; Alle *et al.*, 2022).

In Sri Lanka, the overall mean parental satisfaction rate was 93.6% (Jayasinghe and Abeysena, 2020), Southern Ethiopia had 63% (Sileshi *et al.*, 2023), and North Central Ethiopia had 47.8% (Alle *et al.*, 2022). The results were similar in Dabir Dar, Ethiopia (Alemu, 2021) and North West Ethiopia, where half of the parents were satisfied with neonatal care services (Seid, Getaneh, and Shetie, 2021)). Despite utilizing different measuring instruments, the similarities could be attributed to standard settings and the health care delivery system. The health care system for Malawi is slightly similar to Ethiopia's, with lower neonatal mortality in Malawi than the latter (Tamir *et al.*, 2023)

A literature review for Malawi reveals numerous satisfaction studies for adult inpatients and outpatient settings (Kawaza *et al.*, 2020; Sinyiza *et al.*, 2022). The researcher did not come across parental satisfaction studies with neonatal care outcomes. It is crucial to ascertain parental satisfaction with the quality of neonatal care as there is scanty evidence, and clinical experience may indicate high levels of dissatisfaction due to high mortality. Therefore, this study assessed the levels and factors associated with parental satisfaction with neonatal care services at the Kamuzu Central Hospital Ethel Muthalika Nursery Unit.

2.3 Factors influencing parental satisfaction levels

2.3.1 Parents socio-demographic characteristics

Common predictors of parent satisfaction are socio-demographic characteristics of the parents and neonates which differ and play a crucial role in determining parental satisfaction. Prior studies attempted to define the determinants of parent satisfaction. Most studies showed an inconsistent, weak, moderate, firm, or unclear relationship between satisfaction levels and parents' characteristics. For example, age was a more consistent predictor, with older parents being more satisfied than younger parents in Norway and Ethiopia (Hagen *et al.*, 2019; Seid, Getaneh and Shetie, 2021). On the contrary, younger age increased the odds of parental satisfaction with neonatal care services in Greece and Ethiopia (Tsironi *et al.*, 2012; Alemu, 2021).

Level of education had no significant association with parental satisfaction rate (Mol, Argent and Morrow, 2018). However, low education levels and low economic status were reported to increase parents' satisfaction with neonatal care (Hagen *et al.*, 2019; Nguyen *et al.*, 2020). The findings are consistent with Tsironi *et al.*, (2012). Contrary to the findings, Sileshi *et al.*, (2023) reported low satisfaction levels among parents with no education and higher satisfaction in parents with secondary or tertiary education. However, Jannes *et al.*, (2020) denoted less satisfaction in parents with higher educational attainment. The inconsistent findings guarantee the need for this study to identify factors associated with parental satisfaction levels in Malawi.

McCormick *et al.*, (2008, cited in Hagen *et al.*, 2019) identified low satisfaction levels among parents with low family income. The results were contrary to the findings by Nguyen *et al.*, (2020), where higher satisfaction was noted among lower-income parents. In addition, Seid, Getaneh, and Shetie, 2021), denoted that parents from rural areas were more satisfied than the ones from the urban. The researchers attributed the results to national health insurance for every neonate, which ensures equal access and treatment, thereby increasing satisfaction levels. The economic hardship, hospital demand for food and essential supplies, uncertainty of neonate condition, and high mortality increase stress levels in parents. Parenting in the NICU environment is very stressful (Sankar *et al.*, 2017) and may contribute to lower satisfaction levels. Knowledge of the causes of stress is vital in increasing satisfaction levels and employing strategies to minimize stress levels.

According to Hagen *et al.,* (2019), support from family and friends reduces stress and is vital in increasing satisfaction levels. The evidence is similar to the findings by Tsironi and Koulierakis, (2019), where married parents had increased satisfaction levels.

2.3.2 Neonatal sociodemographic characteristics and clinical information

In addition to the factors above, several neonatal characteristics may influence parent satisfaction levels. Literature denotes neonates' gestation age, the severity of the condition, birth weight, single or multiple birth, and period and place of admission as significant determinants of parental satisfaction (Galanis *et al.*, 2016; Hagen *et al.*, 2019; Nguyen *et al.*, 2020; Gulo *et al.*, 2021). One of the critical neonatal factors affecting parental satisfaction levels is the severity of neonatal conditions. Evidence suggests that parents with neonates who are critically ill report lower levels of satisfaction than their counterparts (Hagen *et al.*, 2019; Nguyen *et al.*, 2020). The complexity and severity of the condition causes anxiety and stress, which impacts the overall satisfaction with the care provided. The writers also reported low levels of parental satisfaction with an increase in the duration of stay. Prolonged hospitalization, separation of parents and neonates, and uncertain prognosis may increase stress levels and decrease satisfaction levels (Oude Maatman *et al.*, 2020).

Furthermore, birth weight and gestation age were reported to influence parental satisfaction levels. According to Alle *et al.,* (2022), parents of neonates with average birth weight and those of full-term neonates were more satisfied with NICU services than their counterparts with preterm neonates. Average birth weight is an essential indicator of neonatal condition and development and a predictor of the likelihood of disease and other complications (Wubetu *et al.*, 2021). Galanis *et al.,* (2016) reported higher satisfaction levels in parents with breastfeeding infants, single births, and those not admitted to the isolation room. The increased satisfaction may be attributed to the parent's ability to participate in neonatal care through breastfeeding and providing adequate attention to the single baby, unlike in multiple births.

2.3.3 Hospital structure and processes

Parental satisfaction with neonatal care is influenced by multiple factors, such as the quality of services, competence of healthcarers, the effectiveness of communication, the level of family engagement, the physical environment, and the emotional support to parents during challenging or stressful times in NICU (Nguyen *et al.*, 2020, Sankar *et al.*, 2017).

The clinical environment, communal or private rooms, influenced parent satisfaction rates differently. Parents were more satisfied with open and communal rooms as there was minimal boredom and loneliness, while others opted for single rooms to prevent nosocomial infections and promote privacy (Kainiemi *et al.*, 2021; Mol, Argent and Morrow, 2018). Furthermore, the writers denoted that the physical arrangement of the NICU influenced the staff's ability to provide audio and visual privacy during care. The physical layout of a NICU may positively and negatively affect the implementation of ward activities. Overall, parent satisfaction increases when the physical amenities, such as cleanliness, clinical equipment, and physical condition of the facility are sound and fully functioning.

A comfortable, quiet, and well-designed space can help create a sense of calm and ease parents' anxiety during their NICU stay (Gulo et al., 2021). Additionally, easy access to the baby's room and comfortable seating areas increased parents' satisfaction with the hospital environment. Furthermore, Oude Maatman *et al.*, (2020) reported higher satisfaction levels when parents stayed in the same room with their babies. Other studies reported that physician behaviour, service accessibility, continuity of care, confidentiality, and efficiency influence satisfaction levels (Jayasinghe and Abeysena, 2020; Sileshi *et al.*, 2023). The views are similar to those of Mol, Argent, and Morrow, (2018), who claim that parents' opinions about physicians' communication and abilities to understand a language substantially determine satisfaction levels. Gulo *et al*., (2021) further support the idea that accessibility of healthcare services and effective communication are vital in improving satisfaction levels. Patient satisfaction rises when providers are competent and able to offer and maintain a comfortable environment (Nguyen *et al.*, 2019).

2.4 Parental satisfaction measuring instrument

Measuring parental satisfaction with neonatal care involves using validated instruments that assess different dimensions, allowing parents to rate their experiences and provide feedback. Dall'Oglio *et al.*, (2018) conducted a systematic review to assess instruments for measuring parent satisfaction with FCC in NICUs. They discovered two validated tools that accurately measure parent satisfaction with FCC in NICUs, which were considered as outcome indicators. The EMPATHIC-N, created by Latour *et al.*, (2012), and the Neonatal Satisfaction Survey-NSS-13, created by Hagen *et al*., (2015), were the validated tools discovered.

By assessing parental satisfaction, healthcare providers and institutions can identify priority areas for quality improvement in neonatal clinical settings.

The EMPATHIC-N questionnaire was created in Netherlands, validated and used across multiple countries and languages (Latour *et al.*, 2012). There are variations in the dimensions of the EMPATHIC-N findings in different study settings. The five dimensions: information, care and treatment, parental participation, organization and professional attitude are rated differently by parents in different settings. Parental involvement in care is now very prevalent in general pediatric wards (Mol, Argent and Morrow, 2018). However, it is only universal in some pediatric intensive care units (PICU) and NICUs worldwide (Segers *et al.*, 2019). The parent/child relationship is crucial for infant growth and development and ensures parental contentment as they carry out parenting duties in the neonatal care unit (Lake *et al.*, 2020).

In USA, an adaptation and psychometric evaluation study of the EMPATHIC-NICU-USA was done to measure parent satisfaction with care in the NICU (Lake *et al.*, 2020). The study involved 282 parents, 61% white and 22% black. There was higher overall satisfaction, with a mean of 5.85 for recommendations to others and 5.84 for future use out of 6, respectively. The general performance of doctors and nurses was high, with a mean of 9.41 and 9.62 out of 10, respectively. The Cronbach Alpha of the four dimensions was 0.70, indicating good reliability. There were moderate associations between the domain's total scores and validity indicators, with a correlation ranging from 0.30 to 0.57. Unfortunately, the results cannot be generalized to our setting due to differences in clinical environment and socioeconomic and cultural backgrounds.

A cross-sectional study involving 340 parents of preterm infants in Vietnam reported higher satisfaction with communication and information sharing (Nguyen *et al.*, 2020). Open and honest communication about baby's condition, treatment options, and prognosis was critical in promoting parental satisfaction with neonatal care (Nguyen *et al.,* 2020). Neonates utilize non-verbal communication, requiring close observation by parents and healthcare providers to ensure timely interventions and treatment. However, in our clinical setting, parents are only allowed 30 minutes visit every two hours, making it difficult to participate fully in neonatal care and decision-making. According to Jannes *et al.,* (2020) unrestricted visiting schedule is crucial in promoting parent participation in neonatal care and satisfaction. Communication is vital in maintaining therapeutic relationships between parents and healthcare professionals (Oude Maatman *et al.*, 2020).

The lack of communication can cause both parents and healthcare workers to feel insecure, stressed, and unable to negotiate and maintain a therapeutic relationship. The results are challenging to generalise as the study population was only preterm infants, and there were some differences in the clinical, socioeconomic, and cultural status.

In a quantitative cross-section study in Northern Ethiopia, Alle *et al.,* (2022) reported 47.8 % parental satisfaction among 385 parents. The researchers recorded the lowest parental satisfaction score in the care and treatment dimensions, with a high score in the organization dimension. There was a mean of 50.4% on knowledge, 36.9 % on care and treatment, 50.1% on parental participation, 59.0% on organization and 48.6% on professional attitude. The findings also denoted a positive correlation between parental satisfaction with average birth weight, full term gestation age, urban residency, short hospital stay, and in mothers as compared to their counterparts. The findings contradict with a quantitative cross-sectional multicenter study reported by Gulo *et al.,* (2021), where care and treatment, professional attitude and parental participation had high mean scores in ascending order. There was a relatively low score on communication and organization or hospital environment. Despite similarities in study population and health care settings, variations in satisfaction levels warrant the current research.

Mol, Argent and Morrow, (2018) conducted a prospective descriptive survey using the EMPATHIC-N 30 questionnaire in South Africa. There was a mean overall satisfaction of 5.5 out of 6. There were higher scores on parent participation in the Pediatric Intensive Care Unit (PICU) as the unit utilized an open visitation policy, which promotes infant and parental bonding. Internal consistency of 0.2 on parental participation and 0.59 on care and treatment was lower than the results for (Latour *et al.,* 2012). The parents of children admitted to this study site come from a wide range of social, educational, linguistic, and cultural backgrounds, which may account for the low internal consistency in parental engagement domain compared to findings published by (Latour *et al.,* 2012). The difference could be attributed to the small sample size of 100 compared to 454. However, other parents expressed dissatisfaction as the unit only allowed one parent to stay overnight (Mol, Argent and Morrow, 2018). The researchers identified lower scores in the communication and knowledge section attributed to multilingual and diverse languages, which acted as barriers during communication. In addition, the use of medical jargon rather than simple language reduced parental satisfaction levels (Mol, Argent and Morrow, 2018). This study was done in PICU and utilized a small sample size, making it difficult to generalise the results.

Finally, a descriptive study by Jayasinghe and Abeysena, (2020) in Sri Lanka, examined the relationship between parental satisfaction and neonatal care among 235 participants. The questionnaire was administered on discharge, with 94 per cent of respondents satisfied with neonatal care. Greater satisfaction was seen in the information section, specifically in communication about the baby's condition and treatment. More than 92 % of the respondents reported referring others to the NICU and returning in the future for other services. Higher satisfaction levels are critical in ensuring future access and utilization of neonatal services by the community. However, the study did not utilize the EMPATHIC-N questionnaire, but the data collection tool had similar elements. The researcher did not find a study measuring parental satisfaction using a validated instrument in Malawi.

2.5 Conclusion

The review of the literature shows that several factors, such as communication, information sharing, parental participation, socio-demographic characteristics of the parents and the newborn, and standard of care given by medical professionals, all have an impact on parental satisfaction with neonatal care. By identifying the associated factors, it is easy to implement strategies for improving the quality of newborn care and boosting parental satisfaction. Several studies have been conducted in developed countries, with a few in developing countries. The differences in socioeconomic status and characteristics of the study population affect the generalization of results. The review indicates satisfaction studies in the adult population, with no study measuring satisfaction with neonatal care in Malawi or at the study site. The literature further indicates no use of a validated instrument to measure parental satisfaction levels with neonatal care in Malawi but reported exploratory studies assessing parents' experience with nursery admission. Therefore, the current study was conducted to measure parental satisfaction levels using a validated instrument.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter describes the procedures followed to assess the quality of neonatal services provided at KCH EMNU. It presents the research design, study setting, participants and recruitment process, sample size, sampling method, data collection instrument, data collection method, and data management. It further describes how data was analyzed, outlines ethical considerations, and plans for results dissemination.

3.1 Study Design

A facility-based analytical cross-sectional study, utilizing quantitative design involved parents and their neonates records admitted at KCH EMNU in Lilongwe, Malawi. A cross sectional study was selected due to time limitation and its ability to allow for observation, description and documentation of multiple phenomenon at one point in time. While the research aims to examine parental satisfaction with newborn care, the research team explored the neonatal records and parental characteristics, hospital processes, environment, and clinical guidelines that may affect satisfaction levels.

3.2 Study Setting

The Ethel Muthalika Nursery Unit is located at KCH, a tertiary hospital serving as a referral centre, teaching hospital, and a study site for this research. The neonatal unit serves the central region and some districts in the northern parts of Malawi. It has separate wards for Kangaroo Mother Care, isolation rooms, and high-risk areas. As a major referral hospital, it provides comprehensive neonatal care services, making it an ideal location for assessing parental satisfaction with neonatal care quality. The NICU functions as a level II facility with some activities provided at level III but does not provide advanced life support using a mechanical ventilator. Approximately 2098 babies were admitted in 2020, with a monthly admission mean of 175 neonates (Valentine *et al.*, 2020). According to the Sick Neonate Register 2023, there were about 3109, with a monthly admission mean of 260 admissions, 177 discharges, and 627 neonatal deaths. The facility has isolation rooms A and B for babies admitted from home, Kangaroo Mother Care (KMC), and High Risk A and B for nursing both critically ill and stable babies.

The different rooms help in prevention of cross-infection and ensure adequate monitoring. Babies in KMC and isolation room B (admissions from home) stay with their mothers all day, unlike their counterparts.

3.3 Study Population

The study population comprised of all parents and records of neonates admitted for at least 48 hours which ensure adequate interactions with the service provided. Parents with neonates still admitted to the unit, on discharge or on follow-up care were included in the study and their neonates' records.

3.3.1 Target Population

The study population comprised of all parents and neonatal records of neonates who were admitted for at least 48 hours in the EMNU during the data collection period. Parents with neonates admitted to the unit, discharged immediately, or on follow-up care following discharge were included.

3.3.2 Accessible Population

The study's accessible population comprised of parents whose neonates had been admitted to the KCH EMNU for at least 48 hours. The parents who consented to participate during data collection were eligible to participate in the study.

3.4 Inclusion and Exclusion Criteria

3.4.1 Neonatal records

All neonatal hospital records with complete information as stipulated on the checklist were included in the study. The records review was done as a first thing daily in order to identify neonates whose mother would meet the inclusion criteria. The data was entered on a google sheet in order to keep records of all the neonates present during data collection period. The case files were assigned study numbers if the data was complete and met the incusion criteria. Later on, remarks as to whether one was recruited in the study or not was indicated with reasons.

3.4.2 Parents

All parents with hospitalized neonates in NICU for at least 48 hours were included in the study. Time spent in other facilities was not calculated, and participants were interviewed on discharge, follow up visit or while still in the ward if their neonates' records met the inclusion criteria and were complete. Only one parent was interviewed; if both were present, they were left to decide who participates in the study.

3.4.3 Exclusion Criteria

Records and parents of neonates born with significant congenital abnormalities and neonatal demise were excluded from the study. In addition, parents who were critically ill or with postpartum psychosis were exempted from the study.

3.5 Study Sample

The mean monthly admission was 260, as recorded in the Sick Neonate Register, (2023). The sample size calculation utilized a prevalence of a previous study conducted in North Ethiopia, with a prevalence of 50% parental satisfaction towards NICU care at 95% confidence interval and 5% confidence limits and Non-responsive rate of 10% (Seid, Getaneh, and Shetie, 2021). Sample size calculation utilized the Modified Cochrane formula since the population was finite (260 X 2= 520). The researcher did not find a study measuring parental satisfaction with neonatal care in Malawi. As such, the prevalence was used for a study in Ethiopia due to similarities in the health care system.

$N = Z^2P(1-P)/e^2$, Z= standard normal value at 95%, confidence interval = 1.96,
P = prevalence is 50 %, which is 50/100 = 0.5, q = 1-p = 1-0.5 = 0.5, e = desired
level of precision ± 5 % = 0.05

$N = \{\underline{(1.96)^2 \times 0.5\ (0.5)^2\}/}\ (0.05)^2$, $N \underline{= \{3.8416 \times 0.5\ (0.5)\}/\ 0.0025\qquad} = N=$ **384.16**

Adjusting for a finite population.

$\{1\underline{+(n-1)}\}/N + \{\underline{(520-1)/384.16\}\ } = 222$

Adjusting for Non-Response Rate (NRR)

NRR at 10 % = 0.1, n = n/1-NRR, n = 222/1-0.1, n = 218/0.9, 246.6, **247.**

The sample size was 247 neonatal care records and parents as calculated above. However, during data collection period there was a total of 475 parents and neonatal records. There was a total of 475 parents and neonates with records during the data collection period. Fifty three of them did not meet the inclusion criteria, 3 parents declined to participate in the study and 169 were not systematically selected for the study. A total of 250 records and parents were systematically selected to participate in the study. Figure 3.1 depicts participant's recruitment for the current study.

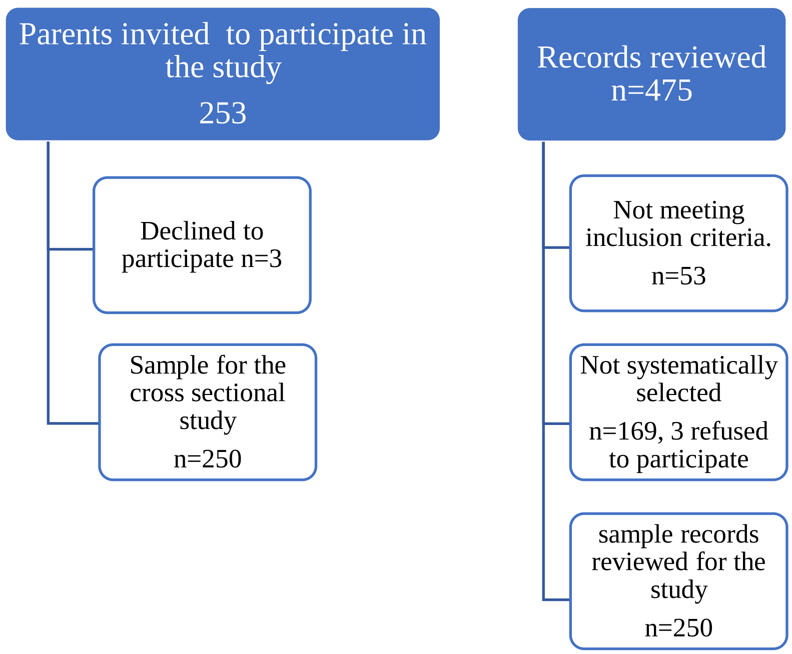

Figure 3.1: Flow diagram on sample size determination

3.6 Sampling Technique

The study used a systematic sampling technique. The starting point was a random sampling of the first number, followed by a systematic selection of participants using the calculated Kth interval of 2 with replacement. A systematic sampling technique awarded equal opportunity to the study participants. Sampling involved listing the study population, calculating the sample size and identifying the sampling framework.

The records and individuals were selected at second interval. The researcher obtained the samples by numbering neonate case files, each population subject and selecting every *k*th subject. Since the population was 520 and the sample size was 247, the kth interval is 520/247, which was 2.1. The research team approached every second parent to participate in the study. When the eligible participant refused to participate in the study, the the next systematically selected participant. Systematic sampling minimized selection bias and increased the odds of parents participating in the study. However, it did not ensure similar characteristics to the whole population

3.7 Data collection instruments.

Data collection utilized a checklist and an adopted EMPATHIC-N questionnaire with a sufficient model fit of 57 statements within five domains. The first section was a checklist consisting of 12 items: parent's characteristics such as age, gender, education level, income, marital status, support and ethnicity and neonatal characteristics such as birth weight, gestation age, length of stay, health status, history of admission, admission status and admission place. A checklist was used to extract neonatal and parental socio-demographic data from neonatal case files, and additional data was obtained from the parents.

The second section explored parents' experience using a six-point Likert scale and 57 close ended questions in the 5 dimensions: The domains were: Information (12 statements); Care and Treatment (17 statements); Parental Participation (8 statements); Organization (8 statements); and Professional Attitude (12 statements). There were two additional questions to assess overall parenral satisfaction which is the outcome according to the conceptual framework model. Parents were asked to determine if they would recommend the NICU to others and their ability to return for treatment in the future. The five dimensions and the overall satisfaction utilized 6 points Likert scale with the following interpretation: 1= Strongly Dissatisfied, 2= Dissatisfied, 3 = Slightly Dissatisfied, 4= Slightly Satisfied, 5 = Satisfied, and 6= Highly Satisfied for easy scoring. The last questions assessed parents to rate the performance of doctors and nurses using a scale of 1 to 10, which ranged from very bad to excellent. The last four statements were used to measure overall satisfaction, however satisfaction levels were also determined in the five dimensions.

3.8 Data Collection procedure and timeline

Parents with neonates in the unit were informed about the study title and purpose. Before beginning data collection, the researcher and research assistants introduced themselves to the Senior Nursing Officer (SNO) in charge of the neonatal unit and explained the purpose of the study. The SNO was informed about ethical approval and considerationsty of parents and neonatal names on the data collection tools, and confidentiality throughout the research process. Once the SNO approved, the research team conducted screening procedures of neonatal records to confirm inclusion criteria. Neonates admitted in the nursery ward for at least 48 hours were identified and assigned numbers starting from one. Random selection of one number was done, followed by selection of the second interval. The procedure was repeated daily to accommodate the new admissions and those that were not selected, without replacement of those that were already interviewed. Parents were informed of the study, and those who voluntarily consented were given an information sheet detailing the study before obtaining permission through signing/thumbprint on the consent form.

There after, data was collected through face-to-face interview using a structured questionnaire which was uploaded in Kobo tool box and Open Data Kit (ODK) for two months. Two research assistants not directly involved in provision of neonatal care at the facility were trained for one day. The objective for training was to orient the research assistants on the aim of the study, how to collect data using questionnaires, and maintain privacy and confidentiality. Training those who are not directly involved in care helps to avoid social desirability bias. The research team read out the question to the participants and elaborated where participant did not understand. The participant selected options which were saved and submitted to Kobotool box. Data collection was done from August to October 2024 after obtaining ethical clearance and approvals.

3.9 Validity and Reliability

3.9.1 Validity

The data collection tool was adopted, with a Cronbach alpha of 0.82 to 0.95 (Latour *et al*., 2012). The tool was translated by clinical, academic and language experts following guidelines of forward-to-back translation from English to Chichewa and back to English by Wild *et al.*, (2005).

The researcher and one language expert were suitable for this task because they are bilingual Malawians, fluent in both English and Chichewa. The work was then verified by a language expert before subjecting it to two clinical experts who had no idea of the original questionnaire. Further modification of the Chichewa version of the translated instruments were done based on the back-translation. This ensures correctness and clarity of the translated instrument. The language expert, researcher, research supervisors and original author reviewed the adopted questionnaire before pilot testing the instrument. External validity was ensured through systematic sampling procedures, thus preventing selection bias and promoting the generalization of findings.

3.9.2 Reliability

The questionnaire was piloted at the same facility with a small number of participants (10 % of sample size =25). In addition, systematic sampling was used to reduce selection and information bias, thereby increasing the reliability of the results. In addition, the participants were interviewed immediately after discharge or during admission to reduce recall bias.

3.10 Pilot Study

A pilot study was conducted at the same facility using 25 randomly selected participants as this corresponded to 10% underpower probability in the main study. This was essential to assess feasibility and address site-specific challenges, thereby correcting errors, establish tool reliability before main study. Piloting at same site was also done as there is no nearby tertiary-level facilities operating at the same level. Clarity of the questions or difficulties parents had in answering the questions were reviewed in line with our clinical environment to increase the reliability. The researcher discussed the observations during pilot study with the supervisors, a clinical neonatal nurse and original author. The results were utilised to make the necessary changes to the instrument in the local language and final version was reached. Additional information such as family support, male involvement, number of children delivered now and some few wording adjustment of the EMPATHIC-N were made (See Appendix 6A). The calculated overall Cronbach's Alpha was 0.941 with information domain 0.855, care and treatment 0.904, parental participation 0.417, professional attitude 0.752 and organization 0.755. The data from the pilot study was not included in the analysis of the main study findings.

3.11 Data management and storage

The submitted files were checked daily for clarity and an updated copy was downloaded. Similarly, the information sheets and questionnaire were checked daily for completeness and filed in an arc file. The forms were locked in a trunk to ensure security, effortless reference, and quick and efficient data retrieval. Data transfer was limited between gadgets, and only the researcher had access/passport to the Kobo tool box database.

3.12 Data analysis

Data analysis reveale connection and provides insight into the relevancy of the information gathered. Knowledge of the intricate linkages in the data is a critical component of quantitative data analysis (Albers, 2017). The collected data was cleansed before analysis by reviewing the questionnaires for accuracy. SPSS version 22 was used for analysis. The Statistical Package for Social Sciences (SPSS) version 22 was used to analyze the data. Descriptive statistics, Chi-square test, Fishers Exact test, Spearman Rank correlation and Multiple Binary Logistic Regression Analysis was done to predict the association.

CHAPTER FOUR: ANALYSIS AND PRESENTATION OF FINDINGS

4.0 Introduction

This chapter presents findings obtained from the cross section quantitative study. The approach facilitated the identification of parental satisfaction level and associated factors among parents with neonates admitted to the nursery unit. Presented data was collected from 250 parents and only mothers were interviewed and their 250 neonatal records giving a 101.2 % response rate of the calculated sample size. An interview of the parent and review of neonatal records were used to collect the data. The outcome variable, parental satisfaction was at 68% and was measured using the EMPATHIC-N questionnaire. The tool was classified according to points on likert scale as satisfied above the mean, dissatisfied below the mean and 0 for not applicable denoted a situation which was not experienced or applicable for the mother. The data was collected between August to October 2024.

4.1 Data processing and analysis

The data in Kobo tool box was downloaded as an excel version and was transported to SPSS. The dataset was checked for missing values, outliers, and inconsistencies. Descriptive statistics were calculated and presented as frequencies and percentages for categorical variables. At the same time, continuous data was expressed as mean (M) and standard deviation (SD). To measure satisfaction, Firstly, the responses were categorized as satisfied or unsatisfied using the mean as the cutoff point, and then the results were computed. In other words, individual scores from 1 to 3 indicated dissatisfaction, while 4 to 6 indicated satisfaction. Furthermore, Chi square test was used to examine factors associated with parental satisfaction scores. Where the assumptions of the Chi-square test were violated, the Fisher's exact test was used. Spearman rank was also done to measure correlation between parental satisfaction and the five EMPATHIC-N dimensions. The statistical tests were done at 5% level of significant and confidence interval was set at 95%. Based on the significant results, multivariable regression analysis was used to determine predictors of parental satisfaction with the quality of neonatal services.

4.2 Presentation of findings

Both descriptive and inferential statistics were presented utilizing tables and figures. The results were presented according to the study objectives. Parental and neonatal sociodemographic characteristics were presented first, followed by presentation of satisfaction levels and reliability of the EMPATHIC-N questionnaire. Data identifying association with parental satisfaction, correlations and predictors of satisfaction were presented in tables and highlighted the statistical signicant value.

4.3 Parental and neonatal sociodemographic characteristics and clinical information

4.3.1 Parental sociodemographic characteristics n=250

The study involved 250 mothers whose neonates were admitted at Kamuzu Central Hospital, Ethel Muthalika Nursery Unit (KCH EMNU) thereby representing a recruitment rate of 101.2 % as the sample was calculated at 247. Table 4.1 presents the sociodemographic characteristics of the respondents. Overall, the mean age of the study participants was 25.86 years with age ranging from 15 to 47 years. Majority of the parents were in the age range between 15 to 24 years (n=126, 50.4%) followed by age range of 25 to 39 years (n=117, 46.8%). The majority of the respondents were coming from rural areas (n=138, 55%). In terms of education, majority of the mothers (n=121, 48%) had attained primary school education followed by those with secondary education (n=96, 38.4%). There were 229 of the sampled mothers were married thereby representing 91.6 %. Results further show that majority of the mothers were Chewa by tribe which contributed to almost (n=174, 69.6%). Income per day by the participants showed that on average, families were having almost $2.3 (MK4, 000.00) with some having no money and highest acquisition being $28.5 (MK50, 000.00) a day. In order to have a view of economic status of the respondent, the daily income information was collected and based on results majority of the participants were living below poverty line (less than $1.9) (n=174, 69.6%).

Table 4.1 Parental sociodemographic characteristics (n=250)

Variable	Categories	Frequency (n)	Percentage (%)
Age	15 to 24 Years	126	50.4
	25 to 39 years	117	46.8
	40 and Above	7	2.8
Resident	Rural	138	55.2
	Urban	112	44.8
Level of education	Uneducated	13	5.2
	Primary	121	48.4
	Secondary	96	38.4
	Tertiary	20	8
Marital Status	Married	229	91.6
	Single	21	8.4
Tribe	Chewa	174	69.6
	Tumbuka	11	4.4
	Lomwe	22	8.8
	Yao	11	4.4
	Ngoni	22	8.8
Income per day	Less than $1.9 (MK3300)	174	69.6
	More than $1.9 (MK3300)	76	30.4

Table 4.2 shows that the majority (n=223, 89.2%) reported that they had family support. Furthermore, results indicate that 92.4% of the mothers had delivered a single baby whereas 7.6% had multiple deliveries. The study participants were asked whether the child's father was allowed to see their sick child. Only (n=43, 17.2%) fathers were allowed to see their child. The results further revealed that fathers who were allowed to see their sick child, (n=34, 79.1%) had done so once, (n=5, 11.6%) had seen their child twice, (n=3, 7.0%) had seen their sick child three times and the remaining portion had done so four times.

Table 4.2 Parental clinical information (n=250)

Other information	Categories	Frequency (n)	Percentage (%)
Support from family	Yes	223	89.2
	No	27	10.8
Number of children delivered during the current pregnancy	Single	231	92.4
	Multiple	19	7.6
Was the father allowed to see the child	Yes	43	17.2
	No	207	82.8
Number of times father allowed to see the child during hospitalization	Once	34	79.1
	Twice	5	11.6
	Thrice	3	7.0
	Four	1	2.3

4.2.2 Neonatal characteristics

The neonates whose mothers participated in the study were also enrolled in the study. The information about the baby was obtained from the mother while the clinical information was reviewed from the medical records. The frequency distribution and percentage of their responses is highlighted in table 4.3. The table denotes that only (n=12, 4.8%) had ever been hospitalized before and that among those admitted neonates the majority of the respondents were mothers whose neonates were either still admitted (n=222, 88.8%), discharged (n=12, 4.8%) or on follow up care (n=16, 6.4%) following 48 hours of admission. Majority of these neonates were placed in high risk A (n=113, 45.2%). Furthermore, it can be reported that among all sampled neonates who had been admitted, (n=208, 83.2%) of them had shown signs of improvement since admission.

Among the neonates involved in the study, majority (n=133, 53.2%) were born preterm and the gestation age ranged from 26 to 41 weeks with a mean gestation age of 34.7 weeks. Similarly, birth weight ranged from 780 to 4600 grams with a mean weight of 2245.3 grams. The results showed that majority were born with low birthweight (n=141, 56.4%).

The results further indicate that majority (n=209, 83.6%) of neonates admitted had short stay in the hospital (less than 7 days) as compared to those who had long stay (over 7 days) accounting to (n=41, 16.4%). The mean length of hospital stay was 6.6 days with a minimum of 2 days and a maximum of 150 days.

Table 4.3 Neonatal sociodemographic and clinical characteristics (n=250)

Characteristics	Categories	Frequency	Percentage
Ever been Hospitalized	Yes	12	4.8
	No	238	95.2
Admission Ward	High risk A	113	45.2
	High risk B	69	27.6
	Isolation A	26	10.4
	Isolation B	22	8.8
	Kangaroo mother care.	20	8
Health Status of Neonate	Improvement	208	83.2
	No improvement	39	15.6
	Deteriorating	3	1.2
Gestation Age	Preterm	133	53.2
	Term	117	46.8
Birth weight	Low Birth Weight	141	56.4
	Normal Birth Weight	105	42
	High Birth Weight	4	1.6
Neonatal hospital stay	Short stay	209	83.6
	Prolonged	41	16.4
Hospital status of the neonate	Admitted	222	88.8
	Discharged	12	0.048
	Follow up care	16	0.064

4.3 Reliability of EMPATHIC-N Questionaire and parental satisfaction levels.

Satisfaction level of the mothers of the neonates was assessed using EMPATHIC-N questionnaire. The total EMPATHIC-N values and the five domains showed a good level of internal consistency. Table 4.4 shows the five domains' Cronbach's values ranging from 0.60 to 0.81, where as the total EMPATHIC-N Cronbach's value was 0.92. In terms of total mean dimension scores, Care and Treatment domain had highest mean dimension score of 84.58 followed by Professional attitude domain which had a mean total score of 59.11. Among the domains, organization had the least mean total score of 37.90. The overall total mean score was found to be 25.62 out of 32 possible total score.

Table 4.4 Cronbach's Alpha and mean scores of the dimension and overall satisfaction

Dimensions (no.items)	Cronbach'sAlpha	Minimum	Maximum	Mean Dimension score (SD)	Maximum possible dimension score
Information (12)	0.71	18	71	49.16 (±10.26)	72
Care and Treatment (17)	0.81	32	102	84.58(±9.45)	102
Parental Participation (8)	0.74	18	48	42.05(±5.17)	48
Organization (8)	0.60	20	47	37.90(±4.30)	48
Professional Attitude (12)	0.76	30	72	59.11(±6.56)	72
Overall Satisfaction (4)	0.92	9	32	25.62(±4.18)	32

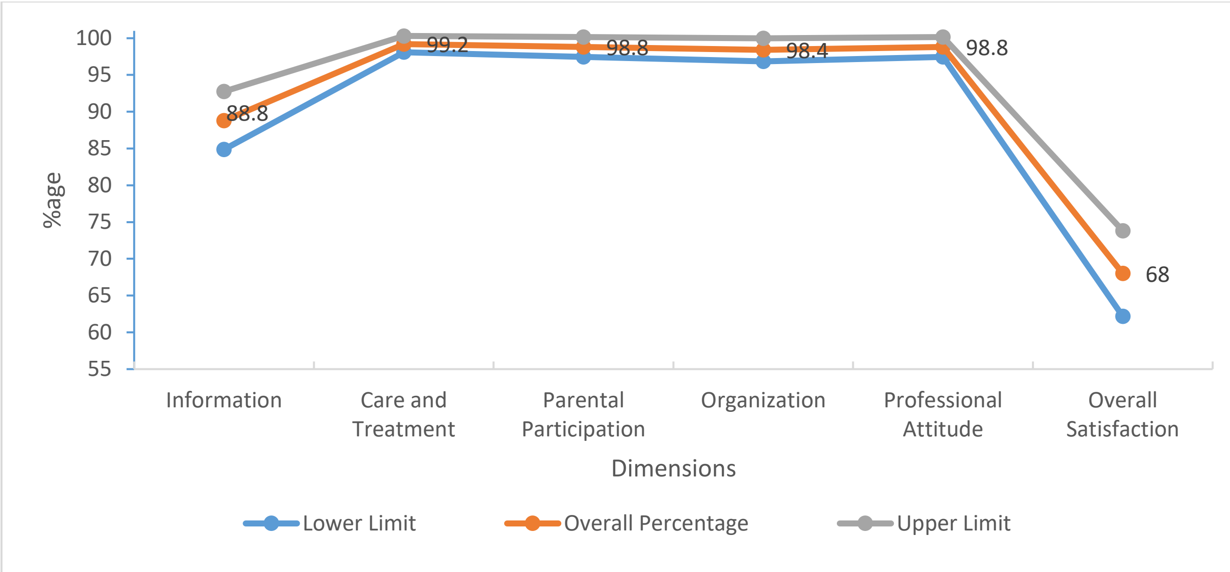

Figure 4.1 levels of overall parental satisfaction with neonatal care and the five dimensions

Figure 4.1 presents the proportions, of the overall parental satisfaction which was recorded at 68% [95% CI= (62.2-73.8)]. The parental satisfaction scores were compared with each other and, the lowest parental satisfaction proportion was for the domain of information at 88.8% [95% CI= (84.9-92.7)] while the care and treatment domain showed the highest parental satisfaction proportion of 99.2 [95% CI= (98.0-100)]. The domain of parental participation, Organization and Professional attitude showed similar parental satisfaction proportions (Figure 4.1). The individual item performance for all the domains were highlighted in order to identify areas contributing to satisfaction or dissatisfaction with neonatal care.

Table 4.5 results show that among the 12 items of the information domain, the highest scoring was obtained from item "Doctors and nurses were giving us honest information" with a mean of 5.42 out of 6. It can further be seen that the lowest mean score of 2.19 was realized from item "Being Notified quickly when the baby's condition deteriorates". This means that health workers were hesitant to inform the parents when the health of the child deteriorated. Furthermore, this domain had a lot of underscored means of less than 4.

Table 4.5 Mean scores for Information Domain

Information Items	Mean	SD
Discussing the management and support with the care health workers	4.5	1.66
Questions answered clearly by Health care workers	4.1	2.14
The information delivered by doctors and nurses always the same	4.52	1.32
Notified quickly when the baby’s condition deteriorates	2.19	2.55
Given information about our baby’s illness from the doctors and nurses	4.57	1.70
Potential problems due to the treatment that the baby is receiving highlighted	3.72	1.63
Provision of clear information about blood tests and other diagnostic tests	3.14	2.37
Received information about how drugs work in the body	3.29	1.82
The doctor explained to us about the expected health outcome of our baby	3.63	1.69
The written information on the posters was clear	4.73	1.99
The message given by the doctors and nurses was clear	5.34	0.87
Doctors and nurses were giving us honest information	5.42	0.85

Table 4.6 shows information regarding the care and treatment domain, the highest mean score of 5.48 was recorded on item “Doctors and nurses are true professionals: and they know what they are doing”. To the contrary, the domain recorded its lowest mean score on item “When our baby's illness worsens, doctors and nurses acted quickly” with a mean of 2.93.

Table 4.6 Mean scores for Care and Treatment Domain

Care and Treatment items	Mean	SD
Doctors and nurses were working together	5.31	1.05
Health care workers prevented and provided treatment of our baby's pain	5.17	1.16
Doctors and nurses are true professionals: and they know what they are doing	5.48	0.87
Appropriate medications were administered at the right time	5.20	1.18
The doctors and nurses inquired about the history of our baby's illness	5.15	1.20
Doctors and nurses showed interest in our baby’s growth	5.33	1.01
When our baby's illness worsens, doctors and nurses acted quickly	2.93	2.70
Our child's needs were well met	5.20	1.12
The team of workers had one goal: to take care and support our baby and us	5.33	0.89
The doctors and nurses made sure that our baby was comfortable	5.42	0.89
We knew the doctors and nurses who were looking after our baby every day	4.45	1.52
The doctors and nurses gave us advice according to our concerns	3.74	1.60
Doctors and nurses were very helpful with our needs	4.68	1.26
The team of workers took care of our baby and us	5.34	0.93
In difficult times, we had a nurse to help us	5.31	0.92
Our baby was always well looked after by the nurses in his incubator/bed	5.40	0.87
The transfer of care from delivery room/referring hospital to the neonatal facility was successful	5.15	1.04

Table 4.7 depicts the mean scores of the 8 items for parental participation domain. The highest mean score was observed on item called “Nurses encouraged us to take part in our baby's care” with a mean of 5.56 whereas the lowest means score of 4.58 was noted on “We stay close to our baby even when receiving advanced care” item.

Table 4.7 Mean scores for Parental Participation Domain

Parental Participation items	Mean	SD
We participated in making decisions about our baby's care and support	5.29	1.04
We were encouraged to stay close to our baby	5.42	1.06
We rely on a team of health professionals	5.43	0.90
We stay close to our baby even when receiving advanced care	4.58	1.46
Nurses encourage us to take part in our baby's care	5.56	0.79
Nurses assisted in strengthening our relation with our baby	5.46	1.01
The nurses taught us the very important aspects of newborn care	5.2	1.26
Before we left the facility, we discussed the management of our baby	5.12	1.22

According to the information presented in table 4.8, organization domain has 8 items and among them, **“**the team of workers worked properly” item scored highly with a mean of 5.71 and the lowest mean score was 1.32 on item “We were able to communicate with the staff in the nursery, by phone”. This means that communication via the phone between the health workers and parents was rarely practiced.

Table 4.8. Mean scores for Organization Domain

Organization	Mean	SD
We felt safe in the nursery	5.18	1.08
Our baby's crib or bed was clean	5.6	0.82
The team of workers worked properly	5.4	1.09
We were able to communicate with the staff in the nursery, by phone	1.32	1.09
There was enough space around our baby's crib/bed	4.93	1.37
The nursery was very clean	5.71	0.65
There was no noise in the nursery	4.53	1.05
There was a nice and friendly atmosphere in the nursery	5.23	1.14

Table 4.9 presents the professional attitude domain. Among the 12 items of professional attitude domain presented, item “We were received well by the staff” had the highest mean score of 5.58 indicating that this item was commonly practiced by the health workers. On the other hand, results suggest that health workers do not have time to listen to the mothers as evidenced by item “Doctors and nurses take time to listen to our thoughts” which had a lowest score of 2.92. Another low score was observed at 3.02 on the item “Nurses and doctors were introducing themselves”.

Table 4.9 Mean scores for Professional Attitude Domain

Professional Attitude	Mean	SD
Nurses and doctors were introducing themselves	3.02	1.78
We received compassion from the doctors and nurses	4.69	1.22
The team was working in a clean manner	5.53	0.61
The staff maintained the privacy of our baby and us	5.43	0.89
The staff showed respect for our baby and us	5.19	1.07
The discussions between the doctors and nurses were only about our baby	5.25	0.89
There were happiness and openness among the workers	5.47	0.84
We were received well by the staff	5.58	0.97
The staff provided adequate attention to our baby and us	5.31	0.82
Our culture was respected	5.5	0.7
At all times, our baby's health was priority for doctors and nurses	5.21	0.97
Doctors and nurses took time to listen to our thoughts	2.92	1.91

Table 4.10 presents the overall results for parent experience, performance of doctors, and performance of nurses. Parents highly recommended the KCH EMNU to others (mean = 5.47, SD = 0.89) and would return to the KCH EMNU in the future if their child required intensive care (mean = 5.43, SD = 0.99). General performance of doctors was rated higher at a mean of 7.44 out of 10 (SD = 1.69) than for nurses, whose general performance mean was at 7.28 (SD = 1.94).

Table 4.10 Overall parental satisfaction with neonatal Care

Experience on Care	N	Mean (SD)
We would encourage others with similar problems to use the nursery unit (1 to 6)	250	5.47(±0.89)
If we ever have the same problem, we will come back to the nursery unit (1 to 6)	250	5.43(±0.99)
How would you rate the overall performance of Doctors? (1 to 10)	250	7.44(±1.69)
How would you rate the overall performance of Nurses? (1 to 10)	250	7.28(±1.94)

4.4 Factors associated with parental satisfaction with neonatal care

To identify factors associated with satisfaction, chi square tests were run against satisfaction with some selected variables. Table 4.12 indicates some of the variables that were associated with parental satisfaction with level of significance set at 5%. Findings revealed that tribe, health status of neonate and admission ward emerged statistically associated with satisfaction at 5% level of significance. Support from family, residence, birth weight, gestational age, marital status and other variables were subjected to the chi square tests and were not significant. Variables whose levels had frequencies fewer than 5 (health condition of neonate and admission status of the neonate) were subjected to Fischer’s exact test as it is not very sensitive to fewer observations as compared to chi-square test.

Table 4.11 Associations between parental satisfaction and parental and neonatal characterisctics

Factors	Categories	Satisfaction Levels: Not Satisfied	Satisfaction Levels: Satisfied	Fisher's/Chi-Square Test, P Value
Support from family	Yes	69	154	Chi square
	No	11	16	$\chi^2 = 1.06, P = 0.303$
Residency	Rural	50	88	Chi square
	Urban	30	82	$\chi^2 = 2.54, P = 0.111$
Educational level	Primary and below	50	84	Chi square
	Secondary and above	30	86	$\chi^2 = 3.75, P = 0.053$
Tribe	Chewa	**64**	**110**	**Chi square**
	Other Tribe	**16**	**60**	**χ^2=6.01, P=0.014**
Age	15-30 Years	58	133	Chi square
	Above 30 Years	22	37	$\chi^2 = 0.99, P = 0.319$
Birth Weight	Low weight	46	95	Chi square
	Normal Weight	34	75	$\chi^2 = 0.06, P = 0.810$
Period of Stay	Short stay	62	147	Chi square
	Long Stay	18	23	$\chi^2 = 3.19, P = 0.074$
Income	Below Poverty line	52	122	Chi square
	Above poverty line	28	48	$\chi^2 = 1.18, P = 0.278$
Health status of neonate	Improvement	**58**	**150**	
	No change	**20**	**19**	**Fischer Exact**
	Deteriorating	**2**	**1**	**χ^2=9.94, P=0.007**
Admission Status of Neonate	Admitted	74	148	
	Discharged	1	11	Fischer Exact
	Follow up care	5	11	$\chi^2 = 3.27, P = 0.195$
Admission Ward	High risk A	**22**	**91**	
	High risk B	**30**	**39**	**Chi square**
	Isolation A	**9**	**17**	**χ^2=17.47, P=0.002**
	Isolation B	**8**	**14**	
	Kangaroo Mother Care	**11**	**9**	

4.5 Correlation between parental satisfaction and the five domains of EMPATHIC-N

To have a view reading relationship between satisfaction domains and parent experience on care and performance of health workers, the Spearman's rank correlations was run as shown in Table 4.11. The correlations ranged from 0.157 to 0.530. The highest correlation was between Health care attitude domain with recommendation of the facility to others (r=0.530). The weakest correlation was for the parental participation domain and rating of doctors (r= 0.157). The moderate correlations were for the domain health care attitude and on recommendation of KCH EMNU to others and return to the KCH EMNU in the future (r=0.530 and 0.524).

Table 4.12 Spearman rank correlation between parental satisfaction and dimensions with neonatal care

Domains	Recommended the KCH EMNU to others	Return to the KCH EMNU in the future	Rate Doctors	Rate Nurses
Information	0.212**	0.205**	0.265**	0.269**
P-value	<0.001	<0.001	<0.001	<0.001
Care and Support	0.392**	0.419**	0.277**	0.314**
P-value	<0.001	<0.001	<0.001	<0.001
Participation	0.431**	0.412**	0.157*	0.203**
P-value	<0.001	<0.001	<0.001	<0.001
Performance	0.412**	0.340**	0.187**	0.255**
P-value	<0.001	<0.001	<0.001	<0.001
Health Care Attitude	0.530**	0.524**	0.360**	0.380**
P-value	<0.001	<0.001	<0.001	<0.001

**Correlations significant at the 0.05 level (two tailed).

4.6 Multiple Binary Logistic Regression

In order to ascertain the influence of different factors on satisfaction, multiple binary logistic regression was employed. Firstly, candidate variables were identified from the chi square analysis. Based on the results from chi- square tests, all variables whose p value was less than 0.3 were taken on board for multiple binary logistic regression. Table 4.13 are results indicating three variables namely tribe, income and admission ward as important factors relevant at predicting satisfaction of the mothers of neonate. Mothers who belonged to the Chewa tribe were less likely to attain satisfaction than mothers from other tribes. The mothers from the Chewa tribe had 0.37 odds of being satisfied as compared to those from other tribes ($p = 0.010$). Regarding the income levels, results have demonstrated that mothers who lived below the poverty line were more likely to get satisfied as compared to mothers who lived above the poverty line. The mothers who were living below poverty were 2.06 times more likely to be satisfied as compared to mothers who lived above the poverty line ($p = 0.042$). Lastly, multiple binary logistic regression results showed that mothers whose neonates were admitted in separate ward (High risk A, High risk B and Isolation A) had more chance of being satisfied in comparison with those combined with their neonates (Isolation B and Kangaroo wards). Mothers in separated care wards had 3.23 chances of being satisfied with the health worker care as compared to the mothers in combined care wards ($p < 0.001$).

Although some variables were not statistically significant, some trends were observed. For instance, regarding the period of stay, mothers who had short stay in the ward were more likely to be satisfied as compared to those who stayed longer. Similarly, mothers whose neonates were improving were more likely to be satisfied as compared to the mothers whose neonates were deteriorating.

Table 4.13. Multiple Binary logistic regression

Factors	Satisfaction Levels		ADJUSTED ODDS RATIO	P-Value
	Not Satisfied	Satisfied	OR[95%CI]	
Residency				
Rural	50	88	0.83[0.40-1.72]	0.617
Urban	30	82	1	
Education Level				
Primary and Below	50	84	0.72[0.35-1.49]	0.374
Secondary and Above	30	86	1	
Tribe				
Chewa	64	110	**0.37[0.17-0.78]**	**0.010**
Other Tribe	16	60	1	
Period of Stay				
Short Stay	62	147	1.62[0.68-3.85]	0.276
Long Stay	18	23	1	
Income				
Below Poverty Line	52	122	**2.06[1.02-4.14]**	**0.042**
Above Poverty Line	28	48	1	
Health Condition of the neonate				
Improvement	58	150	4.10[0.33-9.04]	0.278
No change	20	19	1.71[0.13-7.03]	0.675
Deteriorating	2	1	1	
Status of the respondent				
Admitted	74	148	1.20[0.24-4.56]	0.785
Discharged	1	11	4.72[0.37-13.51]	0.155
Follow up care	5	11	1	
Admission Ward				
Separated Care	61	147	**3.23[1.74-6.00]**	**<0.001**
Combined Care	19	23	1	

4.7 Conclusion

The results of the study denoted that the EMPATHIC-N questionnaire is reliable for use in our setting with a Cronbach's Alpha of 0.92. Futhermore, parental satisfaction was at 68% denoting moderate satisfaction. The results are critical in informing healthcare providers, hospital managers and Ministry of Health to improve on information sharing as the dimension had the lowest satisfaction score compared to the other counter parts. Furthermore, health care providers should be considerate of factors such as economic status, tribe, health status of the neonate and admission ward as they may directly influence parental satisfaction with neonatal care.

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.0 Introduction and overview of the findings

This chapter examines parental satisfaction with neonatal careservices at Kamuzu Central Hospital Ethel Muthalika Nursery Unit.The discussion was based on the Donabedian Structure, Process and Outcome model and the study objectives to assess levels, identify factors affecting parental satisfaction and examine relationship between satisfaction with hospital structure, processes and parental and neonatal characteristics. The results show that 68%of parents wee moderately satisfied, with variables such as tribe, neonatal health status and admission ward influencing satisfaction. The EMPATHIC-N is a reliable instrument in measuring parental satisfaction. In addition, there is good evidence that economic status, neonate health status and Chewa tribe may assist in predicting parental satisfaction with neonatal care.

5.1 Parental and Neonatal Demographic Characteristics and clinical information

The study involved only mothers of the reproductive age group (15-49 years) with a mean age of 25.86 years and a range of 15 to 47 years. Most mothers were aged 15 to 24, corresponding to a high fertility rate in the 20 to 24 age range (NSO, 2024). The youngest age is slightly higher than the fertility report of 10-14 years (NSO, 2024). However, there is still increased risk of maternal and neonatal complications due to young age. About 38.4% of mothers attended secondary school or higher, a figure slightly higher than the 28% in (NSO, 2024). This underlines the critical role of education in enhancing parental understanding of the healthcare system and their ability to evaluate the quality of care provided. Most of them were from the rural area, 55.2%, and the results conform to the results by Alle *et al*., (2022) in Ethiopia. Similar socioeconomic status and healthcare delivery systems could have influenced similar results. In addition, unestablished neonatal units in rural areas increase the number of referrals for neonatal care. Most parents were married, and the results were consistent with findings by Alle *et al.*, (2022) in Ethiopia and Panamichael *et al*., (2018) in Greece.

The majority of the neonates were delivered prematurely and weighed less than 2500 grams at birth. Prematurity and low birth weight highlight the urgent need for improvement in neonatal conditions as they are associated with more neonatal deaths, increased hospital stays and reduced parental satisfaction levels. Contrary to the results, studies in Ethiopia denoted more full-term neonates with normal birth weight (Alemu, 2021; Alle *et al*., 2022). The results further indicate that the majority were still admitted, and a lot were showing signs of improvement. This improvement in neonatal conditions is critical in enhancing parental participation and satisfaction with care. These variables were selected as they directly linked to parental satisfaction as depicted in other studies (Dall'Oglio *et al.*, 2018; Papamichael, Ioannou and Talias, 2018; Hagen *et al.*, 2019; Jayasinghe and Abeysena, 2020; Nguyen *et al.*, 2020; Alemu, 2021; Gulo *et al.*, 2021; Alle *et al.*, 2022)

5.2 Levels of parental satisfaction with neonatal care

The study found parental satisfaction level of 68% using the EMPATHIC-N questionnaire, indicating both strengths and areas for improvement in neonatal care services. This is slightly higher than previous studies in Ethiopia, where satisfaction was reported at 42% and 60%, 47.9% and 57.87% (Adal, Atomsa and Tulu, 2022; Alemu, 2021; Elfios *et al*., 2024). The differences may be due to higher early neonatal mortality rates in Ethiopia (Tamir *et al.,* 2023). In addition, the current study utilised a validated instrument while the others utilised newly formulated interview guides. This could have contributed to easy understanding of the content, which could have contributed to higher satisfaction levels.

On the contrary, higher satisfaction was found in Norway 76% Hagen *et al.,* (2019), and Greece 87.8% (Voulgaridou *et al*., 2023). Advanced clinical neonatal settings and different measuring instruments and small sample size in Greece contributed to the differences. Sakonidou *et al.,* (2020) reported 56% higher parental satisfaction in intervention groups. Most studies identified were done in developed countries with advanced clinical neonatal settings, adequate resources, and higher standards of care as compared to our setting, making it difficult to generalize the results.

In addition, research showed 79.6% satisfaction in India (Sankar *et al*., 2017), Sri Lanka had 93.65% (Jayasinghe and Abeysena, 2020), and South Africa had 91.7% (Mol, Argent, and Morrow, 2018). Though the higher scores were in developing countries, there is better access to clinical resources, stable economy, technological advancements, different cultural backgrounds, and higher literacy levels in the other countries compared to the study site. Furthermore, the smaller sample sizes in India and South Africa may also have contributed to higher satisfaction. The fluctuations of satisfaction in both developed and developing countries does not show a clear trends of factors contributing to parental satisfaction.

The study's primary outcome falls short of the Ministry of Health's 80% satisfaction goal by 2022 (Malawi Health Network Indicators, 2018). The possible factors contributing to low satisfaction include hospital processes and policies restricting access to neonates conflicting with FCC neonatal clinical guidelines which supports male involvement, information sharing and parental involvement in neonatal care. Furthermore, the critical shortage of medical supplies, drugs and healthcare providers could also contribute to low satisfatction levels. The results denoted lack of male involvement with 82.8% of fathers not allowed to see their child. The researcher suggests on the need to improve clinical strategies to encourage male involvement in neonatal care, as it has been linked to reduced neonatal mortality and increased maternal satisfaction (Gopal *et al.*, 2020).

The overall satisfaction was based on four questions as depicted in the results section. The results are slightly lower than those in USA, where 97.5% of parents recommending the unit to others and 97.3% returning for future use. In addition, the general performance of doctors was 9.41 and nurses, 9.62 out of 10 in USA (Lake *et al*., 2020). The difference in clinical settings and high standards of neonatal care could have contributed to the higher satisfaction scores. On the other hand, the shortage of specialized human and material resources, and lack of family intergrated care could have influenced the results. Overall, the satisfaction levels denoted the need for health care providers, hospital management and Ministry of Health to strengthen on the strategies to help in increasing satisfaction levels.

Studies in Malawi showed high adult patient satisfaction rates in stroke patients, cervical cancer, family planning, and maternal and newborn care (Creanga *et al*., 2017; Kawaza et al., 2020). The satisfaction levels were measured on the actual patients as compared to the parents who are not the direct recipients of neonatal care. Furthermore, neonatal field is a new specialty with inadequate trained healthcare providers than the other studies. However, very lower satisfaction levels were reported among adult inpatients at Mzuzu Central Hospital (Sinyiza et al., 2022). The study involved different departments making it difficult to focus interventions for improvement. The study recommends incorporating inputs from care recipients and parents' involvement in quality improvement projects to improve patient satisfaction levels.

5.2.1 Parental satisfaction levels according to the five domains

The study evaluated hospital structures and processes using parental satisfaction scores in the EMPATHIC-N questionaire. Most parents were less satisfied with information sharing about their neonate's condition, treatment plan, and possible effects of treatment. However, more parents expressed satisfaction with the care and treatment received. The satisfaction scores ranged from 88.8% in information domain to 99.2% in care and treatment domain, denoting the need for improvements in communication between healthcare providers and parents. The findings were slightly lower than the ones of the original author Latour et al., (2012), but higher than those recorded in Ethiopia by Gulo et al., (2021) and Alle *et al.*, (2022). The findings indicate the need for strengthening and intergrating FCC initiatives in neonatal care.

5.2.1.1 Care and treatment domain

The care and treatment domain had the highest parental satisfaction at 99.2%, higher than Ethiopia's 83.4% (Alemu, 2021) and South Africa's 86% (Mol, Argent and Morrow, 2018). Parents prioritize their child's health outcomes, leading to a positive perception of neonatal care. Most parents were satisfied with doctors and nurses' performance, promoting trust in healthcare providers. However, majority were dissatisfied with the speed of response during emergencies, possibly due to separate living arrangement between parents and infants. It is a common occurrence in NICU to have parents asking for help or reporting to health care workers when there is worsening of the neonate’s condition.

Factors like increased workload may influence prompt provision of care, highlighting the need for adequate well-trained healthcare providers and parent's presence and participation in care. The study suggests that despite the knowledge and skills of healthcare providers, factors such as increased workload may influence the prompt provision of neonatal care.

5.2.1.2 Parental participation in neonatal care domain

World Health Organization, (2020) recommends parental participation as a crucial aspect of modern neonatal care, and emphasizes on respectful treatment of newborns and their families in neonatal intensive care units. Research shows that parental involvement in neonatal care improves neonatal growth and neurological development (Siva et al., 2023). Parental involvement is critical in reducing stress and retinopathy of prematurity, increasing weight gain, and developing parent's skills in neonatal care (Haile et al., 2024). Parents were highly satisfied with participation, which is crucial for ensuring parental compliance and continuity of care after discharge. Parents who spend most time with their newborn have better opportunities to identify infant needs and problems as compared to NICU staff with multiple infants under their care (O'Callaghan, Dee and Philip, 2019). However, more parents were dissatisfied with their inability during advanced care, as separation of parents and infants influenced their availability. The design of neonatal units to accommodate both parents and children is vital in enhancing availability and participation in neonatal care.

Parental participation has been associated with increased breastfeeding, decreased mortality, and decreased hospital readmission (Reiter et al., 2022). In China, parental participation was associated with reduced hospital length of stay, medical expenditures, and rates of adverse outcomes (Hei et al., 2021). Despite controversial remarks about parental availability during advanced care, the FCC recommends parental participation as it empowers parents with skills to care for the neonate after discharge and may protect healthcare providers from lawsuits. Evidence suggests that restricting parents can help reduce infections (Szatkowski et al., 2019; Franck et al., 2022). On the contrary, Evans et al., (2023) did not support evidence that restrictions prevents infections. Thorough infection prevention protocols such as periodic swabbing and strict infection prevention strategies to isolate microbial agents and minimize infections in the neonatal units.

5.2.1.3 Hospital organization domain

Health systems' organizational structure impacts parents' professional treatment and involvement in their babies' care. The domain also evaluated the physical structure in relation to the conceptual framework and assessed aspects such as space, privacy, cleanliness and safety of the neonatal unit. The study found that parents were dissatisfied with the inability to communicate with nursery teams through phone, which affects their satisfaction.Similar results were recorded by Gulo et al., (2023). This can lead to parents stress as they are kept in separate wards and other may demise without presence of the parents. Majority of the parents were satisfied with cleanliness of the nursery environment and neonate's crib, which is associated with reduced infection rates and high-quality care (Dramowski et al., 2021). The cleanliness of the neonatal nursery unit influences parents' opinions about the quality of care received. The Ministry of Health should consider constructing larger facilities with adequate space, staff, and clean facility to enhance parental satisfaction with neonatal care.

5.2.1.4 Information domain

Parent-provider communication is crucial for determining parent's well-being and satisfaction levels with neonatal care (Labrie et al., 2021). Continuous, honest, and open communication is essential when providing healthcare services. Parents were more satisfied with honest information from doctors and nurses. Good communication has a positive impact on parents' satisfaction and perception of neonatal care (Wreesmann *et al.*, 2021). However, parents were less satisfied with timeliness in notifying them when the baby's condition deteriorates and lack of clear information about blood tests, diagnostic tests, and treatment plan which may lead to inadequate participation in decision-making and non acceptance of bad neonatal outcomes. In neonatal facilities with limited visitation hours and segregated nursing, providing clear and up-to-date information is essential for parental satisfaction. Riskin et al., (2022) supports the argument and conducted an intervention study where communication technology strategy was used to improve parent’s satisfaction. However, it was not statistically significant in increasing satisfaction levels. Medical information must be simple for easy understanding, regardless of who is providing it (Guttmann, Orfali and Kelley, 2022). Future studies should focus on evaluation of effective strategies to enhance communication in low resource settings.

5.2.1.5 Professional attitude domain

Parental satisfaction levels are significantly influenced by the professional attitude of healthcare professionals, which includes respect, empathy, effective communication, and dedication to high-quality service (Elfios et al., 2024). Quality medical services increases patient satisfaction, but it is not the sole cause as healthcare worker's attitude has high influence on hospital processes and outcome such as satisfaction levels (Tiryaki et al., 2020). Healthcarer's attitude is mostly remembered or appreciated more by parents than the treatment and health outcome of the neonates (Wanduru et al., 2024). It is crucial to treat parents with respect and dignity to promote good working relationships and higher satisfaction levels. Conversely, majority of parents were less satisfied with doctors and nurses' inability to listen to their thoughts and introduce themselves during interactions. Similar results were reported by (Nguyen et al., 2020). Although neonates are not able to communicate or express their feelings, needs and satisfaction (Haile et al., 2024), respectful care is essential, and healthcare providers should have good customer care and provide family centered care with respect.

5.3 Association between satisfaction and hospital processes, neonatal and parental characteristics

This section provides an account on factors associated with parental satisfaction with neonatal care. Statistical tests denoted that tribe, neonatal health status, and admission ward were significant factors associated with parental satisfaction with quality of neonatal care. Factors such as marital status, birth weight, gestation age, family support, and place of residence were not statistically significant.

5.3.1 Association between satisfaction and parental socio- demographic characteristics

Parental sociodemographic characteristics are critical in influencing satisfaction. Parent's tribe was the only significant variable associated with parental satisfaction ($P = 0.014$). As the p-value is less than 0.05, we reject the null hypothesis. This suggests that cultural background influences perceptions of quality of neonatal care as emphasized by Mol, Argent, and Morrow, (2018) in South Africa. The discrepancy might be explained by differences in cultural beliefs, communication, and expectations. Culturally sensitive approaches are needed to improve satisfaction across diverse groups and ensure equitable, family-centered neonatal care.

Parents' education was not statistically significant in determining satisfaction levels. However, education plays a crucial role in promoting satisfaction and understanding medical terms, treatment, and procedures. Higher education levels enhance parental involvement in decision-making, compliance with treatment plans, early identification of danger signs and increase satisfaction levels. The argument is supported by (Hagen et al. 2019) where more educated parents were highly satisfied with neonatal care. However, low levels of education may lead to lower expectations of care and also increase parental satisfaction levels.

Age alone did not influence parental satisfaction with neonatal care in the present study. This may denote equal treatment and opportunities in the unit regardless of parent's age. Contrary to the findings, Shrestha et al., (2022) had significant results with a p-value of 0.001. Young parents may lack the skills, confidence, and resources to take care of a sick newborn. While older parents have emotional maturity, experience in handling stressful situations, and more engagement in neonatal care and decision making. Literature review indicates that young maternal age increased parental satisfaction, possibly due to the model of neonatal care used (Alemu, 2021). However, young women were dissatisfied with the quality of care provided (Seid, Getaneh, and Shetie, 2021).

The study found that 100% of respondents were mothers, making it difficult to evaluate the influence of gender on parental satisfaction. The findings conform to a systematic review in Ethiopia where fathers did not participate as they focused more on work, and caring for other siblings at home (Haile et al., 2024). Contrary to findings, in Turkey and Ethiopia where majority were mothers with few fathers and other guardians (Hagen et al., 2019; Sileshi et al., 2023; Gulo et al., 2021).

In Malawi, mothers are more present and involved in the care of the newborns at the hospital and homes. In addition, the unit only allows fathers to visit the neonate once during admission which further deters men from participating in care. Male involvement is a key element in enhancing the health of mothers and children (Siva et al., 2023). The lack of male involvement in neonatal units contributes to higher levels of stress and reduced satisfaction. Literature review indicates that mothers are more satisfied with neonatal care than fathers (Alle et al., 2022; Dall'oglio et al., 2018). On the contrary, mothers were more dissatisfied than fathers and guardians (Ali, et al., 2021).

The majority of respondents had their neonates still admitted at the time of data collection, but the results were not statistically significant. However, admission status showed significant difference with slightly higher levels of satisfaction in the discharged groups compared to the admitted group. It may be argued that unknown neonatal outcome in admitted group affected parental satisfaction levels.The timing of the study is different from the original author's where data was collected three weeks post discharge. Similarly, Lake et al., (2020) collected the data after discharge and had higher satisfaction scores. The low satisfaction scores obtained from parents who were still admitted may be caused by parents not wanting to indicate their dissatisfaction for fear of not being assisted. The sentiments are similar to those shared by Jayasinghe and Abeysena, (2020) in Sri Lanka. Furthermore, the low levels may be attributed to the nature of data collection where the others utilized a self administered questionnaire than face to face interviews.

Marital status did not show any trend or statistical significance in both univariate and multiple binary logistic regression analysis. However, the majority of respondents were married, which supports the idea that parents who are married have higher satisfaction levels and good support from their spouse and families. The results conform to findings by Nguyen et al, (2021). Married parents have higher satisfaction levels and good support from the spouse and families which help in minimizing stress. Lastly, place of residence had no statistical significant, however, there was a significant difference with urban parents being more satisfied than their counterparts. The results are not consistent with those recorded by (Alle et al., 2022; Haile et al., 2024) where parents from the rural were more satisfied than the ones from the urban. This suggests that parents from remote locations may have a lower degree of awareness about their rights, needs and expectations causing higher levels of satisfaction (Alle et al., 2022).

5.3.2 Association between parental satisfaction and neonatal sociodemographic characteristic

The study found significant association between parental satisfaction and neonatal health status and admission ward. Parental satisfaction was highly associated with the neonate's health status ($p = 0.007$). As the P-value is less than 0.05, we reject the null hypothesis. This implies that parents are more satisfied when their newborns have better health outcomes. This is possibly due to the anticipation of discharge and good outcomes.

These results were similar to (Nguyen et al., 2018; Adama et al., 2022) where relationship between neonatal health status and maternal satisfaction. Enhancing standards of neonatal care could help improve parental satisfaction with neonatal services.

Admission ward was significantly associated with parental satisfaction (p = 0.002). Since the p-value is less than 0.05, we reject the null hypothesis. This indicates that the ward where the neonate is admitted impacts parents' experiences. Differences in ward environment, level of care, staff interaction, or care processes may influence satisfaction, highlighting the need for consistent quality standards across all wards. The evidence is supported by Gulo et al., (2021) who denoted high parent satisfaction in level II NICU compared to level l or III NICU. Similarly, Hagen et al., (2019) denoted increased satisfaction with neonatal care where one or a group of physicians/nurses provided continuous care.

There was no statistical significance between satisfaction and birth weight, suggesting that parents were more concerned with the overall quality of care their child received than baby's weight. There were more preterm infants than term babies with no trends on satisfaction observed in the current study. In contrast, parents of full term infants and those with average birth weight were more satisfied with NICU services than their counterparts (Alle et al., (2022). Average birth weight is an essential indicator of good neonatal condition, development and a predictor of neonatal outcome (Wubetu et al., 2021). On the contrary, low birth weight and prematurity increases the risk of other ailments and prolonged hospital stay which may in turn decrease parental satisfaction levels (Harding et al., 2019)

Hospital length-of-stay was not statistically significant, but satisfaction differences were noted, with mothers who had short stays (less than 7 days) being more likely to be satisfied. The current results were similar to the findings by (Alemu, 2021; Alle et al., 2022; Seid, Getaneh, and Shetie, 2021) in Ethiopia who asserted low satisfaction levels among parents whose neonates had a short stay. The similar trends are in the health care delivery systems of Malawi and Ethiopia could have contributed to similar findings. In low income settings, shorter hospital stays are believed to reduce the financial burden and logistical challenges associated with prolonged hospital visits. Finally, the mean length of stay of 6.6 days denoting that majority of the neonates were not taking longer in the unit at the time of data collection.

However, the range from 2 to 170 days denotes that others stayed for longer as the unit admits more premature and serious neonates with complications with others requiring surgical procedures.

5.3.3 Association of parental satisfaction and hospital processes

The study investigates the relationship between parental satisfaction and the five domains: information, care and treatment, organization, professional attitude, and parental participation. The results show that all domains were statistically significant with a moderate to weak, positive relationship as depicted in table 4.11. The moderate to weak correlations denotes association between parental satisfaction and the hospital processes. The results further supports the assumption by Donabedian, where the hospital structure and processes such as health care system, provider's availability, qualification, and attitude influence parental satisfaction levels. However, the cause effect between variable can not be established in this study design.

The highest correlation was found between health care attitude and recommendation of the facility to others. The results denotes that there was a moderate relationship between parents and healthcare providers to an extent that the majority would recommend the health facility to others but the relationship between the two is not exceptionally strong. The highest correlation aligns with the Donabedian theory that predicts a strong relationship between hospital processes and outcome of care. Parents who are satisfied with healthcare providers' attitude tend to influence others and participate in community sensitization, thereby promoting utilization of neonatal health services.

The parental participation domain and the rating of physician's perfomance had the weekest correlation, indicating that although parents appreciate the chance to be involved in their child's care, their perception of doctors' performance did not influence their participation. Parental skills, confidence, previous experience and condition of the neonate could also moderate the relationship. In addition, parent's evaluations of doctors may be impacted more by their opinions about clinical results and communication abilities than by their involvement in patient care. It would be recommended to have parents during doctors ward rounds in the neonatal unit in order to improve on the interaction between doctors and parents. Parents frequently engage with nurses more often than they do with doctors in many newborn care settings. Despite a weak correlation, results denote higher score on satisfaction with performance of doctors than nurses (see table 4.11).

In addition, satisfaction levels were less than 80% target denoting the need for improvement by both doctors and nurses. The results were more positive than those in China where they recorded a weak negative correlation r = -0.025-0.327 (Tiryaki et al., 2020). The differences could be caused by social economic variations where parents may have low expectation from health services provided and tends to continue to utilise the facility even when the quality of standards are low. In addition, the larger sample size and questionnaire items in the current could have contributed to higher scores than the others.

5.4 Predictors of parental satisfaction with quality of neonatal care.

The study used multiple binary logistic regression to determine the association between parental satisfaction and two or more predictors of satisfaction. Three variables were identified: tribe, income, and admission ward. Mothers from the Chewa tribe were 0.37 times less likely to be satisfied with neonatal care. The researcher did not come across literature denoting the association of parental/patient satisfaction and Chewa tribe. However, it may be argued that parents assume that everyone knows their beliefs and values preferences, as Chewa is a dominant tribe and language at the study site. Mothers may have higher expectations for care quality due to cultural background and the impact of tribes' values, beliefs, and language which may have an impact on neonatal health. Language and cultural differences influenced interactions between parents and healthcare providers and contributed to miscommunication and higher stress levels in South Africa (Mol, Argent, and Morrow, 2018). The results are different with the present study as mothers with similar background were less likely satisfied with neonatal care. The study's non-exploratory nature may not reveal the cause of dissatisfaction, and future research should allow respondents to share their experiences.

The study found that mothers living below the poverty line were 2.06 times more likely to be satisfied than those living above the poverty line P 0.042. This trend is similar to previous studies in Vietnam and Ethiopia (Nguyen et al., 2020; Alemu, 2021). In Vietnam lower-income parents were more satisfied due to the National Health Policy which provides equal treatment to every newborn. Similar trends could be attributed to similar health system in Ethiopia and Malawi. However, it may also be argued that parents living above poverty line may perceive standards of care to be low as compared to services in private hospital.

The research did not highlight financial constraints faced by parents in NICUs, suggesting that future studies should use a mixed method to explore parents' unique experiences.

Contrary to the findings by McCormick et al. (2008, cited in Hagen et al., 2019) satisfaction levels were reported low among parents with low income. The disparities occur due to nature of participants as they only focused on mothers with premature infants who are mostly dissatisfied as compared to term infants. Furthermore, in a phenomenological study, Mengesha et al., (2020) recorded financial constraints as a challenge for parents in NICU. Additional charges for stock-out medications, and daily costs like food may pose financial difficulties to the parents. Similar challenges are anticipated as a low income country, however, the research design did not provide the opportunity to share their experiences and challenges. Future study should utilize a mixed method to explore parents' unique views and experiences.

The study found that mothers who were nursed separately had 3.23 chances of being satisfaction with neonatal care as compared to those who were rooming-in. This contrasts with previous studies that found separation of parents and neonates to be stressful and negatively impacted family members (Sileshi et al., 2023). The higher satisfaction levels may be due to increased contact between healthcare providers, unlike minimal contact when mothers assume most of the responsibility for neonatal care in combined care wards. Previous studies found that collaboration between healthcare workers and parents reduces length of stay, promotes breastfeeding and parental satisfaction levels (Haile et al., 2024; Nakphong et al., 2021; Ng, Ho and Lee, 2019). The evidence suggest that parents who were separated from their newborns were less likely to be exclusively breastfeeding post-delivery. The study denotes a gap in monitoring of the patients in rooming in wards increasing risk of delayed assessments and care. Healthcare providers should provide equal support to all parents in the unit and manage the neonates equally regardless of the admission ward.

There were some patterns noted though the variables were not statistically significant. For example, Mothers who stayed in the ward for shorter periods were more satisfied than those who stayed longer, and mothers whose babies were doing better were more satisfied than those whose babies were deteriorating. In a systematic review, Haile *et al.*, (2024) recorded that parents whose babies had a shorter length of hospital stay in the neonatal intensive care unit were about three times more likely to report satisfaction with the care delivered compared to parents whose babies had longer hospital stay.

5.5 Reliability of the EMPATHIC-N questionaire

The EMPATHIC-N Chichewa version questionnaire is reliable with a Cronbach alpha of 0.92. The dimensions had a Cronbach alpha ranging from 0.60 on organisation to 0.81 on care and treatment denoting a questionable to good reliability. The tool is universally applicable and comprehensible measure of parental satisfaction for use in various linguistic and cultural contexts (Papamichael, Ioannou and Talias, 2018). The tool is universally applicable and can be modified for use in various linguistic and cultural contexts. The results are slightly lower as compared to the results of the two cohorts of the original version by (Latour et al., 2012; Lake et al., 2020; Tiryaki et al., 2020). The difference may be attributed to the smaller sample size used in the present study and high literacy levels in the developed countries making it easier for the parents to understand and evaluate neonatal care. Furthermore, Gulo et al., (2023) recorded a higher overall Cronbach alpha of 0.96 in a cultural adaptation study that was done in Ethiopia. The domains ranged from 0.74 to 0.98. The higher scores may be attributed to the adaptation process used and the reduction of the questionnaire items. Contrary to this finding, Alle et al., (2022) and Mol, Argent and Morrow, (2018) recorded lower scores in the dimensions with excellent overall Cronbach alpha. The low scores were attributed to the small sample size in South Africa which influenced the statistical analysis in this study. In addition, low literacy levels could have influenced parent's ability to understand and evaluate care received.

5.6 Implications of the study findings

5.6.1 Implications to Nursing practice

The study reveals that parents are utmost satisfied with their newborn care at 68% with all dimensions of the EMPATHIC-N questionnaire above 85%. However, the results denote that there is room for improvement in areas such as staff performance, communication, male involvement and family-centered care. Interventions to train staff and implement strategies to promote these aspects is crucial for increased parental satisfaction levels. Daily interaction strategies should be implemented, providing parents with information about their neonate during ward rounds or where necessary regardless of neonate's health status. This empowers parents with decision-making and confidence in caring for the neonate. The use of technology, such as phones should be encouraged to keep parents updated on their neonate's treatment plan and prognosis. Nurses' conduct and practice should be up to standard to promote the utilization of neonatal health facilities.

5.6.2 Implications to nursing education

The study showed that majority of the respondents expressed high levels of satisfaction in healthcare behaviours, care and treatment, professional attitude and ward organization despite lower levels of the overall satisfaction. In addition, there was some evidence of the lack of knowledge on patient’s right and obligation which needs to be emphasized during training of medical personnel in order to promote awareness and improve the community knowledge and ability to evaluate the care provided to them**.** Furthermore, nursing training should focus on evidence based practice such as respectful neonatal care, FCC, quality improvement interventions and community sensitization about neonatal care to help increase awareness and parental satisfaction with neonatal care.

5.6.3 Implications to nursing research

The literature review indicates few studies done to assess parental satisfaction with quality of neonatal care services in Malawi. Therefore, future research in neonatal care should scale up and provide national wide information on levels of satisfaction, factors influencing parental satisfaction and promoting satisfaction with neonatal care services. Furthermore, there is a needs to conduct a validation study to identify a shorter version of the data collection instrument to be used in different clinical sites to assess parent's satisfaction at all levels of the health care delivery.

5.6.4 Implications to Policy or Nursing administration

According to the results, 68% of the parents were satisfied with neonatal care. There was no male involvement in neonatal care with mothers mostly dissatisfied with communication, and organization of the neonatal unit activities. Nursing managers should develop and reinforce on the family centered care approach and other clinical policies to address the unmet need of the parents and their neonate in the neonatal unit. Furthermore, there should be staff training and parent's sensitization on their sick child right and care protocols which increases demand for quality neonatal standards.

5.7 Conclusion

The study found that parental satisfaction with neonatal care outcomes is 68%, indicating moderate contentment among parents. Factors affecting parental satisfaction include education, tribe, neonatal health condition, and admission ward. Low income status and being nursed separately with the neonate increased satisfaction levels. The results are comparable to other NICU settings in developed and developing countries. Future research should target multiple sites, different care levels, and use interventions to increase parental satisfaction. Emphasizing parent empowerment and male involvement in neonatal care can help reduce neonatal mortality and increase satisfaction levels. Healthcare providers have a critical role in ensuring high parental satisfaction and provision of quality neonatal care according to the set standards.

5.8 Recommendations

Following the results of the study, the following recommendations have been made to:

5.8.1 Recommendations to the Hospital Management at KCH EMNU

1. Implement regular training sessions for healthcare staff to improve communication skills, ensuring that they can effectively convey the information and provide emotional support to parents.
2. Establish a protocol for providing consistent and clear updates to parents regarding their newborn's condition, treatment plans and prognosis.

3. Improve infrastructure and communication systems by investing in modern communication systems that enable heathcare providers to easily reach parents through phone or digital platforms.
4. Upgrade the physical environment of neonatal units to enhance comfort, privacy, and accessibility for both fathers and mothers.
5. Assign dedicated staff members/time to handle parental inquiries and provide timely updates, ensuring consistent and reliable communication.

5.8.2 Healthcare providers at KCH EMNU

1. Create and promote support groups for parents to share their experiences and receive emotional support from both professionals and peers.
2. Intergrate counseling services within neonatal units to help parents cope with the emotional stress of having a newborn in intensive care and encourage them to participate in care through hands on experience to promote confidence levels.
3. Participate in the training and implementation of family centred care and empower males with knowledge, skills and opportunities for them to be involved in neonatal care.
4. Make effort in the provision of accurate, timely and honest information about neonatal condition, treatment and prognosis.

5.8.3 Recommendation to the Government through Ministry of health.

1. The Government through the Ministry of Health should continue to advocate for quality improvement and take part in projects to evaluate satisfaction levels in both public and private hospitals.
2. The Government through Ministry of health and interested Non-Governmental Organization should organize for initial training and refresher courses on quality neonatal care and satisfaction surveys to promote teamwork and collaboration in increasing parental satisfaction levels.
3. The Government through the Ministry of Health should provide adequate funding to Health Institutions for procuring medical supplies, equipments and infrastructure development to enhance quality of neonatal care.
4. There is need to provide grants and funding for research and innovative discovery to aid in quality improvement project in neonatal care and promote parental satisfaction levels.

5.8.3 Recommendation to nursing research

1. Future research should include intervention studies to aid in raising awareness of factors influencing parental satisfaction levels.
2. These findings, along with many more, should be disseminated globally to help address the challenges of high neonatal mortality, and provide a baseline information on the levels and factors contributing to parental satisfaction with neonatal care.

5.9 Strength of the study

The use of a validated instrument to measure parental satisfaction ensures the reliability and validity of the data collected. A validated tool minimizes measurement errors, allowing for consistent assessment across different respondents and enhancing the credibility of the findings. The sample size of 250 was sufficient for robust statistical power for analysis. This enables reliable drawing of conclusion and generalization of the results within the study population. In addition, the direct administration of the instrument ensured high response rate and the use of KOBO tool box reduced the likelihood of misinterpretation and incompleteness of responses respectively. Finally, the cross-sectional design provides a snapshot of parental satisfaction at a specific point in time and identifying trends and associations that can guide immediate interventions or further research in improving neonatal care services. For instance, identification of lack of male involvement, inadequate use of technology for communication and timely communication to parents about neonatal condition and treatment plan would assist in improving neonatal care.

5.10 Limitations

As a cross-sectional study data was recorded at one particular moment in time, thus data may not account for shifts in satisfaction brought on by changing conditions, such as better services or short-term problems like staff shortages. In addition, the research design cannot prove causality. For instance, even if Chewa tribe predicted low levels of parental satisfaction, this does not prove that the tribe was the source of the satisfaction as other factors may influence satisfaction levels. Furthermore, the study design would not delve deeply into the reasons behind satisfaction or dissatisfaction, limiting the study's explanatory power. In addition, social desirability bias may cause participants to give less than or untruthful answers, particularly in situations when parents may be afraid of the consequences of giving unfavorable feedback regarding hospital services. Parents were therefore, encouraged to voice out concerns and were interviewed away from the neonatal unit to minimise bias. Future research should involve adopting longitudinal designs, triangulating data sources, and incorporating qualitative methods to capture a more comprehensive view of parental satisfaction.

5.11 Dissemination and utilisation of findings

The findings will be presented to relevant stakeholders such as UNZABREC, COMREC, Kamuzu Central Hospital Research Committee, the University of Zambia –School of Nursing Sciences, UNZA Medical Library, and the KUHeS library. Hard copies were going to be submitted to the School of Nursing Sciences, UNZA Medical Library and Kamuzu Central Hospital. Furthermore, the findings were going to be published in peer-reviewed journals, presented at national and international conferences to enhance quality of neonatal care services worldwide.

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APPENDICES

Appendix 1: Study Period

Activity	May 2024	June 2024	July 2024	Aug 2024	Sept 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	April 2025
Proposal writing/approval												
Trainings and pretesting												
Data collection and entry.												
Data analysis												
Dissertation writing												
Defending dissertation												
Submission of document												

Appendix 2: Research budget

Activity /Item	Quantity	Frequency	Unit Cost (MK)($)	Total Cost (MK)($)
Training of research assistants	2	1	40,000 ($23.6)	80,000 ($47.2)
Data collection and entry	2	60	4,000 ($2.36)	480,000 ($282.4)
Airtime	3	1	5,000 ($3)	15,000 ($8.82)
Stationary				
Ball pens	10	1	3,500 ($2)	35,000 ($20.6)
Ream of papers	3	1	15,000 ($8.82)	45,000 ($26.5)
Lever arch file	2	1	3,500 ($2)	7,000 ($4.1)
Paper perforator	1	1	5,000 ($3)	5,000 ($3)
Printing consent forms	275	2	50 ($0.03)	37,500 ($22)
Printing of proposal	2	1	10,000 ($5.9)	45,000 ($26.5)
Printing of dissertation	4	1	25,000 ($14.7)	100,000 ($59)
Logistics				
Airticket for data collection	2	1	495,000 ($291)	990,000 ($583)
Transport for local running	45	3	3,000 ($1.76)	405,000($238.2)
Compensation	275	1	1,000 ($0.6)	350,000 ($206)
Ethical clearance				
KCH Research committee	1	1	60,000 ($35.3)	60,000 ($35.3)
UNZABREC (ZK1500) & NHRA Fee (ZK2010)	1	1	300,000 ($176.5)	300,000 ($176.5)
Subtotal				**3,049,400($1794)**
10% KUHeS overheard fees				304,940 ($179.4)
Total				**3,171,840 ($1811)**
Contingency (10% of total)				317, ,184 ($181.1)
Grand Total			3,489,024 ($1992)	

Appendix 3A: Participants' Research Consent Form

Permission to participate in a study on parental satisfaction with the quality of neonatal care services provided at KCH EMNU in Lilongwe, Malawi.

Introduction

I am (representing) Mary Chibaya Mkandawire, a postgraduate student at the University of Zambia, School of Nursing Sciences, pursuing a Master of Science in Neonatal Nursing. Partial fulfilment of the program requires conducting research, hence the reason for conducting this study. As parents of neonates admitted to the nursery unit, your participation in this study is crucial and highly valued. The insights and experiences shared will significantly contribute to our understanding of neonatal care. I request your participation in this study.

Purpose of the Study

This study assesses parental satisfaction with quality neonatal care at KCH EMNU. The study will help to understand the quality of services offered and design interventions to improve the quality of neonatal care services and reduce neonatal mortality.

Study Procedure

If you agree to participate in this study, you must consent before the interview. You will be asked general and specific questions, including social demographic data and other questions, to help us measure your satisfaction with the quality of the neonatal care services. It will take less than 30 minutes. Please note that this is not an experimental study; as such, no sample will be collected, and no intervention will be carried out.

Benefits and Risks

There are no direct benefits for the participants. However, the results from this study will help hospital managers and other stakeholders to find measures to improve the quality of neonatal care services, hence increasing the uptake of the services and parental satisfaction. The study will further help parents to actively participate in care of their sick children.

Participation will help in reducing preventable neonatal deaths as the parents will comply with medical and nursing treatment. There are no monetary benefits for those parents participating in this study. However, MK1000 will be given as compensation for your time spent in responding to the questions and the delay in going home. No risks or physical harm are associated with this study, but if you feel uncomfortable with other questions, you are free not to answer them.

Rights of the Participants

Participation in this study is voluntary, and you are free to refuse or withdraw from participating if you feel so at any point during the study process. Note that refusing or withdrawing from this study will not affect the care of the sick neonate, and there is no penalty in any form.

Contact for Additional Information

Questions or any concerns about this study should be addressed to the following:

- Principal Investigator: Mary Chibaya Mkandawire. School of Nursing Science, P.O. Box 50110, Lusaka, or KUHeS, School of Maternal, Neonatal and Reproductive Health, Private Bag 1, Lilongwe. Telephone number: +260771569418/+265993039961. Email: marykatengeza@gmail.com.
- The Chairperson, University of Zambia, Biomedical Research Ethics Committee, P.O. Box 50110, Lusaka. Phone number: +260-1-256067; Email: s.munsaka@unza.zm. Or
- The Chairperson, College of Medicine Research and Ethics Committee (COMREC), Private Bag 360, Chichiri, Blantyre 3. Telephone: 0888118993. Email: comrec@medcol.mw.

Confidentiality and Privacy

The interview will be conducted in a closed room to make sure that nobody should hear what you are saying. In addition, the data collectors will not share the information collected with anybody else. The questionnaires will be kept in a lockable cupboard and accessed by the research team only, including the researcher, the research assistants, and supervisors.

The results will be published, and information will not be known that these are your views, as no name will be indicated on the questionnaire.

Ethical Approval

This study has been authorized by the Hospital Director, KCH, through the Research Committee. Ethical approval will be obtained from UNZABREC, the National Health Research Authority of Zambia, and the College of Medicine Research and Ethics Committee.

Consent Statement

I have been informed of the study to assess parental satisfaction with the quality of neonatal care services provided at KCH-EMNU. The interviewer has explained the purpose and nature of the study. In addition, there are no monetary benefits and no risks associated with this study. Furthermore, the information collected will be confidential. The interviewer also explained that participating in this study is voluntary, and I can withdraw at any time if I feel like doing so.

I hereby voluntarily give my informed consent to participate in this study.

………………………………………………………………… ………………………

Participants 'signature/thumbprint Date

…………………………………………………………………….. ……………………….

Researcher signature Date

……………………………………………………………….…. ……………………

Witness's signature Date

Appendix 3B: Chilolezo cha wotenga nawo mbali pa kafukufuku.

Kafukufuku wofufuza m'mene makolo akukhutitsilidwa ndi thandizo la zaumoyo lomwe limaperekedwa kwa ana akhanda omwe agonekedwa, pa chipatala chachikulu cha KCH, mu mzinda wa Lilongwe, Malawi.

Malonje

Ine ndine (woyimilira) Mary Chibaya Mkandawire yemwe ndi wophuzira pa sukulu ya ukachenjede yosula wophunzira za umoyo ya ku, Zambia. Ndikupanga kafukufukuyu ngati mbali imodzi yofuna kukwanilitsa maphuziro. Inu mukupemphedwa kutenga nawo gawo mukafukufukuyu.

Cholinga cha kafukufukuyu

Cholinga cha kafukufukuyu ndikupeza mmene makolo amakhutitsidwira ndi thandizo lamakanda omwe agonekedwa muchipatala chachikulu cha KCH. Zotsatila kafukufukuyu zidzathandiza kupeza njira zomwe zingathandizire kuti chithandizo cha anawa chikhale chapamwamba komanso tichepetse chiwerengero cha imfa ya ana amakandawa.

Ndondomeko ya Kafukufuku

Ngati mwavomereza kutenga nawo mbali pakafukufukuyu, mukupemphedwa kusainira kuvomereza kwanu. Ndipo mudzayankha mafuso okhudza mbiri ya moyo wanu. Muyankhaso mafuso omwe atithandize kuyeza m'mene mwakhutitsiridwa ndi chithandizo chomwe mwana wanu komanso inu mwalandira pachipatala pano. Izi zitenga nthawi yosaposera mphindi 30. Kafukufukuyu, palibe kulandira thandizo loonjezera komaso palibe kupimana magazi ndi zina ndi zina.

Ubwino ndi Kuopsa

Ubwino wakafukufukuyu ndiwakuti zotsatila zake zidzathandiza kupititsa patsogolo ndondomeko zabwino zothandizira makanda omwe sanathe masiku 28. Kuonjezera pamenepo palibe phindu la ndalama kamba kolowa nawo mukafukufukuyu.

Koma chifukwa choti ndakuchedwetsani mulandire MK1000 ngati chipepeso. Kafukufukuyu alibe zoopsa zina zilizose koma ngati pali mafuso oti simumasuka kuyankha musadzikakamize kutero.

Ufulu wa Otenga Mbali

Kutenga mbali mukafukufukuyu sikokakamiza ndipo muli ndi ufulu osiya kuyankha mafunso nthawi ina yiliyose pamene mwafuna kutero. Izi sizikusonyeza kuti mukakana kutenga mbali kapena mukasiira pa njira kuyankha mafuso mwana kapena inu simulandira chithandizo kapena chilango china chilichose.

Kudziwa Zambiri Zakafukufuku Ameneyu

Ngati pali mafunso kapena madandaulo ena aliwonse okhudza kafukufukuyu mutha kuimba phone kapena kulemba kalalata kwa anthu awa:

- Wofufuza, Mary Chibaya Mkandawire. School of Nursing science, P.O. Box 50110, Lusaka, or KUHeS, School of Maternal, Neonatal and Reproductive Health, Private Bag 1, Lilongwe, imbani pa nambala izi: +260771569418/+256993039961. Keyala: marykatengeza@gmail.com.
- Wa pa mpando woyang'anira kuti kafukufuku akutsatira njira yoyenera, University of Zambia, Biomedical Research Ethics Committee, P.O. Box 50110, Lusaka. Phone number: +260-1-256067; E-mail: s.munsaka@unza.zm. Or
- Wa pa mpando woyang'anira kuti kafukufuku akutsatira njira yoyenera, College of Medicine Research and Ethics Committee (COMREC), Private Bag 360, Chichiri, Blantyre 3. Telephone: 0888118993. Email: comrec@medcol.mw.

Kusunga Chinsinsi

Kafukufukuyu achitikira mu chipinda chomwe chikhale chotseka panthawi yoyankha mafuso kuti anthu ena asamve. Mayankho omwe mutapereke adzasungidwa mosamala ndipo sadzaonedwa ndi munthu wina aliyese kupatula wofufuza, wothandizira komaso woyang'anira kafukufuku. Dzina lanu silidzalembedwa pa pepala la mafuso ndipo mayankhowo sadzadziwika kuti mwapereka ndinu.

Chilolezo

Mkulu wa chipatala chachikulu cha Kamuzu Central adavomereza kupanga kafukufukuyu komaso bungwe lowona za kafukufuku kuti akutsatira njira zoyenera ku sukulu ya ukachenjede yosula anthu pa za umoyo wa mdziko la Zambia komanso Malawi adaperekaso chilolezo.

Kuvomereza Kutenga nawo Mbali

Ine ndauzidwa za kafukufuku ofuna kupeza mmene makolo akukhutitsiridwa ndi chithandizo chamakanda pa chipatala chachikulu cha KCH mu mzinda wa Lilongwe, Malawi. Ofusa mafunso wandifotokozera cholinga cha kafukufukuyu komanso ndondomeko yake. Kuwonjezera apo wandifotokozeraso kuti palibe phindu la ndalama kamba kotenga nawo mbali pa kafukufukuyu komaso palibe kuopsa kulikonse. Andifotokozeraso kuti mayankho omwe nditapereke adzasungidwa mosamala ndi mwachinsisi. Komaso andiuza kuti ndikutenga nawo mbali pa kafukufukuyu mosakakamizidwa ndipo ndili ndi ufulu wokana kutenga mbali kapena kusiya kuyankha mafuso panjira.

Ine ndamvetsa bwino zakafukufukuyu ndipo ndavomera kutenga mbali mosakakamizidwa

……………………………………………………………. ……………………….

Posayina kapena kudinda wotenga mbali Tsiku

……………………………………………………… …………………………………

Posayina wofufuza Tsiku

………………………………………………………… ………………………………….

Posayina mboni/wothandizira kafukufuku Tsiku

Appendix 4A: Parental /Guardian Consent for Participants below the age of 18 years.

Permission to participate in a study on parental satisfaction with the quality of neonatal care services provided at KCH EMNU, Lilongwe, Malawi.

Introduction

I am (representing) Mary Chibaya Mkandawire, a postgraduate student at the University of Zambia, School of Nursing Sciences, pursuing a Master's of Science in Neonatal Nursing. Partial fulfillment of the program requires conducting research hence this study. I request your consent for your child to participation in this study which is targeting parents with neonates admitted in the Nursery unit.

Purpose of the Study

This study aims at assessing parental satisfaction with the quality of the neonatal care services at KCH EMNU. This will help to have knowledge of the quality of neonatal services offered and help to design interventions to help improve the quality of neonatal care services and reduce mortality.

Study Procedure

If you agree that your child should participate in this study, you are requested to give consent before the interview. The laws of Malawi require a parent or relative aged 18 years and above to consent on the behalf of any person under 18 years to participate in the study since she/he is considered a child who cannot make the decision alone. There are questions on social demographic data and other questions to help assess satisfaction levels with the neonatal care service. This will take less than 30 minutes. This is not an experimental study, therefore no sample will be collected and there is no intervention to be carried out.

Benefits and Risks

There are no direct benefits for the participants, but this study's results will help neonatal care providers improve the quality of services. This will further help reduce preventable neonatal deaths as stakeholders will incorporate measures to increase satisfaction levels.

Parent participation will promote neonatal health as parents comply with medical and nursing treatment. There are no monetary benefits for parents participating in this study. However, MK 1,000 will be given as compensation for the delay. There are no risks or physical harm associated with this study but if your child feels uncomfortable with other questions, he/she is free not to answer.

Rights of the Participants

Participation in this study is voluntary and you are free to refuse or withdraw your child from participating if you feel so at any point in time during the study process. Note that refusing or withdrawing from this study will not affect the delivery of the neonatal services and there is no penalty in any form.

Contact for Additional Information

Questions or any concerns about this study should be addressed to the following:

- Principal Investigator, Mary Chibaya Mkandawire. School of Nursing science, P.O. Box 50110, Lusaka, or KUHeS, School of Maternal, Neonatal and Reproductive Health, Private Bag 1, Lilongwe, Telephone number: +260771569418/+265993039961. Email: marykatengeza@gmail.com.
- The Chairperson, University of Zambia, Biomedical Research Ethics Committee, P.O. Box 50110, Lusaka. Phone number: +260-1-256067; E-mail: s.munsaka@unza.zm. Or
- The Chairperson, College of Medicine Research and Ethics Committee (COMREC), Private Bag 360, Chichiri, Blantyre 3. Telephone: 0888118993. Email: comrec@medcol.mw.

Confidentiality and Privacy

The interview will be conducted in a closed room to make sure that nobody should hear what your child will be saying. In addition, the data collectors will not share the information collected with anybody else. The questionnaires will be kept in a lockable cupboard which is going to be accessed by the research team only which includes the researcher, the research assistants and supervisors.

The results will be published and information will not be known that these are your child's views as there will be no name indicated in the questionnaire.

Ethical Approval

This study has been authorized by the hospital director at KCH through KCH Research Committee. The ethical approval has been obtained from the University of Zambia Biomedical Research Ethics Committee, the National Health Research Authority of Zambia and College of Medicine Research and Ethics Committee.

Consent Statement

I have been informed of the study to assess parental satisfaction with quality of the neonatal care services provided at KCH EMNU, Lilongwe, Malawi. The interviewer explained the purpose and the nature of the study. In addition, it has been explained to me that there are no monetary benefits and no risks associated with this study. Furthermore, it has been explained that the information collected will be confidential. The interviewer also explained that participating in this study is voluntary and my child can withdraw at any time if he/she feels so.

I hereby voluntarily give my informed consent for my child to participate in this study.

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Participants 'signature/thumbprint Date

….……………………………………………………………… ……………………………

Researcher signature Date

………………………………………………………………….. …………………………….

Witness's signature Date

Appendix 4B: Chilolezo cha kholo/m'bale mmalo mwa otenga mbali wochepera zaka 18

Kafukufuku wofufuza m'mene makolo akukhutitsidwira ndi thandizo la ana akhanda likuyendera pa chipatala chachikulu cha KCH mu mzinda wa Lilongwe, Malawi.

Malonje

Ine ndine (woyimilira) Mary Chibaya Mkandawire yemwe ndi wophuzira pa sukulu ya ukachenjede yosula wophuzira za umoyo m'dziko la Zambia. Ndikupanga kafukufukuyu ngati mbali imodzi yofuna kukwanilitsa maphuziro. Inu mukupemphedwa kuti mwana wanu alowe nawo mukafukufukuyu.

Cholinga cha kafukufukuyu

Cholinga cha kafukufukuyu ndikupeza mmene makolo akukhutitsidwira ndi thandizo lomwe limaperekedwa kwa ana osakwana masiku 28 omwe agonekedwa pa chipatala cha KCH. Zotsatila za kafukufukuyu zidzathandiza kupeza njira zomwe zingathandizire kuti ana ndi makolo asamalilidwe bwino. Pakutero zidzathandizanso kuti tichepetse imfa za makanda osakwana masiku 28.

Ndondomeko ya Kafukufuku

Inu ngati kholo kapena omuyang'anira mwanayu mukupemphedwa kuti mupereke chilolezo kuti mwana wanu alowe nawo mu kafukufuku. Malamulo a dziko lathu lino la Malawi amafuna kholo kapena m'bale wake wa mwana amene ali ndi zaka 18 kupita mtsogolo kuvomereza kutero kwa mwana wochepera zaka 18 chifukwa chakuti ndi wang'ono ndipo sangathe kupanga chiganizo choyenera payekha. Ngati mwavomereza kutenga nawo mbali pakafukufukuyu, mukupemphedwa kusainira kuvomereza kwanu. Ndipo mwanayu adzayankha mafuso okhudza mbiri ya moyo wake ndi mwana. Ayankhanso mafuso omwe atithandize kuyeza mmene mwakhutitsidwira ndi chithandizo chomwe mwalandira komanso mwana wanu pachipatala pano. Izi zitenga nthawi yosaposera mphindi 30. Kafukufukuyu, palibe kulandira thandizo loonjezera komaso palibe kupimana magazi kapena zina ndi zina.

Ubwino ndi Kuopsa

Ubwino wakafukufukuyu ndiwakuti zotsatila zake zidzathandiza kupititsa patsogolo chithandizo cha ana achichepere osakwana masiku 28 komanso kuchepetsa imfa zawo. Palibe phindu la ndalama kamba kolowa nawo mukafukufukuyu. Koma chifukwa choti takuchedwetsani mulandire MK1000 ngati chipepeso. Kafukufukuyu alibe zoopsa zina zilizonse koma ngati pali mafunso oti simumasuka kuyankha musadzikakamize kutero.

Ufulu wa Otenga Mbali

Kutenga mbali mukafukufukuyu sikokakamiza ndipo mwana wanu ali ndi ufulu osiya kuyankha mafunso nthawi ina yiliyose pamene mwafuna kutero. Izi sizikusonyeza kuti mukakana kuti mwana wanu atenge nawo mbali kapena kusiya kuyankha mafuso panjira salandira chithandizo kapena kulandira chilango china chilichonse.

Kudziwa Zambiri Zakafukufuku Ameneyu

Ngati pali mafuso kapena madandaulo ena aliwose okhudza kafukufukuyu mutha kuimba phone kapena kulemba kalalata kwa anthu awa:

- Wofufuza, Mary Chibaya Mkandawire. School of Nursing science, P.O. Box 50110, Lusaka, or KUHeS, School of Maternal, Neonatal and Reproductive Health, Private Bag 1, Lilongwe. Imbani nambala izi: +260771569418/+265993039961. Keyala: marykatengeza@gmail.com.
- Wa pa mpando woyang'anira kuti kafukufuku akutsatira njira yoyenera, University of Zambia, Biomedical Research Ethics Committee, P.O. Box 50110, Lusaka. Phone number: +260-1-256067; E-mail: s.munsaka@unza.zm. Or
- Wa pa mpando woyang'anira kuti kafukufuku akutsatira njira yoyenera, College of Medicine Research and Ethics Committee (COMREC), Private Bag 360, Chichiri, Blantyre 3. Telephone: 0888118993. Email: comrec@medcol.mw.

Kusunga Chisinsi

Kafukufukuyu achitikira m'chipinda chotseka panthawi yoyankha mafuso kuti anthu ena asamve nawo. Mayankho omwe mwana wanu atapereke adzasungidwa mosamala ndipo sadzaonedwa ndi munthu wina aliyese kupatula wofufuza, wothandizira komaso woyang'anira kafukufuku.

Dzina la mwana wanu kapena m'bale wanu silidzalembedwa pa pepala la mafunso ndipo mayankhowo sadzadziwika kuti wapereka ndi mwana kapena m'bale wanuyu.

Chilolezo

Mkulu wa chipatala cha KCH adavomereza kupanga kafukufukuyu komanso bungwe lowona za kafukufuku kuti akutsatira njira zoyenera ku sukulu ya ukachenjede yosula anthu a za umoyo mu dziko la Zambia komanso Malawi lidaperekanso chilolezo.

Kuvomereza Kutenga nawo Mbali

Ine ndauzidwa za kafukufuku ofufuza m'mene makolo akukhutitsidwira ndi chithandizo cha ana osakwana masiku 28 chikuyendera pa chipatala chachikulu cha KCH EMNU. Ofusa mafunso wandifotokozera cholinga cha kafukufukuyu komanso ndondomeko yake. Kuwonjezera apo wandifotokozeraso kuti palibe phindu la ndalama kamba kotenga nawo mbali pa kafukufukuyu komaso palibe kuopsa kulikonse. Andifotokozeraso kuti mayankho omwe mwana wanga atapereke adzasungidwa mosamala ndi mwachisisi. Komanso andiuza kuti mwanayu akutenga nawo mbali pa kafukufukuyu mosakakamizidwa ndipo mwanayu ali ndi ufulu wokana kutenga mbali kapena kusiya kuyankha mafuso panjira.

Ine ndamvetsa bwino zakafukufukuyu ndipo ndavomera kuti mwana wanga atenge mbali mosakakamizidwa

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Posayina kapena kudinda wotenga mbali Tsiku

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Posayina kholo/m'bale Tsiku

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Appendix 5A: Assent form for participants aged below 18 years

Permission to participate in the study assessing parental satisfaction with the quality of neonatal care services at KCH EMNU, Lilongwe, Malawi.

Introduction

I am (representing) Mary Chibaya Mkandawire, a postgraduate student at the University of Zambia, School of Nursing Science pursuing a Master of Science in Neonatal Nursing. Partial fulfilment of the program requires conducting research hence this study. I request your assent to participate in this study which is targeting parents with neonates admitted in the nursery unit.

Purpose of the Study

This study aims at assessing parental satisfaction with quality of neonatal care services at KCH EMNU. This will help to have knowledge of the quality of services offered which will help to design interventions to improve on the quality of neonatal care services and reduce mortality.

Study Procedure

If you agree to participate in this study, you are requested to give a written assent before the interview. The laws of Malawi require a parent or guardian aged 18 years and above to give consent on the behalf of any person less than 18 years to participate in the study. Your parent/guardian has consented for you to participate in this study. There are questions that you are supposed to answer that include social demographic data and other questions to help us measure the levels of satisfaction with quality of neonatal care services. This will take less than 30 minutes. This is not an experimental study, no sample will be collected and there is no intervention to be carried out.

Benefits and Risks

There are no direct benefits for the participants but the results from this study will help stakeholders to improve standards of neonatal services. This will further help reduce preventable neonatal deaths as parent's participation is crucial.

There are no monetary benefits for parents participating in this study. However, MK1000 will be given as compensation for delaying the participants. There are no risks or physical harm associated with this study but if you feel uncomfortable with other questions, be free not to answer.

Rights of the Participants

Participation in this study is voluntary and you are free to refuse or withdraw from participating if you feel so at any point in time during the study process. Note that refusing or withdrawing from this study will not affect the delivery of the services to you and your child and there is no penalty in any form.

Contact for Additional Information

Questions or any concerns about this study should be addressed to the following:

- Principal Investigator, Mary Chibaya Mkandawire. School of Nursing science, P.O. Box 50110, Lusaka, or KUHeS, School of Maternal, Neonatal and Reproductive Health, Private Bag 1, Lilongwe, Telephone number: +260771569418/+265993039961. Email: marykatengeza@gmail.com.
- The Chairperson, University of Zambia, Biomedical Research Ethics Committee, P.O. Box 50110, Lusaka. Phone number: +260-1-256067; E-mail: s.munsaka@unza.zm. Or
- The Chairperson, College of Medicine Research and Ethics Committee (COMREC), Private Bag 360, Chichiri, Blantyre 3. Telephone: 0888118993. Email: comrec@medcol.mw

Confidentiality and Privacy

The interview will be conducted in a closed room to make sure that nobody should hear what you will be saying. In addition, the data collectors will not share the information collected with anybody else. The questionnaires will be kept in a lockable cupboard which is going to be accessed by the research team only which includes the researcher, the research assistant and supervisors. The results will be published and information will not be known that these are your views as there will be no name indicated in the questionnaire.

Ethical Approval

This study has been authorized by the hospital Director at KCH through the Research Ethics Committee. The ethical approval has been obtained from the University of Zambia Biomedical Research Ethics Committee (UNZABREC), the National Health Research Authority of Zambia, and the College of Medicine Research and Ethics Committee (COMREC).

Consent Statement

I have been informed of the study to assess parental satisfaction with the quality of neonatal care services provided at KCH EMNU in Lilongwe. The interviewer explained the purpose and the nature of the study. In addition, it has been explained to me that there are no monetary benefits and no risks associated with this study. Furthermore, it has been explained that the information collected will be confidential. The interviewer also explained that participating in this study is voluntary and I can withdraw at any time I feel so.

I hereby voluntarily give my informed assent to participate in this study

……………………………………………………………………… ……………………….

Participants 'signature/thumbprint Date

….…………………………………………………………………. ………………………….

Researcher signature Date

………………………………...…………………………………. ….……………. ….

Witness's signature Date

Appendix 5B: Chilolezo cha wotenga nawo mbali pa kafukufuku a zaka zochepera 18

Kafukufuku wofufuza m'mene makolo akukhutitsidwira ndi thandizo la ana akhanda omwe agonekedwa pa chipatala chachikulu cha KCH mumzinda wa Lilongwe, Malawi.

Malonje

Ine ndine (woyimilira) Mary Chibaya Mkandawire yemwe ndi wophunzira pa sukulu ya ukachenjede yosula wophunzira za umoyo m'dziko la Zambia. Ndikupanga kafukufukuyu ngati mbali imodzi yofuna kukwanilitsa maphunziro. Inu mukupemphedwa kuti mutenge nawo mbali pakafukufukuyu.

Cholinga cha kafukufukuyu

Cholinga cha kafukufukuyu ndikupeza m'mene mmakolo akukhutitsidwira ndi thandizo la ana akhanda likuyendera pa chipatala chachikulu cha KCH mu mzinda wa Lilongwe. Zotsatila za kafukufukuyu zidzathandiza kupeza njira zomwe zingathandizire kukweza umoyo wa ana osakwana masiku 28. Pakutero zidzathandizanso kuchepetsa imfa za anawa ndi kukweza umoyo wawo.

Ndondomeko ya kafukufuku

Malamulo a dziko lathu lino la Malawi amafuna kholo kapena m'bale wake wa mwana amene ali ndi zaka 18 kupita mtsogolo kuvomereza kuti mwana or m'bale wawo atenge nawo mbali pakafukufuku chifukwa chakuti munthu wochepera zaka 18 amatengedwa kuti ndi mwana sangathe kupanga chiganizo choyenera payekha. Kholo/m'bale wanu wavomereza kuti mutenge nawo mbali ndipo nanunso ngati mwavomereza mukupemphedwa kusainira kuvomereza kwanu. Ndipo muyankha mafuso okhudza mbiri ya moyo wanu. Muyankhaso mafuso okhudza mmene mwakhutitsidwira ndi thandizo la mwana komanso makolo pa chipatalachi. Izi zitenga nthawi yosaposera mphindi 30. Kafukufukuyu, palibe kulandira thandizo loonjezera komaso palibe kupima magazi kapena zina ndi zina.

Ubwino ndi Kuopsa

Ubwino wakafukufukuyu ndiwakuti zotsatila zake zidzathandiza kupititsa patsogolo ndondomeko zabwino zothandizira ana akhanda ndikupeza ndondomeko zochepetsera imfa za anawa. Palibe phindu la ndalama kamba kolowa nawo mukafukufukuyu. Koma chifukwa choti ndakuchedwetsani mulandire MK1000 ngati chipepeso. Kafukufukuyu alibe zoopsa zina zilizonse koma ngati pali mafunso oti simumasuka kuyankha musadzikakamize kutero.

Ufulu wa otenga mbali

Kutenga mbali mukafukufukuyu sikokakamiza ndipo muli ndi ufulu osiya kuyankha mafuso nthawi ina yiliyose pamene mwafuna kutero. Izi sizikusonyeza kuti mukakana kutenge nawo mbali kapena kusiya kuyankha mafuso panjira inu kapena mwana simulandira chithandizo kapena kulandira chilango china chilichose.

Kudziwa zambiri zakafukufuku ameneyu

Ngati pali mafuso kapena madandaulo ena aliwose okhudza kafukufukuyu mutha kuimba phone kapena kulemba kalalata anthu awa:

- Wofufuza, Mary Chibaya Mkandawire. School of Nursing science, P.O. Box 50110, Lusaka, or KUHeS, School of Maternal, Neonatal and Reproductive Health, Private Bag 1, Lilongwe. Imbani pa nambala izi: +260771569418/+256993039961. Keyala: marykatengeza@gmail.com.
- Wapa mpando woyang'anira kuti kafukufuku akutsatira njira yoyenera, University of Zambia, Biomedical Research Ethics Committee, P.O. Box 50110, Lusaka. Phone number: +260-1-256067; E-mail: s.munsaka@unza.zm. Or
- Wa pa mpando woyang'anira kuti kafukufuku akutsatira njira yoyenera, College of Medicine Research and Ethics Committee (COMREC), Private Bag 360, Chichiri, Blantyre 3. Telephone: 0888118993. Email: comrec@medcol.mw.

Kusunga chinsisi

Kafukufukuyu achitikira mu chipinda chomwe chikhale chotseka panthawi yoyankha mafuso kuti anthu ena asave. Mayankho omwe mungapereke adzasungidwa mosamala ndipo sadzaonedwa ndi munthu wina aliyese kupatula wofufuza, wothandizira komaso woyang'anira kafukufuku.

Dzina lanu silidzalembedwa pa pepala la mafuso ndipo mayankhowo sadzadziwika kuti mwapereka ndinu.

Chilolezo

Mkulu oyang'anira chipatala chachikulu cha KCH adavomereza kupanga kafukufukuyu komanso bungwe lowona za kafukufuku kuti akutsatira njira zoyenera ku sukulu ya ukachenjede yosula aza umoyo la m'dziko la Zambia komanso Malawi adaperekanso chilolezo.

Kuvomereza kutenga nawo mbali

Ine ndauzidwa za kafukufuku ofuna kupeza m'mene makolo akukhutitsidwira ndi thandizo la ana osakwana masiku 28 obadwa chikuyendera pano pa chipatala chachikulu cha KCH mu mzinda wa Lilongwe. Ofusa mafunso wandifotokozera cholinga cha kafukufukuyu komanso ndondomeko yake. Kuwonjezera apo wandifotokozeraso kuti palibe phindu la ndalama kamba kotenga nawo mbali pa kafukufukuyu komanso palibe kuopsa kulikonse. Andifotokozeraso kuti mayankho omwe ndipereke adzasungidwa mosamala ndi mwachisisi. Komanso andiuza kuti ndikutenga nawo mbali pa kafukufukuyu mosakakamizidwa ndipo ndili ndi ufulu wokana kutenga mbali kapena kusiira kuyankha mafuso panjira.

Ine ndamvetsa bwino zakafukufukuyu ndipo ndavomera kuti nditenga mbali mosakakamizidwa

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Posayina kapena kudinda wotenga mbali Tsiku

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Posayina kholo/m'bale Tsiku

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Posayina wochita kafukufuku Tsiku

Appendix 6A: Adopted and back-translated EMPATHIC-N English version questionnaire

Title: Parental satisfaction with the quality of neonatal care service provided at KCH EMNU in Lilongwe, Malawi.

General Information.

- Identification Number…..……………………………………………………………
- Date of interview…...…….……………………………………..……………………
- Name of interviewer...……………………………………..…………………………..
- Interview starting time…..…………………………………………………………...
- Status of the respondent 1. Admitted 2. Discharged, 3. Follow up care

Part 1: Parents and neonates' social demographic characteristics.

	Modifiable factors	
1.	Participant's age. Specify	
2.	Gender	1. Male 2. Female
3.	Marital status	1. Married 2. Single 3. Divorced 4. Widow
4.	Relationship between the respondent and neonate	1. Baby's mother 2. Baby's father 3. Others……………….....
5.	How many children delivered this pregnancy? Specify	
6.	Place of residence.	1. Rural 2. Urban

7.	Educational level	1. Uneducated 2. Primary 3. Secondary 4. Tertiary
8.	Total income per day. Specify in Malawi Kwacha.	
9.	Ethnic group	1. Chewa 4. Yawo 2. Tumbuka 5. Ngoni 3. Lomwe 6. Other: Specify
10.	Birth weight in grams. Specify	
11.	Gestation age in weeks at birth. Check records and specify.	
12.	How long have you been in the hospital during this admission? Specify	
13.	The current health status of the baby (As compared to when the child was just admitted to the hospital).	1. Improvement 2. No improvement 3. Deteriorating
14.	Have you ever been admitted to the neonatal unit of this hospital before?	1. No 2. Once 3. More than once
15.	Where was the baby admitted?	1. High risk A 2. High risk B 3. Isolation B 4. Kangaroo Mother Care
17.	Do you receive support from the child father/spouse?	1. Yes 2.No

18.	How many times was the father allowed to see the child when he visited? Specify	

PART 2: PARENTS SATISFACTION WITH THE CARE PROVIDED AT THE KCH EMNU.

In this section, ask the parents to describe how they feel about the support they are receiving at the neonatal ward using the following questions. Use the numbers 1 up to 6 as a scale to measure this point. If they agree with this statement, mark the box on the right. But if they don't agree, mark the left side. In some cases, some statements may not agree with what other parents have seen or experienced. In that case, please mark the last box indicating not applicable **(N/A) = 0. Ask parent to indicate one option on each statement asked: 1=Greatly Dissatisfied, 2=Dissatisfied, 3=Slightly Dissatisfied, 4=Slightly Satisfied, 5=Satisfied, and 6=Greatly Satisfied.**

		No			**Yes**			**N/A**
		1	2	3	4	5	6	0
	INFORMATION							
19.	Every day we were discussing the management and support of the baby with the doctors and the nurses.							
20.	Our questions were answered clearly by doctors and nurses.							
21.	The information delivered by doctors and nurses were always the same.							
22.	We were notified quickly when the baby's condition deteriorates.							
23.	We were given clear information about our baby's illness from the doctors and nurses.							
24.	Doctors were clearly explaining the potential problems that may arise due to the treatment that the baby was receiving.							

25.	Doctors and nurses provide clear information about blood tests and other diagnostic tests							
26.	We received clear information about how the drug works in the body from doctors and nurses.							
27.	The doctor explained to us about the expected health outcome of our baby.							
28.	The written information on the posters was clear.							
29.	The message given by the doctors and nurses was clear.							
30.	Doctors and nurses were giving us honest information.							
		No				**Yes**		**N/A**
	CARE AND SUPPORT	**1**	**2**	**3**	**4**	**5**	**6**	**0**
31.	Doctors and nurses were working together.							
32.	Health care workers were attentive to the prevention and treatment of our baby's pain.							
33.	Doctors and nurses are true professionals: and they know what they are doing.							
34.	Appropriate medications were administered at the right time.							
35.	During the time we were admitted to the hospital, the doctors and nurses knew the history of our baby's illness.							
36.	Doctors and nurses show interest in our baby’s growth.							
37.	When our baby's illness worsened, doctors and nurses acted quickly.							
38.	Our child's needs were well met.							

39.	The team of workers had one goal: to take care of support our baby and us							
40.	The doctors and nurses made sure that our baby was comfortable.							
41.	We knew the doctors and nurses who were looking our after baby every day.							
42.	The doctors and nurses gave us advice according our to concerns.							
43.	Doctors and nurses were very helpful with our needs.							
44.	The team of workers took care of our baby and us.							
45.	In difficult times, we had a nurse to help us.							
46.	Our baby was always well looked after by the nurses when nursed on his incubator/bed.							
47.	The transfer of care from delivery room/reffering hospital to the neonatal facility was successful.							
			No		**Yes**			**N/A**
	PARTICIPATION IN CARE	**1**	**2**	**3**	**4**	**5**	**6**	**0**
48.	We participate in making decisions about our baby's care and support.							
49.	We were/are encouraged to stay close to our baby.							
50.	We rely on a team of health professionals.							
51.	We stay close to our baby even when receiving advanced care.							
52.	Nurses encourage us to take part in our baby's care.							
53.	Nurses assisted in strengthening our relationship with our baby.							
54.	The nurses taught us the very important aspects of newborn care.							

55.	Before we left the hospital/during admission, we discussed the management of our baby.							
				No		Yes		N/A
	PERFORMANCE OF WORK.	**1**	**2**	**3**	**4**	**5**	**6**	**0**
56.	We feel safe in the nursery							
57.	Our baby's crib or bed was clean.							
58.	The team of workers works properly							
59.	We are able to communicate with the staff in the nursery, by phone.							
60.	There was enough space around our baby's crib/bed.							
61.	The nursery was very clean.							
62.	There was no noise in the nursery.							
63.	There was a nice and friendly atmosphere in the nursery.							
				No		Yes		N/A
	HEALTH WORKERS BEHAVIOUR	**1**	**2**	**3**	**4**	**5**	**6**	**0**
64.	Nurses and doctors were introducing themselves and explained what they wanted to do.							
65.	We received compassion from the doctors and nurses.							
66.	The team was working in a clean manner.							
67.	The staff maintains the privacy of our baby and us.							
68.	The staff shows respect for our baby and us.							
69.	When they come to visit us, the discussions between the doctors and nurses was only about our baby.							
70.	There was happiness and openness among the workers.							
71.	We were well received by the staff.							

72.	Regardless of the workload, the staff provides adequate attention to our baby and us.							
73.	Our culture was respected.							
74.	At all times, our baby's health was the priority for the doctors and nurses.							
75.	Doctors and nurses take the time to listen to our thoughts.							
	YOUR VIEWS ON CARE	**1**	**2**	**3**	**4**	**5**	**6**	**0**
76.	We would encourage anyone who has a similar problem to use the nursery unit.							
77.	If we ever have the same problem, we will come back to the nursery unit.							

How would you rate the overall performance of doctors and nurses?

		Very poor	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Excellent**
78.	Doctors												
79.	Nurse												

Appendix 6B: Mafunso a mu Chichewa.

Mutu wa kafukufuku: Kukhutitsidwa kwa makolo ndi thandizo la zaumoyo mu chipinda chosamalira makanda pachipatala cha KCH-Ethel Wa Mutharika, Lilongwe, Malawi.

Zofunika za kafukufuku

- Nambala yokudziwirani…..…………………………………………………………..
- Tsiku lofusidwa mafunso…...…….………………………………………..……………
- Dzina la ofunsa mafunso...……………………………………..……………………..
- Nthawi yoyambira kufunsa mafunso…..………………………………………………..
- Panthawi yofunsidwa mafunso 1) Mukadali mchipatala 2)Mukutulutsidwa 3)Mwabwera kudzangowonedwa.

GAWO LOYAMBA: MBIRI YOKHUDZANA NDI KHOLO PAMODZI NDI MWANA.

	ZOSINTHA	
1.	Zaka zakubadwa za oyankha mafunso.	
2.	Chibadwidwe	1. Mwamuna 2. Mkazi
3.	Ubale pakati pa oyankha mafunso ndi mwana wa khanda.	1. Mai wa khanda 2. Bambo wa khanda 3. Ena………………....
4.	Mwabereka ana angati ulendo uno? Tchulani	
5.	Malo okhala	1. Kumudzi 2. Kutauni
6.	Maphunziro	1. Sindinaphunzire 2. Pulayimale 3. Sekondale

		4. Koleji
7.	Mapezedwe a ndalama	1. Wochepera ($1.9(MWK3230) pa tsiku. 2. Yoposa ($1.9(MWK3230) pa tsiku.
8.	Mtundu wa anthu	1. Chewa 4. Ngoni 2. Tumbuka 5. Lomwe 3. Yawo 6. Ena: Tchulani
9.	Kulemera kwa mwana mumagalamu pa nthawi yobadwa. Onani ndi kulemba.	
10.	Mwana anabadwandi masabata angati? Onani ndikulemba.	
11.	Mwakhala nthawi yayitali bwanji m’chipatala? Lembani masiku	
12.	Thanzi la mwana (kuyerekeza nthawi yofunsidwa mafunso ndi mmene amkagonekedwa.	1.Pali kusitha kwabwino 2.Palibe kusintha 3.Wadwalika kwambiri
13.	Mwana anagonekedwa m’chipinda chiti?	1.Isolation A 2.Isolation B 3High risk A 4.High risk B 5.Kangaroo Mother Care
14.	Munayamba mwagonekedwakonso m’chipatala cha makanda muno mbuyomu?	1. Eya 2. Ayi

15.	Ngati mwavomera funso lapamwambali, munagonekedwako kangati? Tchulani	
17.	Mumalandira chithandizo kuchokera kwa bamboo ake amwana?	1.Eya 2. Ayi
18.	Atabwera kudzakuonani, analolezedwa kangati kuti amuone mwana? Tchulani	

GAWO LACHIWIRI: ZOMWE MAKOLO ANAONA ZOKHUDZANA CHISAMALIRO CHAMWANA M'CHIPATALA.

Mu gawo ili, afunseni makolo kuti afotokoze m'mene awonera za thandizo lomwe akulandira mchipatala cha ana pogwiritsa fundo zotsatirazi. Gwiritsani ma nambala 1 mpaka 6 ngati mlingo oyezera mfundoyi. Ngati akugwilizana ndi mfundoyi, achongereni bokosi lakumanja. Koma ngati sakugwirizana nazo, chongani mbali yaku manzere. M'fundo zina sizikugwilizana ndi zomwe makolo ena anaona kapena kukumana nazo. Zikatero, chonde chongani bokosi lomaliza lomwe likusonyeza kusagwirizana (N/A)=0. Funsani makolo kuti asakhepo mligo omwe: 1=Osakhutitsidwa kwambiri, 2=Osakhutitsidwa, 3=Osakhutitsidwa pang'ono, 4=Okhutitsidwa pang'ono, 5= Okhutitsidwa, ndi 6 = Okhutitsidwa kwambiri.

		Ayi					**Eya**	**N/A**
		1	**2**	**3**	**4**	**5**	**6**	**0**
	KAPEREKEDWE KA UTHENGA/CHIDZIWITSO.							
19.	Tsiku lililonse timakambirana za kasamalidwe ndi thandizo la mwana ndi madokotala pamodzi ndi anamwino.							
20.	Mafunso athu amayankhidwa momveka bwino ndi madokotala pamodzi ndi anamwino.							

21.	Uthenga operekedwa ndi madokotala komanso anamwino umafanana nthawi zonse.							
22.	Timadziwitsidwa mwachangu mwana akakhala kuti wadwalika kwambiri.							
23.	Timauzidwa momveka bwino za matenda a mwana wathu kuchokera kwa madokotala ndi anamwino.							
24.	Madokotala amafotokozera bwino zamavuto omwe angadze kaamba kathandizo lomwe mwana akulandira.							
25.	Madokotala ndi anamwino amapereka uthenga womveka bwino okhudzana ndi zoyeza za m'magazi komanso akafukufuku ena ofuna kupeza matenda ena.							
26.	Timalandira uthenga womveka bwino wokhudza m'mene mankhwala amagwilira ntchito m'thupi kuchokera kwa madokotala ndi anamwino.							
27.	Adokotala adatifotokozera zomwe tingayembekezere zokhudzana ndi thanzi la mwana wathu.							
28.	Uthenga wachidziwitso omatidwa pakhoma owerengaomwe timaona umakhala omveka bwino.							
29..	Uthenga operekedwa ndi madokotala pamodzi ndi anamwino unali womveka bwino.							
30.	Madokotala ndi anamwino amatiuza zoona.							
	CHISAMALIRO NDI CHITHANDIZO	**1**	**2**	**3**	**4**	**5**	**6**	**0**
31.	Madokotala ndi anamwino amagwira ntchito limodzi.							
32.	Gulu la ogwira ntchito linali ndi tcheru kupewa ndi kuchiza ululu wa mwana wathu.							
33.	Madokotala ndi anamwino ndi akatswiri enieni: ndipo amadziwa zomwe amachita.							
34.	Mankhwala oyenera amaperekedwa mu nthawi yake.							

35.	Panthawi yomwe amatigoneka m'chipatala, madokotala ndi anamwino anatifunsa mafunso/ mbiri ya matenda a mwana wathu.							
36.	Madokotala ndi anamwino amaonetsa chidwi ndi m'mene mwana wathu akukulira.							
37.	Matenda amwana wathu akakula, madokotala ndi anamwino amachitapo kanthu mwansanga.							
38.	Zofuna za mwana wathu zimakwaniritsidwa bwino.							
39.	Gulu la ogwira ntchito linali ndi cholinga chimodzi: kusamalira ndi kuthandiza bwino mwana wathu ndi ifenso.							
40.	Madokotala ndi anamwino amaonetsetsa kuti mwana wathu adzikhala mwamtidzi (momasuka).							
41.	Timadziwa madokotala komanso anamwino omwe akuyang'anira mwana wathu tsiku lililonse.							
42.	Madokotala ndi anamwino ankatipatsa thandizo lokhudza malingaliro athu							
43.	Madokotala ndi anamwino amatithandiza bwino pa zosowa zathu.							
44.	Gulu laogwira ntchito limasamalira mwana wathu ndi ife tomwe.							
45.	Mnyengo zovutitsitsa, pamakhala namwino otithandiza.							
46.	Mwana wathu amasamalilidwa bwino nthawi zonse ndi anamwino akakhala mu chofungatira/kama lake.							
47.	Kusamutsa kwa chisamaliro kuchokera kwa ogwira ntchito ku chipinda choberekeramo/chipatala chaching'ono kupita kuchipinda chosamalira ana kunayenda bwino.							
	KUTENGA GAWO LOSAMALIRA MWANA	**1**	**2**	**3**	**4**	**5**	**6**	**0**
48.	Timatenga nawo gawo popanga zisankho zokhudzana ndi chisamaliro ndi chithandizo cha mwana wathu.							
49.	Amatilimbikitsa kukhala pafupi ndi mwana wathu.							

50.	Timadalira gulu la ogwira ntchito ya zaumoyo.							
51.	Timakhala pafupi ndi mwana wathu ingakhale panthawi yomwe akumpatsa thandizo lalikulu.							
52.	Anamwino amatilimbikitsa kuti tizitenga nawo gawo losamalira mwana wathu.							
53.	Anamwino amatilumikizitsa ndi mwana wathu.							
54.	Anamwino anatiphunzitsa mbali zofunika zenizeni za chisamaliro cha mwana wakhanda.							
55.	Tisanatuluke/tikadali m'chipatala, tinakambirananso za kasamalidwe ka mwana wathu.							
	KAGWILIDWE KA NTCHITO	**1**	**2**	**3**	**4**	**5**	**6**	**0**
56.	Timamva kutetezedwa m'chipinda chosamalira ana							
57.	Chofungatira kapena kama la mwana wathu linali loyera bwino.							
58.	Gulu la ogwira ntchito limagwira ntchito moyenelera.							
59.	Timatha kulumikizana ndi ogwira ntchito ku chipinda chosamalirako ana a khanda, kudzera pafoni.							
60.	Panali malo okwanira kuzungulira chofungatira/kama la mwana wathu.							
61.	Chipinda chogonamo ana a khanda chinali choyera bwino.							
62.	M'chipinda chosamalira ana a khanda mudalibe phokoso.							
63.	M'chipinda chosamalira ana a khanda munali malo abwino komanso motakasuka.							
	MAKHALIDWE A OGWIRA NTCHITO.	**1**	**2**	**3**	**4**	**5**	**6**	**0**
64.	Nthawi zonse anamwino ndi madokotala amadzitchula dzina ndi zomwe akufuna kuchita.							
65.	Tinalandira chifundo kuchokera kwa madokotala ndi anamwino.							
66.	Gulu la ogwira ntchito limagwira mwa ukhondo.							
67.	Gulu la ogwira ntchito limasunga chinsinsi cha mwana wathu ndi ife tomwe.							

68.	Gulu la ogwira ntchito limasonyeza ulemu kwa mwana wathu ndi ife tomwe.							
69.	Akabwera kudzatiyendera, zokambirana pakati pa madokotala ndi anamwino zimakhala zokhudzana ndi mwana wathu yekha.							
70.	Panali kusangalala ndi kumasukirana pakati pa ogwira ntchito.							
71.	Tinalandilidwa bwino ndi gulu la ogwira ntchito.							
72.	Mosasamala za kuchuluka kwa ntchito, ogwira ntchito amapereka chisamaliro chokwanira kwa mwana wathu ndi ife tomwe.							
73.	Chikhalidwe chathu chinalemekezedwa.							
74.	Nthawi zonse, thanzi la mwana wathu linali patsogolo kwa madokotala ndi anamwino.							
75.	Madokotala ndi anamwino amapereka nthawi yomva maganizo athu.							
	MAGANIZO ANU PA CHISAMALIRO	**1**	**2**	**3**	**4**	**5**	**6**	**0**
76.	Titha kulimbikitsa aliyense amene ali ndi vuto lofanana ndilomweli kugwilitsira ntchito chipinda chosamalira ana akhanda.							
77.	Ngati tingadzakumanenso ndi vuto lomweli, tidzabweranso kuchipinda chosamalira ana akhandawa.							

Mungaike pa mlingo wanji mmene amagwilira ntchito?

		Zoipa kwambiri.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Zabwino kwambiri**
78.	Madokotala												
79.	Anamwino												

Appendix 7: Institution support letter from Kamuzu University of Health Sciences.

KAMUZU UNIVERSITY
OF HEALTH SCIENCES

SCHOOL OF MATERNAL, NEONATAL AND REPRODUCTIVE HEALTH

19th June 2024

To whom it may concern

Dear Sir/ Madam,

SUPPORT LETTER FOR MS. MARY CHIBAYA MKANDAWIRE

I am writing to support Ms. Mary C Mkandawire's proposed research titled Parental Satisfaction with the Quality of Neonatal Care Services Provided at Kamuzu Central Hospital, Ethel Mutharika Nursery Unit, in Lilongwe, Malawi. This research will be housed in our Department of Neonatal Health and is relevant to us.

The study will assess levels and determinants of parent satisfaction with neonatal care at the KCH nursery unit. This research directly aligns with our shared goal of improving Maternal and Child Health, aiming to enhance the quality of neonatal care, promote parent participation, and ultimately, reduce preventable neonatal deaths. This aligns with one of KUHeS's key roles, which is to improve and promote health for all.

The knowledge generated will be incorporated appropriately in both theoretical and clinical teaching to advance the care provided to normal or sick neonates and their families at the hospital and community. Understanding participants' views and determining the factors contributing to satisfaction and dissatisfaction with neonatal care is vital in promoting neonatal well-being. The results would influence practice by providing a valuable framework for health interventions promoting satisfaction.

The proposed study will contribute substantially to providing relevant and acceptable care to neonates and their families.

Yours faithfully,

Eveles Chimala

HEAD OF NEONATAL HEALTH DEPARTMENT

Appendix 8: Kamuzu Central Hospital acceptance letter.

REF. NO. KCH/RESEARCH
TELEPHONE NO.: (265) 753 555
TELE FAX NO.: (265) 756 380

PLEASE ADDRESS ALL COMMUNICATIONS TO: THE HOSPITAL DIRECTOR
E-MAIL: Kch@sdnp.org.mw

Ref : nhsrc/2024

MINISTRY OF HEALTH
KAMUZU CENTRAL HOSPITAL
P. O. BOX 149
LILONGWE
MALAWI
1ST JULY 2024

The Chairman,
Kamuzu University of Health Sciences Research Committee,
Private Bag 360,
Chichiri,
Blantyre 3

Dear Sir,

LETTER OF SUPPORT TO CONDUCT A STUDY TITLED"PARENTAL SATISFACTION WITH THE QUALITY OF NEONATAL CARE SERVICES PROVIDED AT ETHEL MUTHARIKA NURSERY UNIT IN LILONGWE"

Support is hereby being given to the researcher to go ahead and submit their proposal to your distinguished committee.
We will await your committee's scrutiny of the proposal and feedback.
Many thanks.

Jonathan Ngoma
Hospital Director

Appendix 9: Approval from University of Zambia Biomedical Research Ethics Committe

UNIVERSITY OF ZAMBIA

BIOMEDICALRESEARCHETHICSCOMMITTEE

Telephone: +260 977925304 Ridgeway Campus Telegrams: UNZA, LUSAKA P.O. Box 50110 Telex: UNZALU ZA 44370 Lusaka, Zambia

Fax: + 260-1-250753 E-mail: unzarec@unza.zm

Federal Assurance No. FWA00000338IRB00001131 of IORG0000774NHRAR-REC No 2021-05-0002

Your REF. No. 5215-2024 **23rd May, 2024**

University of Zambia,
School of Nursing and Midwifery,

PO Box 50110, **Lusaka.**

Dear Ms. Mkandawire,

RE: PARENTAL SATISFACTION WITH THE QUALITY OF NEONATAL CARE SERVICES PROVIDED AT KAMUZU CENTRAL HOSPITAL, ETHEL MUTHALIKA NURSERY UNIT, IN LILONGWE, MALAWI (REF. NO. 5215-2024)

The above-mentioned research proposal was presented to the Biomedical Research Ethics Committee on 23rd May, 2024. The proposal is **approved**. The approval is based on the following documents that were submitted for review:

a) **Study proposal**

b) **Questionnaires**

c) **Participant Consent Form**

APPROVAL NUMBER : REF. No. 5215-2024.

This number should be used on all correspondence, consent forms and documents as appropriate.

i. **APPROVAL DATE: 23rd May 2024**

ii. TYPE OF APPROVAL : Standard.

iii. EXPIRATION DATE OF APPROVAL : 22nd May 2025

iii. After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the UNZABREC Offices should be submitted one month before the expiration date for continuing review.

iv. **SERIOUS ADVERSE EVENT REPORTING**: All SAEs and any other serious challenges/problems having to do with participant welfare, participant safety and study integrity must be reported to UNZABREC within 3 working days using standard forms obtainable from UNZABREC.

v. **MODIFICATIONS**: Prior UNZABREC approval using standard forms obtainable from the UNZABREC Offices is required before implementing any changes in the Protocol (including changes in the consent documents).

vi. **TERMINATION OF STUDY**: On termination of a study, a report has to be submitted to the UNZABREC using standard forms obtainable from the UNZABREC Offices.

vii. **NHRA:** You are advised to obtain final study clearance and approval to conduct research in Zambia from the National Health Research Authority (NHRA) before commencing the research project.

viii. **QUESTIONS**: Please contact the UNZABREC on Telephone No. +260977925304 or by e-mail on unzarec@unza.zm.

ix. **OTHER**: Please be reminded to send in copies of your research findings/results for our records. You are also required to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study. Use the online portal: unza.rhinno.net for further submissions.

Yours sincerely,

Munsaka.

Prof. Sody Mweetwa Munsaka, BSc., MSc., PhD

CHAIRPERSON

Tel: +260977925304: E-mail: s.munsaka@unza.zm

Appendix 10: Approval from the College of Medicine Biomedical Research Committee

KAMUZU UNIVERSITY

CERTIFICATE OF ETHICS APPROVAL

This is to certify that the COMREC, has reviewed and approved a study entitled:

P.07/24-0930 - Parental satisfaction with neonatal care services provided at Kamuzu Central Hospital, Ethel Muthalika Nursery Unit, Lilongwe Malawi. by **Ms. Mary MKANDAWIRE**

on

16/08/2024

As you proceed with the implementation of your study, we would like you to adhere to international ethical guidelines, national guidelines and all requirements by COMREC some of which are indicated on the next page for your study.

Prof. Eric Umar (Comrec Chairperson)

Approved by
College of Medicine
16/08/2024
(COMREC)
Research and Ethics Committee

Appendix 11: Approval to utilize the EMPATHIC-N questionnaire

Jos Latour <jos.latour@plymouth.ac.uk> Fri, Jan 19, 10:30 AM

Dear Mary

Thank you for the interest in the EMPATHIC-N. I am happy to provide the EMPATHIC-N instrument to use it for your study. The only requirement to use the EMPATHIC-N questionnaire is to reference the original article in all publications and academic outputs that might appear from your study including presentations.

Attached are the following files:

1. EMPATHIC-N the original Dutch version, tested on validity and reliability.
2. EMPATHIC-N, the English version, translated but not tested.
3. The original reference of the EMPATHIC-N questionnaire.
4. Article Wild et al 2005. Suggested method of translation and cultural adaptation.
5. A draft translation protocol (based on Wild et al) that might be helpful for you to use/adapt
6. I also prepared a draft study protocol that might be helpful for you to use/adapt.

(advice is to recruit more parents as in the sample size if you want to do factor analysis, 10 responses per item is needed then).

My advice is to use the method of translation and cultural adaptation described by Wild et al. 2005 (see attached).

Please keep me informed about your study and very much looking forward to seeing your result.

Kind regards,

Jos

Prof. Dr. Jos M. Latour - Professor of Clinical Nursing & Associate Head of School - Research

School of Nursing and Midwifery | Faculty of Health | University of Plymouth |

Portland Square Building A| Room 107b | Drake Circus, Plymouth PL4 8AA | UK

Tel +44 (0)1752 586578| Mob +44 (0)7771 882034| Email jos.latour@plymouth.ac.uk

https://www.plymouth.ac.uk/staff/jos-latour | https://orcid.org/0000-0002-8087-6461