EXPERIENCE OF ADOLESCENT MOTHERS CARING FOR NEWBORNS ADMITTED IN NEONATAL INTENSIVE CARE UNIT AT THE REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM, TANZANIA.

Lulu Gabriel, MD

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By

Lulu Gabriel

A Dissertation Submitted in Partial Fulfillment of the Required for the Degree of Master of Public Health (MPH) of The Muhimbili University of Health and Allied Sciences

October 2024

CERTIFICATION

The undersigned certifies that s/he has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Science a dissertation entitled "**Experience of adolescent mothers caring for newborns admitted in neonatal intensive care unit at the regional referral hospitals in Dar es salaam, Tanzania.",** in fulfillment of the requirement for the degree of Master of Public Health of the Muhimbili University of Health and Allied Science.

Dr. Emmy Metta

(Supervisor)

Ms. Faithness Kiondo

(Co-Supervisor)

Date

DECLARATION AND COPYRIGHT

I, Lulu Gabriel, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other university for similar or any other degree award.

Signature……. Date…….

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DEDICATION

I would like to dedicate this work to my mother Ms. Sarah Rugaimukamu and my family for the unconditional love, support and prayers.

ABSTRACT

Background: Early motherhood remains a significant public health concern globally, particularly in low- and middle-income countries. Tanzania faces a high adolescent birth rate, with implications for neonatal health, as a significant proportion of newborns are admitted to NICU. However, there is limited understanding of the experiences of adolescent mothers caring for newborns in NICU in Tanzania.

Aim of the study: To understand the experience of adolescent mothers caring for newborns admitted in NICU at the regional referral hospitals in Dar es Salaam, Tanzania to provide in-depth information that will contribute to improve healthcare practices and policy formulation in the country.

Methodology: A qualitative phenomenological design was employed, involving in-depth interviews with adolescent mothers caring for their newborns in NICU at three regional referral hospitals in Dar es Salaam. Data was analyzed thematically with support of NVivo 14 software.

Results: Most of the adolescent mothers in the study had positive perception towards care received in NICU, but some experienced fear and emotional distress. They expressed a need for support, particularly in fulfilling maternal roles such as breastfeeding. Communication experiences varied, with most mothers understanding their newborn's diagnosis and treatment plan, but some faced challenges due to healthcare providers' attitudes or lack of attentiveness. Adolescent mothers were generally involved in decision-making about their newborn's treatment but inconsistently. All the mothers emphasized the importance of support from healthcare providers, families, and friends during this challenging time, particularly emotional support and also, some participants identified financial assistance as a significant need.

Conclusion: Providing holistic support to adolescent mothers caring for newborns in NICU is essential for enhancing their well-being and promoting positive health outcomes. This includes improving communication skills among healthcare providers through fostering supportive environments that promote empathy and understanding and addressing financial burdens.

Recommendations: To enhance the NICU experience of adolescent mothers, hospital management should focus on expanding infrastructure to reduce overcrowding, train healthcare providers in empathetic communication to support adolescent mothers, and ensure the availability and affordability of essential medical equipment. Additionally, offering financial aid programs to cover mothers facing financial constraints.

TABLE OF CONTENTS

CERTIFICATION i
DECLARATION AND COPYRIGHT ii
ACKNOWLEDGEMENT iii
DEDICATION iv
ABSTRACT v
ABBREVIATIONS x
DEFINITION TERMS xii
Operational Definitions xii
1.0 INTRODUCTION. 1
1.1 Background. 1
1.2 Problem Statement. 3
1.3 Conceptual Framework 4
1.4 Rationale. 5
1.5 Research Questions. 5
1.5.1 Broad question. 5
1.5.2 Specific questions. 5
1.6 Objectives. 6
1.6.1 Main Objective. 6
1.6.2 Specific Objectives. 6
2.0 LITERATURE REVIEW 7
2.1 Perception of adolescent mothers towards care provided in NICU 7
2.2 Experience of communication with NICU healthcare providers. 8
2.3 Support needed by adolescent mothers in NICU. 10
3.0 METHODOLOGY 12
3.1 Study Design 12

3.2 Study area..... 12
3.3 Study population..... 12
3.4 Sample size and Selection..... 12
3.5 Data collection methods..... 13
3.5.1 Data collection procedure..... 13
3.5.2 Training of Research Assistant..... 13
3.7 Data Analysis..... 14
3.8 Ethical Consideration..... 15
4.0 RESULTS..... 16
4.1 Social demographic characteristics of the study participants..... 16
4.2 Perception of Care Received..... 17
4.2.1 Quality of care..... 18
4.2.2 Family-centered care..... 19
4.3 Communication experience with NICU healthcare providers..... 21
4.3.1 Clarity and understanding..... 21
4.3.2 Involvement in decision making..... 22
4.3.3 Communication constraints..... 23
4.4 Support needed in caring for their newborns..... 24
4.4.1 Emotional support..... 25
4.4.2 Financial support..... 27
4.4.3 Social support..... 28
4.4.4 Practical support..... 28
5.0 DISCUSSION..... 29
5.1 Adolescent mothers' Perception of Care in NICU..... 29
5.2 Communication experience with NICU healthcare providers..... 31

5.3 Support needed in caring for their Newborns 32
5.4 Study Limitations and Mitigations..... 34
6.0 CONCLUSION AND RECOMMENDATIONS 35
6.1 Conclusion 35
6.2 Recommendations..... 35
REFERENCES. 37
APPENDICES 45
Appendix I: Informed Consent Form – English Version 45
Appendix II: Informed Consent Form – Swahili version. 47
Appendix III: In-Depth-Interview Guide – English Version..... 49
Appendix IV: Ethical clearance..... 55
Appendix V: Permission Letter 59

LIST OF TABLE

Table 1: Social Demographic Characteristics of the study participants. 16

LIST OF FIGURE

Figure 1: An adapted WHO quality of care framework focusing on experience of care for maternal and newborn health..... 4

ABBREVIATIONS

ABR	–	Adolescent Birth Rate
FCC	-	Family Centered Care
IDI	–	In-Depth- Interview
IRB	-	Institutional Review Board
NICU	–	Neonatal Intensive Care Unit
NGT	-	Nasogastric Tube
PI	-	Principal Investigator
RA	-	Research Assistant
RHMT	-	Regional Health Management Team
RMNCAH	-	Reproductive Maternal Child and Adolescent Health
RRH	-	Regional Referral Hospital
UNICEF	-	United Nations International Children's Emergency Fund.
WHO	–	World Health Organization.

DEFINITION TERMS

Standard Definitions

Neonate/Newborn: An infant under 28 days of age (1).

Neonatal Intensive Care Unit: A nursery in a hospital that provides around-the-clock care to sick or preterm babies who are under 28 days of age (2).

Adolescent Mother: A girl aged 10-19 years who is pregnant or given birth (3).

Early motherhood: A woman having first child before age 21 (4).

Adolescent Birth Rate: The annual number of births to women aged 15-19 years per 1000 women in that age group (3).

Healthcare provider: Is a trained individual with knowledge and skills to provide preventive, curative, promotional or rehabilitative health care in a systematic way to people, families and communities. They include doctors, nurses, midwives and pharmacists (5).

Phototherapy machine: Works by emitting specific wavelengths of light that are absorbed by the skin to prevent the neurotoxic effects of high serum unconjugated bilirubin (6).

Operational Definitions

Newborn/Neonate: An infant 3 days after birth but under 28 days of age.

Adolescent Mother: A girl aged 15-19 years who has given birth.

Early motherhood: A woman having first child between 15-19 years.

Healthcare provider: Is a doctor or nurse in NICU setting providing preventive, curative, promotional or rehabilitative health care in a systematic way to mothers.

Phototherapy machine: A machine that uses light to treat jaundice in newborns.

1.0 INTRODUCTION.

1.1 Background.

Early motherhood is a significant public health concerns with far-reaching implications. In 2021, 14% of women worldwide gave birth before the age of 18(4). Despite a global decrease in adolescent birth rate (ABR) from 64.5 births per 1000 women in 2000 to 41.3 births per 1000 women in 2023 but rates of change have been uneven across regions with highest rates in low- and middle-income countries (3). As of 2019, adolescents aged 15-19 years in low and middle-income countries, had an estimated 21 million pregnancies each year and led to about 12 million births (3). The estimated ABR in African region was 97 per 1000 adolescents in 2022 (3) while that of Eastern and Southern Africa Region is twice the global rate, at 92 births per 1000 girls (7). Tanzania ranks 17th in Africa with the highest adolescent birth rate and by 2016 one in four adolescents aged 15-19 had begun childbearing (8). Early motherhood remains a prominent issue in Tanzania; according to World Bank report, the ABR in 2021 was 124 births per 1000 adolescents in the country (9).

A child's birth is a significant occasion, but when complications arise and newborns require admission to the NICU, the unexpected and stressful events have profound impact on mothers' emotional, psychological, social and economic wellbeing (10). Studies have shown that adolescent pregnancy is associated with adverse pregnancy outcomes including low birth weight, preterm birth and low APGAR score (11,12) which are among the common conditions requiring neonatal admission to NICU, others are birth asphyxia, congenital malformations, heart conditions, sepsis, and respiratory disease syndrome(13,14). In Tanzania, sepsis, prematurity and birth asphyxia accounts for NICU admission by 15.4%, 18.4% and 26.8%, respectively (15).

The transition to motherhood for adolescents is often marked by unique psychological, social and economic stressors which can significantly impact their ability to care for their newborns in NICU(16). Furthermore, admission of a newborn in NICU disrupts mother-newborn attachment and bonding which is very important for infant development and can also result to distress among mothers(17) and may lead to difficulties in exercising the maternal role(18). Studies have shown that, mothers with newborns admitted in NICU face enormous

amount of social, emotional, psychological and financial challenges that impacts their maternal and self- care (10,19).

The burden of early motherhood is compounded by psychological issues including suicidal ideation, guilt, loneliness, anxiety and stress as experienced by some adolescent mothers (20). These experiences are likely to be magnified when the mother is caring for the neonate admitted in NICU. Additionally, the high cost of caring for neonates admitted in NICU raises concerns about the economic implications of early motherhood and its impact on the quality of care provided in the NICU(21) since most of adolescent girls are either still at school or unemployed hence financially dependent to their families or spouse. Moreover, the communication challenges and lack of supportive relationships with healthcare providers experienced by adolescent mothers in NICU hinder their ability to navigate the complexities of neonatal care (22,23).

Majority of the studies have discussed experience of adult mothers in the NICU (10,17,19,24,25), but less is known about the experience of adolescent mothers in NICU. A meta-analysis review on adolescent parenting in NICU showed that, majority of research focused on parenteral stress and parenting practices among adolescent parents with neonates in NICU (26). Adolescent mothers undoubtedly have particular concerns that should be taken into account, even if it would appear that they and the older mothers had similar experiences in NICU when faced with similar stressors (26).

In Tanzania 18.4% of NICU admissions are due to prematurity (15) and mostly contributed by adolescent pregnancy. Studies on early motherhood have primarily focus on trends, magnitude, and factors associated with adolescent pregnancy and also challenges experienced by adolescent mothers(27). There is limited research and knowledge of experiences of adolescent mothers with newborns admitted to NICU in Tanzania.

Therefore, this study focused on exploring the experience of adolescent mothers caring for their newborns admitted at NICU in Dar es Salaam. By shedding light on these experiences, we can contribute into informing strategies geared towards improving healthcare practices, adolescent mothers' well-being and enhance neonatal care in Tanzania.

1.2 Problem Statement.

In 2021, ABR was 124 births per 1000 adolescents in Tanzania, this shows that early motherhood is still a prevalent issue in the country (9). Studies have shown that early pregnancy is associated with adverse birth outcomes including preterm and low birth weight (11,12), the conditions that accounts for 18.4% of NICU admission in Tanzania (15). Given the higher ABR in the country (9), it is likely that many of the neonates born to adolescent mothers are also admitted in NICU.

Adolescent mothers are a vulnerable group which require support for smooth transition to motherhood since adolescence is a time of physical, emotional, and cognitive development hence immature coping strategies (26). Additionally, most of the adolescents are still in schools and dependent to their families economically and socially making adolescent mothers less equipped in caring for their newborns especially when admitted to NICU.

Majority of studies on mothers in NICU report on adolescent mothers as part of larger NICU parents' population. Others focused on parenteral stress and parenting practices among adolescent parents with neonates in NICU (26). Which showed that just like older mothers, in NICU, adolescent mothers face difficulties in establishing a normal mother-infant relationship (28), have limited understanding of their newborns condition and prognosis (26,29), and other barriers to parenting in NICU such as financial constraints, psychological and emotional stress (19,28,30–33). Hence, there remains a gap in understanding adolescent mothers' specific experiences while caring for their newborns in NICU.

Therefore, this study aimed at exploring the experiences of adolescent mothers who are taking care of their newborns admitted in NICU at regional referral hospitals in Dar es Salaam. This enabled gaining in depth understanding of the adolescent mothers' unique struggles, perceptions of care provided to their neonates, as well as the barriers encountered while accessing healthcare services and support. Such information is crucial for informing targeted interventions and strategies aimed to improve adolescent mothers care experiences for their babies in NICU and neonatal health outcomes.

1.3 Conceptual Framework

The conceptual framework set forth a range of key aspects that aimed to understand the experiences of adolescent mothers caring for newborns admitted in NICU. This framework was adapted from WHO quality of care framework for maternal and newborn health focusing on the experience of care provided in health facilities (34). Experience of care includes first, a mother receive care that is deserving of her respect and dignity, this shapes their perceptions towards the care provided at NICU. Secondly, effective communication with the healthcare providers whereby a mother should feel as though she knows what is going on, what to anticipate and be involved in shared decision making for the wellbeing of their newborns, and lastly, she should have access to support system of her choice whenever needed, be it emotional, social or financial (34,35).

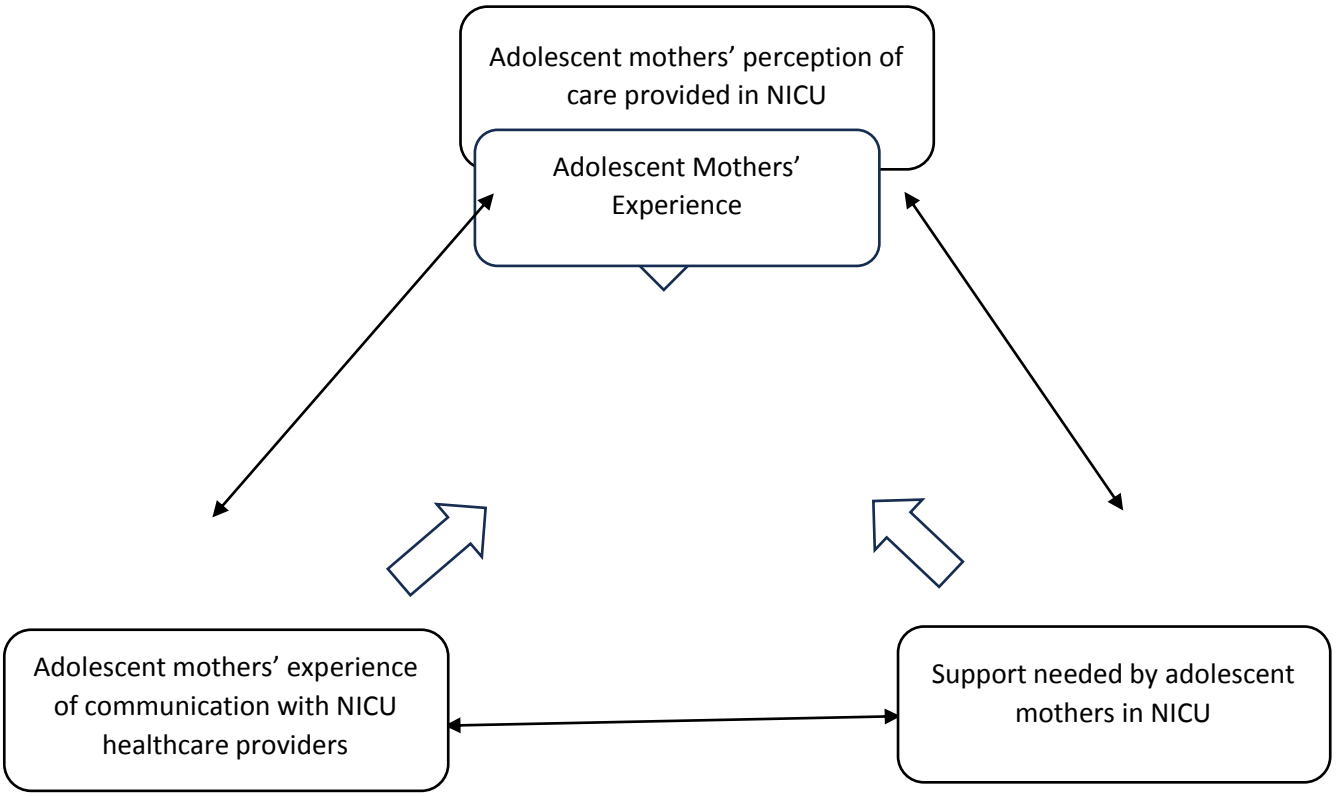


Figure 1: An adapted WHO quality of care framework focusing on experience of care for maternal and newborn health

1.4 Rationale.

Currently, the patient experience is acknowledged throughout the world as an independent component of the quality of healthcare (35). Hence improvement of health care quality in NICU highly depends on information from mothers' experience. By exploring adolescent mothers' perception of care provided to their newborns in NICU, their experience of communication with NICU healthcare providers and support system present when needed by them during this challenging period allowed fully understanding of their experiences.

Findings from this study aim to provide information to healthcare providers working in NICU, hospital administrators and policy makers that will help in development of targeted interventions and support systems tailored to adolescent mothers' specific needs. This will promote their health and well-being during this challenging period and also provide clear directions for quality improvement efforts in NICU.

1.5 Research Questions.

1.5.1 Broad question.

What is the experience of adolescent mothers caring for newborns admitted in NICU at the regional referral hospitals in Dar es Salaam, Tanzania?

1.5.2 Specific questions.

1. What are the perceptions of adolescent mothers towards care provided to their newborns admitted in NICU at the regional referral hospitals in Dar es Salaam, Tanzania?
2. What are communication experiences with healthcare providers among adolescent mothers with newborns admitted in NICU at the regional referral hospital in Dar es Salaam, Tanzania?
3. What support is needed by adolescent mothers when caring for their newborns admitted in NICU at the regional referral Hospitals in Dar es Salaam, Tanzania?

1.6 Objectives.

1.6.1 Main Objective.

To understand the experience of adolescent mothers caring for newborns admitted in NICU at the regional referral hospitals in Dar es Salaam, Tanzania.

1.6.2 Specific Objectives.

1. To explore adolescent mothers' perceptions of care provided to their newborns admitted in NICU at the regional referal hospitals in Dar es Salaam, Tanzania.
2. To explore communication experiences with the NICU healthcare providers among adolescent mothers with newborns admitted at the regional referral hospitals in Dar es Salaam, Tanzania.
3. To identify the support needed by adolescent mothers when caring for their newborns admitted in NICU at the regional referal hospitals in Dar es Salaam, Tanzania.

2.0 LITERATURE REVIEW

This literature review aimed to delve into the perceptions, communication experiences with NICU healthcare providers, and specific needs of mothers caring for their newborns in NICU. By analyzing existing literature on this topic, the study sought to uncover valuable insights that can inform healthcare systems on how to better support and address the needs of this vulnerable demographic within NICU settings.

2.1 Perception of adolescent mothers towards care provided in NICU

Patient perception towards care received at the hospital is shaped by their overall health and disease experience which starts before they enter the healthcare system (35). Adolescent mothers in NICU should receive care with respect and dignity, despite the circumstances that resulted to their motherhood, age difference with the healthcare providers or limited knowledge and understanding of motherhood in NICU (36–38). Dignity and respect should be a priority for healthcare providers (39) in influencing clients' perception on the care provided.

Mothers of newborns in the NICU often experience stress brought by emotions of helplessness, alienation and exclusion and may lack sufficient knowledge to properly care for and engage with their neonates in NICU (40). Studies have shown that implementing Family-centered care (FCC) improves neonatal outcomes in NICU as well as mothers' psychological well-being, satisfaction, knowledge, and skills (41,42). FCC encourages the use of principles of respect for human dignity, family collaboration, information sharing and parenteral involvement in care through suitable tactics and resources that address the needs of the woman as a mother, caregiver and care receiver, with the goal of minimizing any potential trauma that may be caused by their newborns admitted in NICU (43).

The process of adjusting to hospital settings is facilitated when parents take an active role in providing care for their critically ill children, this has been shown to bring positive outcomes (44). Also, when mothers take part in their newborn's care and feel valued and required by them, their negative emotions are lessened hence strengthening the mother's role (44) and influence their perception towards care provided.

Studies have shown that admission of a newborn in NICU disrupts mother-newborn attachment and bonding which is very important for infant development and can also result

to distress among mothers(17) and may lead to difficulties in exercising the maternal role(18). Furthermore, the experience of mothers in NICU are associated with depressive symptoms and psychological trauma(24). Majority of NICUs prohibit parents from spending a lot of time with their newborns, this practice greatly lowers the standard of care and parenteral confidence (44) and affects visitation to the NICU due to long-term maternal distress (45).

Good interaction between the mother-family-healthcare providers ultimately turns the mother into a passive or active participant in their newborns' care, reducing the negative consequences that a hospital stay may have and improving the mother's quality of life and her child's survival (43) since coping with prenatal and parenting stress is a significant struggle for teenage mothers (46) which further expose them to more stress. Hence, exploring adolescent mothers' perceptions towards care provided will give insight on the quality of care provided in NICU.

2.2 Experience of communication with NICU healthcare providers.

Communication between parents and NICU staff has been described as a crucial aspect of the NICU experience, with parents experiencing feelings of being given attention or ignored in their emotional situation (47). Studies have shown that positive communication from healthcare providers can enhance maternal autonomy and engagement in their baby's care, while poor communication can lead to feelings of isolation and frustration (48).

Effective communication promote adolescent mothers' awareness and understanding of their infants' conditions and prognosis hence motivate mothers' active engagement in decision making towards care of their newborns (49). Research indicates that when healthcare providers engage mothers in shared decision-making and provide them with information about their newborn's condition and treatment options, it enhances their sense of control and ownership over the caregiving process (37,50). Involving mothers in decision-making not only empowers them but also ensures that the care plan aligns with their values, preferences, and goals for their newborn's health (51) which facilitates smoother transitions from NICU to home care and promote continuity of care for the infant.

Effective communication between healthcare providers and adolescent mothers in NICU is essential for building trust, providing information, addressing concerns, and promoting parental involvement (28). Access to accurate and understandable information about their neonate's condition, treatment plans, medical procedures, and potential outcomes is crucial for adolescent mothers in the NICU (52). A study found that clear explanations of medical procedures and treatment plans positively influences maternal confidence in care giving, enhances adolescent mothers' understanding of their neonate's health status and promotes informed decision-making (31,37). Additionally, another study emphasized the significance of healthcare providers, especially nurses, in reducing maternal stress by maintaining communication with mothers and providing competent care for their neonates in the NICU (48).

Several barriers may hinder adolescent mothers' communication with the healthcare providers while caring for their newborns in NICU. These include factors such as power dynamics due to age differences between adolescents and healthcare professionals whereby empathetic communication from nurses has shown to help alleviate feelings of guilt or blame often experienced by adolescent mothers (37,38). Others are perceived lack of knowledge or competence by the young mother, limited support systems or resources available to adolescents, language barriers, or cultural norms that discourage active participation (49). Furthermore, it has been shown that supportive interactions can enhance maternal self-efficacy, decrease stress levels, improve mental health outcomes (53), and increase satisfaction with healthcare services (44).

To successfully fulfil the need for effective communication between adolescent mothers and NICU healthcare providers, it is important to know how they experience it (47). Overall, the literature underscores the pivotal role of effective communication between healthcare providers and adolescent mothers in the NICU. By fostering positive and supportive communication, healthcare providers can enhance maternal experiences, promote maternal engagement in newborn care, and potentially mitigate stress and feelings of isolation among adolescent mothers in the NICU.

2.3 Support needed by adolescent mothers in NICU.

Caring for neonates admitted in NICU is a challenging experience, particularly for adolescent mothers who may lack previous parenting experience and face unique social, emotional and economic circumstances. A study done in Uganda showed that mothers of neonates admitted to NICU in a low-resource setting still need a lot of support other than the medical care given to their babies (25). They often require emotional support due to the stress and anxiety associated with their infant's critical condition (24,54). Research suggests that having access to empathetic and compassionate healthcare providers who provide reassurance and encouragement can significantly alleviate emotional distress among these young mothers (38,55). Peer support groups or counseling services focusing on parental self-care have also been found beneficial in providing emotional support (56).

Mothers also require social support from family members, friends, and other support networks (57). This support can include emotional encouragement, practical assistance with daily tasks outside of the hospital setting for example, bringing home cooked meals and clean clothes, transportation to/from the hospital, or simply having someone to talk to who understands their situation (56,58). Studies have shown that social support is crucial for alleviating stress among adolescent mothers in NICU and promoting their well-being(59).

Upon admission to NICU, infants require numerous interventions depending on the severity of their diseases and this impacts the duration of NICU stay which varies from few days to few weeks to few months, all these amounts to increasing cost of care (13,60). According to a study in Michigan, in 2021 the average NICU bill was $4,969 and in 9% of cases where Neonatal intensive care was needed, the bill exceeded $10,000 (61). In developed countries, the cost of NICU care is usually covered by the government or insurance companies, while in many developing nations like Tanzania, the parents are responsible for the significant expense of their infants' admission to the hospital's care (13,62). Studies have shown increase in financial burden on parents during NICU stay increases stress on mothers upon admission of their newborns due to uncertainty associated with the prognosis of their babies and increasing cost which can impact the care received (10) and sometimes result to parents' request for discharge against medical advice in order to get rid of the financial constraints

(63). Hence adolescent mothers also require financial assistance from their families in caring for their newborns.

Studies have shown that supportive interactions with healthcare providers can enhance maternal self-efficacy, decrease stress levels, improve mental health outcomes (53), and increase satisfaction with healthcare services (44), but there is evidence that mothers in the NICU experience a gap between expected and actual support provided by healthcare providers (64).

Adolescent mothers caring for neonates admitted in NICU require various forms of support to navigate the challenges they face. Emotional support from healthcare providers, peer support groups, and counseling services can help alleviate emotional distress (33,44). Practical assistance, such as breastfeeding support and guidance on medical procedures, can enhance adolescent mothers' caregiving skills (33). Access to accurate and understandable information about their infant's condition is crucial for informed decision-making (33,42). Social and financial support from family members, friends, and other support networks is vital for overall well-being (42). Hence, exploring their needed support will inform on the vital requirements in terms of social, financial, psychological and emotional support of adolescent mothers in NICU.

The topic of mothers with newborns in NICU has received a lot of attention in research, but the specific viewpoints of adolescent mothers have not been thoroughly investigated. Previous studies have mainly focused on mothers in NICU as a whole, with some research examining the stress and parenting methods of adolescent parents with newborns in NICU (26). Therefore, this research aims to specifically explore how adolescent mothers perceive the care received in NICU, their communication experiences with healthcare providers, and the support they require while caring for their newborns in NICU, in order to better understand their experiences during this time.

3.0 METHODOLOGY

3.1 Study Design

This qualitative study using phenomenological design was conducted among adolescent mothers with newborns admitted in NICU at the regional referral hospitals in Dar es Salaam. This design was selected owing to its usefulness in extracting in depth information on a specific phenomenon (65).

3.2 Study area.

This study was conducted in three Regional Referral hospitals (RRHs) in Dar es Salaam, namely Amana RRH, Mwananyamala RRH and Temeke RRH located in Ilala, Kinondoni and Temeke Municipal Council respectively. These hospitals serve majority of residents with different backgrounds and socio-economic status in all Municipals in Dar es Salaam according to their geographical locations. They provide regional level referrals to a minimum of 310 public, private hospitals and health centers around them. They also receive referrals from Mkuranga and Kisarawe districts. They have bed capacity of 341, 245 and 304 respectively. All the hospitals have improved NICU facilities and being regional referral hospitals, they receive most cases which require NICU care, hence have a wide range of clients with the information required to address the study objectives.

3.3 Study population

Adolescent mothers caring for their newborns 72 hours post-neonatal admission to NICU at the regional referral hospitals in Dar es Salaam.

3.4 Sample size and Selection.

Purposive sampling was used to recruit participants from the selected RRHs in this study. The principal investigator (PI), with assistance from healthcare providers in the NICU, identified adolescent mothers caring for their newborns by reviewing patient files that indicated the mother's age and date of admission of the newborn. Once identified, the PI personally handled the recruitment process, introducing the adolescent mothers to the study. The PI also arranged interviews at a convenient time for the participants, which were conducted in a designated room outside the NICU department. A total of 15 adolescent mothers caring for their newborns admitted in NICU were interviewed.

Data saturation was reached after thorough probing was done by the PI with no new views or suggestion emerging (66,67).

3.5 Data collection methods.

3.5.1 Data collection procedure

Data was collected through In-Depth Interviews (IDI) conducted by the PI with support from a trained research assistant (RA). The interviews were guided by a semi-structured Swahili IDI guide which included a variety of questions to elicit adolescent mothers' perceptions of care, their communication experiences with healthcare providers and the support needed while caring for their admitted newborns in NICU. The IDI guide was pre-tested with 2 volunteer adolescent mothers caring for their newborns in NICU from Tumbi Regional Referral Hospital and the pre-test findings were used to refine the IDI guide questions before their actual use in the study. The interviews were conducted in a quite designated room at the respective hospitals using Swahili language and was audio-recorded with the mothers' permission to facilitate proper record keeping. The average time taken per interview was 40 minutes.

3.5.2 Training of Research Assistant

The research assistant has a Bachelor degree in Nursing and experience in conducting IDIs, transcription and translation. And before the commencement of data collection the RA was trained for 2 days to understand the aim of this study, research objectives and familiarize with the IDI guide**.** Further to supporting the PI during data collection, the trained RA did daily briefing after each data collection day to address the challenges encountered and communicated feedback on data monitoring and verbatim transcription of the audio-recorded interviews.

3.6 Trustworthiness

Ensuring trustworthiness is crucial in establishing the legitimacy and validity of qualitative findings. The key criteria for ensuring the quality of qualitative research are the elements of

trustworthiness, which are credibility, transferability, dependability, and confirmability (68). To ensure credibility of the study findings, the PI spent prolonged time building rapport, introducing each participant to the study and arranging a convenient time of interview for each participant to ensure participants feel comfortable in sharing their actual experience during this challenging time (68). Additionally, triangulation of data sources was done to help put the findings in context, and provide a foundation for comparison. Transferability was ensured by utilizing in-depth explanations of the methodology and research context during data collection to demonstrate how the results can be applied to different populations, times, context and circumstances.

Confirmability, was upheld by keeping a document with thorough record of everything that happened during the research process to give a clear description of how research influence was controlled and minimized by documenting the researchers' reflections, biases, and decision-making process. This permits the audit trail and guarantees that the conclusions are grounded in the gathered facts and are not unfairly impacted by the researchers' biases.

Dependability of the study was ensured to demonstrate that the research study's conclusions are reliable and consistent through Peer debriefing where the data and initial findings were discussed with researchers and experts in Reproductive, maternal, newborn, child and adolescent health (RMNCAH) to gain diverse perspectives. It was carried out to identify biases, validate the analytical framework, and provide alternative perspectives.

3.7 Data Analysis.

Qualitative data analysis for this study employed Braun and Clarke thematic analysis. Initially, the collected data underwent verbatim transcription done by the research assistant within 48 hours after the data collection. The PI reviewed the transcripts against the audio-recordings to ensure their quality and accuracy before they were imported into qualitative data management software (QSR Nvivo 14) for analysis. To avoid loss or distortion of important details, cultural contexts, and idiomatic expressions, which were essential for understanding participants' experiences and perspectives data analysis was done on the Swahili version of the transcripts (69). Through repeated reading of the transcripts, the PI familiarized with the data and identified preliminary themes and carefully chose quotes that

effectively illustrate various perspectives and patterns relevant to the study objectives. A meticulous examination of the data was done to obtain keywords which are the recurring terms (70,71) to encapsulate the participants' experience. Codding was done to capture the core message of the data (65,70) by development of inductive codes and composition of the thick description followed. Upon finalizing the code structure, it was systematically applied to all transcripts. The codes were categorized into themes that link the research questions and data representing a patterned meaning within data (65,71). Throughout the analytical process, conceptualization of the keywords, codes and themes was done and any newly identified codes were incorporated. Findings were interpreted within thematic areas, and key lessons learned were documented. The reporting phase involved the removal of repetitions, filler words, and hesitations, as they contribute no substantive value to the context and translations to English language was done on the quotations included in the report. Ultimately, the analysis culminated in the presentation of key themes and ideas derived from the study.

3.8 Ethical Consideration.

Ethical clearance was granted by the Institutional Review Board (IRB) of Muhimbili University of Health and allied sciences. The research officers from each hospital provided permission to carry out the study. Participants were informed in detail about the study objectives and their right for participation or withdrawal at any point of the study. Furthermore, they were assured that their information will be confidential and used only for research purposes and also their participation would be anonymous. Adolescent mothers aged 18 and above who were willing to participate were asked for written consent, while for those with less than 18 years consent was sought to both them and their guardians. Understanding the context and nature of the study participants, all mothers were handled with extreme care and gentleness, acknowledging their concerns and addressing their fears while offering emotional support before and during the interview whenever needed.

4.0 RESULTS

4.1 Social demographic characteristics of the study participants

A total of 15 adolescent mothers within the ages of 16 to 19 years were interviewed in this study. This was the first birth to all the mothers and all lived in Dar es Salaam at the moment of delivery and admission. Mothers' education level ranged from primary to secondary school and all had spent 3 to 18 days in NICU during the time of interview. Most of the adolescent mothers were single and unemployed as shown in Table 1.

Table 1: Social Demographic Characteristics of the study participants.

Participant	Age	Marital status	Education Level	Employment status	Person/People Living with	Number of days in NICU
1	18	Cohabiting	Primary	Unemployed	Partner	5
2	17	Married	Primary	Unemployed	Husband	3
3	19	Single	Secondary	Unemployed	Guardian	3
4	17	Single	Primary	Self employed	Parents	3
5	19	Single	Secondary	Unemployed	Guardian	18
6	18	Single	Secondary	Self employed	Friends	4
7	19	Single	Secondary	Unemployed	Parents	4
8	17	Cohabiting	Secondary	Unemployed	Friend	4
9	19	Married	Secondary	Unemployed	Husband	5
10	18	Single	Secondary	Unemployed	Parents	3
11	18	Cohabiting	Secondary	Self employed	Partner	4
12	19	Married	Secondary	Unemployed	Husband	3
13	16	Single	Secondary	Unemployed	Parents	3
14	19	Single	Secondary	Self employed	Guardian	3
15	18	Married	Primary	Unemployed	Husband	4

The findings are presented based on the main themes and sub-themes generated from the data. These includes perception of care received (quality of care received and family-centered care); communication experience with NICU healthcare providers (clarity and understanding, involvement in decision making and communication constraints); and support needed while caring for their newborns in NICU (emotional support, social support, practical support and financial support).

4.2 Perception of Care Received

Most of the adolescent mothers expressed receiving good care from the healthcare providers in NICU. They acknowledged the healthcare providers for treating them with dignity and respect despite their age differences and circumstances that led to their pregnancy. A mother said:

> *"...I am not discriminated because even when they give us health advice, we are all called they do not say you are young or older since you are a mother they give advice…." (Single,18 years)*

Despite good services received, some mothers expressed fear and emotional distress due to this being their first birth, delivering premature newborns and upon admission to the NICU as one mother shared:

> *"... at first, I was afraid because this is my first born, I was afraid to see my baby I could not even touch him, I used to cry… when they give me negative test results, or after checking his weight and when they told me I used to cry because I did not understand…since I was told about his jaundice today, I am just afraid…" (Single, 18 years)*

Another mother expressed concern about potential congenital anomalies resulting from prematurity, reflecting a fear of the unknown, she said:

> *"When I gave birth to my baby at seven months… I was concerned what if he does not have ears or maybe eyes…" (Cohabiting, 18 years)*

Further, mothers felt helpless and incompetent of exercising maternal roles when they were unable to breastfeed their newborns, a mother said:

> *"...I stay there changing diapers for my baby as currently he has greenish poop I am concerned if it is because he is not breastfed or what…other mothers are breastfeeding their newborns I am just there caressing my baby… every time I see my baby I see like… (started crying) I do not even know…" (Cohabiting, 17 years)*

4.2.1 Quality of care

Most of the adolescent mothers complemented the quality of care as seeing improvements in their newborn's conditions, number of the healthcare providers in NICU and presence of comfortable environment to live for them and their newborns throughout admission. One mother shared:

> *"...the treatment I received was good, because my baby is currently doing well, if the treatments were not good, I would have said I do not understand my baby's condition, for that I am thankful also there are beds, sheets are changed every day, you can see how the baby's beds are changed, new sheets... there is a toilet, the services like I told you, there are plenty of doctors available, it is not just one. So honestly speaking, it is good..." (Cohabiting, 18 years)*

Additionally, mothers gratified the presence of important treatments which were helpful to their newborns, also were delighted with delivery of care where the healthcare providers made them aware of their newborn's treatment plans and those treatments were showing positive health outcomes, as one mother quoted saying:

> *"...my baby has received blood transfusion and medication drips...they have been giving him medications up to today. Yesterday they put him on a machine, so up to now he is still on the machine and they have given him medication which he continues to use..." (Married, 17 years)*

Also, mothers reported not to be bothered by NICU visitation system because their main focus and aim was to see improvement in their newborn's condition, one mother mentioned:

> *"... about coming to see my child for a while does not bother me at all because I want my child to recover, even if they told me to come every time and give him what he needs." (Married, 19 years)*

But some mothers faced challenges due to inadequate hospital infrastructures such as number of beds hence had to share beds with other mothers, a mother shared:

"If you dont have a baby, you share the bed with another mother, they should add more beds..." (Single, 19 years)

Others faced challenges due to inadequate number of supplies such as patient clothing, and feeding tools such as NGT tubes. As one mother said:

"The hospital gowns for patients are available honestly, but sometimes you find that there's a shortage... the tubes they use to feed the baby, my baby used it but I see other mothers complaining that they have to buy it. Why are not these things brought here? These things should be provided here for parents to be helped..." (Single, 18 years)

For mothers with newborns having jaundice some faced delays in their newborns' treatment due to limited phototherapy machines as one mother said:

"…when there are many babies, some miss out on the machines..." (Single, 16 years)

And for the mothers whose newborns had to start jaundice treatments on the phototherapy machines they had to buy goggles which reported to be costly as one mothers said:

"Also, for the googles those babies with jaundice wear for them to be placed on the machines, they are sold at twenty-five thousand shillings which is costly…" (Single, 18 years)

4.2.2 Family-centered care

Mothers reported involvement of their caretakers such as biological families, husbands, relatives and friends in caring for their newborns. They also reported involvement of partners (newborn's father) in caring for their newborns as one mother reported:

"My mother, my young sister, my partner and other relatives they all came… my partner comes every day and it gives me joy that they care…" (Cohabiting, 17 years)

One mother reported that her family was disappointed when they found out about her pregnancy, as she was still in college and they had invested a lot in her education. They

transferred her to her aunt, who is currently caring for her. She also mentioned that she is currently on good terms with her mother, but the father of the newborn abandoned her when she told him about the pregnancy.

> *"My mother was dissapointed when she found out I was pregnant she told me... just go to your aunt...I can not bear to see you in this state... because I came from home and went to school, our parents have been looking for money, and I have gotten pregnant... Right now, I am speaking with her well whenever she calls... I informed my patrner about the pregnancy and he disagreed he said he is not able to sire a child, so I should find someone else." (Single, 19 years)*

And another mother reported to be abandoned by both the newborn's father and her biological family, hence she and her newborn were cared for by the hospital's social welfare services and her friend and this contributed to increase in fear and distress to post admission survival.

> *"I lived with him for some time, but when I told him I am pregnant he refused and said it is not his pregnancy…when I was 5 months pregnant, he chased me out of his house…my friend was the one who helped me and told me to come to Dar es Salaam after I told her my situation…because even at home my father did not welcome me back because I was pregnant… Here I was told that the social welfare will help me because my friend rarely comes and she often does not bring food but there are samaritanians who bring me food... I won't go back home, I will just stay here with my friend, if they could not help me when I was pregnant they can't help me now when I am with a child... so I just have to work harder making sure my child has a good life because she is now mine..." (Single, 18 years)*

Although families, friends and relatives visited, but no participant has ever received their newborn's health update and treatment information together with them from the healthcare providers. All the mothers personally informed their families about their newborn's condition and treatment during their visit at the hospital and urged that their families are often not around to receive such information when needed due to competing priorities as one mother shared:

"...we have never been informed of my baby's progress together, when I am informed on my baby's progress by the doctor, I tell my mother... they [family] have their own work, so you find they just bring me food and leave, so I am the one who tells them..." (Single, 19 years)

Some mothers reported family involvement when urgent payments are required for their newborn's treatment.

"…my mother was called yesterday to pay for the equipment needed for treatment… she was given the bill and she went to pay…" (Cohabiting, 17 years)

Although all the mothers were fine, updating their families personally, some showed positivity towards the idea of receiving their newborn's report from the healthcare provider together with their families.

"…this [family involvement] is better but I do not know if that is their system and it is not just me, it is all of us who give information to our relatives..." (Single, 19 years)

4.3 Communication experience with NICU healthcare providers

Most of the mothers reported having good communication with healthcare providers as they were well informed about their newborn's conditions and treatment plans, they also showed readiness to ask questions or request for help whenever necessary. One mother shared:

"Today they told me my baby has jaundice but they have not told me on the treatment plan, I want to go ask them, I feel free asking them, they always answer me well…" (Single, 17 years)

4.3.1 Clarity and understanding

Mothers reported a good understanding towards their newborns condition and this was geared by easy accessibility of information from healthcare providers which was reported to be given daily as one mother said:

> *"...they usually come in the morning when they pass by and explain the condition of the baby, if the condition is bad, they will add more treatment for him…" (Married, 17 years)*

And also showed that healthcare providers use friendly and understandable language while communicating with the mothers as majority were able to provide details of their newborns' reason for admission, treatment plan and prognosis as one mother said:

> *"...my baby was admitted because he has jaundice. Since he was admitted, blood tests have been done and it was found that he needs a blood transfusion. A test was taken yesterday, so he needs a blood test for blood grouping in order to get blood transfusion because his blood levels are low. The jaundice is still there…my baby has jaundice and low blood level. I think his medications are twice a day..." (Married, 19 years)*

They also reported on their enthusiasm to ask questions when they do not understand or when they see any changes on their newborn's condition and comfortability in receiving answers from the healthcare providers as one mother said:

> *"I feel free to ask them questions any time, and they answer me well they have never answered me bad or scold me…" (Married, 19 years)*

4.3.2 Involvement in decision making

The findings showed that most of the mothers were involved in decision making of their newborn's treatment and were pleased by it and added that being involved in decision making increases the sense of ownership of their newborn's treatment. A mother said:

> *"I am involved because doctors always ask for my permission to take my baby for treatment, they ask, am I allowed to leave with your baby to seek treatment elsewhere, or treat him here as I want, that is, allow my baby to go and stay there. I feel good because they involve me in something that is mine..." (Single, 18 years)*

But some reported to do not be involved in decision making and that has led to increase in fear of uncertainty of their newborn's health as one mother shared:

"They wrote the bill and my mother went to pay so my baby could undergo tests, they did not ask me if they should put my baby in the machine, they just told me we are putting him in the machine... I was afraid because I do not know anything and this is my first birth…" (Married, 18 years)

Mothers urged healthcare workers to involve them in decision making regarding their newborns treatment because they are unaware and this would help to ease their fear of uncertainty. One mother said:

"I would suggest that they ask us because some of us are new here and this is our first birth … we do not know about this matter." (Single, 18 years)

4.3.3 Communication constraints

Some of the mothers reported difficulties in communicating with the healthcare providers due to their bad attitude, aggressive speech and not attentively listening to them or attend to their needs when requested as one mother said:

"Nurses sometimes have a bad attitude, even if you call them sometimes they do not come right away... when they find [newborns] drip has come off, they scold you...sometimes I understand them, sometimes I do not understand them at all, and when you ask them, they say we are taking care of babies born today… like today until I cried...I found my baby crying and asked the doctor why my baby is crying...he said we are taking care of newborns, leave, I did not like their words and they do not listen to me, every time you ask them something important they scold you..."(Cohabiting, 18 years)

This has made some of the mothers to refrain from requesting for help or asking questions concerning their newborns health, and others were more distress. A mother said:

"Honestly, I feel very bad because we came here for treatment…you can call a doctor then he comes late or when you request for help, they say wait or tell you to ask another healthcare provider…" (Married, 17 years)

Due to this, mothers' communication with healthcare providers highly depended on their comfortability to seek help from them. Mothers expressed preference to healthcare providers who consistently care for their newborns, others preferred healthcare providers who listens to them, respond when called, provide education and guidance on how to care for their newborns. One mother said:

> *"...there is a doctor who always takes care of my baby, so when I ask him, he answers me well...when we get there, he calls us all, educates and guides us on how to breastfeed our babies and be clean...he insists we should always wash our hands with water every time we touch our babies and when you call him, he comes right away and listens to you and answers in a polite way not aggressively..." (Cohabiting, 18 years)*

Others preferred healthcare providers who are charming, respond politely to their questions as one mother was quoted saying:

> *"…whoever I find very charming, he talks to people politely, I feel like I can also talk to him politely, when I ask questions, he answers politely…I know some who come in the room and talks aggressively, I do not talk to them…" (Single, 18 years)*

And others preferred healthcare providers who admitted them on the first day as one mother said:

> *"I am used to the one who admitted me on the first day, he passes through our babies and guides us and if there is a problem he tells us." (Married, 19 years)*

4.4 Support needed in caring for their newborns

All mothers reported receiving support from healthcare providers, families and friends while caring for their newborns admitted in NICU and this support has made them stronger and at ease during this challenging time.

> *"They [healthcare providers] comfort me which boosts my self-confidence…" (Single, 19 years)*

Another mother reported on the support she has received from anonymous people as quoted saying:

> *"There are people who bring us food, porridge, juice and breads every day in the morning, healthcare providers call us to take the food, they also bring diapers and oil, I do not know them or have their contacts but I am so grateful to them…" (Single, 19 years)*

Generally, all mothers were thankful for the support they have received so far and most of the mothers expressed that the support they received was enough, as one mother said:

> *"I do not need more support from my family because they are caring for me now and they love me." (Single, 17 years)*

But some mothers requested their families not to give up on them during this challenging time, as one mother shared:

> "*…I have received enormous support from my husband I just want him to do not give up on us." (Married, 17 years)*

4.4.1 Emotional support

Most of the mothers received emotional support from their families mostly, from their mothers, some from their partners and other from friends. This support comforted them especially on their worst days and made them stronger to care for their newborns as one mother said:

> *"On days that I feel bad I talk to my mother, I really like talking to her it does not matter how I tell her whether I am crying or not but she is the first person I talk to, she comforts me I feel better…." (Single, 19 years)*

Some of the mothers reported to receive emotional support from healthcare providers which they also found it important as it comforted them, as one mother was quoted saying:

> *"...I started crying and that nurse asked me why I was crying, I told her and she truly comforted me, telling me not to worry because God will help with everything, regardless of whether my relatives are here or not... she comforted me and I truly felt better..." (Single, 18 years)*

But one mother reported receiving no emotional support from the healthcare providers when they clearly saw that she needed it, a mother shared:

> *"When they scolded me, I felt really bad and cried even though they saw me crying they did not caress me at all…" (Single, 18 years)*

And another mother questioned if the healthcare providers are aware of their emotional distress since at times, they do not offer emotional support, one mother shared:

> *"I do not think they know that we feel bad when they give us bad news…" (Single, 19 years)*

Generally, most of the mothers requested for more love from their families while caring for their newborns in NICU. And also, requested for more love and care from the healthcare providers towards their newborns as they spend more time with the newborns than they do and this will decrease stress and mistreatments such as not responding when called or aggressive speech when communicating. One mother said:

> *"I just want my family to love my baby and help me throughout our admission… healthcare providers should also love our babies since they spend more time with them, us we just come and leave but they stay here throughout and also, treat them accordingly…" (Single, 19 years)*

4.4.2 Financial support

The findings showed that participants have received financial support from their families and even to the unmarried couples the newborn's father stepped in to support in the treatment. One mother said:

> *"The baby's father is involved and provide support too because some of the treatment bill is paid by him…" (Single, 18 years)*

Some of the mothers reported to do suffer from financial burden and some are afraid of staying at the hospital longer due to increase in financial constraints to their caretakers. One mother said:

> *"Coming here I was stressed due to money...in the early days I went to a nurse and asked if I can be discharged earlier so as I can save the money that is used to care for us while we are here like the one used for bus fare, my food, keep in mind that there are other people at home who also need to be cared for..." (Single, 19 years)*

Additionally, mothers reported on delay of treatment of their babies due to failure to timely pay for the treatment. One mother shared:

> *"…my newborn was to supposed to do an X-ray in the afternoon but due to financial constraints at home, my mother has no work or business…it is hard for her to get that amount at once…we delayed to pay until the night, after payment she did the X-ray…" (Single, 19 years)*

Most of the mothers requested more financial support from their families and were concerned about the treatment bill as one mother said:

> *"Support from my family is money only because as I continue staying here the bill increases…" (Single, 19 years)*

4.4.3 Social support

Most of the mothers reported to receive social support such as home cooked meals. One mother said:

> *"My family really support me, they bring me food every morning, afternoon and evening…" (Single, 17 years)*

Additionally, some of the mothers reported receiving social support from their fellow mothers at the hospital which boost their strength, relieve stress and comfort them though they did not expect it but its presence was significant for their mental health and wellbeing as one mother said:

> *"...they help me reduce stress. We chat and laugh, and when they come here to see their babies, they say "oh my, the condition of my baby is not good." But when she gets back there, what can you do? You have to get used to it, we sit together and chat, when the time comes to visit and feed our babies we come and just like that..." (Married, 19 years)*

Generally, all the mothers were thankful to their families, parents/guardians and friends for caring and the social support that they provide them with and no one requested for more support as they found it enough. One mother shared:

> *"I find the support provided by my family to be enough, I do not need more…" (Single, 17 years)*

4.4.4 Practical support

Most of the mothers reported to receive practical assistance from the healthcare providers while caring for their newborns in NICU, this kind of support they never thought they needed but its presence was impactful for them and their newborns as one mother shared:

> *"…if the mother is not around and the baby is not in good position, they place the baby in a good position and if the baby's temperature is high, they place the baby on a cooler temperature..." (Single, 16 years)*

5.0 DISCUSSION

The aim of the study was to explore the experience of adolescent mothers caring for newborns in NICU. The themes that emerged were adolescent mothers' perception of care, communication experience with healthcare providers in NICU and support needed while caring for their newborns in NICU.

5.1 Adolescent mothers' Perception of Care in NICU

The study revealed that most of adolescent mothers had positive perception towards care received at NICU. They expressed gratitude for the dignity and respect shown by healthcare providers, despite their young age, the circumstances resulted to their motherhood or limited knowledge and understanding of motherhood as this was the first birth to all the participants. This aligns with existing literature emphasizing on the importance and prioritization of dignity and respect in patient care to foster positive perception of the healthcare system (36–39).

Despite the generally positive feedback, some mothers reported experiencing fear and emotional distress due to challenges as this was their first birth, premature delivery, and/or NICU admission. Mothers also expressed feelings of helplessness and incompetence when unable to breastfeed their newborns which is also reflected in the literature exploring newborns' mothers in NICU (40). But their participation in caring for their newborns like changing diapers and caressing the baby eased the stress as shown by a study by De Sousa Machado et al that taking part in their child's care and feeling required by them lessen their negative emotions and strengthen the mother's role (44). Despite studies showing NICU system prohibits parents from spending a lot of time with their newborns which lowers parental confidence and affecting NICU visitations (44,46) most of the adolescent mothers were not bothered by the visitation system as long as their newborn's health was improved.

The quality of care was generally well-received, with mothers describing the quality of care as seeing improvements in newborn conditions, adequate staffing, and a comfortable environment. A study done in Iran showed that quality care involves sufficient healthcare providers and a supportive environment positively influence patient outcomes (73) and

perception towards care. But still some mothers faced challenges due to inadequate hospital infrastructures, equipment and supplies such as beds, machines and clothing respectively. Which led to discomfort among mothers when sharing beds and delay in treatment of their newborns. A study done in Bangladesh showed that, adolescent mothers faced challenges with hospital infrastructures where mothers sharing beds was a common and serious concern for them (74).

Additionally, studies have shown that implementing family-centered care (FCC) principles improves neonatal outcomes in NICU and mother's psychological wellbeing, satisfaction, knowledge and skills (41,42). Similarly, this study found that, good family involvement in caring for their newborns played a crucial role in adolescent mother's wellbeing, with many newborn's fathers actively participating in caring for their newborns and offering support. However, one mother reported abandonment by both the newborn's father and her biological family, relying on hospital social welfare services and a friend for support. Another mother reported family disappointment due to her pregnancy which resulted to her transfer to live with relatives but later patched things with her mother, this is shown by a study done in South Africa that pregnant adolescents are at increased risk of being abandoned by partners and families. Responses to pregnant adolescents range from anger and disappointment to abandonment, acceptance and forgiveness (20) but this downgrade FCC principles which advocates for family support and has shown its impact on maternal well-being during NICU admission (43).

Furthermore, findings from this study showed that only newborn's mothers participated fully in caring for their newborns in NICU and decision making, healthcare providers treated them with respect and dignity by valuing their inputs, providing clear and comprehensive information on their newborns' condition and treatment plans. Family members were only involved when immediate payments were needed. Studies have echoed the importance of dignity, respect, and information sharing as essential components of FCC, as these build trust and empower parents to be active caregivers throughout the NICU journey (75). The core domains of FCC as explained by the Florida Perinatal Quality Collaborative emphasize that family participation, clear information sharing, and respect for family knowledge are vital for optimizing outcomes and fostering caregiver confidence (76). Additionally, these

studies also emphasize that family-centered models should ideally include all family members in both caregiving and decision-making, beyond financial support alone. Engaging fathers and extended family can improve the continuity and quality of care (75,76) as shown by the study findings that some mothers were open to FCC system since it will actively engage their family in caring for their newborns.

Most of the mothers reported to be able and comfortable updating their families on the newborn's condition acknowledging their families' activities especially during time for information sharing, as many of family members will be working to earn money for their treatments and others preparing meals for their next visits. This aligns with a study in Ghana that found, while FCC was conceptually embraced but practical implementation was inconsistent. Family participation was often limited due to socio-cultural factors, with clinicians struggling to involve families beyond occasional collaboration. Barriers such as limited communication and emotional stress among families were also identified, emphasizing the need for structured systems that facilitate the active engagement of all family members in the care process, including decision-making beyond financial responsibilities (77).

5.2 Communication experience with NICU healthcare providers.

The study has shown that most of the mothers had good communication with the healthcare providers while updating them on their newborn's health status and treatment plan, replying to questions as mothers were knowledgeable of their newborn's condition and treatment and some could provide detailed information, for those who were not aware of the treatment given to their newborns showed readiness to follow up for more information. This aligns with literature that has shown communication between parents and NICU staff is crucial aspect of the NICU experience (47) further promotes adolescent mothers' awareness and understanding of their infants' conditions and prognosis which enhance maternal autonomy and engagement in their newborn's care (48). However, some faced challenges communicating with certain healthcare providers due to issues like bad attitudes or aggressive speech which has been shown can lead to feelings of isolation, frustration and ignored (47,48). And this led to some mothers showing preference to healthcare providers

whom they find comfortable communicating with, such as healthcare providers who were consistent in caring for their newborns, responsive, provided clear education and guidance in caring for their newborns which enhanced their parental engagement and reduce stress as shown in studies that good communication between mother and healthcare providers reduces stress, improves mother's quality of life and child's survival (43,72).

Regarding involvement in decision-making on newborns' treatment plans, most adolescent mothers expressed satisfaction with being included in decision-making processes as it gave them a sense of ownership over their newborn's care. Studies have shown that involvement of mothers in decision-making enhances their sense of control and ownership over caregiving process and empowers them (37,50,51). Nonetheless, some reported not being involved in decision-making which resulted in increased fear regarding uncertainties about their newborn's health.

Participants generally appreciated information accessibility through regular updates during ward rounds by healthcare providers, however, some expressed interest in receiving these updates together with family members present at NICU visits to enhance family engagement as it was shown by a study done in Brazil that family involvement turns a mother into a passive or active participant in their newborns' care, reducing the negative consequences that a hospital stay may have and improving the mother's quality of life (43).

5.3 Support needed in caring for their Newborns

Adolescent mothers highlighted the importance of support from healthcare providers, families and friends, which significantly contributed to their coping mechanisms during their newborns' NICU stay, this is consistent with a study done in Uganda that showed that mothers with newborns in NICU require a lot of support than medical care given to their babies (25).

Emotional support, in particular, was crucial and requested to be provided consistently in alleviating fear, stress and boosting maternal confidence. Others requested more love shown by both healthcare providers and families towards themselves and their newborns in NICU as shown by studies that emotional support help alleviate emotional distress and anxiety

among young mothers (54,55). However, some participants indicated insufficient emotional support from few healthcare providers when they clearly needed it and this resulted to mothers having preference towards certain healthcare providers whom they interact with. Furthermore, fostering a supportive environment that promotes love and empathy from both healthcare providers and families can significantly impact the well-being of both mother and baby.

Financial support was another critical need, with some mothers facing financial burdens due to the high cost of NICU care hence requiring more financial support from families, some reported delays in treatment due inability to pay promptly and one mother requested for early discharge due to financial constraints. This is consistent with literature emphasizing the financial challenges associated with prolonged NICU stays and the need for adequate financial support systems (13,62,63). Financial assistance programs should be implemented to address the financial burden faced by adolescent mothers during this challenging period.

The results indicated that adolescent mothers caring for their newborns in NICU expressed that, they do not require additional social support from their families and friends, as they believe the current level of support, they are receiving is sufficient. This finding can be compared to Maslow's Hierarchy of Needs, where social support falls under the "belongingness and love needs" category (78). In this context, it appears that these adolescent mothers feel that their need for belongingness and love is being fulfilled by the existing support network available to them. However, it is important to note that while social support may be perceived as adequate other needs outlined in Maslow's hierarchy such as safety and physiological needs for instance employment and sleep, respectively, may still require attention Therefore, according to Maslow’s framework suggests that while social support may meet certain psychological needs for these adolescent mothers, it does not necessarily address all aspects of their well-being.

Furthermore, mothers reported receiving social and practical support they never thought they needed but its presence made them aware of its importance, this was shown by Rosenstock et al that adolescent mothers caring for their newborns admitted in NICU have needs but often have less insight into the amount of support they require (26). Such support included peer to peer social gatherings where they share stories which helps alleviate their emotional

distress and further keep them active throughout hospital stay when families are not around. Also, presence of faith-based groups which provide them with important necessities such as food and diapers enhanced their engagement in caring for their newborns, in addition practical assistance received from the healthcare providers in NICU such as guidance in breastfeeding the baby, milking, changing diapers and positioning of the baby were also documented by a study showing mothers in NICU experience a gap between expected and actual support provided by healthcare providers (64), this calls for more support towards adolescent mothers in NICU.

Overall, the findings shows the importance of providing holistic support emotional, social, financial, and practical assistance to adolescent mothers in the NICU. This comprehensive approach is essential for enhancing maternal well-being and promoting positive health outcomes for both mothers and their newborns.

5.4 Study Limitations and Mitigations

Data was collected from participants while their newborns were still admitted in NICU which increased risk of social desirability bias. This was mitigated through providing a conducive environment and upheld professionalism hence establishment of good rapport with participants during introduction of the study and interview, ensured them that there is no wrong or right answer and lastly, guaranteed confidentiality and anonymity of the data received from them.

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study highlighted experience of adolescent mothers caring for their newborns in NICU at the regional referral hospitals in Dar es Salaam which indicated that mothers in NICU had positive perceptions of care received from healthcare providers. They appreciated being treated with dignity and respect, as well as the improvements in their newborn's health. But challenges remain such as abandonment by families and partner, emotional distress, inadequate hospital infrastructures and supplies.

Further, mothers demonstrated clear understanding of their newborns' conditions and treatment plans facilitated by effective communication with healthcare providers. Overall, mothers were thankful for the support they received but requested continued emotional and financial support to navigate the challenges of NICU care. They specifically requested more empathetic and supportive interactions from healthcare providers to reduce stress and improve their caregiving experience.

6.2 Recommendations

Based on the feedback, here are suggested recommendations for regional referral hospitals in Dar es Salaam to improve care and support for adolescent mothers. By implementing these suggestions, this can significantly enhance the experience of adolescent mothers in the NICU, ensuring they receive essential support and care during this critical period.

1. The RRH management teams with help from the respective RMHTs should facilitate in the improvement of hospital physical infrastructure such as increase number of beds to address the issue of overcrowding to ensure comfortable sleeping conditions which can significantly improve mother's well-being.
2. The RRH management teams should facilitate and conduct regular trainings for healthcare providers on effective communication skills such as empathy communication and provision of client-centered services. Adolescent mothers expressed that their concerns are often not taken seriously, leading to feelings of

neglect. Implementing a system where staff consistently check in with adolescent mothers could help address this issue.

3. The RRH management teams should ensure availability and affordability of the medical equipment and supplies. Provide essential equipment like goggles for babies with jaundice at a reasonable cost. High prices can be a barrier for many families. Additionally, consider establishing a subsidized program or seeking donations to offset these costs. Add more phototherapy machines for newborns to ensure that all babies receive the necessary care without delays. This is crucial, especially during times when the NICU is at full capacity. Further improve availability of necessary supplies such as patient clothing, and feeding tools such as NGT tubes.

REFERENCES.

1. Newborn health [Internet]. [cited 2024 Feb 19]. Available from: https://www.who.int/westernpacific/health-topics/newborn-health
2. Neonatal intensive care unit (NICU) | March of Dimes [Internet]. [cited 2024 Feb 19]. Available from: https://www.marchofdimes.org/find-support/topics/nicu
3. Adolescent pregnancy [Internet]. [cited 2024 Jan 4]. Available from: https://www.who.int/news-room/fact-sheets/detail/adolescent-pregnancy
4. Early childbearing and teenage pregnancy rates by country - UNICEF DATA [Internet]. [cited 2024 Jan 4]. Available from: https://data.unicef.org/topic/child-health/adolescent-health/
5. WHO. Standards for improving the quality of care for small and sick newborns in health facilities [Internet]. 2020. 60 p. Available from: https://apps.who.int/iris/bitstream/handle/10665/334126/9789240010765-eng.pdf?sequence=1&isAllowed=y
6. Nursing guidelines : Phototherapy for neonatal jaundice [Internet]. [cited 2024 Jul 24]. Available from: https://www.rch.org.au/rchcpg/hospital_clinical_guideline_index/phototherapy_for_neonatal_jaundice/#
7. Assessing the Vulnerability and Risks of Adolescent Girls and Young Women in ESA | UNICEF Eastern and Southern Africa [Internet]. [cited 2024 Jan 4]. Available from: https://www.unicef.org/esa/reports/assessing-vulnerability-and-risks-adolescent-girls-and-young-women-esa
8. Yah CS, Ndlovu S, Kutywayo A, Naidoo N, Mahuma T, Mullick S. The prevalence of pregnancy among adolescent girls and young women across the Southern African development community economic hub: A systematic review and meta-analysis. Heal Promot Perspect [Internet]. 2020;10(4):325–37. Available from: https://doi.org/10.34172/hpp.2020.51
9. Tanzania - World Bank Gender Data Portal [Internet]. [cited 2024 Feb 29]. Available from: https://genderdata.worldbank.org/countries/tanzania/
10. Adu-Bonsaffoh K, Tamma E, Nwameme AU, Mocking M, Osman KA, Browne JL. Women's lived experiences of preterm birth and neonatal care for premature infants

at a tertiary hospital in Ghana: A qualitative study. PLOS Glob Public Heal. 2022 Dec 1;2(12):e0001303.

11. Adhikari J, Kharel S, Bahl L, Poudel D, K.C. R. Neonatal Outcome Among Adolescent and Adult Pregnancy in a Tertiary Care Center of Nepal. J Nepalgunj Med Coll. 2018;14(2):56–9.
12. Diabelková J, Rimárová K, Dorko E, Urdzík P, Houžvičková A, Argalášová Ľ. Adolescent Pregnancy Outcomes and Risk Factors. Int J Environ Res Public Health. 2023;20(5):0–9.
13. Sharma D, Murki S. Making neonatal intensive care: cost effective. J Matern Neonatal Med. 2021;34(14):2375–83.
14. Ali SR, Ahmed S, Lohana H. Disease patterns and outcomes of neonatal admissions at a secondary care hospital in Pakistan. Sultan Qaboos Univ Med J. 2013;13(3):418–21.
15. Mmbaga BT, Lie RT, Olomi R, Mahande MJ, Kvåle G, Daltveit AK. Cause-specific neonatal mortality in a neonatal care unit in Northern Tanzania: a registry based cohort study. BMC Pediatr. 2012;12.
16. Erfina E, Widyawati W, Mckenna L, Reisenhofer S, Ismail D. Adolescent mothers ' experiences of the transition to motherhood : An integrative review-NC-ND license (http://creativecommons.org/licenses/by- International Journal of Nursing Sciences Adolescent mothers ' experiences of the transition to motherhood : A. Int J Nurs Sci [Internet]. 2019;6(2):221–8. Available from: https://doi.org/10.1016/j.ijnss.2019.03.013
17. Gul P, Hulya E. Experiences of New Mothers with Premature Babies in Neonatal Care Units: A Qualitative Study. J Nurs Pract. 2020;3(1).
18. Fernández Medina IM, Granero-Molina J, Fernández-Sola C, Hernández-Padilla JM, Camacho Ávila M, López Rodríguez M del M. Bonding in neonatal intensive care units: Experiences of extremely preterm infants' mothers. Women and Birth [Internet]. 2018;31(4):325–30. Available from: http://dx.doi.org/10.1016/j.wombi.2017.11.008
19. Mohammed A, Legesse H, Hailu M. The lived experience of parents' challenges in a neonatal intensive care unit at Dilchora referral hospital, Ethiopia: a

phenomenological study. 2023; Available from: https://doi.org/10.21203/rs.3.rs-2555096/v1

20. Govender D, Naidoo S, Taylor M. "I have to provide for another life emotionally, physically and financially": understanding pregnancy, motherhood and the future aspirations of adolescent mothers in KwaZulu-Natal South, Africa. BMC Pregnancy Childbirth. 2020;20(1):1–21.
21. Mwamakamba LW itso., Zucchi P. Cost estimate of hospital stays for premature newborns of adolescent mothers in a Brazilian public hospital. Einstein (Sao Paulo). 2014;12(2):223–9.
22. Ramaiya A, Kiss L, Baraitser P, Mbaruku G, Hildon Z. A systematic review of risk factors for neonatal mortality in Adolescent Mother's in Sub Saharan Africa. BMC Res Notes. 2014;7(1).
23. Sheeran N, Jones L, Rowe J. The relationship between maternal age, communication and supportive relationships in the neonatal nursery for mothers of preterm infants. J Neonatal Nurs. 2013 Dec 1;19:327–336.
24. Wang LL, Meng HH, Ma JJ, Zhou J. Mothers' experiences of neonatal intensive care: A systematic review and implications for clinical practice. World J Clin Cases. 2021;9(24):7062–72.
25. Namusoke F, Sekikubo M, Namiiro F, Nakigudde J. "what are you carrying?" Experiences of mothers with preterm babies in low-resource setting neonatal intensive care unit: A qualitative study. BMJ Open. 2021;11(9).
26. Rosenstock A, Van Manen M. Adolescent parenting in the neonatal intensive care unit. J Adolesc Heal [Internet]. 2014;55(6):723–9. Available from: http://dx.doi.org/10.1016/j.jadohealth.2014.08.001
27. Sik I. Early motherhood in Tanzania : Exploring the education , health and employment challenges of Dar es Salaam ' s adolescent mothers. B Sect. 2015;90.
28. Agrawal R, Gaur A. Parent stress in neonatal intensive care unit: an unattended aspect in medical care. Int J Contemp Pediatr. 2016;4(1):148.
29. Boss RD, Donohue PK, Arnold RM. Adolescent mothers in the NICU: How much do they understand. J Perinatol. 2010;30(4):286–90.
30. Paula L dos S, Celli A, Mariotto RMM, Lagos-Guimarães HNC, Marciniak A.

Frequency of maternal stress and psychic risk in newborns who have been hospitalized in a neonatal intensive care unit. Rev Bras Saude Matern Infant. 2022;22(4):783–91.

31. Mengesha EW, Amare D, Asfaw LS, Tesfa M, B. Debela M, Ambaw Getahun F. Parental experiences in neonatal intensive care unit in Ethiopia: a phenomenological study. Ann Med [Internet]. 2022;54(1):121–31. Available from: https://doi.org/10.1080/07853890.2021.2004320
32. Dickinson C, Vangaveti V, Browne A. Psychological impact of neonatal intensive care unit admissions on parents: A regional perspective. Aust J Rural Health. 2022 Feb 1;30.
33. Akkoyun S, Tas Arslan F. Investigation of stress and nursing support in mothers of preterm infants in neonatal intensive care units. Scand J Caring Sci. 2019;33(2):351–8.
34. Tunçalp, Were WM, Maclennan C, Oladapo OT, Gülmezoglu AM, Bahl R, et al. Quality of care for pregnant women and newborns - The WHO vision. BJOG An Int J Obstet Gynaecol. 2015;122(8):1045–9.
35. Oben P. Understanding the Patient Experience: A Conceptual Framework. J Patient Exp. 2020;7(6):906–10.
36. Moshi F V., Tilisho O. The magnitude of teenage pregnancy and its associated factors among teenagers in Dodoma Tanzania: a community-based analytical cross-sectional study. Reprod Health [Internet]. 2023;20(1):1–13. Available from: https://doi.org/10.1186/s12978-022-01554-z
37. Mangeli M, Rayyani M, Cheraghi M, Tirgari B. Exploring the Challenges of Adolescent Mothers From Their Life Experiences in the Transition to Motherhood: A Qualitative Study. Journal of family & reproductive health [revista en Internet] 2017 [acceso 1 de setiembre de 2022]; 11(3): 165-173. J Fam Reprod Heal [Internet]. 2019;11(3):165–73. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6045691/pdf/JFRH-11-165.pdf
38. Babaii A, Mohammadi E, Sadooghiasl A. The Meaning of the Empathetic Nurse–Patient Communication: A Qualitative Study. J Patient Exp. 2021;8:1–9.
39. Dignity and Respect in Care – How You Can Promote It [Internet]. [cited 2024 Mar

17]. Available from: https://www.theaccessgroup.com/en-gb/blog/hsc-dignity-and-respect-in-care/

40. Chertok IRA, McCrone S, Parker D, Leslie N. Review of interventions to reduce stress among mothers of infants in the NICU. Adv Neonatal Care. 2014;14(1):30–7.
41. Ding X, Zhu L, Zhang R, Wang L, Wang TT, Latour JM. Effects of family-centred care interventions on preterm infants and parents in neonatal intensive care units: A systematic review and meta-analysis of randomised controlled trials. Aust Crit Care [Internet]. 2019;32(1):63–75. Available from: https://doi.org/10.1016/j.aucc.2018.10.007
42. Kestler-peleg M, Stenger V, Lavenda O, Bendett H, Alhalel-lederman S. " I ' ll Be There ": Informal and Formal Support Systems and. Child. 2022;9(1958):1–11.
43. Costa S, Letícia I, Palmeira T, Santos G, Lopes G. Mother ' s Perception About the Experience in the Neonatal Intensive Care Unit. 2019;5(1):42–50.
44. De Sousa Machado T, Chur-Hansen A, Due C. First-time mothers' perceptions of social support: Recommendations for best practice. Heal Psychol Open. 2020;7(1).
45. Article R, Floden, A, Combs C, Article R. NIH Public Access. Bone. 2008;23(1):1–7.
46. Sattari M. {HHS} {Public} {Access}. J Pediatr. 2013;176(5):139–48.
47. Wigert H, Dellenmark Blom M, Bry K. Parents' experiences of communication with neonatal intensive-care unit staff: An interview study. BMC Pediatr. 2014;14(1):1–8.
48. Lisle J, Buma K, Smith J, Richter M, Satpute P, Pineda R. Maternal Perceptions About Sensory Interventions in the Neonatal Intensive Care Unit: An Exploratory Qualitative Study. Front Pediatr. 2022;10(June):1–9.
49. Muller M. Participative management in health care services. Curationis. 1995;18(1):15–21.
50. Quosdorf A, Peterson WE, Rashotte J, Davies B. Connecting With Adolescent Mothers: Perspectives of Hospital-Based Perinatal Nurses. Glob Qual Nurs Res. 2020;7.
51. Persson C, Ericson J, Salari R, Eriksson MH, Flacking R. NICU parents' mental health: A comparative study with parents of term and healthy infants. Acta Paediatr

Int J Paediatr. 2023;112(5):954–66.

52. Hargett CW, Doty JP, Hauck JN, Webb AMB, Cook SH, Tsipis NE, et al. Developing a model for effective leadership in healthcare: A concept mapping approach. J Healthc Leadersh. 2017;9:69–78.
53. Ceylan SS, Keskin Z, Yavaş Z, Özdemir H, Tosun G, Güner E, et al. Developing the Scale of Parental Participation in Care: Neonatal Intensive Care Unit and Examining the Scale's Psychometric Properties. Intensive Crit Care Nurs. 2021;65.
54. Persson C, Ericson J, Salari R, Eriksson MH, Flacking R. NICU parents ' mental health : A comparative study with parents of term and healthy infants. 2023;(February):954–66.
55. Lee CK, Huang XY. Psychological Processes of Postpartum Mothers with Newborns Admitted to the Intensive Care Unit. Asian Nurs Res (Korean Soc Nurs Sci) [Internet]. 2022;16(1):9–17. Available from: https://doi.org/10.1016/j.anr.2021.12.007
56. Butler N, Quigg Z, Bates R, Jones L, Ashworth E, Gowland S, et al. The Contributing Role of Family, School, and Peer Supportive Relationships in Protecting the Mental Wellbeing of Children and Adolescents. School Ment Health [Internet]. 2022;14(3):776–88. Available from: https://doi.org/10.1007/s12310-022-09502-9
57. Soni R, Tscherning C. Family-centred and developmental care on the neonatal unit. Paediatr Child Health (Oxford). 2021 Jan 1;31(1):18–23.
58. Gonçalves AM, da Silva CC, Cabeça LPF, de Lione Melo L. Understanding the participation of mothers in the care for their children with chronic diseases in an Intensive Care Unit. Rev Gauch Enferm. 2022;43:1–11.
59. Williams KG, Patel KT, Stausmire JM, Bridges C, Mathis MW, Barkin JL. The neonatal intensive care unit: Environmental stressors and supports. Int J Environ Res Public Health. 2018;15(1).
60. Yang X, Meng T. Admission of full-term infants to the neonatal intensive care unit: a 9.5-year review in a tertiary teaching hospital. J Matern Neonatal Med. 2020;33(17):3003–9.
61. 1 in 6 families in new study spent more than $5,000 to have a baby [Internet]. [cited

2024 Jan 22]. Available from: https://www.michiganmedicine.org/health-lab/1-6-families-new-study-spent-more-5000-have-baby

62. NICU Admission Up in the U . S . Jama P. 2012;2015.
63. Isaac EW JI. Determinants of discharge against medical advice amongst neonates admitted at Federal Teaching Hospital Gombe, Nigeria. Niger J Paediatr [Internet]. 2019;46(1):5–8. Available from: http://dx.doi.org/10.4314/njp.v46i1.2
64. Negarandeh R, Hassankhani H, Jabraeili M, Abbaszadeh M, Best A. Health care staff support for mothers in NICU: a focused ethnography study. BMC Pregnancy Childbirth. 2021;21(1):1–12.
65. Lewis S. Qualitative Inquiry and Research Design: Choosing Among Five Approaches. Vol. 16, Health Promotion Practice. 2015. 473–475 p.
66. Fusch PI, Ness LR. Are we there yet? Data saturation in qualitative research. Qual Rep. 2015;20(9):1408–16.
67. Saunders B, Sim J, Kingstone T, Baker S, Waterfield J, Bartlam B, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. Qual Quant. 2018;52(4):1893–907.
68. Ahmed SK. The pillars of Trustworthiness in Qualitative Research. J Med Sci Public Heal. 2024;2.
69. Regmi K, Naidoo J, Pilkington P. Understanding the Processes of Translation and Transliteration in Qualitative Research. Int J Qual Methods. 2010;9(1):16–26.
70. Naeem M, Ozuem W, Howell K, Ranfagni S. A Step-by-Step Process of Thematic Analysis to Develop a Conceptual Model in Qualitative Research. Int J Qual Methods. 2023;22:1–18.
71. Braun, Virginia Clarke V. Thematic analysis. :1–41.
72. Mukuna RK, Aloka PJO. Interpretative Phenomenological Analysis of Teenage Mothers Resiliency in Overcoming Adversities in Pregnancy and Early Motherhood in South Africa. Probl Educ 21st Century. 2021;79(1):104–17.
73. Mosadeghrad AM. Factors influencing healthcare service quality. Int J Heal Policy Manag. 2014;3(2):77–89.
74. Bhattacharyya S, Issac A, Rajbangshi P, Srivastava A, Avan BI. "Neither we are satisfied nor they"-users and provider's perspective: A qualitative study of maternity

care in secondary level public health facilities, Uttar Pradesh, India. BMC Health Serv Res [Internet]. 2015;15(1):1–13. Available from: http://dx.doi.org/10.1186/s12913-015-1077-8

75. Franck LS, Bisgaard R, Cormier DiM, Hutchison J, Moore Di, Gay C, et al. Improving Family-Centered Care for Infants in Neonatal Intensive Care Units: Recommendations from Frontline Healthcare Professionals. Adv Neonatal Care. 2022;22(1):79–86.
76. Improvement Q, Kit T, Initiative P. A Quality Improvement Tool Kit for the PAIRED Initiative Family-Centered Care in the NICU. 2021;
77. Abukari AS, Acheampong AK, Aziato L. Experiences and contextual practices of family-centered care in Ghanaian nicus: a qualitative study of families and clinicians. BMC Health Serv Res [Internet]. 2022;22(1):1–8. Available from: https://doi.org/10.1186/s12913-022-08425-0
78. Hopper E. Maslow ' s Hierarchy of Needs Maslow ' s Hierarchy of Needs. Business [Internet]. 2020;(April):3–5. Available from: file:///C:/Users/ADMIN/OneDrive/Documents/02LITERATUR/22mac/Maslow's Hierarchy.pdf

APPENDICES

Appendix I: Informed Consent Form – English Version

INFORMED CONSERT FORM.

Study title: Experience of adolescent mothers caring for newborns admitted in Neonatal intensive care unit at the regional referral hospitals in Dar es Salaam, Tanzania.

Introduction: My name is Lulu Gabriel, a student at Muhimbili University of Health and Allied Science, conducting a study among adolescent mothers with newborns admitted to the NICU department at Regional Referral Hospitals, Dar es Salaam. I humbly request for your consent to take part in the study and thus contribute to its success by providing the necessary information.

Purpose of the study: The study aims at exploring adolescent mothers' experience of care for their neonates admitted to the NICU department at regional referal hospitals in Dar es Salaam. Your involvement in this study is of value and will help us understand these experiences which will ultimately help to inform healthcare practices, improve adolescent mothers' well-being and enhance neonatal care in Tanzania.

How to participate: On acceptance to take part in this study, you will be asked questions and required to respond according to the specific questions which will be asked. Additionally, the interview will be recorded.

Confidentiality: No personal details or information that might be used to identify the participant will be recorded and your participation in this study will not be known anywhere. All data collected for this study will be kept completely confidential and utilized exclusively in this study. After this study is over, the information will be deleted after being used.

Risks to participants: No harm is attributed to you or your child by taking part in this study.

Voluntary participation: The study is entirely optional, and although I sincerely hope you will consent to participate, you will be allowed to withdraw your participation at any time

regardless of whether you have already given your consent. You will not be penalized if you decide not to participate in the study or stop participating.

Communication: In case of any questions and concerns about this study, you can contact Lulu Gabriel (0763953142) is the key contact person in this study.

In case of any concerns regarding your rights as a study participant or if you feel like you were not handled fairly, you can communicate with the Chairperson of the Research and Publications Committee;

Dr. Nahya Masoud, the Directorate of Research and Publications, Muhimbili University of Health and Allied Sciences, P.O. Box 65001, Dar es Salaam. Phone; +255-222-150-302, +255- 222-152-489, Email; drp@muhas.ac.tz

Permission to proceed: Do you think you can continue your participation in this study? If you have decided to participate, please sign below and write the date of today.

I have read and comprehended well the contents of this form. I agree to take part in this study.

Research participant's signature…….

Researcher's signature…….

Date of signed consent…….

Appendix II: Informed Consent Form – Swahili version.
FOMU YA KUOMBA RIDHAA YA USHIRIKI KWENYE UTAFITI.

Utafiti: Uzoefu wa mama vijana wenye watoto wachanga waliolazwa idara ya watoto wachanga mahututi katika hospitali za rufaa za mkoa jijini Dar es Salaam, Tanzania.

Utangulizi: Jina langu ni Lulu Gabriel, mwanafunzi wa chuo kikuu cha Tiba na Sayansi Shirikishi za Afya Muhimbili, ninafanya utafiti miongoni mwa mama vijana wenye Watoto wachanga waliolazwa katika idara ya Watoto wachanga mahututi katika hospitali za rufaa za mkoa jijini Dar es Salaam. Ningependa kukuomba ridhaa yako kushiriki katika utafiti huu na kuchangia katika mafanikio yake kwa kutoa tarifa zinazohitajika.

Dhumuni la tafiti: Utafiti huu unalenga kukusanya taarifa zinazohusu uzoefu wa vijana balehe wa kike wenye Watoto wachanga waliolazwa katika idara ya Watoto wachanga mahututi katika hospitali za rufaa za mkoa jijini Dar es Salaam. Ushiriki wako katika utafiti huu ni wa muhimu na utaweza kusaidia kupata uzoefu huo ambao taarifa zote kwa pamoja zitsaidia katika kuboresha huduma za matibabu kwa vijana balehe wa kike na Watoto wao wanapokuwa wamelazwa idara ya Watoto wachanga mahututi nchini Tanzania.

Jinsi ya kushiriki: Kwa kukubali kushiriki kwenye utafiti huu, utaulizwa maswali yaliyopo kwenye dodoso na utahitajika kutoa majibu kutokana na maswali utakayoulizwa na kutokana na uelewa wako. Pia mazungumzo yetu yatarekodiwa.

Usiri: Taarifa za utambuzi wako kama vile jina halitachukuliwa na ushiriki wako katika utafiti huu hautajulikana popote. Taarifa zote zitakazokusanywa kwenye utafiti huu hazitatumika sehemu nyingine yoyote bali katika utafiti huu tu. Mwisho wa utafiti, taarifa zote zilizokusanywa zitafutwa baada ya matumizi.

Hatari/Adha kwa washiriki: Hakuna madhara yoyote yanayotarajiwa kutokana na ushiriki wako kwenye utafiti huu.

Ushiriki wa hiari: Ushiriki wako katika utafiti huu ni maamuzi yako. Natumaini kuwa utakubali kushiriki. Unaweza kujitoa katika utafiti huu kwenye hatua yoyote ile ya ushiriki licha

ya kutoa ridhaa hapo mwanzo. Hakuna adhabu yoyote itatolewa kwako au kwa mtoto wako kwa kukataa kushiriki au kujitoa kwenye utafiti huu.

Mawasiliano: Kama kuna maswali yoyote kuhusiana na utafiti huu unaweza kuwasiliana nami Lulu Gabriel (0763953142).

Na endapo una swali lolote linalohusu haki yako ya msingi kama mshiriki wa utafiti au endapo unahisi hukutendewa haki, unaweza pia kuwasiliana na mwenyekiti wa kamati ya tafiti na machapisho;

Dr. Nahya Masoud, Kurugenzi ya tafiti na machapisho, Chuo Kikuu Cha Tiba na Sayansi Shirikishi za Afya Muhimbili, P.O. Box 65001, Dar es Salaam. Simu; +255-222-150-302,

+255-222-152-489 Barua pepe; drp@muhas.ac.tz

Ruhusa ya kuendelea: Je, ni sawa kwa wewe kuendelea na ushiriki kwenye utafiti huu? Endapo umefanya uamuzi wa kushiriki tafadhali weka sahihi hapa chini na andika tarehe ya leo.

Nimesoma na kuelewa taarifa zilizoko kwenye fomu hii, nipo tayari kushiriki kwenye utafiti huu.

Sahihi ya mshiriki wa utafiti……
Sahihi ya mtafiti……
Tarehe ya kusaini fomu ya ridhaa…….

Appendix III: In-Depth-Interview Guide – English Version

Experience of adolescent mothers caring for newborns admitted in Neonatal Intensive Care Unit at the Regional Referral Hospitals in Dar es Salaam, Tanzania.

Greetings,

My name is Lulu Gabriel, a student at Muhimbili University of Health and Allied Science (MUHAS), conducting the above-mentioned study in NICU department at Regional Referral Hospitals in Dar es Salaam. Since you are among the mothers with newborns at NICU, I hereby kindly ask you to share your experiences with me. The information you are going to share will be strictly confidential, and I will not record your name or take any information that can lead into reviling your identity.

Please feel free to express your opinions, ideas and experiences, there is no wrong or right answer, rather I am looking for your experiences.

Participant ID: …..

Participant Age: …….

Marital Status: ……

Number of children: ……..

Education Level: ……

Employment status: ……

Place of Residence: ……

Person/People leaving with: ……

1. Introductory Questions.

- How long have you been in the hospital? Probe on: What happened until you came here? Who escorted you to the hospital? Has any of your children been admitted to NICU before?
- Why was your newborn admitted to NICU? Probe on: How long has your newborn been admitted to NICU? How is your newborn condition now?
- What has happened since the admission of your newborn to NICU? Probe on: Care received.

2. **Perception of adolescent mothers towards care provided to newborns at NICU.**
    - How do you find the care provided to your newborn since admission to NICU?
    - What aspects of treatment as a child's mother do you find important? Why?
    - What aspects of treatment as a child's mother do you find helpful? Probe on: How was it helpful?
3. **Adolescent mothers' experience of communication with NICU healthcare providers.**
    - What is your communication experience with health care providers in NICU? **Probe on:** How do they inform you about your newborns condition? Who else is informed by the healthcare providers about your newborns condition? Where and when?
    - When do you ask healthcare providers about your newborns progress? Probe on: Feedback received.
    - How are you involved in decision making concerning your newborns' care in NICU? Who else is involved?
    - Are you satisfied with the communication experience you have had with the healthcare providers? Why?

- Would you recommend any changes to be made on communication between you and healthcare providers in NICU? Why? What changes?

4. Support needed by adolescent mothers.

- What support do you need from healthcare providers while caring for your newborn in NICU**?** Probe on: Support received from healthcare providers.
- What support do you need from your family while caring for your newborn in NICU? Probe on: Support received from her family? child's father engagement in caring for their newborn?
- What support do you need from friends while caring for your newborn in NICU? Probe on: Support received from friends.
- What other people do you need support from while caring for your newborn in NICU? Probe on: What support have you received from them?

5. What challenges do you face while caring for your newborn in NICU?
6. Being a teen mother, do you feel mistreated or judged in any way? How? By who?
7. In general, how would you describe the quality of care provided to your newborn in NICU?
8. What are your recommendations (to the doctors, nurses, administrators) in improving the quality of care for adolescent mothers who present with similar conditions?

IDI guide – Swahili version

Uzoefu wa mama vijana wenye watoto wachanga waliolazwa idara ya watoto wachanga mahututi katika hospitali za rufaa za mkoa, jijini Dar es Salaam, Tanzania.

Salamu,

Jina langu ni Lulu Gabriel, mwanafunzi wa chuo kikuu cha Tiba na Sayansi Shirikishi za Afya Muhimbili, ninafanya utafiti uliotajwa hapo juu katika hospitali za rufaa jijini Dar es Salaam. Kwa maana wewe ni mmoja wa kundi hili, ningependa kuomba ushiriki wako kwa kujibu maswali nitakayokuuliza na kwa kutoa tarifa zinazohitajika. Majibu yako yote yatakuwa siri, na ndiyo maana hatuchukui jina lako.

Huu si mtihani hivyo hamna majibu yaliyo sahihi au la, bali unaombwa kujibu kufuatana na uelewa na imani yako binafsi.

Mshiriki namba: …..

Umri: …….

Hali ya ndoa: ……

Idadi ya Watoto: …..

Ngazi ya Elimu: ……

Hali ya ajira: ……

Sehemu anayoishi: ……

Unaishi na nani: …….

1. **Maswali ya Utangulizi.**

    - Una muda gani hapa hospitali? Ulizia zaidi kuhusu: Ilikuaje ukaja hapa? Nani alikusindikiza hospitali? Mtoto wako alishawahi kulazwa idara ya Watoto wachanga mahututi?

- Kwanini mtoto wako amelazwa idara ya Watoto wachanga mahututi? Ulizia zaidi kuhusu**:** Ni kwa muda gani mtoto wako amelazwa idara ya Watoto wachanga mahututi? Hali ya mtoto wako ikoje kwa sasa?
- Nini kimetokea tangu kulazwa kwa mtoto wako hapa? Ulizia zaidi kuhusu: huduma alizopata.

2. **Mtazamo wa mama vijana kuhusu huduma zitolewazo katika idara ya Watoto wachanga mahututi.**
    - Unazionaje huduma alizopata mtoto wako tangu kulazwa?
    - Matibabu gani yanayotolewa kwa mtoto wako wewe kama mzazi unayaona ni ya muhimu? Kwa nini?
    - Matibabu gani yanayotolewa kwa mtoto wako wewe kama mzazi unayaona yana msaada? Yamekusaidiaje?
3. **Uzoefu wa mawasiliano kati ya mama vijana na watoa huduma za afya katika idara ya Watoto wachanga mahututi.**
    - Unaweza kunielezea mawasiliano yako na watoa huduma za afya katika idara ya Watoto wachanga mahututi? Ulizia zaidi kuhusu**:** Wanakupaje taarifa kuhusu hali ya mtoto wako? Nani mwingine anapewa taarifa kuhusu hali ya mtoto wako? Wapi na Muda gani?
    - Wakati gani unawauliza watoa huduma kuhusu maendeleo ya mtoto wako? **Ulizia zaidi kuhusu:** Mrejesho anaopata.
    - Unashirikishwaje katika kutoa maamuzi juu ya huduma za mtoto wako hapa idara ya Watoto wachanga mahututi? Nani mwingine anashirikishwa?
    - Je, umeridhishwa na mawasiliano yako na watoa huduma za afya? Kwanini?

- Je, ungependa kushauri mabadiliko yoyote kuhusu mawasiliano kati yako na watoa huduma za afya hapa idara ya Watoto wachanga mahututi? Kwa nini? Mabadiliko gani?

4. Msaada wanaohitaji mama vijana.

- Msaada gani unauhitaji kutoka kwa watoa huduma za afya unapomuhudumia mtoto wako aliyelazwa idara ya watoto wachanga mahututi? Ulizia zaidi **kuhusu**: Msaada gani umeupata kutoka kwa Watoa huduma za afya.
- Msaada gani unauhitaji kutoka kwa familia yako unapomuhudumia mtoto wako aliyelazwa idara ya watoto wachanga mahututi? Ulizia zaidi kuhusu: Msaada gani umeupata kutoka kwa familia yako. Ushiriki wa baba wa mtoto katika kumuhudumia mtoto.
- Msaada gani unauhitaji kutoka kwa rafiki zako unapomuhudumia mtoto wako aliyelazwa idara ya watoto wachanga mahututi? Ulizia zaidi kuhusu: Msaada gani umeupata kutoka kwa rafiki zako.
- Watu gani wengine unahitaji msaada kutoka kwao unapokuwa unamuhudumia mtoto wako aliyelazwa idara ya Watoto wachanga mahututi? Ulizia zaidi **kuhusu:** msaada umeupata kutoka kwa hao watu.

5. Changamoto gani unakutana nazo katika kumtunza mtoto wako katika isdara ya Watoto wachanga mahututi?
6. Wewe kama mama kijana, ushawahi kuhisi hautendewi haki kwa aina yoyote au unahukumiwa na watoa huduma za afya? Kiaje?
7. Kwa ujumla, unaelezeaje ubora wa huduma zitolewazo kwa mtoto wako katika idara ya Watoto wachanga mahututi?
8. Una mapendekezo yoyote (kwa waganga, wauguzi, watawala) katika kuboresha huduma za mama vijana ambao wanakuwa na changamoto kama zako?

Appendix IV: Ethical clearance

UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

OFFICE OF THE DIRECTOR – RESEARCH, PUBLICATIONS AND INNOVATIONS

Ref. No.DA.282/298/01.C/2272 Date: 31/05/2024

MUHAS-REC-05-2024-2272
LULU GABRIEL
SHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: EXPERIENCE OF ADOLESCENT MOTHERS CARING FOR THEIR NEWBORNS ADMITTED IN THE NEONATAL INTENSIVE CARE UNIT AT THE REGIONAL REFERRAL HOSPITALS IN DAR ES SALAAM, TANZANIA.

Reference is made to the above heading,

I am pleased to inform you that the Chairperson has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 31/05/2024
EXPIRATION DATE OF APPROVAL: 31/05/2025

STUDY DESCRIPTION:
Purpose:
The purpose of this qualitative phenomenological study is to understand the experience of adolescent mothers caring for their newborns admitted in NICU at the regional referral hospitals in Dar es Salaam, Tanzania.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%2015580.pdf and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain Data Transfer Agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain Material Transfer Agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country.
8. Apply for and obtain permission to publish the results from National Institute for Medical Research. The application should be before submitting to a publisher and not concurrently through the email publications@nimr.or.tz.
9. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
10. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
11. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website https://drp.muhas.ac.tz/.



Dr. Nahya Salim Masoud,
Chairperson, MUHAS Research and Ethics Committee

JAMHURI YA MUUNGANO WA TANZANIA
WIZARA YA AFYA.
HOSPITAL YA RUFAA YA MKOA YA TEMEKE
Baruapepe:temekerh@afya.go.tz,S.L.P 45232 Dar es Salaam,Simu 0222856007

Kumb. Na. TRRH/RSC/9/10/01/28 **Tarehe: 19/06/2024**

Ndg, Lulu Gabriel
Muhimbili University of Health and Allied Sciences
S.L.P 65001
DAR ES SALAAM.

YAH: OMBI LA KUFANYA UTAFITI "EXPERIENCE OF ADOLESCE MOTHERS CARING FOR THEIR NEWBORNS ADMITTED IN THE NEONATAL INTERSIVE CARE UNIT AT THE REGIONAL REFFERAL HOSPITALS IN DAR ES SALAAM, TANZANIA" (RESEARCH)

Tafadhali husika na somo tajwa hapo juu.

2. Nimepokea barua yako ya tarehe 31 May, 2024 kuhusu ombi lako la kufanya Utafiti (Research) katika Taasisi yetu, kuhusu **"experience of adolesce mothers caring for their newborns admitted in the neonatal intersive care unit at the Regional Refferal Hospitals in Dar es salaam, Tanzania."**

3. Ombi lako limekubaliwa, utatakiwa kulipa ada kiasi cha **Tshs. 100,000/=** Hivyo wasiliana na mhasibu wa mapato wa Hospitali **Ndg. Lusajo Nsajigwa** kwa namba **0717 959495** ili akupatie control Number kwa ajili ya malipo ya ada hii ili uweze kuruhusiwa kufanya utafiti.

4. Asante kwa ushirikiano.

MGANGA MFAWIDHI
S. L. P. 45232
DAR-ES-SALAAM
HOSPITALI YA RUFAA YA MKOA YA TEMEKE

Dkt. Joseph G. Kimaro
MKURUGENZI
HOSPITALI YA RUFAA YA MKOA YA TEMEKE

Nakala: CSCO - ***Tafadhali hakikisha taarifa ya utafiti inabaki hospitalini***

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH

Telephone Address:

Telephone: 022-2760500

Mwananyamala Regional
Referral Hospital,
P.O.Box 61665
Dar es Salaam.

RE: NO.: MA. 239/240/01/108

DATE:12TH June,2024

Director,
Muhimbili University of Health and,
Allied Sciences,
Clinical Medicine,
P.O.BOX 65001,
DAR ES SALAAM.

RE: LULU GABRIEL, TO CONDUCTI HIS RESEARCH IN MWANANYAMALA REGIONAL REFERRAL HOSPITAL

The captioned subject refers

2. May you be informed that your request to research Titled "***Experience of Adolescent Mothers Caring for their Newborns ADMITTED IN THE Neonatal Intensive care Unit at Mwananyamala Hospital In Tanzania" Start*** **from 9TH June to 09th July, 2024**, is asserted.

3. The Institution charges **100,000/=**, as Research fee as per student spent. The payments are to be made upon reporting.

4. May she report to the Administration and HR department head for further instruction.

Thanks.

MEDICAL OFFICER INCHARGE
MwanamalaRegionalReferralHospital
P. O. Box 61665
DAR-ES-SALAAM

Atugonza Kyaruzi
RESEARCH COORDINATOR
FOR: MEDICAL OFFICER INCHARGE
MWANANYAMALA REGIONAL REFERRAL HOSPITAL

COPY:
Head of Pediatric Department - **Mwananyamala Regional Referral Hospital**
Lulu Gabriel **-Report to the head of Pediatric Department**

Appendix V: Permission Letter

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH

AMANA REGIONAL REFERRAL HOSPITAL

Telegram "HEALTH", DODOMA
Phone No.: +255 026 – 2323267
Email: ps@afya.go.tz

REF. NO. MoHCDGEC/ARRH/R.1/VOL II/83

P.O. Box 25411
DAR ES SALAAM
Phone: 022—2861903

Date: 04/06/2024

Dean, Department of Microbiology and Immunology,
MUHAS,
P.O. B ox 65001,
DAR ES SALAAM.

Re: PERMISSION FOR DATA COLLECTION

Refer to your letter dated 3rd June, 2024 which requested us to allow **Lulu Gabriel** to conduct research and collect data in our institution.

We are here to acknowledge your request with the following conditions, that she must submit the results of her research after completion of analysis in order the hospital to make use of data's to solve hospital problems.

Regards.

For:
MEDICAL OFFICER I/C
AMANA REGIONAL REFERAL HOSPITAL
P. O. Box 25411
DAR ES SALAAM

Dr. Rose Ntambuto
FOR: MEDICAL OFFICER INCHARGE
AMANA REGIONAL REFERRAL HOSPITAL