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Experiences of Mothers with hospitalized Preterm Babies in Tamale Central Hospital, Ghana

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Admission of a baby into the Neonatal Intensive Care Unit (NICU) is highly traumatic and stressful for parents especially mothers. This leads to a breakdown of the family unit due to the impediments undermining the family routine. When a baby is born premature, preparations for the baby is interrupted and the mother of the premature baby might feel as if she is missing out on something. There is an observation of maternal challenges regarding the management of preterm babies at the Tamale Central Hospital. These challenges range from social, economic, physiological and psychological in nature. Physiologically, preterm babies encounter numerous problems such as respiratory, maintenance of body temperature, exposure to infection and difficulty in feeding.
Purpose: This study seeks to determine the maternal experiences of hospitalized preterm babies.
Methodology: A phenomenological qualitative design was used. Fifteen mothers with hospitalized preterm babies were interviewed. Interviews were audio recorded and transcribed verbatim. This allowed for consistency and reliability. After transcribing and reading the interviews, meaningful units were identified and grouped by similarity, giving rise to thematic categorization.
Results: The study found that the involvement of mothers in the care of their preterm babies in

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NICU was helpful though they experienced fear in interacting with their babies initially due to adverse barriers such as fear of hurting the preterm baby and fear of equipment in the NICU.
Conclusion: The factors which led to mothers' anxiety such as fear in interacting with their babies, fear of equipment in the neonatal intensive care unit and non-explanation of the baby's condition would be reduced if mothers get the support from staff, other mothers from the NICU and the participants' families assisted them to cope.

Keywords: Experience; mothers; preterm babies; Neonatal Intensive Care (NICU).

1. INTODUCTION

Preterm births are births occurring prior to the 37 completed weeks' gestation. It is a serious health care challenge in many countries around the world. Preterm infants are at a greater risk of mortality and morbidity particularly for those born at the lowest gestations and or with extremely low birth weight less than 1,000 grams [1] (Larsen, 1993). Advances in perinatal and neonatal care have led to improved survival rates of preterm infants [2]. Premature birth and subsequent hospitalization of neonates in the Neonatal Intensive Care Unit (NICU) are highly traumatic and distressing events for parents especially mothers, this leads to a breakdown of the family unit due to the impediments, constraints, and situations undermining the family routine [3,4]. When a premature baby is born, physical, psychological and social preparation for the baby is interrupted and the mother of the premature baby might feel as if she is missing out on something [1].

Motherhood is a special moment expected by most women. Pregnancy and delivery are said to be a process that significantly restructure the social role of women especially during early weeks of child birth. Unfortunately, the possibility of a premature delivery and seeing the infant in a NICU, forces these mothers to face the dilemma of having or not having their babies. The threat to the health of infants admitted to the NICU has a tendency to trigger emotional instability and anxiety in affected mothers [1].

Admission of neonates into the NICU is very difficult and challenging for mothers and their families, owing to the modern and technological environment of the NICU that separates the babies physically, psychologically, and emotionally from parents (Frello et al., 2012). Again, the mothers of neonates on admission may be facing several problems during their stay on admission. These problems include but not limited to separation anxiety, fear of disease and the unknown, the hospital environment, and uncertainty about the present and the future of the family, that is, the clinical evolution of the baby and his/her survival [5,6].

Moreover, hospitalization in intensive care generates an overlap of losses, namely the loss of the idealized child and the impossibility of being with the child at home. Being a mere observer of the baby's care makes mothers feel deprived of their maternal function unable them to recognize themselves as mothers, and often unable to accept and acknowledge their child since a team has appropriated that care that a parent should be providing (Frello et al., 2012). At present, it is not uncommon for mothers to harbour feelings of worthlessness, failure, and inferiority. Moreover, this is a delicate stage faced by mothers and families, any possibility of bonding with the baby can be compromised and hence causing disorder in the mother-child relationship. Again, it is known that a good relationship between parents and the nursing staff is essential to encourage bonding of babies and parents in the NICU during the period of hospitalisation [1].

2. METHODS

Study design: The study used a phenomenological qualitative approach to explore and describe the experiences of the participants using an interview guide as data collection tool. The qualitative design allows for discovering of meaning and revealing various realities: however, generalization is not the main focus [7]. The design also enables detailed investigation and understanding of the experiences of mothers with hospitalized preterm babies.

Setting: Tamale Metropolis is located in the heart of the Northern Region of Ghana. It is the capital of the Northern Region of Ghana. It lies between 9.16^{o} and 9.34^{o} North and 00.36^{o} and 00.57^{o} West. The Metropolis has a land mass of $731km^{2}$ and approximately 180m above sea level. It is

boarded to the North by the Savelugu-Nanton District, South by Central and East Gonja Districts, East by the Yendi Municipal and West by Tolon and Kumbungu Districts. It is divided into three Sub-Metros; Tamale North Sub-Metro, Tamale Central Sub-Metro and Tamale South Sub-Metro. The health administration is subdivided into Tamale Central, Bilpeila, and Vitting Sub-districts. The 2012 and 2013 projected population of the Metropolis was 383205 and 404609 respectively [8]. Accordingly, the population of women in reproductive age (WIFA) were estimated to be approximately 11113 and 11734 respectively (3% of total population). Islam is the dominant religion with an affiliated population of 84%. The Metropolis experiences one rainy season from April/May to October, with peak in July/August which is influenced by the moist South-West monsoon winds. It records a mean annual rainfall of 1100 mm with only 95 days of intense rainfall. The dry season is from November to March, which is influenced by the dry North-East winds (Harmattan). Tamale Central Hospital also serves as the regional hospital of the region. It provides secondary level service point with Labor and Maternity Wards including Comprehensive Emergency Obstetric and Neonatal Care (EmONC).

Target Population: This study targeted a population of parents who have neonates admitted to NICU in the Tamale Central Hospital of the Tamale Metropolis.

Inclusion Criteria: The study included mothers of neonates who have their babies admitted to the NICU of the Tamale Central Hospital for at least 3 days. Mothers who could speak English or technique to recruit the participants to participate in the study. The technique allows and guide in the selection of mothers with hospitalized preterm babies.

Data Collection Instrument: Interview guide which was semi-structured was used to give focus and direction to the pattern of the in-depth face-to-face interview in order to retrieve very useful information from the participants [7]. Also, the instrument used for the data collection was adequate enough to retrieve information that will provide answers to the research questions [11]. The interview guide was structured based on the objectives of the research. The semi-structured interview guide had open ended questions divided into sections A (Demographic Characteristic data) and section B (Experiences of admission into NICU).

Data Collection Procedure: An introductory letter from the Ghana College of Nurses and Midwives, and research proposal were used to apply for the ethical clearance and administrative approval from the Ethics Review Committee of the Ghana Health Service. More importantly, a formal request was made to the in-charge of the Neonatal Intensive Care Unit of the Tamale Central Hospital to use the nurses' rest room to conduct the interviews with little or no interruptions of any kind, and also to ensure privacy and favourable environment for the interview.

Dagbanli language were included in the charge of the NICU, mothers who were on The ethical clearance and administrative approval (appendices A, B & D) were obtained from the Ethics Review Committee of the Ghana Health Service. With the help of the nurse in-study. Exclusion Criteria: Mothers with post-delivery complications who were on admission were exempted from the study. referred to as judgmental sampling. This is permission was also sought in order to audio also described as a method that enables record and take notes of observation that could Sampling Technique and Size: Purposive sampling is a non-probability sampling technique admission for at least three days in the ward were identified using the patient folders. After the introduction and establishment of rapport, the consented participants were interviewed. The interview was done after thorough explanation to the participants of the purpose and benefits of the study and also after the verbal and written consent were requested from them. Their for the selection of a subset from the entire population based on the investigator's knowledge of the study [9,7]. Purposive sampling also enables the investigator to generate a criterion that represent the characteristics of the target population and select based on the predetermined criteria [10]. Therefore, the researcher employed purposive sampling not be recorded by the device in order to retain relevant information.

Methodological Rigour: Prion and Adamson (2014), reported that rigor is the principle that underpins the being sure of the data collection, analysis and interpretation (methods) as factual. This was further reiterated by Tobin and Begley [12], that methodological rigor in qualitative research underpins the acknowledgement of the

method as a systematic scientific process. For these reasons, rigor ensures that the integrity and fitness of the method used in carrying out the study is established. Trustworthiness is very essential in assessing the value of a qualitative research (Johnson & Raslova, 2017). To ensure credibility and that the findings and the interpretation are valid, the investigator established rapport with the participants before the interview in order to promote trust. In doing the face-to-face in-depth interview, field notes were taken to include non-verbal gestures that could not be captured by the audio recorder. This was then used for the summary and transcription of the interviews.

With transferability, the comprehensive description of the methods with attention drawn to the setting and participants used was done. This will guide the reader to decide on the possibility of replicating the method on another population with different context but similar characteristics. Through dependability, member checking was done; a step-by-step rigor of the methods (data collection, analysis and interpretation) was incorporated to give much understanding of the process. Confirmability demonstrates that the data and interpretation of the findings are from the participants, not the investigator's perspectives [13] (Prion & Mothers described their lived experiences of having their preterm babies cared for in the neonatal unit. Fifteen mothers who delivered preterm babies were interviewed.

All the participants gave their informed consent before recruitment into the study. The researcher was introduced to the participants, after which participants were informed about the study with the knowledge that they could provide information regarding the study (purposive sampling). All participants were interviewed in a private quiet room in the neonatal intensive care unit after consenting to participate in the study.

The demographic characteristics of the fifteen participants, the mean age was 29.9 ± 6.0. Majority were Married 19 (95%) and majority of them againi8 (40%) did not have any form of formal education. Exactly half of them had babies of birth weight of 1.41kg-2.0kg (50%).

Experiences of mothers with preterm babies on admission at the NICU

An unfamiliar and intimidating environment Adamson, 2014). The data and findings condition within the first 24 hours after birth. The were subjected to the participants review in intravenous lines, feeding tubes and oxygen.

When the participants arrived in the neonatal unit their fear was exacerbated by an unfamiliar and frightening environment. They were overwhelmed by the strange equipment that as used, especially that used to stabilize the baby's order to reduce investigators' potential subjectivity.

3. RESULTS

Two themes emerged from the experiences of the participant's interview. They are description of the experience and mother coping with the challenges. These themes were related to each other, and the experiences of the participants could be described as cyclical in nature. The series of events which happened to the participants demonstrated how one factor affects another, such as the increase in the mother's fear and anxiety when the baby's condition deteriorated, or a decrease in fear when the condition improved. Participants reported that they were shocked by the unexpected delivery of preterm baby. Their trauma was increased by the separation from their baby, who required nursing in the NICU while the mothers were admitted in the postnatal ward.

Equipment made the participants' afraid of touching the babies because they thought that something might go wrong if they did iso; this affected mother-infant interaction. Seeing other sick babies was unexpected and added to the fear that they experienced in respect of their own infants:

> *You might have seen your baby but seeing so many of them is scary because some of them have many drips with so many other things on their chest and nostrils. The babies are so tiny and cannot turn to the other side, there are wires connected to them. Hmm sad (**P7**)*

For some participants the incubator with the alarm was anxiety-provoking as they feared for their baby's safety, not knowing how to open the incubator or how to work with it, which further increased their overall sense of fear. The incubator with its constant alarms and noise was frightening to participants, since their infants were inside the incubators, they did not understand what was happening. Participants were concerned about the safety of their baby whiles inside the incubator, especially during their first days in the neonatal unit when they did not know how to open it. The incubators initially prevented physical contact between participants and their babies:

> *You know where those babies are... isn't it? When you get there, you do not know the equipment, where the baby is and where the baby is kept. When you get there, the first thing that frightens you is the machine that the baby will be kept in, as it alarms since you will be wondering what is happening, you see? (**P5**)*

The strange and unfamiliar equipment used on the baby created more anxiety among the participants, especially if the equipment was not explained to them. Participants wanted to be informed about the equipment used on their baby and to be informed about the function of it in order to allay their anxiety:

> *Sometimes you will find her on ...I do not know what battery it is. It used to be placed on her abdomen. I did not know what it was. When the baby is lying and there is no machine connected to him, I am happy, the sickness is not serious. They don't tell me what that thing is **(P6**)*

Participants were frightened when they arrived in the neonatal unit since everything was unexpected, strange and overwhelming. They did not receive orientation to the NICU environment, which seemed to increase their anxiety and fear of coping. They felt that they could have been prepared psychologically by being told what to expect when they arrived in the unit and be orientated to the unit ion arrival. This overwhelmed the participant's initially and affected their interaction with the baby:

> *We could have been told that the people in the neonatal unit are different from those outside the unit. Do not be surprised by what you will see, because they do not breathe on their own. They are assisted to breathe. (P7).*

When one participant was in the NICU to interact with her baby she sometimes saw babies who were not alive since they were not breathing. This made her afraid because she felt that a mother should not have the experience of coming to the unit and finding her infant dead. She felt that babies who had died should be removed from the unit iso that the other mothers would not have to deal with this as well:

> *Other things which were frightening are babies who were dying. You will find a baby who has long died kept for a long time. It is you who will tell yourself that the baby is dead. (**P7**).*

The neonatal environment exacerbated the participants' fear for the survival of their baby. They were worried when their babies lost weight, since they associated this with deterioration of the infant's condition and the possibility that the infant could die. Their fear was fuelled by the belief that infants with very LBW were more vulnerable. The fear that participants experienced while in the neonatal unit delayed the development of a relationship with their babies:

> *You will hear one mother saying my baby is weighing... because at first. I delivered him weighing one point four (1.4kg) and his weight dropped, dropped and dropped until he weighed point something. I wondered if he would end up weighing 500g as his weight dropped or not? This is because I heard that some babies were weighing 650g and these are the babies who were 'going', even that of one point one (1.1kg). I also wondered if my baby is also going (**P7**).*

While in the unit the participants met with other mothers who had babies there. Participant's saw other mothers' babies dying and this made them afraid as they thought that their babies might also die. Every time the participants went to the unit, they were worried that they might find their baby dead:

> *What is frightening is that we are sleeping with other mothers who also have babies in the same room as mine. Sometimes when we come, maybe coming for a three o'clock feed or any other time, you will find that baby dead. That is what frightened me thinking*

*that maybe one day, when I come here, I will be told that my baby is no longer alive. Yes! (**P8**).*

Although the technological environment was intimidating, as they spent more time in the unit and were informed about prevention of infection, they felt more reassured. The participants felt that their babies were in a safe environment, as the rooms were clean and it appeared as if there was a commitment to cleanliness and prevention of infection:

*It's... where the babies are, is very clean. It seems as if they clean every time we leave. I Mothers coping with the experiences with preterm infants in NICU. A life uncertain-my baby's vulnerability: have never seen that place dirty. They expect an early delivery of their babies. To this. The birth of a preterm baby was a traumatic experience to the participants, who did not make us remove our slippers before we enter the place, we use to forget but they constantly remind us to remove them. We can sit on the bare floor in some of the corners (**P8**).*

Participants believed that the neonatal unit environment had less bacteria and or germs that could infect their babies while in there as it was clean. They felt satisfied with the cleanliness of the place and thought that their babies were less likely to be infected:

*Where my baby was... where they are admitted. I was happy by the cleanliness of the... the way those women clean their areas. They clean; they make sure that they clean the place when we go. It is always clean to avoid bacteria... to prevent bacteria and germs among the babies. The place has to be clean (**P1**).*

The cleanliness of feeding utensils such as feeding cups also reassured the participants, who felt that their babies were safe from infection. The participants were informed that a preterm baby's immune system is not well developed and the baby can easily be infected. So, when they saw that the feeding utensils were sterilized and cleaned before and after feeding the baby, they felt that their babies were free from the likelihood of infection that could be caused by dirty feeding utensils:

*We have been taking what we use to clean the utensils from the neonatal unit and we take good care of them. We also wash our hands before we use the utensils so that they will always be clean. They say we should not share with the others so that there will be no contamination (**P5**).*

Mothers clean the feeding utensils for feeding babies but they are provided with sterilizing pills to clean the utensils with. The doctors tell us to clean them well. We didn't end, they lacked the psychological preparation for the birth of their baby which they would have made during the last months of their pregnancy. Participants were shocked by the sudden onset of the delivery and they experienced both emotional and psychological stress. They were disappointed and frustrated because they could not carry their baby to term. Participants had to ideal with feelings of uncertainty. They experienced fear and anxiety because they did not know whether the babies, born before their time, would survive. According to them their babies appeared iso small and the physical appearance of the babies made participants afraid, because they did not expect to deliver such a small baby.

*When I delivered... I did not expect that the baby will be so small. I was afraid because I was even feeling cold and took off the clothes that I was wearing. My baby looked so tiny, the baby was small and breathing fast. I didn't know how to handle the baby, hmm its well (**P7**).*

Participant's demonstrated eagerness to handle their babies but were afraid of doing iso since they thought that they did not know how to do it. They questioned their own ability as they feared that handling could damage the baby. The participants felt incapable of handling the babies and felt that they could not do iso because the babies were small. They felt that they were not going to be able to perform their parental role, and this made them afraid since they were wondering how they were going to cope. They overcame their fear to be able to handle the babies while performing the caring tasks. Participants were initially afraid of touching the babies, as they felt that this might hurt the babies since they looked iso small and vulnerable. They described the baby as being "soft" and were unsure of how they could handle the baby without causing some pain or harming the baby.

*Know how to use the sterilizing pills first eventually had to learn how since it was my baby. (**P8.**)*

*The bay was so small and I was so Ah Well, I was afraid of him, he was too small. I didn't know how to hold him but I wondering why the baby so small. What can I do than to take it like that? **(P1)**.*

*At first, I was scared, seeing him... wondering how aah am I going to handle such vulnerable baby? I also thought that... the baby was... very small and soft, and handling him might hurt him since his hands and feet are not yet very strong like a normal baby. (**P1)***

*Although they wanted to interact with the babies, hold or touch the them, they were afraid and did time. I used to see babies but I never saw a baby born that small. I was wondering how this one is like, wondering whether he will survive or not (**P2**) not want to cause any harm like "breaking that their babies would survive when the although separated from their infants, participants in this study were involved in the care of their preterm babies. The babies were sick after delivery or needed care to stabilize them while being nursed in incubators. Anxious about the outcome of the condition of their babies, their feelings oscillated between hope and hope lessness. Participants were hopefu him"*

Participants described their babies as being "too tiny" The presumed vulnerability of the baby initially affected the interaction of the mother with the baby:

*I was afraid of holding him, wondering where I am going to hold, whether touching him will break him or not i... the body was too tiny. Tiny fingers, sometimes I lose hope but give all to God. I cannot lift the baby like the way I do to other new babies (**P7**).*

The participants did not expect or believe that their preterm babies would survive, mainly because it was their first time seeing such small babies. To these participants the babies' size was attributed to the babies' prematurity, as previously mentioned, which made them fearful since they felt that the babies would not adapt well to extra-uterine life:

*I did not even expect that the baby will survive because it was my first time to see that...as I was shown the baby that the baby can be born so small. I do think in my mind if the baby will survive because the baby was too small beyond imagination but I have hope also (**P7**).*

The babies also looked different from other babies that the mothers had seen before, and since that was not a normal happening, they felt that the babies might not survive. The participant's felt that even if the baby was alive, he or she might be alive only for a short period of time. The participant's fear for the survival of the baby delayed the development of a relationship between them and their babies:

Mmm! The baby was too small... you could not believe that he will survive for a longer condition of the babies seemed stable. This was assumed when the baby was feeding well and gaining weight. They desired to be closed to the babies by expressing their love to the babies and staying with the babies a long time in the neonatal unit. When doing this they experienced less anxiety:

*Sometimes when you get there you feel like pouring your love to your baby, wanting to stay with him for a longer time. Having to put baby back into the incubator after a brief touch and cuddling is disturbing. More time is needed with the baby (**P2**).*

Participants were reassured when the condition of the babies improved, and they then felt that the babies would survive. When this happened, they felt as if they had accepted the arrival of their preterm babies, although they still experienced anxiety about the babies' conditions, since it fluctuated:

*Yes, today I have accepted that the baby is born, he will grow though his condition changes sometimes. I have hope since there is not much to do with the baby being so small. I am becoming used to the tiny baby (**P7**).*

The participants' anxiety increased when their preterm babies' conditions deteriorated. The deterioration in the babies' condition created a form of separation from the mothers and their babies since they became afraid of the babies, just like they were afraid of the baby initially when they first saw him or her:

> *Sometimes when you find that his condition has changed, you want to leave immediately. Due to that change in his condition, you become afraid of the baby just like the first time you saw him (**P2**).*

The participants felt frightened when they realized that their babies had stopped breathing. They felt afraid as they thought that the babies were not alive and this made them very anxious about their babies' conditions and the prognosis. An increase in the mothers' anxiety led to fear of the baby, which became a barrier to building a relationship with their babies:

> *I was frightened because the baby was not breathing. I was wondering whether he was dead or what was happening to him. The way the baby was breathing made me afraid is sick and small. Sometimes I wonder what the problem is hmm" I ask the nurses anytime the baby is breathing small (**P2**). The participants were concerned about the safety of their babies and were always ion the lookout for anything that signalled danger to the babies. They had been informed that a preterm baby is sensitive and susceptible to infection and were cautioned about the importance of the cleanliness of the equipment. This made them alert to anything that was potentially harmful to the babies: and thinking the baby was going to die They took the oxygen back to my baby after (**P4**).*

Participant's felt afraid if any unusual thing was happening to their babies. One participant was frightened and became so anxious about the baby's condition when she found the baby with secretions from the mouth and nostrils, as she thought that the baby was not breathing:

> *He had a lot of foam from his mouth and yellow stuff from his nostrils. This is one of the things that frightened me as I was wondering as if a person can have yellow stuff from his nostrils. When that was happening, I thought he is not breathing well, you see because aa hee (**P7**).*

The participants were worried about anything abnormal happening to the babies as this increased their concern about the infant's wellbeing. They asked questions about whatever seemed to be affecting the well-being of the babies in order to get clarity from the nurse. They wanted an explanation for whatever they did not understand:

> *Last time I asked the nurse about the fact that my baby experienced eye discharges every time the light was put ion and whether that does not affect him. Sometimes the plasters they use to cover the baby face remove (**P7**).*

When the babies were losing weight, the participants were worried because loss of weight could be a sign that the babies were unwell. The participants were worried until the babies started gaining weight again:

> *You wonder whether the baby is sick or what could be the problem. The baby is so small and is not holding on to the breast* the had *the other baby died, you see and this they did without cleaning it. I then complained to that lady that what they are doing is not good. They are causing bad luck to my baby (**P4**).*

The participants went to the neonatal unit every three hours to interact with the babies and provide caring activities such as feeding, changing the baby's nappy and cleaning the baby's cord. This made them uncomfortable as they were always concerned about how they were going to find the baby when they got to the neonatal unit. They felt that it would be safer if they were allowed in the neonatal unit more often in order to ensure the safety of the baby, as they began to realize that nurses were not with the babies all the time. Participant's felt that some of the babies who died, had done iso because they had a problem which could not be promptly identified and there had been an inadequate response:

> *Some babies lose their lives because they were not identified or seen. So when you are there... going to the neonatal unit more often, I think it is safe. This would even assist nurses because I think some things happen when they are not aware. At first, I thought they do not care, because I thought when somebody is allocated to the room, he or she has to be there full time observing the babies but it is not like that. They stay at the reception area while the babies are there. **(P7).***

4. DISCUSSION

4.1 An unfamiliar and Intimidating Environment

The participants were overwhelmed at the sight of so many babies attached to --numerous

monitors and unfamiliar technologies. Several studies have demonstrated how the technological environment of the neonatal unit overwhelms mothers and how it may affect the attachment process [14]. In a phenomenological study involving seven mothers of preterm babies who were interviewed four times, they found that mothers reported haven been adversely affected by the very sick infants being cared for in the neonatal unit [15] (Rabe et al., 2013). The mothers stated that they were unable to handle the situation, although they wanted to participate in their infants' care. They also reported that they wished they could be with their babies in a private area.

Delayed or problematic processes of attachment may result, affecting the way the mother perceives her own well-being of their babies [16]. The participants' preterm babies were nursed in incubators for provision of warmth and were initially on intravenous fluid therapy and oxygen to stabilize their condition. Participants were afraid of the equipment at first and could not initiate physical contact with their preterm babies through touch. These environmental factors together with other previously related fears hampered the initial contact between the participants and their preterm babies. Other research studies reported how the unfamiliar environment of the neonatal unit with technology affects physical contact of the mother and her baby and poses a threat to interaction between them [16].

In their study they argued that under normal circumstances parents feel responsible for the growth and development of their baby. They have realistic expectations and feel competent in caring for their infant in an environment that is favourable for the development of attachment links. The family is the context within which an intimate link between parents and infant is made, but when mothers are in the neonatal unit the technology required for treatment of a preterm baby poses a barrier to the initial interaction of parents with their infants [14]. Malakouti and friends found that mothers reported that they were worried by the equipment in the unit, such as endotracheal tubes, chest drains, and cannulae and feeding tubes. The parents reported that they were afraid of the equipment, and it took a long time before they were able to participate in the care of their child [17].

The participants in this study were separated from their preterm babies who were admitted to the neonatal unit; however, since they were generally recovering well from post-delivery, they were actively involved in the care of their preterm baby. The participants were able to interact with their preterm babies on a daily basis, and this helped to moderate their psychological distress of separation from their babies. The literature reviewed showed how involvement of parents in the care of their preterm babies moderated their distress and helped in building a relationship between mother and preterm baby [18,19].

One of the findings indicated that participants fear was exacerbated if they witnessed the deterioration and death of another premature infant. The participants felt very threatened by the deterioration and death of infants in the unit, and this increased their fear about the prognosis of their own infant. This seemed to have contributed to delay in the development of a relationship between participants and their preterm babies. The other finding of this study not reported in the literature reviewed is that although participants initially had fear when they arrived in the neonatal unit, they were reassured that somehow their preterm babies were safe from infection since the neonatal unit was clean and utensils for feeding the babies were sterilised.

4.2 Interaction with Healthcare Provider

Generally, the participants in this study felt that there was good interaction between them and the staff members who communicated with them as they expected. However, three participants felt that there was poor interaction between them and the staff members. Other related studies show how poor interaction between staff members and parents of preterm babies affect staff communication with parents. A phenomenological study conducted by [15], on maternal experiences of preterm birth and neonatal intensive care involved 36 mothers of infants admitted to three NICUs. The study found that the overall communication with both doctors and nurses was regarded by mothers as good, although three mothers reported that nurses did not interact with them as expected [15,20].

A phenomenological hermeneutic by [21], who interviewed 10 mothers, found that mothers needed continuous information about the baby's care; because sometimes there was no information from staff, mothers felt that their interaction with staff was not good and tended to have a lack of trust in them [22] carried out a

study with a hermeneutic approach to explore parents' and nurses' experiences of the close parent-nurse relationship when a premature baby is hospitalized. The study found that nurses experience the interaction with parents as the most challenging part of their job, and that the quality of nurses' interaction depends more on their personal abilities than ion their professional role.

In a study entitled 'Families' views ion ward rounds in neonatal units', Bramwell and Wendling (2005), found that even though some parents appreciated the interactions they had with the professionals when they were involved in ward rounds in the neonatal unit, some did not. Some mothers reported that their interaction with the medical and nursing staff was not good and that staff did not communicate well with them. One parent reported that it would be good if the doctors made an effort to talk to the parents. These findings provide evidence of the need for chatting was an important strategy to develop a rapport with the parents. They shared part of their own lives and exchanged life experiences with mothers, as they believed that this form of interaction assisted mothers to feel comfortable and confident in providing care to their infant. Nurses were able to engage at a deeper level with mothers and were able to provide care according to the needs of the mother and the family. Nurses introduced themselves to mothers, went through the routine of the unit with them, and gave them an opportunity to ask questions about their babies good interaction between mothers and the nursery staff's acknowledgement of a woman's.

Nurses involved mothers in planning the care of the baby for the day, since this helped mothers in taking care of the baby. It is reported that 'chatting' helped mothers to relate to the nurse, and to feel equal and connected to them [14,24]. The mothers in turn felt safe to express their concerns, which also helped them to participate actively in providing care to the infant. The staff while involved in the care of their preterm babies.

Nurses in the SCBU should aim to build good relationships with mothers while their preterm babies are admitted to the neonatal unit in order to promote communication. Kearvell and Grant [23] conducted a study which demonstrated the importance of good interaction between nurses and mothers of preterm infants. This is important when the preterm baby is hospitalized, since the nurse supports the mother in establishing connection with the baby. Nurses who are sensitive to the needs of mothers are helpful in guiding and strengthening maternal responses to their infants, hence assisting them to attach to their preterm baby [23].

A strategy called 'chat' can be practiced by staff in the NICU where this study was conducted. 'Chat' is described as a social talk with mothers [24].

Staff can utilize this strategy in building a rapport with the mothers in the unit, and get to know what the mothers expect from them. This could enhance the development of good relationships between staff and the mothers in the neonatal unit. In their study, they found that mothers reported valuing nurses who chatted with them not only about the baby but about life outside the nursery [23]. With these nurses, mothers stated that they felt relaxed, familiar and confident in caring for their baby. Nurses reported that status as a mother helped mothers to have self-confidence and their self-esteem was not affected. Mothers experienced 'chatting' as establishing, maintaining and enhancing their confidence and self-image as mothers [14,24].

The findings of the current study demonstrate that when the participants were provided with information on how to care and were also shown how to provide the caring activities, they developed confidence in taking care of their preterm babies. The participants were reassured when nurses and doctors were helpful while they were in the neonatal unit. Helpful nurses and doctors enabled the participants to fulfil their parental role, whereas mothers became anxious when they felt that nurses were not helpful [25]. The importance of providing mothers with information on how to care for a preterm baby and their need for assistance with anything relating to the preterm baby's care, have been highlighted in other studies [17,6]. Aagaard and Hall [24] suggested that facilitative actions are important in helping mothers to develop caregiving actions for the babies. The facilitative actions include giving empowering and consistent information to the mother on how to provide care and help in minimizing the separation between mother and baby throughout hospitalization. To facilitate attachment, mothers need to be taught how to interact with the babies [26]. The information given to the mother boosts her confidence while providing care to the baby [26].

Nurses need to be aware that they are the ones who can facilitate mother-infant attachment positively or negatively, because if the mother does not receive information on arrival in the neonatal unit she will not be confident in providing care to her preterm baby, and this can affect the mother-infant attachment [26]. This was the case with one participant in this study, who stated that she was not given any information by the nursing staff ion how to take care of her baby. However, the participant managed to bond with the baby since she was supported by her family, other mothers in the neonatal unit and some staff members during subsequent days while in the neonatal unit.

In their study, when nurses' views were established ion what could facilitate parenting of mothers in the neonatal unit, they mentioned involving them in the care and decision-making as much as possible; ensuring that they are well informed; development of good staff relationships, including understanding of cultural needs; having open visiting hours; helping mothers with breastfeeding; encouraging parents to touch and hold their infant; and making sure that they are informed about what they need to know concerning the baby's condition [26]. Guided participation of the mother in caring for her preterm baby while in the neonatal unit is advocated, and the mother may be supervised in everything that she does in caring for the baby. This guidance enables the mother to gain competence in caring for her baby [27].

The participants in this study seemed to experience less anxiety when their babies' condition was explained to them, when there was an explanation of procedures done to the baby and of the baby's treatment.

The converse was evident, in that their anxiety seemed to increase when there was no explanation provided about the baby's condition and treatment. A number of studies demonstrate how the giving of information to parents about the preterm babies' care and health status helps parents to cope with their anxieties and promotes interaction between the parents and their preterm babies [17,6]. A phenomenological study by Hall (2005), found that parents reported that lack of communication about the babies' condition, procedures performed ion the baby and treatment of the baby increased their anxiety. The parents reported that they became anxious as they requested accurate information concerning the babies' conditions, and were always wondered what was happening concerning the baby's progress while ion treatment (Hall, 2005). The parents also reported that they wanted to know what was going ion when their baby was sick and admitted to the intensive care unit. They wanted to understand and felt that it was important for them to know exactly what was happening concerning their baby's condition. When the doctors and nurses told them what was going ion, parents felt as if they were part of the team.

Family-centered neonatal care should be based on open and honest communication between parents and professionals on medical and ethical issues (Harrison, 1993) [20]. Communication in the NICU has been found to be frustrating for both parents and professionals. Dodane et al. [27] also mentioned that parents had previously reported that they were not always accurately talked about the consequences of medical conditions and intensive care treatments or about medical and ethical controversies regarding care of their babies. This was possibly an attempt to shield parents from information about uncertainties or controversies concerning their babies' NICU treatment.

Appropriate, timely and sensitive provision of information is a fundamental need for parents of preterm infants [28]. Despite the overwhelming nature of such information, parents find it more stressful when information is withheld. Information has the potential to empower parents, and is viewed as a right [28], reported that parents in their study wished to be informed about everything that could possibly be relevant to their child's condition, such as causes, progress, outcomes, treatments, their infant's behaviour, and all that happened while they were not present. This study also found that parents felt they should have access to their children's medical records. A phenomenological study by Schenk and Kelley [29], they found that mothers requested information about their infants' health on a continuous basis by visiting and phoning the neonatal unit throughout the day. Mothers reported that they loved the nurses and were happy with the care when they received information about their infants, as they wanted to know about their infants' diagnosis.

Family-centered care is advocated for in neonatal units [20]. Although the need for the involvement of other family members is not reflected in the findings of the current study, family-centered care is not adequately practiced

in the unit in which this study was conducted. The participants were the only family members allowed into the NICU and thereby acted as representative of the family, but were not able to enjoy in-unit support from their family. [30,20], stated that family-centered care is a philosophy aimed at improving communication with families, and its possible benefits include improved satisfaction with care, decreased stress of parents, increased parental comfort and competence in post-discharge care, improved success with breastfeeding, shortened hospital stay, decreased readmissions post-discharge and increased staff satisfaction. Gooding et al. [31] are of the opinion that family centered care is an approach to medical care rooted in the belief that optimal health outcomes are achieved when patients' family members play an active role in providing emotional, social and developmental support. The inclusion of other family members in the care of a preterm baby is essential in neonatal units, because having a sick preterm baby is stressful for the family [20]. If other family members like the father are equally involved in the care of a preterm baby, they will be actively involved in the decision-making concerning the baby's care and will effectively support the mother during hospitalization of the preterm baby, and even after discharge.

The exclusion of fathers from having contact with their preterm babies was not reflected in the findings of this current study. The researcher, who is a Motswana, knows about the cultural aspect of not involving fathers in the care of a newborn until after the mother's confinement (Fleury et al., 2014). It is worth noting that this cultural aspect may affect the attachment between the father and his preterm infant. Increasingly, the trend worldwide is for parents to interact with their preterm baby on order to have increased connection (Fleury et al., 2014) [32]. Studies conducted in other countries reveal the problems faced by fathers of preterm infants. The presence of fathers during the delivery of their preterm baby and their being involved in their care enhances the attachment between the two. Fathers of preterm infants reported that they did not feel like fathers and felt distant after the birth of their preterm infants [33,34].

4.3 Overcoming Fear: Emotional Connections

Touch, one of our basic needs in communication, is one of the most fear-inducing responses in the connection between mothers and their preterm infants [14]. The participants' overwhelming fear of touch hindered their attempts to make physical contact with the preterm baby. With the encouragement of the nurses, they were able to overcome their fear, and able to hold their preterm baby with confidence. The difficulties that mothers of preterm infants' face before they are able to initiate contact with their baby can delay the building of a relationship between mother and baby [14]. Support from staff may assist in establishing the mother-infant relationship.

Fenwick, Barclay and Schmied [35] interviewed i28 mothers in hospital after the admission of their preterm baby in the nursery. Twenty-three of the mothers were ire-interviewed i8 i- i12 weeks after the discharge of their babies. Mothers reported that they wanted to touch and hold their baby while in the nursery, but were initially afraid to do iso due to fear of harming the baby and environmental barriers. Rowe, Gardner and Gardner [36] explored the experiences of parents of preterm newborns during hospitalization and their transition to home. They found that mothers reported that they felt as if they knew their infants as time went on, since they were competent in caring for their baby and were reassured. The mothers reported that the support from staff also helped them to hold their baby, and were reported to have described their babies as theirs after having an opportunity to hold them [36].

When they were able to hold their infants, the participants in the current study were thrilled. They developed relationship with their preterm babies. The love that the participants experienced after holding their preterm baby helped them to develop an emotional connection with them. Studies have been conducted which demonstrate how the mother has to develop positive feelings and love towards her baby in order to bond with the baby [1]. Seeking and maintaining proximity arouses feelings of love, security and joy (Frello et al., 2012). The pleasurable feelings of intimacy in the relationship with the infant are essential for attaining higher states of affiliation. To feel affection for this particular infant and to be fulfilled by the attainment of this new parenting creates an emotional climate conducive to attachment [14].

Malakouti et al. [17] argued that parents experience connecting to their infant in an

individualistic way. When parents are in contact with their infants, they are able to recognize their infants' cues, and this enables them to be emotionally connected with them [17,6]. They further stated that early and extensive contact enables parents to become acquainted with their infants' feeding, embracing, rocking, maintaining prolonged visual contact, and actively seeking these opportunities for interaction with the intent all foster the development of an affective tie (Bellietial., 1998; [17,6]. This was evident in the current study since the participants did not develop a relationship with their babies during the first few days of interaction, but managed to bond with them and maintain the bond because of the constant contact that they had with them. This is also confirmed by Dodane et al. [8] who described the formation of a bond as falling in love and maintaining a bond as loving someone.

Herbs and Maree (2006), argued that the first feelings of love are not essentially attributed to the initial contact between the mother and the baby. Figueiredo, Costa, Pacheo and Pais [37] affirm this by stating that maternal bonding does not occur after birth but occurs with time as the mother maintains contact and interacts with the baby. When mothers interact with their baby, the interaction affects the baby [38,6] and there is certain behaviour that infants show towards their parents which are essential in promoting maternal attachment, such as crying, eye contact and facial expression [37].

The mother who is interested in touching her baby enables the baby to recognize her as she communicates with the baby. The mother is sensitive to the voice of her infant, which may cause her to secrete milk [38,17,6]. The increased levels of estrogen, oxytocin and prolactin coupled with other maternal behaviour after delivery, such as touching and breastfeeding the baby, enable the mother to bond with the baby [37,39].

4.4 Early Contact of Mothers and the Hospitalized Preterm Babies

The participants in the current study bonded with their babies after some time as they experienced difficulty in initiating contact. Early contact between the mother and her baby can be accomplished in the NICU where this study was conducted by utilizing KMC, as this has been proven to be very effective in promoting bonding between the mother and her preterm baby [40,41] (Marley et al., 2017). KMC facilities are limited in the institution in which this study was conducted, since there are only three KMC beds for mother's which are situated in the postnatal ward. Since mothers are involved in the care of their preterm babies, they can be encouraged to kangaroo care their preterm babies in the SCBU as soon as the baby's condition is stabilized. Charpak et al [42] recommend that KMC is started after resuscitating the baby and ensuring that the baby is adapting well to extra-uterine life.

The main objective of starting KMC after stabilizing the baby is to control stress in both mother and baby [20]. It is also done to help the baby cope physiologically, and to promote early bonding and future breastfeeding [42]. According to [41] and [23] kangaroo holding has been shown to help mothers feel close to their infants, develop confidence in them, promote breastfeeding, decrease stress for both mother and baby, and enhance early development of the baby. Since KMC promotes breastfeeding, mothers are reported to feel confident after feeding their infants and this also assist mothers to become attached to their infants [23].

Another study conducted by Ramanathan, Paul, Deorari, Taneja and George [43] found that when two groups of i14 mothers apiece, those who provided KMC to their LBW infants and those who provided a standard form of care, were observed and interviewed, 70% of those who provided KMC felt that they could touch and lightly stroke their infants' entire bodies when using the method. Mothers who provided KMC to their infants also reported that they preferred KMC rather than incubator care, and eight mothers aid they would continue KMC even after discharge. Other reported effects besides promotion of bonding ion the KMC group were better weight gain after one week of life, shorter duration of hospital stay, and success in breastfeeding. The success in breastfeeding attributed to KMC has demonstrated benefits in neurological development, intelligence quotient (IQ), and the enhancement of mental development of preterm babies [42].

These studies demonstrated the benefits of KMC when mothers kangaroo their preterm infants. KMC promotes contact between the mother and the preterm infant and may enable mothers to develop confidence in touching and caring for their infant. The participants in the current study encountered difficulties in touching and holding their infants initially, which could have been minimized by KMC of their preterm infants.

5. CONCLUSION

The health of the mother, preterm infant and family is a critical aspect of maternal and child health care. This study contributes to the body of knowledge, specifically with regard to Tamale-Ghana. The experiences of mothers of preterm babies who were involved in the care of their preterm babies in NICU at the Tamale Central Hospital was the focus of this qualitative study. An exploratory descriptive design was used to explore and describe the participants' experiences. Two themes emerged from the data, which provided a rich description of the experiences: a life uncertain my baby's vulnerability and an unfamiliar and intimidating environment.

The study found that the involvement of participants in the care of their preterm baby in NICU was very helpful. Even though they experienced fear in interacting with their baby initially due to diverse barriers such as fear of hurting the preterm baby and fear of the equipment in the neonatal unit, the participants managed to overcome their fears as they interacted with their preterm baby ion a daily basis. Other contributory factors which led to the mothers' anxiety in and fear in this setting were negative interactions that participants experienced, such as non-explanation of the baby's condition and the procedures performed ion the baby. Support from staff, other mothers in the neonatal unit and the participants' families assisted them to cope and promoted bonding.

CONSENT

After the introduction and establishment of rapport, the consented participants were interviewed.

ETHICAL APPROVAL

The ethical clearance and administrative approval (appendices A, B & D) were obtained from the Ethics Review Committee of the Ghana Health Service.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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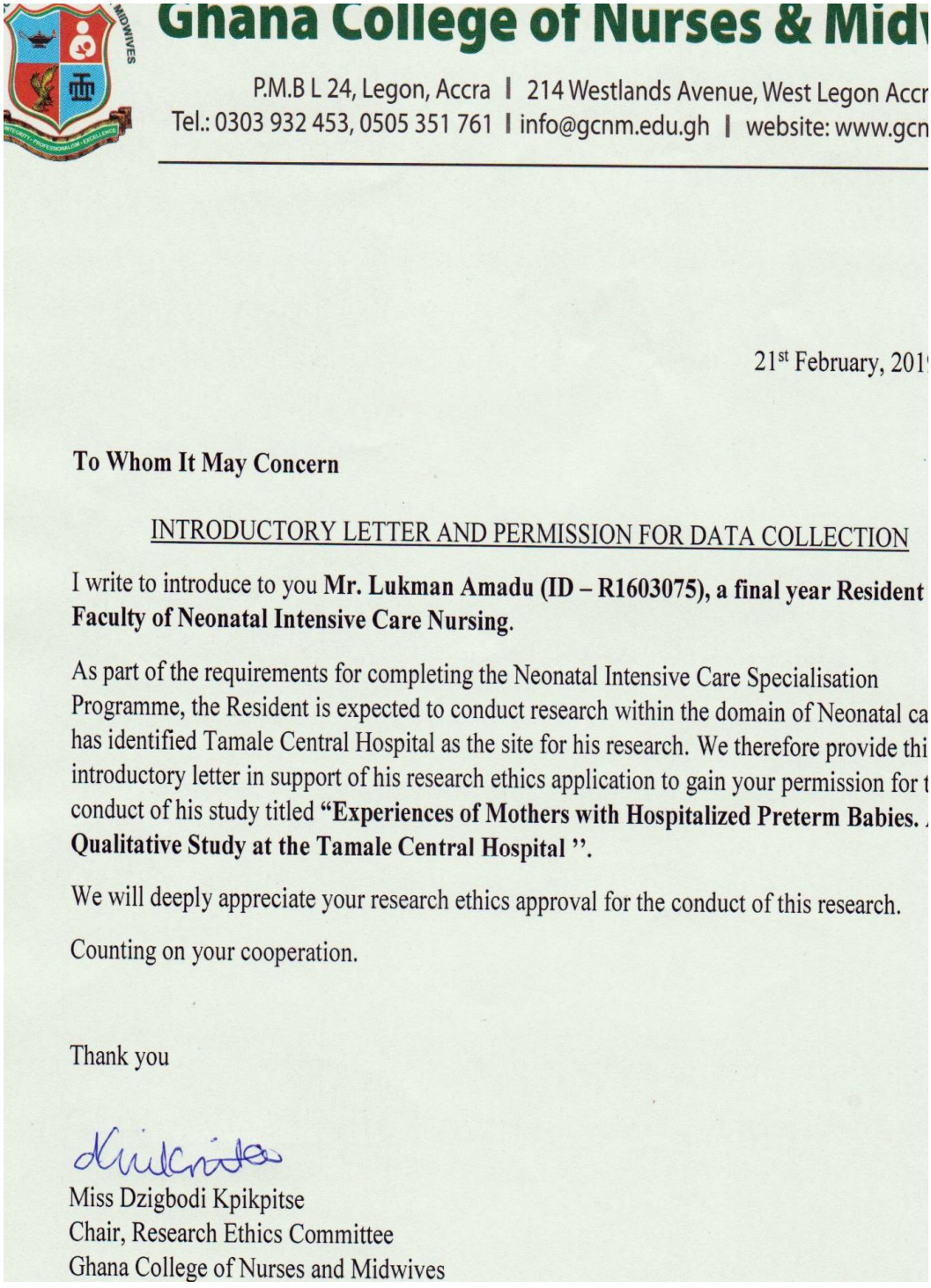
Appendix C. Introduction Letter



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21st February, 201

To Whom It May Concern

INTRODUCTORY LETTER AND PERMISSION FOR DATA COLLECTION

I write to introduce to you **Mr. Lukman Amadu (ID – R1603075), a final year Resident Faculty of Neonatal Intensive Care Nursing.**

As part of the requirements for completing the Neonatal Intensive Care Specialisation Programme, the Resident is expected to conduct research within the domain of Neonatal ca has identified Tamale Central Hospital as the site for his research. We therefore provide thi introductory letter in support of his research ethics application to gain your permission for t conduct of his study titled **"Experiences of Mothers with Hospitalized Preterm Babies. Qualitative Study at the Tamale Central Hospital ".**

We will deeply appreciate your research ethics approval for the conduct of this research.

Counting on your cooperation.

Thank you

Miss Dzigbodi Kpikpitse
Chair, Research Ethics Committee
Ghana College of Nurses and Midwives

Appendix D: Ethical Clearance Approval Letter

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

Research & Development Division
Ghana Health Service
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MyRef. GHS/RDD/ERC/Admin/App/19/224
Your Ref. No.

15th July, 2019

Lukman Amadu
P. O. Box 767
Tamale

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	**GHS-ERC 047/05/19**
Project Title	Experiences of Mothers with Hospitalized Preterm Babies. A Qualitative study at the Tamale Central Hospital
Approval Date	15th July, 2019
Expiry Date	14th July, 2020
GHS-ERC Decision	**Approved**

This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report after completion of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.
- Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED.....
DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

Peer-review history:
The peer review history for this paper can be accessed here:
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