POST-DISCHARGE FEEDING CHALLENGES AMONG MOTHERS WITH PRETERM INFANTS AT KORLE-BU TEACHING HOSPITAL, ACCRA

A Dissertation Submitted to School of Nursing of the University of Ghana

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DECLARATION

I, Alberta Palmis Gyepi-Garbrah do hereby declare that this dissertation is the outcome of my own study with the exception of references made to other people's work which have been duly acknowledged. The dissertation has been undertaken under the guidance and supervision of Dr. Florence Naab of School of Nursing, University of Ghana, Legon and Dr. Mame Yaa Nyarko, a Paediatric consultant of Princes Marie-Louis Hospital, Accra. This work has not been partially or fully submitted for any degree neither has it been submitted concurrently in candidature for any other degree. The under signed supervisors declare that they have read the dissertation and have recommended it to the School of Nursing for acceptance.

…….
Alberta Palmis Gyepi-Garbrah Date: ……
(Candidate)

We the undersigned certify that we have read and accepted this dissertation as conforming to required standard.

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ABSTRACT

The purpose of this study was to assess the post-discharge feeding challenges among mothers‟ of preterm infants. A qualitative design was employed in the study. A purposive sampling method was used to select nine participants at the Paediatric/Child Health out-patients department of the Korle-Bu Teaching Hospital. An interview guide was used to understand the post- discharge feeding challenges each mother and their preterm infants encounter after discharge. Participants were interviewed between Thirty to forty-five (30 - 45) minutes using a semi structured interview guide. Data were content analyzed and themes were generated. The main findings suggest that though mothers‟ of preterm infants were noted to have fairly adequate knowledge on feeding and care after discharge, they continued to have feeding challenges such as lactation problems, and inability to identify hunger and satiety clues. Their preterm infants also continued to have challenges with sucking, staying awake to feed, vomiting after feeding, and weight loss after discharge. In conclusion, Mothers of preterm infants were found to require a more individualized approach to their child's specific needs and their own concerns. There is also a need for early follow up and support from health care personnel after discharge.

DEDICATION

This work is dedicated to the glory of God for his mercies and favour. It is also dedicated to Mrs. Helen Gomashie, my mother, Sam, and my children Michael and Eli and my entire family for their unflinching support.

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CHAPTER ONE

1.1 Background to the Study

Preterm infants are infants delivered before pregnancy gets to term (before 37 completed weeks of gestation) and they may still not get to term at the time of discharge from the Hospital, this makes their care and especially their feeding a great concern to caregivers. Feeding problems among infants are yet to be classified universally, but have been documented to include vomiting or spitting with the potential of affecting the child's intake of food (Miller-Loncar, Bigsby, High, Wallach & Lester, 2004). Other authors define feeding problems as selective eating in which the child does not feed from a wide range of foods (Field, Garland & William, 2003). Some researchers defined the problem as expressed by families with children who have feeding problem; where there are variations in the food intake or feeding behaviours that are different from the normal pattern leading to the discomfort of the child or the care giver (Byars , Burklow , Ferguson , O ' Flaherty , Santoro , & Kaul , A ., 2003; Field et al., 2003.

Food, according to Abraham Maslow's hierarchy of needs is a physiological need and is fundamental to all humans and is required for human survival. If this requirement is not met the human body can simply not function. Feeding problems, be it over feeding, under feeding or inadequate intake of nutrients has a lasting effect on the individual. Under feeding has lasting effect on cognitive, motor and sensory functions and can cause deficiency in the nutritional status, growth and a cause of behavioural change among children (Thoyre, 2006). Feeding problems could be described as multifaceted because of the interactions between biological, behavioural, and environmental factors. Problems from various systems of the body may also be involved; systems such as neurological,

gastrointestinal and respiratory systems and difficulties on the part of the caregiver also has the potential to cause feeding problems (Thoyre, 2006).

It has been documented by Obedidat, Bond & Callister, (2009). that mothers whose infants are admitted to the Neonatal Intensive care unit (NICU) have a feeling of lack of control over events while their infants are on admission at NICU and this may cumulated to feeding problems, since the initial feeding and care of the preterm infants are not provided by the mother of the infant (Obedidat, Bond & Callister, 2009). The preterm infant's lengthy stay and initial medical problems while at NICU impedes the mother from giving care. These has the potential of leaving the mother disposed to worry, depression, and may probably kill her poise in care-giving, especially with feeding of the preterm infant (Docherty, Miles & –Davis, 2002). Some mothers may also be afraid of their preterm infants due to their small size leading to difficulty in positioning the preterm infants to breast at feeding times. The preterm infant lacks the ability to coordinate sucking, swallowing and breathing simultaneously, due to these, feeding problems occur and a challenge for mothers and their preterm infants after discharge from NICU (Burlow, McGarth, Valerius & Rudolf, 2002).

For the premature infant, post-discharge health issues has the propensity to complicate feeding development. Medical conditions among preterm infants such as respiratory distress, jaundice, hypoglycaemia, startling attacks, lethargy, diarrhoea and frequent hypothermia, cause them to be inclined to poor oral feeding in comparison to their full term infants (Ludwig, 2007). Their inability to coordinate sucking, swallowing and breathing may lead to aspiration of milk during or after feeding, with its ensuing respiratory distress and apnoeic attacks. Preterm infants have more problems than full

term infants; their feeding time is more protracted and disordered than the term infants and mindful strategies are needed during meal times to maintain their alertness and to ensure that they are awake during meal time (Torola, Lehtihalmes, Yliherva & Olsea, 2012). Furthermore, under developed coordination of behaviour and reactions at meal time among preterm infants is said to be demonstrated as 3 to 5 brief sucks with long gaps between the periods of sucking (Hawdon, Beauregard, Slattery & Kennedy, 2000). This is followed by a noticeable non-nutritive sucking that is broken when a new provocation is started by the care giver, such as moving the nipple or spoon being used before sucking will resume (Hawdon et al, 2000). Therefore, feeding challenges among preterm infants that can hinder them from attaining essential nutritional requirements can be worrying to health caregivers and families of preterm infants.

Research done on feeding of the premature infant has been focused on commencement of feeding the preterm infant in NICU (Pridham, Saxe & Limbo, 2004). There is therefore paucity of research on feeding the preterm infant after hospitalization period but post- discharge feeding remains a crucial concern for many families (Pridham et al., 2004). However, Existing evidence such as multiple re-admissions suggests that many of these infants and their families still struggle with feeding in their early years of post-discharge (Field et al., 2003; Ludwig, 2007). Much of the underpinning to build parental confidence and ability for post discharge care is laid during the time of the infant's admission in NICU. The anxiety and stress at the time of birth, emotional encumbrance of having an infant admitted to NICU and, parental distress at the sights of NICU with its gadgets and constant beeping of machinery remains with the parent even after discharge, and may linger for as much as 2 years after the infant's birth (Shaw,

Deblois,

Ikuta, Ginzburg, Fliesher & Koopmam, 2006). Globally, 15 million infants are born premature, (before 37 completed weeks of gestation) and this figure is swelling (WHO Factsheet No. 363, May 2012). Over 40,000 infants are born annually in the United States; approximately one hundred and ninety infants out of this number are born even before they attain 28 weeks of gestation (Hamilton, Martin & Sutton, 2004). Seventy percent and more of these extremely preterm infants presently survive. Nevertheless, they have substantial risk for long-term damage as well as nutrition and growth deficits (Hack et al., 2005). Premature birth according to World Health Organization (WHO) is the leading cause of death after Pneumonia in children under 5 years. Nonetheless, the upgrading and improvement in health care has led to an augmented survival of neonates born prematurely (WHO factsheet No. 363, May 2012).

Preterm infants have many challenges which eventually influence their existence and quality of life. Three quarters of premature infants can be saved with contemporary cost effective interventions such as appropriate feeding plans with required nutrients (WHO Fact sheet No. 363, May2012). Many preterm infants have been identified to have need for continuous care in the medical and educational services for the record part of their early years and this need is predominantly in the area of feeding (Aylward**,** 2002). A greater percent of these preterm infants continue to be referred for management of substantial and insistent feeding problems, including; eating restricted variety types of food, difficulty transitioning to coarse or lumpy food and totally refusing food (Field et al., 2003).

Growth failure post-discharge is a very common phenomenon among preterm infants. Extensive feeding plans must be put in place before discharge to reduce

inadequate feeding which culminates to failure to thrive. Since this has the tendency to give rise to emotional and psychosocial problems to the care giver and the family as a whole and is a common cause for re-admissions and an additional cost to the family. The difficulty of the premature infant to sustain growth leads to growth failure and this is connected with an increased peril of poor neuro-developmental consequence. The need to increase calorie and protein to sustain life and growth after discharge is essential among preterm infants. Fortification of breast milk and the use of fortified infant formula are the way forward (Dusick, Pointextert, Ehrenkranz & Lemons, 2003). Feeding problems also have substantial significance for infants‟ growth and development as well as their family welfare. Children with feeding problems have the potential for nutritive inadequacies, somatic grievances, unstable growth curve, intellectual, motor, and language delay (Dusick, et al., 2003). These have the tendency to cause tension among parents and their interaction with the child, culminating in behavioural and emotional regulation malady (Esparo et al., 2004). Infants who are born premature and/or with a low birth weight below the tenth percentile for gestational age are at higher risk for developing feeding disorders (Rommel, De Meyer, Feenstra & Veereman-Wauters, 2003). Supporting the preterm infant to develop safe and active feeding ability is a foremost worry of nurses and families in the course of their final weeks at NICU (Thoyre, 2006).

Neonatal complications are noteworthy causes of morbidity and mortality amongst infants in Ghana (Ghana Demographic and Health Survey [GDHS] 2008). From personal observation at the Neonatal Intensive Care Unit (NICU) at the Korle-Bu Teaching Hospital, nurses have identified various feeding challenges which include: infants‟ inability to suck and swallow, inability to stay awake during feeding,

regurgitation of feeds leading to aspiration and subsequent respiratory distress and apnoeic attacks. Other feeding challenges related more to the mothers are; inadequate production of breast milk, inability to feed infant slowly with cup and spoon, prolong feeding time, inability to provide warmth for infant while feeding, lack of mother and child bonding, and lack of confidence to feed a preterm infant. Annual statistical reports from the Korle-Bu obstetrics and gynaecology department shows that preterm delivery has been on an increasing trend with a slight drop in 2011. The numbers delivered are as follows: 480 in 2008, 613 in 2009,639 in 2010 and 583 in 2011. This trend is worrying because in Ghana, neonatal deaths (including preterm deaths) account for 60% of infant mortality (GDHS, 2008). The number of preterm infants with post-discharge feeding problems has been estimated to range between 19-80% **(**GDHS, 2008**).** This percentage is high and is a cause for concern and strategies must be put in place to curb it so as to improve the life of preterm infants and the families.

1.2 Problem Statement

From clinical experience with mothers of preterm infants at the Korle-Bu teaching hospital, the researcher observed that mothers report to the Department of Paediatrics with their preterm infants on account of aspiration of feeds, weight loss and sometimes sudden infant death. Much of the information given to them while on admission and prior to discharge may not have practical meaning for them. When mothers finally go home with their infants, poor feeding, no feeding at all leading to weight loss in their babies, Respiratory problems such as aspiration of feeds with difficulty in breathing leaves these mothers helpless. There are also no official contacts with health caregivers until they

decide to go to the hospital or they may wait till they are due for review. Also, the financial burden and stress that accompanies readmission is also a cause for concern. Though the National Health Insurance Scheme (NHIS) covers the care preterm infants receive, usually some very expensive medications are not covered by the scheme and the cost is borne by the mother/family.

Some of the mothers have other children who are neglected due to the mother's absence during readmission of the newest member of the family. Some mothers are single parents making them bread winners for their families. Their presence in the hospital and absence from work and home, the fear of the unknown of the outcome of the readmission is a source of stress and anxiety to these mothers and their families. Personal observation also reveals that mothers with preterm infants have life style limitations. This is necessitated by the frequent feeding schedule (2-3hourly), maintenance of body temperature and infection prevention measures which are key in care giving. It has also been realized that the care/concern for the preterm infant may be a low priority area for health care planners considering the limited number of facilities and expertise for preterm infants in Ghana. The researcher has also observed that the area of psychological assessment and support for mothers with preterm infants is neglected. Though there are studies conducted on feeding challenges among preterm infants and their mothers, there is little or no research publication in this area in Ghana. Thus the purpose of this study is to examine the feeding challenges among mothers of preterm infants after discharge from NICU at the Korle-Bu Teaching Hospital.

1.3 Purpose Of The Study

The purpose of this study is to explore the feeding challenges of mothers of

preterm infants after discharge.

1.4 Specific Objectives

The specific objectives are to:

1. Identify feeding problems of preterm infants discharged from NICU at Korle - Bu
2. Describe mothers‟ readiness towards feeding their preterm infants before discharge by way of education received.
3. Examine the feeding challenges of mothers with preterm infants after discharge.

1.5 Research Questions

1. What are the feeding problems of preterm infants?
2. How are mothers of preterm infants prepared towards feeding their preterm infants after discharge?

1.6 Significance of Study

The findings of this study will contribute to nursing knowledge which may improve nursing practice and help develop a more effective, goal-oriented discharge education on feeding. It will also increase nursing knowledge on the challenges encountered by mothers and their preterm infant during feeding after NICU care. The findings will also pave the way for further research in this area. Similarly, the findings will provide baseline information on the mothers‟ experiences of feeding their preterm infants after hospital care.

1.7 Operational Definition of Terms

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

Feeding - Ingestion of milk by breastfeeding or cup and spoon.

Challenge - Any difficulty encountered by the caregiver and the infant during the feeding process.

CHAPTER TWO

2.0 LITERATURE REVIEW

This chapter reviewed relevant empirical literature on feeding challenges among premature infants and their mothers. Articles were retrieved from; PubMed, Hinari, and Google scholar using phrases such as feeding challenges of preterm infants and their mothers/caregivers, mothers experience with feeding preterm infants after discharge, transitioning home from NICU. The literature review is organized into two main sub-topics: feeding challenges among preterm infants and feeding experiences of mothers with preterm infants.

2.1 Feeding Challenges among Preterm Infants

In a study to examine the different feeding skills of medically complex children born prematurely and full term infants, the authors set out to determine whether later feeding difficulties in the medically complicated sample were related to their medical aspects or aspects related to their prematurity (Burklow, McGrath, Valerius & Rudolph, 2002). A total of 143 infants who were referred to the outpatient clinic with the history of feeding, nutrition, or growth problems were compared by their gestational age at birth across a variety of dependent variables. The findings indicated that full-term infant and preterm infants did not show significant differences in feeding difficulties at their first oral feeding, but at the time solids were introduced, preterm infants still had feeding difficulty than full-term infants. The authors concluded that, preterm infants, especially those with an early need for respiratory support, will benefit from on-going oral-motor feeding intervention (Burklow et al., 2002). Wang, Dorer, Fleming and Catlin (2007)

compared 125 neonates born between 35 and 36 weeks with 120 neonates born at term (37–41 weeks). Their findings showed that the presence of respiratory distress in the late preterm infant has a significant impact on feeding. For safe and efficient oral feeding, infants must be able to smoothly and effectively synchronize sucking, swallowing, and breathing, with highly accurate timing and coordination. The authors concluded that coordination of these activities is essential to avoid aspiration and swallowing of air during feeding. The feeding process of sucking-swallowing-breathing among preterm infants was also identified by Barlow (2009) to be immature and difficult because these entail complex mechanisms that can be performed at term. This makes preterm infants exhibit disorganization and inability to suck and feed orally. Barlow (2009) suggested a multi-disciplinary approach in identifying this challenge and its‟ management.

In a study conducted by Thoyre, (2006) observation and questionnaires were used to collect data to examine the evidence for feeding problems and their nature among preterm infants. Findings of the study point to the fact that preterm infants who were less than 29 weeks gestation at birth with no medical/surgical complications (healthy preterm) had long standing feeding problems, which were; poor intake, fatigue with feeding and delayed feeding skills compared to none in the control group of full term infants. Forty percent (40%) of the preterm infants in the study had experienced episodes of aspiration compared to none in the control group. The study also found that, preterm infants were less adaptive, less insistent, less cooperative, less alert and less vigorous at meal time. The author concluded that preterm infants need a multidisciplinary team style to feeding and this should remain even after discharge, till the infant grows up to eat regular family meals without struggle or unwarranted family concern. Furthermore, the authors' recommended, encouraging parent / mothers participation in the care of their

infants through hospitalization and planning toward discharge to mothers enhance their care giving abilities before discharge. In a study to assess the management and prevention of feeding problems in young children with prematurity and very low birth weight infants, the authors found that many young children with the history of prematurity and low birth weight have long-term problems with feeding and growth (Brown et al 2013). The authors suggested that, early assessment and bio-behavioural management are critical in averting the long term adverse effect of feeding challenges that occur among the preterm infants group. The authors also recounted that a multidisciplinary tactic is a prerequisite in assisting to attain success with feeding and growth among this cohort. The authors mentioned a further study into preterm infant feeding problems and the development of ways to teach parents to promote adaptive feeding skills and prevent feeding problems from becoming worse (Brown et al., 2013).

Matching the incidence of post discharge feeding dysfunction and hospitalization or visits made to the clinic for subspecialty care for feeding problems among early preterm and late preterm infants early preterm infants were found to have more oromotor dysfunction at 3 months and 12 months and they demonstrated more avoidant feeding (DE Mauro, Patel, Medoff-Cooper**,** Posencheng & Abbasi, 2011). Both groups however, improved after some time with their oromotor function and avoidant feeding behaviour. Regular poor appetite, readmissions and visits to subspecialty clinics were noted to be the same between both groups. The authors concluded that paediatricians ought to relentlessly check all preterm infants for feeding challenges in the first year of life.

A high incidence of immature feeding patterns was identified in 14 out of 35 neonates at age 36 to 40 weeks gestational age (Hawdon**,** Beauregard, Slattery, & Kennedy 2000)**.** The author noted that neonates who had extended respiratory problems

with respiratory care and deferred commencements of feeding were typically affected with undeveloped feeding patterns compared with neonates who had normal commencement of feeding assessments. Neonates with disorganized or dysfunctional feeding were six times more to be expected to vomit and three times more likely to cough when given solid food at 6 months of age. At age one, substantial dissimilarities were also noted in their acceptance for lumpy food and loving meal times. The authors posited that feeding challenges contribute to failure to thrive and psychosocial distress among mothers/care givers after discharge from the NICU. Pickler (2004) identified three systems that are involved in the preterm infants ability to feed by bottle, these are the autonomic subsystem which involves the infants ability to control the heart and respiratory system, motor subsystem has to do with attaining and maintain muscle tone, posture, and smooth body movement while the last subsystem identified was the behavioural and this reflected the infant's sleep pattern and the infant being able to respond to arousal. Pickler (2004) posited that all these three subsystems are essential in the feeding process. If all of the subsystems are not matured it will be difficult to get the infant to suck on the bottle successfully. Thoyre (2006) found out that preterm infants while sucking learn coping strategies and these are strategic, behavioural and compensatory. Feeding tactics such as putting a loose seal on the areola to allow milk to flow out of the mouth are some of the strategies preterm infants use in regulating the process of feeding**.** Maturation of the preterm infant was seen as the major factor in attaining oral feeding skills. Stimulating the preterm infant to achieve non-nutritive suck by the use of orthodontic pacifier or gloved finger to assess feeding readiness was identified by Neiva and Leone (2007) as inaccurate. Rather preterm infants should be considered as ready to be transitioned from tube feeding to oral feeding at their corrected

gestational age.

Postnatal growth failure is a common manifestation among very low birth weight and extremely low birth weight infants. In a study conducted by the National Institute of Child and Human Development (NICHD) Neonatal Research Network of the USA, it was recognized that sixteen percent (16%) of extremely low birth weight infants were small for gestational age at birth, but by 36 weeks corrected age, 89% had growth failure. Follow-up at 18 to 22 months corrected age exhibited that forty percent (40%) of these infants still had weights, lengths, and head circumferences below the 10th percentile (growth failure).The authors associated growth failure with an increased risk for poor neuro-developmental outcome. The researchers suggested that, insufficient post-discharge nutrition is the significant influential element to growth failure and that most extremely low birth weight infants experience major protein and energy deficiency during admission at the NICU and after discharge. Furthermore, the authors suggested an aggressive nutritional support for extremely low birth weight infant to improve growth (Dusick et al., 2003). Growth limitations in the preterm infant have also been documented by Lima et al. (2013). The authors assessed weight and head circumference and identified limitations in growth of preterm infants and small for gestational age infants. Growth limitations were also identified to begin in the NICU. Head circumference and weights measurements were used to assess growth rates (Ehrenkranz et al., 2006). The authors linked growth limitations to the use of steroids for pulmonary diseases and poor feeding and these have effect on the neurodevelopment of the infant and increase the potential for hospital readmissions. It is therefore essential that measures are put in place to curb growth limitations in the life of the preterm infant soon after birth (Ehrenkranz et al., 2006).

Callen & Pinelli (2005) identified feeding difficulties as caused by multiple situations namely; biological, behavioural, and environmental factors. Any effort to reduce the occurrence and duration of the feeding difficulty in the preterm infant must be handled from all the three dimensions. However, they mentioned infant maturation as the ultimate in achieving feeding skills.

Regurgitation is also a worrying phenomenon that is fairly common among preterm infants**.** Ramirez**,** Wong and Shulman (2006) suggested that reducing the amount of feed will help reduce the frequency of regurgitation. Regurgitation of feeds among preterm infants was stated as having the potential to limit growth in preterm infants (**Ramirez** et al., 2006). **Poets** (2004) stated that, regurgitation is due to feeding of large volumes of fluid in the meals of the preterm infant and the supine posture they are put in. The authors conclude that some of these episodes of regurgitation are grave and may lead to aspiration and cyanosis. Treatment should therefore be initiated systematically starting with posture, and then a reduction in the amount of milk offered to the infant, thickening of feeds and then medication. However, these managements according to the author should not be done concurrently and cautioned that most of the infants may not need medication for the problem**.** Correspondingly, Indrio, Riezzo, Raimondi, Cavalllo & Francavilla (2009) associated regurgitation among preterm infants with overfeeding and air swallowed during feeding and crying or coughing".

The authors found that, regurgitation and vomiting may be linked with poor weight gain, respiratory symptoms and oesophagitis. Indrio et al (2009) concluded that standard ways to manage infants with simple regurgitation should be different from infants whose regurgitation leads to a disease condition. Likewise, Bancalari (2005) saw regurgitation

as a usual physiologic incidence occurring at all ages but more common in preterm infants and, is mostly associated with temporal relaxation of the oesophageal sphincter. The relaxation may also increase the episodes of apnoea, however, routine medications given to preterm infants such as caffeine and aminophylline have the propensity to cause regurgitation. Bancalari (2005) cautioned that prokinetics and acid-reducing agents commonly used to manage regurgitations has not been carefully studied for its safety and efficacy in preterm infants, and both may be associated with unwanted contrary effects.

Since feeding is a challenge to preterm infants", Buckley & Charles (2006) assessed breast feeding and bottle feeding among preterm infants and expressed the importance of breast feeding against bottle feeding for the fact that breast feeding lessens infections among preterm infants. The authors were of the view that, the use of formula increases the risk of infections and reduces cognitive, neurological and visual development of the preterm infant. They recommended that, preterm infants should be breast fed during admission and this should continue even after discharge. They however cautioned that, if follow up care is inadequate, mothers may not obtain facts and emotional support to breast feed their preterm infants. Nevertheless breastfeeding of premature infants was identified as a challenge by Callen & Pinelli, 2005.These authors reported that preterm infants do not have oromotor as well as self-feeding skills. The authors of the study concluded that clinicians should work with parents to augment early feeding during admission at NICU and continue breast feeding after NICU care. The authors stated that poor feeding leading to jaundice was a major cause of repeated readmission among preterm infants.

In a related study, preterm infants were identified as being at high risk of readmissions after their first discharge from NICU with conditions such as necrotising

enterocolitis, gastroesophageal reflux, growth and nutritional failure. The authors concluded that identifying high risk infants with the potential for feeding problems before discharge might help in planning their care after discharge from hospital (Namasivayam, Ambalavanan, Waldeman, Scott, Qing, Abhik, Higgins, 2011). Morbidity leading to readmission, and mortality among preterm infants were noted to be high among preterm infants after discharge. These were associated with post discharge conditions such as failure to thrive, respiratory problems, developmental delays, and parenting problems. The author identified limited home care services as the reason for these problems thus leading to subsequent readmissions. The author suggested cautious planning for discharge, good follow up post- discharge to reduce the risks of preterm infant's morbidity, readmission and mortality (Puddu, 2010).

Preterm infants' need to mature to be able to feed orally and this is established at about 36 weeks of gestation (Bertoncelli Cuomo, Cattani, Mazzi, Pugliese, Coccolini, .Zagni, Mordini,Ferrari, 2012). Their ability to keep alert prior to and during feeding is of great significance in attaining regular sucks during feeding. This

also helps in establishing the needed skills required for feeding and the intake of required nutrients (Bertoncelli 2012). Comparing the differences in the type and frequency of behavioural clues between breast-fed and bottle-fed preterm infants, Lin et al. (2013) pointed to higher levels of physical distress in preterm infants who were bottle-fed than in preterm infants who were solely breastfed. Further substantial dissimilarities in behavioural clues were that of milk spillage, central cyanosis and hand pushing during meal times. These were found to be common in bottle fed preterm infants than breast fed preterm infants. The authors‟ conclusion supports breastfeeding rather than bottle-feeding for preterm infants. However, the authors suggested support for care givers of

preterm infants to promote breast feeding among their mothers after discharge.

Young et al. (2013) were of the view that multi-nutrient fortification of breast milk after discharge did not affect growth rates in preterm infants as suggested by other authors. The authors compared multi-nutrient fortified breast milk with unfortified breast milk given to preterm infants after hospital discharge and concluded that fortification did not have any effects on growth rate. However, the authors admitted there was limited data on what multi-nutrient fortification of breast milk involved. The authors also acknowledged that, it would be difficult to fortify breast milk when infants are fed directly at breast and an attempt to fortify breast milk in exclusively fed preterm infants would interfere with breast feeding. Contrasting views were expressed by Schanler (2007). Though the author agreed that breast milk is beneficial to the preterm infant due to its numerous nutritional benefits. However, Schanler (2007) was of the view that nutrients in breast milk are not enough to meet the high nutritional requirements of the preterm infants who weigh less than 1500g. Breast milk must therefore be fortified for these infants. The author also stated that since mothers of preterm infants have problems with lactation, donor pasteurized human milk can be used in place of mothers‟ milk (Schanler, 2007).

To examine the occurrence, severity, and patterns of desaturation during feeding of preterm infants by their mothers, Thoyre and Carlson (2003) found that very low birth weight infants continued to have episodes of desaturation when being fed by their mothers. The authors suggested that behavioural cues must be used to identify oxygen desaturation during oral feeding. Noticing a change in breathing and changes in the rhythm of sucking will help prevent desaturation during feeding.

Feeding problems in infants‟ and young children were identified by Rommel et

al, (2003) using clinical data of 700 children who were less than ten years of age. The authors suggested that fifty percent of the children had feeding problems that were associated with medical and oral conditions, gastrointestinal problems such as reflux. The authors identified that most of the infants with feeding problems had a history of prematurity. The authors concluded that a multidisciplinary team approach is the way forward in assessing and managing these preterm infants with feeding problems.

Maatta et al. (2010) in ascertaining the relationship between early feeding skills and communication development in infants born premature, the authors found that infants who experienced speech and language delay suffered from early feeding challenges. The findings suggested that early identification of feeding problems among preterm infants and their care process during the early extra uterine life is relevant to their growth and development of speech.

Weight faltering has also been identified among preterm infants. Dodrill et al. (2008) assessed growth rates in preterm infants‟ and term infants‟ and concluded that, preterm infants are more likely to suffer weight loss till at least after the first year of life.

2.2 Experiences of Mothers with Preterm Infants

Feeding a premature infant requires skills that are different from those required by a mother of a full- term infant. A mother of a preterm infant must have the ability to successfully feed her preterm infant and to interpret cues for hunger and satiation (Reyner, Pickler & Thompson, 2006). Preterm infants have to cope with the pressure from the environment as well as learn to feed orally. In a study to explore mothers‟ experiences in feeding their preterm infants after discharge, Reyna, Pickler and Thompson (2006) interviewed twenty-seven mothers whose preterm infants were

discharged from NICU. The findings indicated that mothers struggled with feeding their infants in the first week after discharge and experienced periods of transition but developed some comfort later. Therefore, nursing intervention for anticipatory guidance of mothers on feeding their infants after discharge is paramount. Thus, it is important that mothers should be given concrete information to help identify infants‟ cues of hunger and satiety before discharge and during follow up visits.

Maternal distress is more prevalent in mothers of very low birth weight (VLBW) infants. In describing the challenges mothers identified in bottle feeding their premature infants Singer et al. (2003) reported that VLBW infants show little response to mother-child interactions leading to maternal frustration. Thoyre (2001) videotaped 22 mothers while they were bottle feeding their preterm infants. The video recording was played to assist in exploring the mothers‟ experiences with feeding. The mothers identified three groups of challenges; „ensuring safety during feeding, ensuring adequate intake of calories and advancing the feeding plan.

In a study by Rabelo et al. (2007) some of the mothers questioned their skills in bathing, holding, feeding and changing their baby‟s nappy. Mothers‟ were of the view that these activities were intricate in caring for a preterm infant and they were not fully prepared for it. Many of the mothers‟ recounted the lack or little pre-discharge education and the need for these as essential in their ability to acquire skills to care for their preterm infants after discharge. The mothers wanted to receive education on how to give care to their infants at home and what to anticipate. They suggested some form of manual or handbook on what they should expect and actions to take in challenging situations. This need for additional written information was also expressed in studies by Bain et al. (2003) and Hurst (2006).

If mothers are inadequately prepared, it has the potential for devastating effects such as impaired bonding with their infant, difficulties maintaining lactation and breast feeding challenges after discharge (Bain et al. 2003, Broedsgaard & Wagner 2005). It is therefore essential that nurses in NICU prepare mothers toward discharge through education. Valizadeh and Penjvini (2014) suggested that, in providing mothers of preterm infants with education, it is important to consider the mothers‟ experience before educating them, because it goes a long way to help achieve the success mother require in feeding their preterm infants after discharge. The authors concluded that teaching mothers to feed and render care to their preterm infant is necessary for the integrity of the family. Nurses educating mothers of preterm infants should set common goals and knowledge base for feeding among these mothers, to help achieve the infants physical and cognitive growth. Participants in a study by Rabelo et al. (2007) reported that they did not receive information on care of their infants at the time of discharge whiles others stated that they receive some education on just a few areas; hygiene, feeding and the use of vitamins. The authors so expressed the need to consider the socio economic and cultural background of mothers before giving them education. They suggested the use of well-structured and documented method in educating mothers‟ of preterm infants.

Zanardo et al. (2003) identified that most mothers could profit from pre-and post -discharge emotional support. Support such as parent support groups or discussions with previous NICU mothers to relieve increased anxiety levels of mothers of preterm infants both at the NICU and after discharge from NICU. In a study by Broedsgaard & Wagners (2005), the authors recognized that mothers with higher anxiety traits will have challenges with occurrences at NICU leading to more anxiety. In the authors conclusion

mothers‟ of preterm infants must be encouraged to share their NICU experience and even experiences after discharge events, these will help ease their anxiety and reduce the stress levels associated with NICU and are of the preterm infant after discharge. Olshtain-Mann & Auslander (2008) were of the view that parents of preterm infants demonstrated significant signs of stress and had minimum level of capability in care giving compared to parents of term infants. The authors concluded that their findings are key in proposing interventions and management for parents of premature infants in reducing the high level of stress associated with the birth and care of the preterm infants. Garel, Bahauaud and Blondel (2004) also compared fathers and mothers answers to problems they encountered with the preterm infant and their psychological state two months after discharge from NICU. Fathers stated substantial tiredness but were able to handle the stress of NICU and easily defeated the harrowing effects of the premature birth. Fathers seemed more able to handle and defeat the traumatic event caused by the preterm birth and insisted on performing their role in rendering support for the mother and supporting the mother-child relationship. The authors concluded that follow up of preterm infants should include the family and their psychological state.

In another study, mothers of preterm infants were noted to exhibit lower stress levels after receiving psychological interventions after delivering preterm infants as compared to those who did not receive any psychological care. Jotzo & Poets (2005) were of the view that, interventional programmes during and after NICU care is important in limiting the effects of the trauma mothers experienced during their NICU days and after discharge. Similarly mothers of preterm infants reported that fatigue, depressive mood, anxiety and physical symptoms continued up to one year and over after discharge from NICU due to their infants difficult behaviour. The conclusion drawn was

that provision of adequate psychological support during follow up was a necessity for all mothers of preterm infants (Garel et al., 2007). Out of one hundred and ninety-nine women who were picked by random sampling during the first year of having a preterm infant, seventy-four mothers were identified to have met the criteria for diagnosing depression. The authors stated that others in the intervention group received six episodes of cognitive behavioural therapy interventions. Interventions however, did not have any effect on the onset or duration of depression in the both groups (Hagan, Evans & Pope, 2004). This is a worrying phenomenon among mothers of preterm infants.

Health personnel in NICU continue to search for ways to provide comprehensive care to families, Hurst (2006) placed renewed emphasis on offering family support programmes to mothers of preterm infants, these are necessary in providing comprehensive care to the mother and the families as a whole. The use of a blend of ways was noted to be essential in providing support. Using a blend of support such as mother support groups, one-to-one support, and telephone support were noted to be necessary. Group support was noted to yield better prospects for parents to problem-solve and communicate better with staff (Hurst, 2006). The author‟s conclusion indicated that parental group support provided more avenues for communication between health care personnel and the mothers and improved family centred care practises. Feeley et al. (2011) stated that a comprehensive follow up care is required for mothers with preterm infants after discharge from NICU. Follow up provision of psychological care should be made available to all mothers of preterm infants and their families. This is to help curb fatigue, depressive mood, anxiety and physical symptoms that were identified in mothers with preterm infants. The depressive mood caused the mothers to isolate themselves socially. The authors suggested that while providing psychological care to mothers, they

must be encouraged to breast feed their infants because this reduced infection rate resulting in fewer readmissions and reduce the stress associated with readmissions. The authors concluded that, the best way mothers‟ of preterm infants should consider when it comes to feeding, is to feed their infants at breast before discharge and after discharge from NICU.

Feeding difficulties cannot be associated solely with either the mother or the preterm infant. Thoyre and Brown (2004) observed that the process of feeding was a two way affair, this engagement is between the care giver and the infant being fed, both must be involved in the feeding process. The authors stated that in their engagement the care giver has the major role of assisting the preterm infant to be stable at feeding time. The authors suggested that further study into the effective and contingent caregiver feeding behaviours will be necessary

Broedsgaard and Wagner (2005) documented the need to be considerate of the preterm infant's family's situations. They studied Danish parents' experiences on the processes from the birth of a premature infant to the transition home of the mother and the infant. They found that mothers of premature infants communicated the desire for help in caring for their preterm infants. They also noted that hospitalizing mothers of preterm infants together with mothers of term infant was a source of stress to the mother with preterm infant whose infants are on admission in NICU. This is because their preterm infants were on admission on a ward different from their mothers thus mothers did not have their infants with them as their counter parts; mothers of term infants. Broedsgaard & Wagner suggested that when nurses coordinated interventions such as "re-establishing mothers of preterm infants and their families early they could be

effective in meeting the needs of mothers of preterm infants.

Educational background was seen as a factor that contributes to preterm birth. Mothers who have been to school for less than ten years were noted to have high risk of preterm birth compared with mothers who have had education for more than twelve years (Morgen et al., 2008). However, income and career did not affect premature birth very much thus the risk was minor (Morgen et al., 2008). According to Hutchinson et al. (2012) it is significant for healthcare professionals to recognize the feelings and views of parents' during discharge from NICU since this can impact on how they relate with their infants and their interest to partaking in the care. More so health care professionals must recognize that when mothers feel as though they are not part of the infant's life in the initial stages, this can also interfere with subsequent care giving irrespective of the education they receive. The authors mentioned that knowledge of the parents feelings while in NICU and at the time of discharge will help nurses to improve their interactions with the mothers and encourage family centred-care in the NICU. The nurses will also be better informed when giving discharge education to the mothers. The authors suggested further that, studies which will address transition in the context of families of preterm infants from neonatal care unit is a necessity.

Preterm infants have not yet built up their immune system at the time of their birth; this makes them prone to infection and succumbs easily to infection. In a study conducted by Liu et al. (2010) to "Improve Communication and Social Support for Caregivers of High-Risk Infants through Mobile technologies," the authors identified that, care givers of preterm infants needed support in caring for their preterm infants but, the care givers resisted support from friends and family because they were afraid that their visit will be a source of infection to their susceptible preterm infants. Rabelo

et al. (2007) also suggested that mothers of preterm infants will need support at home and nurses should ensure they involve the family during discharge and use both verbal and non-verbal communication skill in teaching mothers. This may assist the mothers‟ of preterm infants to allow family members to render the required support with knowledge. They also were of the view that, education must be repeated during every home visits in an attempt to reinforce teaching and involve other family members. In the same way Lopez et al. (2012) suggested very early home visits within the first ten days of discharge of a preterm infant. During home visit teachings should be re–enforced, thus giving opportunity to other family members who are helping in rendering care to learn care giving skills from health care personnel. Zachariassen (2011) also suggested that increased support and care should be provided by health care personnel for mothers whose infants have been discharged to improve successes in breastfeeding. Boyokova et al. (2012) identified that mothers‟ knowledge at the time of discharge was limited and support for mothers after discharge was crucial in the survival of the preterm infants after discharge. The authors indicated that challenges experienced by mothers after discharge is a cause for the high incidence of readmissions and mortality among preterm infants. They suggested that an accurate measure of situations at home and post discharge concerns must be looked at critically to reduce the frequent readmissions that occurred among this group of infants. Murdoch and Franck (2011) stated that, at the time of discharge and while at home, mothers of preterm infants were nervous about their preterm infants‟ health, and had no support from health care personnel, while performing some medical procedures at home. Nevertheless, mothers were noted to believe in themselves after caring for their preterm infants for some time. However, mothers were of the view that they used intuition and trial and error to identify and respond to the needs of their preterm

infants. The authors concluded that, nurses must identify the needs of the mothers and help them gain confidence in care giving and feeding before discharge. Nevertheless support from health care personnel after discharge is essential in helping mothers gain sufficient confidence in care giving.

Insufficient feeding of the preterm infant is a source of anxiety for care givers both in the NICU and after discharge. Insufficient feeding has the tendency to continue through the first year of life. The way a feeding challenge is described either by the health care personnel or the care giver, may have an impact on how it is controlled or handled. Three working models; goals, expectations, and intentions of the mother were identified by the authors as a means to assess the development of feeding challenges (Pridham et al., 2004). „The models proposed that parents have a mental model of expectations of how their feeding experiences should be and that in turn impact their intention, behaviour and responses to their experiences" (Pridham et al., 2004).

The literature suggests that, though mothers of preterm infant are educated while their infants are on admission in NICU, they still need support from health care personnel while at home. Health workers should tailor education to include scenarios to help the mothers think through situations and find ways of linking up with them after discharge. Regarding mothers/ caregivers, the review revealed that they may lack adequate preparation and education in feeding their preterm babies. Also they lack confidence in feeding their preterm infants. As a result most caregivers / mothers suffer psychological stress and poor bonding with their babies. Early support from health care workers will help in providing care-giving skills to mothers and other family members.

The literature reviewed showed that feeding challenges of mothers with preterm infants‟ have been grossly examined in the developing world. Little is known about these challenges among mothers of preterm infants in the developing world especially Ghana.

CHAPTER THREE

3.0 METHODOLOGY

In this chapter, the methodology employed in the study of the phenomena under investigation was described. The methodology is organized under the following headings: the study design, the research setting, population, sample size, data collection method, analysis of data, research rigor, and ethical consideration.

3.1 Research Design

A Qualitative research approach was used in conducting this research. Qualitative research permits exploring the depth, richness and complexities inherent in a particular phenomenon. Qualitative research is well suited to many nursing investigations with the goal to develop a deep understanding of human lived experiences, and the meaning participants attribute to these experiences (Polit, Hungler & Beck, 2001). Therefore, adopting a qualitative research method aids the researcher to do an in-depth exploration, and gain valuable insight on the topic. The appropriate qualitative design method chosen is phenomenology. Cohen (1987) cited in Carpenter & Streubert (2007) defined phenomenology as "a science whose purpose is to describe particular phenomena or the appearance of things as lived experience" (Carpenter & Streubert, 2007). Phenomenology studies the experiences of persons who have lived the phenomenon under investigation. In other words, phenomenology attempts to discover and describe the lived experiences as explained by the actor.

This design was chosen because, it was deemed more practical and appropriate since the problem under study is a clinical issue involving mothers with preterm infants.

3.2 Research Setting

The study was conducted at the Korle-Bu Teaching Hospital. It is the largest Teaching Hospital in the country, as a tertiary level, referral teaching hospital for Ghana and neighbouring countries; it is involved in clinical teaching, research, and clinical care.

The hospital has nursing staff strength of about three thousand five hundred (3500), and a bed capacity of one thousand six hundred (1600). There are three centres of excellence in the hospital namely: the National Cardiothoracic Centre, the National Radiotherapy Centre and Nuclear Medicine and the Reconstructive Plastic Surgery and Burns Unit. There are also seventeen clinical departments in the hospital, among which are: The Medical, Surgical, Orthopaedics and the Department of Child health where this study was carried out. The hospital now operates as a semi- autonomous organization after the teaching hospitals in the country was granted the status by "act 525 of 1996".

The Children's" block of the Korle-Bu Teaching Hospital where the study was conducted is a three storey building but has its NICU situated on the third floor of the maternity block. The unit has twenty cots, twenty incubators, three ventilators, six continuous positive airway pressure machines (CPAP) and eight radiant warmers. The unit offers treatment for sick infants delivered in Korle-Bu Maternity unit and neonates referred from any other hospital across the country. The unit has three fairly spacious cubicles where mothers are allowed to sit when they come in to see and feed their infants, two rooms with a total of 10 beds where "kangaroo" mother care is practiced, a milk kitchen, a procedure room for infants who are brought in from the lie-in ward in the Maternity block and a mini laboratory. There are thirty (30) general nurses trained on the job in NICU nursing, two paediatric nurses, two critical care nurses, a

neonatologist, residents and housemen. Korle-Bu was chosen for the fact that it handles a greater infant population that require NICU care compared with La General hospital, Ridge Hospital and 37 Military Hospital.

3.3 Target Population

The population used for this study was mothers with preterm infant born before 37 completed weeks and are reporting to the NICU clinic after being discharged from NICU.

3.4 Sample Size and Sampling Technique

In qualitative research, a small number of participants are selected because of the extensive documentations that result from the participants narratives (Gillis & Winston, 2002).

The purposive sampling technique was used for this research. This aided the researcher in selecting typical subjects required (mothers of preterm infants who were discharged from NICU at Korle-Bu and attending follow up clinic). A purposive sampling referred to as a judgmental sampling, involves the conscious selection by a researcher of certain subjects to include in the study (Burns & Grove**,** 2001). It implies a commitment to interview and observe participants who have had experiences with the phenomena of interest (Polit & Hungler, 1999). The sample size depended on saturation of the data. Saturation occurred when no new themes or relevant data emerged or when there was repetition of recovered information and confirmation of previously collected data (Sandelowski, 2000). Therefore sampling continued until there was saturation.

3.5 Procedure

Letters were written to the head of department to inform her about the study and seek permission to recruit. Permission was gained from the nurse in charge of the unit. Posters were posted on the walls to advertise for participants. The researcher visited the NICU and the NICU clinic to communicate the details of the research to the staff. The researcher also communicated with the mothers‟ to provide clarification and explanations to questions asked by interested participants. Thus, the purpose of the research was explained to the mothers and those who were willing to participate and met the inclusion criteria were recruited. Potential participants willing to participate were identified and a date was scheduled at their convenience for interview. The interviews were conducted in a language that the respondent is most comfortable with. All Respondents were asked to sign consent forms as their agreement to partake in the study. Each interview lasted for about 30 to 45 minutes.

3.6 Inclusion Criteria

Mothers with preterm infants born before 37completed weeks of gestation, discharged from NICU of the KBTH and attending the NICU clinic will be eligible.

3.7 Exclusion Criteria

Mothers whose preterm infants were not born at Korle-Bu Teaching Hospital were excluded.

3.8 Data Gathering Tool

Data collection is the precise systematic gathering of information, relevant to the research purpose, and the specific objectives of the study. Qualitative research requires

the use of semi-structured interviews and observation to gather data (Burns & Grove, 2001). Semi-structured interview guide was used as a data collection tool for this research. The interview guide was divided into two main sections. Section A comprises participants‟ demographic data and Section B comprises of the main questions using a set of open ended questions (DeVos, Strydom, Fouche & Delpot, 2005). The essence of section A of the interview guide was to establish rapport with the participants in order to **elicit** rich information from them, while section B elicits information about the participants‟ experiences. Probing questions were asked during interviews to clarify issues which were not well understood by the researcher. The interview guide was pretested prior to the actual interview.

3.9 Data Processing and Analysis

Qualitative data analysis entails listening carefully to narratives, sharing descriptions, and understanding what has been said, always maintaining the highest degree of integrity (Carpenter & Speziale, 2007). Data analysis commenced as soon as interview started, using content analysis. Content analysis can be divided into two different types: manifest and latent analysis (Patton, 1990).

In this research, latent content analysis which is the process of identifying, coding and categorizing the primary patterns in the data was used to analyze the data. The first step in content analysis is to code the data. Coding is the process of identifying persistent words, phrases, concepts, and themes within the data. The coded items were highlighted and put into categories and a summary written for each category.

The emerging themes and sub themes were reviewed by the researcher, and the relationships among categories were used to describe the challenges of preterm infant

and that of their mothers. After the essential structure of the phenomena was identified, the structure was compared with the transcripts to make sure it fits the data. Field notes were reviewed to add to the data and the need to go back to the interviewee was assessed where necessary. The interviews were transcribed and coded.

3.10 Data Management

The interview materials were locked in the researcher's custody. Only the researcher and her supervisors had access to the data. Demographic data were separated from the interviewed data to make sure that no linkages are made between them. The transcripts will be kept for about five (5) years following completion of the study.

3.11 Research Rigor

This is the measurement of the trustworthiness of the research findings. Rigor in qualitative research is very important, and the goal is to accurately represent study participants experiences (Carpenter and Speziale, 2007). Lincoln and Guba, (1985, cited in Carpenter and Speziale, 2007) used the following terms that describe operational techniques supporting the rigor of the work: Credibility, Dependability, Confirmability, and Transferability. The researcher therefore used these concepts to measure the trustworthiness of the research findings. Credibility includes "activities that increase the probability that credible findings will be produced" (Lincoln and Guba, 1985, cited in Carpenter and Speziale, 2007, p322). "One of the best ways to confirm credibility of the findings is to see whether the participants recognize the findings of the study to be true to their experiences"" (Carpenter and Speziale, 2007, pg. 322). Member checks were done to provide feedback to study participants regarding preliminary findings and interpretations. Generally, opportunities were given to participants to validate, confirm

and re-interpret the findings thereby ensuring that the reality of their experience and that of their preterm infants have been truthfully presented. In ensuring credibility, peer debriefing were done with peers who are believed to be objective to review and explore various aspects of the inquiry, to cross check whether the researcher is on the right track.

Dependability is the extent to which judgment about similarities and differences of content are consistent over time (Graneheim & Lundman, 2004). To ensure dependability in this research, all participants were questioned in the same area, thus the same interview guide was used. There was an open dialogue between the researcher and experts in the field to ensure that similar results were obtained when the research is replicated. An audit trail will be kept and made available to anybody who wishes to replicate the study.

Confirmability is a process criterion, and is documented by leaving an audit trail (Carpenter & Speziale, 2007). An audit trail is a recording of activities of the findings over time so that another individual can follow to confirm the findings. To achieve confirmability, there was an audit trail of interviews and transcripts as well as drafts of the final report. Thus, a systematic collection of documents and recording of activities that allowed an independent auditor to come to similar conclusions about the data was ensured. The objective is to illustrate as clearly as possible the evidence and thought process that led to the conclusions.

Transferability refers to "the extent to which the findings can be transferred to other settings"" (Polit and Hungler, 1999, p 717). To achieve transferability, a clear description of procedure for participants selection, as well as detailed presentations of the process of data collection and analysis was done.

3.12 Ethical Considerations

"Ethical issues and standards, must be critically considered in both quantitative and qualitative research"" (Lincoln & Guba, 1985, pp.39, cited in Carpenter & Speziale, 2007, p327). Researchers must observe the following principles when conducting any form of research that involves human subjects. First, researchers must obtain informed consent, and informant participation must be voluntary. Furthermore, researchers must assure participants of confidentiality, and anonymity should be upheld (Carpenter & Speziale, 2007). Details of their rights as participants were described in the consent form. Participants were not forced to participate in this study and refusal to participate will not be used against them. Religion and tribal affiliations were not barriers unless tribal belief forbids the person from talking about the condition. No identifiable information was associated with the data collected, because pseudonyms were used to represent their names.

The research proposal was reviewed by the Institutional Review Board of the Noguchi Memorial Institute for Medical Research at the University of Ghana, Legon for ethical clearance and approval. After obtaining ethical approval, letters were written to seek permission from the head of department of paediatrics as well as the principal nursing officers" in-charge.

Personal contacts were made with participants" during, which the researcher introduced herself and talked to potential participants after obtaining permission from the doctors and senior nursing officers in-charge of the units.

Issues of confidentiality as clearly outlined in the consent form were explained to each participant. Therefore, the researcher ensured that personal information about

participants was kept confidential. All names mentioned by mistake during the interviews were replaced with pseudonyms. All data were saved in a password protected computer. Hard copies of participants‟ information, such as consent forms, and transcripts were saved in locked cabinets for privacy and confidentiality.

CHAPTER FOUR

4.0 Findings and Results

This chapter presents the findings of the study. The demographic characteristics presented first, followed by the mothers readiness to continue with care, problems of the preterm infant, and feeding challenges of the mother.

4.1 Demographic Characteristics

The age ranges of the Participants were between 16 - 40 years with the average age of 26 years. Their educational background was also from uneducated to tertiary level, eight of the participants were Christians while one was a Moslem. One of the mothers had a set of twins; none of the participants had ever delivered a preterm infant. One out of the nine Participants was a teenage mother, while the remaining eight (8) were adults. Five of the participants were multiparous women and the remaining four were first time mothers. However, one participant had had a neonatal death in the past.

Three of the participants‟ worked in the formal sector, another three were unemployed, while the remaining three worked in the informal sector. Five out of the nine participants were married and lived with their husbands and the remaining four were unmarried. The preterm infants were born between 28 and 34 **w**eeks of gestation, 7 of the infants were very preterm (28-34 weeks of gestation) and two of them were late preterm (34weeks gestation and after).

From the experiences narrated by the participants, three main themes and eleven sub-themes were generated from the coding and categorization, and these are presented

in **Table 4**.1 below.

Table 4.1: Themes and Sub -Themes on Post Discharge Feeding Challenges of Pre-terms

THEMES	CODES	SUB-THEMES
Mothers‟ Readiness to continue with Care	**MRC**	■ Knowledge on Care ■ Support Systems
Problems of the Preterm Infant	**PPI**	■ Alertness during feeding ■ Regurgitation of feeds ■ **Latch** and suck ■ Weight loss
Feeding Challenges of the Mother	**FCM**	■ Problems with lactation ■ Prolong feeding times ■ Identifying feeding clues ■ Identifying satiety

4.2 Mothers' Readiness to Continue with Care

This section deals with mothers‟ readiness to continue with care after their preterm infants have been discharge from NICU. While preterm infants are on admission their mothers are prepared through constant education and assistance in rendering care for these preterm infants. Nursing education of client on admission is said to be an ongoing process, right from the day of admission through to discharge.

Sub themes that emerged under mothers‟ readiness to render care included; Knowledge on care, support systems.

4.2.1 Knowledge on Care

Knowledge on care brought together issues of infection prevention, prevention of hypothermia and knowledge on feeding as taught in the NICU. Education on infection prevention was evident in the words of Eli as follows:

> *"Even if you will not touch the baby while at NICU you have to wash your hands. When you are being discharged you're told not to let people visit your child at home because she has not been immunized yet. When my friends come to visit me I tell them she is sleeping" (Eli).*

Other participants Naa and Davi Enyo said;

> *"Hand washing at NICU is like a ritual everyone entering the ward has to do it. There is a sink at the gate; even if you're bringing medicine to the nurses you have to wash your hands. We were told to do the same at home, so as for hand washing I will never forget. When they are teaching too you can't ask questions because we are many" (Naa).*

> *"I have to wash my hand well with soap and water it is all there, before I come to take the cup to express my breast milk. If baby empties bowel and I change, we don't use napkins we use pampers I have to go again and wash my hands before I come to take him" (DaviEnyo).*

Prevention of hypothermia which is the second category considered under Knowledge on care, looked at the education mothers received on prevention of hypothermia among preterm infants. Preventing hypothermia in premature infants is important to their survival and long-term outcome; preterm infants rely on external help to maintain body temperature. For infants born prematurely or that are very small, hypothermia is an issue that can lead to a variety of diseases and even death. In relation to preventing hypothermia mothers expressed receiving education in the following ways;

> *"The nurse said he will become cold and will refuse to eat. I don't expose him but he doesn't eat well. I wrap him very well, I also wear him a cap and socks and long sleeves" (Nuna).*

> *"The NICU is cold so you have to learn to wrap the baby well because when they are in the incubator they don't wear any dress so when you bring them out to feed them you have to wrap them from the head and everywhere"(Seyram).*

> *"I learnt that carrying her in the KMC Position helps to keep her warm and you don't have to bath her for a long time you only wipe her quickly and wear her a good long sleeve dress and you wrap her well, she should not be cold" (Eyram).*

> *"In the NICU they teach a lot; how to wrap your baby, how to feed, how to wash your hands and many other things but the teaching is not structured, you know I am a teacher". (Naa)*

Growth failure in the preterm population is fairly common and is a cause for

readmission into hospital; this is why a mother/ care givers knowledge and ability to feed a preterm infant is a pre-requisite for discharge in NICU. Participants had knowledge on feeding their infants as evident by Eli, Eyram and Fafa.

> *" You give the baby the breast for some time before you feed with the cup and spoon you must remember to warm the milk with hot water and after feeding your baby you have to break the wind" (Eli).*

> *"I was taught to hold the cup in my left hand holding the baby like this and use my right hand to feed her. I was afraid to hold her at first, but they helped me they taught me to hold her and feed her slowly" (Eyram).*

> *"I was taught to be patient and put the breast in her mouth to enable her hold it so that she can suck. They also taught us to beat the back so that she will belch and not choke" (Fafa)*

4.2.2 Support Systems

Family support, spousal support and support from health care professional were assessed. Support systems are essential for mothers whose infants have been admitted to the NICU. Support from the immediate family, is important in reducing stress among mothers of preterm infants. Support such as helping to take care of the infant and assisting in house hold chores were reported. Family may include grandmother of the infant, sibling and any other family member. Family support was available to Davi Enyo, a 16 year old mother, she said:

> *"At home I don't do anything I only eat and care for myself. My mother doesn't go to the market. She has closed the store she stays at home to help me care for the*

> *baby. When I am giving him breast my mother will heat water and prepare the breast pump and everything so that when I finish she can give him the breast milk in the pump with a cup and spoon just like the nurses taught us" (DaviEnyo).*

Naa also shared her experience of family support

> *"One day after feeding him and putting him down to sleep and I went out. I forgot to turn the head to one side as I was taught. When I entered the room my baby was not breathing and I saw milk in his nose, I screamed and called my mother, she came and took him and turned his head down and was shaking him" (Naa).*

However, family support was not available to some of the mothers. This was echoed in the words of some participants as follows.

> *"As for help I don't have any family member around so I do everything myself and it is not easy" (Eli).*

> *"My mother has not come yet, this is not an easy one, all my attention is on her and the 2 older children need someone to care for them, it is tiring and you don't sleep at night you have to continue feeding her all night" (Eyram).*

Spousal support is support from the mothers‟ partner; spousal support is seen as a primary support to the mother. Spousal support was not readily available to participants and this featured prominently in participants words as;

> *He goes to work and comes home very late. He can't help me he says she is too tinny" (Eyram)*

Seyram and Nuna also had no spousal support and they expressed it in a few words;

> *"The man responsible for the pregnancy doesn't want the baby he said it is not his baby, he doesn't help us" (Seyram).*

> *"I live with my husband alone and he goes to work every day he doesn't do anything for us I do everything myself so it is difficult to rest" (Woe*).

Participants stated they received support from health care professionals while on admission but once they were discharged, this support was no longer available. Support from health care professionals to mothers of preterm infants is necessary for continuity of care, considering that preterm infants at the time of discharge have not attained full maturity and may still have problems. Mothers expressed the desire for support from health professional as a need for home visit in the following ways;

"*I still have questions that are not answered especially at home when something new happens at home you don't have anyone to ask, I will ask the Dr. some of them that I remember when it is my turn to see him. I wish my house is close to one of the nurses I will ask her to visit me" (Eli)*

> "*The other day when an older aunty saw me with a cup and spoon she was very upset, she asked why I was using that in feeding my baby, I should feed him directly from the breast and not to use the cup, she was upset I think the cup and spoon feeding is going to be difficult for me to do at home. If some of the nurses were visiting us at home occasionally they can help us solve some of these issues because she will not come to the hospital with me to hear any new thing" (Sela).*

Other participants, Sedem and Naa said

> "*If something different happens at home and I am confused I call the nurse I have her number and she will explain to me but if she doesn't pick the call it is difficult. She said one day she will visit me, I will be very happy, she can teach me new things" (Sedem).*

> *"When we were in KMC the nurse was there all the time but there is no one at home to let you know if you are wrong. The nurses must come and visit us at home to see if everything is fine". (Naa)*

4.3 Feeding Problems of the Preterm Infant

The preterm infants immaturity at the time of birth makes him/her prone to many problems such as; coordinating suck- swallow-breath, hypothermia etc. Six different sub-themes comprising; Inability to stay awake during feeding, regurgitation of feeds, inability to suck and inability to latch on breast, emerged as problems of the preterm.

4.3.1 Inability to Stay Awake During Feeding

The preterm infant feeding patterns are associated with issues of excessive sleeping during feeding. This phenomenon leads to prolong feeding times and a source of stress to the care giver. Inability to stay awake was expressed by mothers in the following ways

> *"She sleeps when you are feeding her, she will suck her lips*

> *as if she wants to suck but sleep, you will wake her up and she will sleep again, she doesn't know she has to wake up to eat. Her father calls her sleeping beauty she doesn't know she has to wake up to eat" (Seyram)*

> *"He can sleep oo from morning to evening you have to force him to wake up and feed him, he is sleeping when he is eating, you have to time him and let him doze a little and wake him up and feed him again"(Sela).*

This is how Sedem expressed her daughter"s inability to stay awake during feeding

> *"When she wakes up to eat, she will still be sleeping but she has to suck, so you have to do it quickly and top her up before she sleeps deeply and refuse to eat. She will be doing her mouth as if she is sucking but she is not sucking anything" (Sedem).*

Eyram also said that;

> *"I have to keep waking her up turning and beating her back so that she can suck, warming the milk when I am topping her up. Sometimes she too is tired and she sleeps and she will not drink the milk in her mouth. When she is tired like that she sleeps while eating but I have to wake her up and let her eat. That is what the nurses say. She doesn't eat like babies do" (Eyram).*

4.3.2 Regurgitation after Feeding

Mothers reported that their preterm infants vomit (regurgitation) after feeding. This phenomenon was noted to be fairly common among the infants whose mothers were interviewed. They expressed it as a worrying phenomenon. The following statements reflect the mothers concerns;

> *"She was vomiting in NICU and they said it will stop but since we came home, it hasn't stopped she still vomits. I am worried if I get someone who can help explain things to me I will be consoled" (Fafa).*

> *"He vomits a lot after feeding, so the nurse makes me hold him for a long time after feeding before you put him down even after that sometimes he vomits. Sometimes it is plenty or small. I am worried when it passes through the*

> *nose because in the house I don't know what to do but in the hospital the nurses know it so they will bring their machine and remove all the food. Since we went home my mother says my baby vomits too much, my mother said none of her children vomited like this" (Davi, Enyo).*

> *"He vomits sometimes after feeding but not always. I beat his back after feeding him before I put him down and you will see that he has vomited" (Sela)*

Naa stated her fears for vomiting in the following way;

> ***"****For some time the vomiting was not coming again and I thought it has stopped but then just this morning it happened again. It makes me afraid. A woman's baby passed after the baby vomited through the nose. My mother thinks I feed the baby too much but I was told how much to give and increase it with 5 mls every 3 days" (Naa).*

4.3.3 Inability to Suck

The preterm infant"s inability to suck was an issue of concern to the mothers. Their infants still had difficulty with well sustained suck even after discharge. Mothers

had to ensure satiety by expressing milk and topping up after breast feeding. They stated their infants‟ inability to suck in the following words;

> *"He doesn't suck for a very long time he sucks and stops and sometimes when he sucks he will pour the milk in his dress and not swallow it, then I give him what I have expressed into a cup but I warm it a little before I give him" (Seyram).*

> *"She still can't hold and suck very well as I will wish. She sucks a little and stops, you can see that she is trying and I will express and I give her the expressed breast milk if I realize she is not sucking, she usually doesn't suck well so I fetch with a spoon for her." (fafa).*

> *"When she is eating it takes a long time for her to finish, she will not suck well. My children like to suck but this one is different she will let all the milk go in her dress"*
> *(Woe).*

Participants also expressed their infants‟ inability to latch on the breast during feeding times. This was a matter of concern to the mothers so much that one mother,

Sedem said;

> "*My baby does not close the mouth on the breast I have to squeeze the milk into her mouth When she closes her mouth to suck it is not strong so I have to use another way to let her get the food" (Sedem*).

Other mothers‟, whose infant was unable to latch, said that;

> "*She doesn't want to hold the breast hard, you see, so I*

can't give only the breast feed I express the milk and I use some to top up" (Woe).

"I think my nipple is too big so it can't even enter her mouth for her to hold it. I learnt that this black area must go into the mouth but you see what she is doing she doesn't want to hold it. I have to express and give her but I didn't know that we will spend a long time here so I didn't bring feeding things" (Eli).

Naa also had this to say;

"When I put the breast in his mouth he will hold it a bit and later he leaves it and sleeps you wake him up and he holds it again" (Naa)

4.4 Feeding Challenges of the Mother

Feeding the preterm infant is a skill that must be learnt before discharge from the NICU. This is due to the fact that, preterm infants have several challenges on account of their immaturity and this may pose a hindrance to the mother's ability to feed. For the feeding challenges encountered by the mother, four sub-themes were generated; Problems with lactation, prolonged feeding times, difficulty in identify feeding clues and Inability to identify satiety.

4.4.1 Problems with Lactation

Mothers whose infants are admitted to the NICU have the potential for poor lactation, due to the various stresses they go through during the time of admission. The

stress may continue at home also because of the many activities involved in the care of the preterm infants. Issues with lactation were expressed as follows;

> *"I was very sick, I did not have breast milk, they gave her NAN, but the nurses told me to think of my baby every time I am coming to feed, it will help the milk to flow and I tried and express some milk when I am in bed on the ward. At home the nurses say the breast milk will come because I can relax, she also said when I try to express more milk will come. My breast milk is still not enough so*

*I bought PRENAN. I have been praying to God to help me." (*Eyram)

> *"Expressing the breast is difficult and painful because I haven't done this before and this is my first child. I started using the breast pump but that also takes time to express a lot of breast milk. The nurses want you to give more breast milk at home" (Naa).*

> *"There are many difficulties in feeding some time getting the breast milk is difficult it doesn't flow a lot especially when you are tired the nurses too want you to give only breast milk. They said when you are home you must try and get the breast milk. I try but when it is difficult I give NAN and the nurses don't want you to say no to them"*
> *(Eli).*

However Nuna states that*;*

> *"When I express I get about 100mls, my sister-in-law says my breast milk is not enough and that my eating habits are poor so my milk will not fill up, she wants me to eat very hot food because that is what will produce the breast milk but I cannot. I am not used to eating very hot food She said cold food will not let the milk come. I think I have enough milk because when I wear my bra I have to put*

handkerchief to prevent the milk from flooding into my dress. The nurses said we should eat well, rest and not worry about events at home and relax so we can have plenty of breast milk"

4.4.2 Prolonged Feeding Times

Feeding times among mothers‟ with preterm infant were noticed to be prolonged due to the processes involved, processes such as preterm infants slow suck, express of breast milk, warming milk while feeding with cup and spoon and many others. Prolong feeding time was expressed by participants as;

> *"when I sit down and I am holding her and I say I am feeding her it takes a very long time to finish feeding because this child will suck the breast and after that I will give the expressed breast milk or the tin food you see I will continue like that and before you realize the next feeding time is up and I have to top up again. When I finish feeding I have to wait for her to sleep. You see after feeding her I will beat her back and get her to bring the air out, sometimes as you beat her back you realize she has vomited and that becomes another problem altogether" (Woe).*

> *"Feeding my baby is difficult; it takes a long time to finish feeding her. I give her the medicine; zicovit and folic acid, I have to stop several times when I am feeding her before we finish one feeding"(Eyram)*

> *"She feeds every hour it is so difficult there is no rest at all but God is with me because when feeding you have to take your time and feed slowly by the time you are done, your whole body will be paining you. You have to give the*

medicine, folic acid and the other one. I have sleepless nights. She will not sleep for you to sleep also. You have to feed her throughout the night" (Naa).

"*The expressing takes time and it is painful. You have to express the breast and the milk will come small, small, small. Sometimes you get 30 mls after she sucks the breast but sometimes I don't get anything then I do NAN for her and feed her with the spoon. You do all these and sometimes she decides not to drink when you give her with spoon until it is warm" (Sedem)*

4.4.3 Difficulty Identifying Hunger Clues

Hunger clues among the preterm population was said to be subtle and therefore difficult to be identified. This made mothers to schedule feeds rather than feeding per demand. Feeding schedules were three hourly and sometimes shorter depending on the infants feeding skills and ability to consume required amount of milk. The following are statements from Fafa, Seyram and Davi Enyo, describing their difficulty;

"Eyi!it's not easy, but God is with us. You see, my child is small her cry isn't loud so if you go out to do something and she starts to cry you can't hear her so in the hospital we were taught to feed 3hourly so I don't see that she is hungry, sometimes I exceed the time a little. I was told that I can feed her in about 2-3 hours. I don't have anything I see to say she is hungry so I can't tell you but let's say I feed her every 3hours" (Fafa)

"You don't wait for her to be hungry, you just look at the time and if it's time you feed her. I know Gods hand is inside If you wait for her to be hungry, you will not see it

you just feed her when the time is up and give her the medicines" (Seyram)

However, Davi Enyo the sixteen year old mother had a different experience regarding difficulty identifying hunger clues from her infant as following;

"when you are there with him, you will see that at the time he is to feed he will be moving, but when you are not there you will not see it, you will think that he is just lying down. He can sleep, for a long time, if you don't force him he will not wake up" (Davi).

4.4.4 Inability to Identify Satiety

Identifying satiety is essential in order to avoid under feeding or over feeding the preterm infant due to the potential of vomiting which can lead to aspiration and its" subsequent respiratory distress. Most of the mothers had difficulty identifying satiety as described below;

"Madam it is difficult to Know when your baby is full so you give the breast and you top up with some EBM when he wakes up and you are not in the room you will not know because his crying is small and when I look at the time and it is 3hrs I wake him up to feed him" (Nuna)

"I don't know if she is full or not but I have to feed 40 ml after I breast feed because her sucking is not the best. When I am increasing the milk ever three days too I am afraid I don't want her to eat too much and vomit Jehovah is there with us" (Seyram)

However, Sedem could identify satiety

If she is not full I know that is why I told you the breast milk is not enough for her so I top up when she is full I beat her back then she will belch then you know she is full when she is full like that then she sleep then you know she is full. Her belly becomes big then you know she is full" (Sedem)

4.4.5 Weight Loss

Post-discharge weight loss among preterm infants was a source of worry among some of the mother. Though they taught they were doing well with care giving this was not evident in the weight of their infants. The following statements were made about weigh loss;

"But my baby has not gained any weight, I am very inquisitive to see the weight as the nurse was weighing, he now 1.35 he was 1.5. when we were going home two weeks ago. I was told to feed him 3hrly every day. I will wake up to feed but when he is fast asleep I can't breast feed him Iknow God will help me" (Nuna).

"I was surprised when the nurse said that my baby's weight has come down because; I feed her just as I was feeding her in KMC. I don't know what is wrong with him" (Eyram)

In summary it is evident that mothers of preterm infants encounter problems after discharge from NICU. Three themes emerged; mothers" readiness towards discharge had to do with how they were prepared to continue with care and support of their infants after discharge. Support came from family, spouses and health personnel.

Mothers‟ challenges with feeding their infants were problems with lactation prolonged feeding times and difficulty Identify feeding clues, which were frustrating to the mothers. These problems always put mothers‟ in states of anxiety due to the fear of the unknown. Thus, interaction with the mothers revealed that they have real problems and therefore it is important to tailor education given to mothers towards these challenges.

CHAPTER FIVE

5.0 DISCUSSION

In this chapter, the findings are discussed in relation to previous research. The findings are discussed according to the three main themes identified. These are; mothers‟ readiness to continue feeding, problems of the preterm infant and feeding challenges of mothers‟.

5.1 Demographic Characteristics

Four out of the nine participants were in their twenties, three were in their thirties, and there was one elderly primip and one teenager. This shows that all the participants were in their reproductive ages. Three out of the nine participants had educational levels higher than junior high school and all three worked in the formal sector, which probably puts them in the middle socio- economic group. Three participants were unemployed and the remaining three were self-employed (traders). Morgen et al (2008) associated high risk for preterm birth to low educational level, but in the current study low socio-economic status did not have a strong bearing on preterm birth.

Eight out of the nine participants were Christians and one was a Muslim. Irrespective of their religious back ground all participants had some relationship with a “supreme being” that made them cope with the situation.

5.2 Mothers’ Readiness to Continue with Care

Two sub-themes emerged under the theme mother‟s readiness to continue with care. These were knowledge on care and support systems. Mothers exhibited a high

level of knowledge on the care of their preterm infants during the interview. Thus making it sound as if with the knowledge they have, they will have no problem with caring for their infants. However mothers‟ continue to grapple with their preterm infants in the areas of feeding and care giving. The separation of mother and infant due to the preterm infants‟ admission to NICU, and the inability of mothers to care for their infants soon after delivery due to their medical condition, instability and the size of the infants are some of the factors that impede care giving in the early days of discharge of the premature infant‟s life. These may decrease the mother‟s confidence in care giving.

Early discharge of the preterm infant at the time when he/she is stable will go a long way to minimize nosocomial infections which is an issue at NICU. Nevertheless infants should not be discharged to mothers/care givers who cannot take care of them as this may increase the risk of morbidity and mortality. Though the NICU in the Korle-Bu Teaching Hospital is over flowing with premature infants and other sick infants‟, careful preparation for discharge and good follow-up care after discharge may reduce these risks of re-admissions due to morbidity. It is important during discharge planning, that mothers‟ receive the needed education, do enough return demonstrations before discharge is considered. Furthermore arrangements for follow up and home visit should also be made before discharge is considered. Mothers or/and care givers knowledge on the care of preterm infant before discharge, has been identified as a major concern due to afore mentioned conditions.

Women who are pregnant expect to carry their pregnancy to term but when the inevitable happens and their infants are born before term, they go through the NICU experience with mix feelings. Upon discharge mothers are expected to take over the

care of their infants at home and this may be difficult due to several reasons. This makes it important that while preterm infants are on admission their parent are taken through lessons and the practice of caring for their infants before discharge. Lessons such as feeding the preterm infant with spoon, preventing hypothermia, infection prevention among many others. The findings of this study revealed that, though mothers are educated on the care of their preterm infants while on admission yet after discharge there are still issues that need to be addressed by health care personnel.

The finding in this present study conforms to findings of Pickler et al (2004). Preterm infants continue to have feeding challenges after discharge. Pickler et al (2004) revealed that changes continue to occur in the infants feeding skills after discharge and these changes still need attention from health care personnel. They suggested the need for improved parental teaching and reported that giving parent's adequate teaching on feeding their preterm infants before discharge may reduce the emotional stress and reactions experienced by parents. This may be a panacea in promoting positive feeding experiences among mothers whose infants have been discharged from NICU.

In the current study mothers" stated that they were allowed and assisted to feed their preterm infants while in NICU, and everything seemed to be going on well but somehow upon reaching home a lot changed, their infants were not feeding as well as they did while on admission. Renner et al (2006) agree with the need for mothers" involvement in the care of their infants while on admission. This is to help mothers develop care giving skills towards care giving after discharged. Renner et al (2006) however suggested that during teaching times situations that may help the mothers think through decisions should be included in the teaching. A variety of things such as; changing the home setting to help sustain the preterm infant, and adjustment to the

demands of feeding and sleep-wake patterns of the preterm infant should be included in the teaching. Participants in the current study did not mention altering the home situation as a need to improving care at home. It is possible that the home environment was not conducive to the infant thus their feeding challenge.

Some mothers in the present study were of the view that during teaching it was difficult to disagree with the nurses while they were teaching. In a study that addressed mothers readiness to care for their preterm infant after discharge by way of education was conducted by Thoyre (2006), findings suggested acknowledging mothers‟ thoughts on feeding, can be a guide to clinicians in preparing to help the mothers. Mothers must therefore be engaged during teaching times instead of just teaching them what to feed and how to feed their infant.

Engaging mothers during their infants‟ admission and allowing them to be part of the team can reduce anxiety and stress. Though mothers were aided in feeding their infants at NICU, they were still nervous about feeding. Murdoch and Franck (2011) also documented that, mothers were nervous about feeding their preterm infants‟. They realized that apart from the mothers using trial and error and intuition to identify the infants‟ needs, it was essential that health care personnel teach mothers how to identify their infants needs as well as feeding them, and respond appropriately to their infants‟ needs. This was consistent with the present study in that, mothers had a worth of knowledge on care giving and feeding as a lot of teaching was done by nurses in the NICU. However, they still had challenges with feeding and care giving.

The use of appropriate linguistics devoid of medical jargons is likewise important during education. The need to structure education during teaching at NICU was mentioned by a participant in this study. A participant who is a teacher revealed

that, the education was not structured and that she felt it was a hindrance to adherence. The education received by mothers in this study also centred on feeding, hygiene and general care.

Support for mothers‟ of preterm infants was looked at in three different dimensions; support from family, support from spouse and support from health care personnel.

In Ghana, when a woman delivers, it is a source of joy to the immediate as well as extended family and in some instance, the joy of the whole community. In line with this communal spirit, new mothers receive basic support such as water, food stuffs and fire wood among others from their social network. It was the norm that maternal or paternal grandmother of the new member of the family move to stay in with the nursing mother or the nursing mother moves in to live with her mother or her mother in-law for social support. It emerged from this study that this is changing. Some mother did not have support from family; this was due to the fact that the families live miles apart and was not readily available to give the support that the new mother required. Others had their mothers (infants grandmother) working in the formal sector and for that matter they had to be at work during the day and get home late and very tired unable to give maximum support. This is consistent with Liu et al. (2009) who identified distance between families as the reason for lack of support for mothers with preterm infants. In certain instances, although families were not together, significant others were still interested in communicating with the new mother Liu et al. (2010). This was also expressed by a participant in this study who stated that her mother called to say she was coming over to see the newest member of the family and give them support for some time.

Nursing a preterm infant is associated with high emotions; fear of the unknown, fear of mishandling the preterm infant and a lot of stress for the mother This has the potential to disrupt existing relationships with her family, such as mothers who already have young children before delivering a preterm infant, give all their attention to the new infant to the neglect of the others. A participant who already has two children, both under five years of age stated that she was spending too much time on the preterm infant to the detriment of the first two children.

Though social support could also be assessed from friends, participants also unveiled that during discharge education, they are told to limit the number of visitors in an effort to prevent infection. This is consistent with the findings of Liu et al (2010) and Pridham et al (2004). who found that many parents though needed support, resisted support because they did not allow friends and some family members to visit them out of fear of exposing their infants‟ to germs from the outside world. The issue of infection makes access to social support very limited to the mothers of preterm infants. Moreover, some participants in this study said that special skills are needed to care for their preterm infants and they were the only persons who possessed that special skill and capable of providing that special care for their preterm infants after discharge. This limits the expanse of support that can be provided by friends and some other family members to the mother of a preterm infant.

Ghanaians believe in the extended family system. Support from family is very important to the new mother. Support from friends and colleagues and significant others cannot be ignored. Finding ways of support for mothers‟ with preterm infant must be looked at critically by health personnel involved in neonatal care. Some participants had support from their mothers, others from their older children. Others working in the

formal sector were looking forward for support from colleagues at work when their maternity leave expires. One participant, a teacher, was expecting to have support from the head teacher of her school so she could send her infant to school with her to enable her keep an eye on her while at work because she was uncomfortable living her infant with anybody at home. Some participants had no support; one of such participants said she had no family support and had difficulty coping with the demand of caring for her preterm infant.

Traditionally, when women deliver, they move from their matrimonial home to stay with their mother and in some cases they stay with their mother-in-law for support living out the father in the life of the new infant. This may have a bearing on the results of this study. Most of the mothers though had not moved out of their homes, had limited support from their spouses in rendering care. Spousal support had different dimensions; financial support and physical support; financial support was available to most of the participants, however one participant said she was a single mother with no financial support from her spouse/baby‟s father.

Physical support from the fathers‟ was also not available most participants stated that their husbands could not carry the infant because they were afraid, others said their spouse thought they will hurt the infants when they carried them. This is supported by Falceto et al. (2008) who identified the lack of physical support from fathers in caring for their preterm infant as a problem. They recommended that Fathers need to be encouraged by health care personnel, and they must look out for situation in which the father will be involved in the care of the infant. This they said can avert the man from moving away from his role as a father. It may be that culture does not allow the father into the child's life to perform certain tasks.

When preterm infants are on admission in the Korle-Bu Teaching Hospital, when fathers‟ come to visit their infants, upon seeing them in the isolette, the question most of them asked is the viability of the infant. They expressed great fear and hardly touched them. There is the need for further research into the fathers‟ experiences with their preterm infants to know how they can be supported through their experiences.

Support from health care personnel starts from the very day of admission through to discharge. This support is on-going until the mothers get home and realize they are all by themselves and every decision they make will affect their baby positively or negatively. Some mothers panicked at the realization that the constant support they enjoyed from health care persons in the hospital was no longer available. Boyokova et al. (2012) identified knowledge gap and support among mothers of preterm infants after discharge. They indicated that challenges experienced by mothers after discharge is a cause for the high incidence of readmissions among preterm infants. They suggested that an accurate measure of situations at home and post discharge concerns must be looked at to reduce the frequent readmissions that occurred among this group of infants. In the current study, though readmission was not considered because the infants have been at home for a maximum of two weeks, some infants had started exhibiting signs of weight loss. Parenting preterm infants after they are discharged home from hospital can be bewildering for the mother and a significant source of crisis for them. The role of the parent can be marred by the prolong hospitalization and the distinct health care needs of the preterm infant. These initial issues make it a challenge for mothers when they are home with their infants. Appropriate follow up care for the preterm infant will prevent the high rate of readmissions which are very costly to the parent and the family of the preterm infant.

Participants in this study stated the need for nurses to visit them at home after discharge. This they said will help resolve new issues that might crop up after discharge. Some also wish the nurses could visit them to talk to family on their behalf to gain family support in caring for their infants. A participant who had difficulty with family concerning cup and spoon feeding suggested the need for home visits by nurses as a significant part of follow- up care for preterm infants and their mothers‟. The follow - up care may include methods of keeping communication with hospital personnel such as telephone number of the facility where someone knowledgeable in matters of preterm infants will be readily available to answer the phone in time of need. Staying in contact with mother can be done through video conferencing where the health care personnel can see whatever is being described or see the infant while speaking to the mother. They also believed the following measures such as forming support groups among mothers of preterm infants, audio recordings, or written materials on required education will go a long way to help the mother. This is essential since NICU care is not available in most parts of Ghana. Though some of the participants have phone numbers of nurses at NICU, this was not official and nurses are not obliged to pick up phone calls from the mothers.

5.3 Problems of the Preterm Infant

Preterm infants have been noted to have continuous problems even after discharge. For instance preterm infants with oro-motor problems before discharge continue to have oral-motor problems at six months and twelve months of age. Oral motor dysfunction can also develop even in clients with no oral motor dysfunction at discharge (Amaizu et al., 2008). None of the mothers‟ complained of any new oral motor dysfunction in this study after discharge, most of the mothers‟ consented to the

presence of oral motor dysfunction as at the time of discharge from NICU. Feeding problems exhibited by preterm infants as described by their mothers in this study are; inability to stay awake during feeding, regurgitation of feeds, inability to latch on the breast and suck. According to participants in this study, some feeding problems that their preterm infants exhibited during admission declined, but some still lingered on after discharge.

Alertness during feeding was identified as one of the problems of the premature infant. Mothers in this study stated that their preterm infants had difficulty remaining alert during feeding, they continued to sleep all the time and sometimes make no attempt to wake up to feed. Most of the mothers‟ in this study had difficulty waking their infants up to feed and even during feeding time. Their sleepiness may be due to the immature brain of the preterm infant.

In feeding preterm infants, care givers must develop ways to wake them up to feed them and keep them awake especially during the process of feeding. This is to avoid aspiration of feeds at meal times and its ensuing respiratory distress and apnoeic attacks which are common phenomena among the preterm population. Preterm infants have a habit of sucking a little and falling asleep until a stimulus is generated by moving the nipple or spoon in the infants‟ mouth to wake the infant up to continue to feed; this process should be continuous throughout the feeding time (Bertoncelli et al., 2012).

Participants in this study progressively ensured alertness before and during feeding, as this has the tendency to influence the infant's feeding skills notably by generating more sucks. Some participants stated they have to keep waking their preterm infant up while feeding them either at breast or when feeding by cup and spoon.

Mothers‟ of preterm infants‟ need a constant reminder that the feeding skill of their

preterm infants‟ are still maturing even at the time of discharge just as the whole preterm infant is maturing. Therefore feeding the preterm infant is a task that requires patience and alertness on the part of the care giver, as well as ensuring the alertness of the infant and this must be taught by health care staff in the NICU. These teachings should be re-enforced before the infant is discharged home. These mindful strategies are needed during meal time to maintain their alertness and to ensure that they awake during meal time.

Mothers‟ of preterm infants need to be reassured that their infants may grow out of the problem as they mature, reassurance could be done by nurses either by telephone conversation or through home visits. Mothers‟ whose infants are still sleeping while feeding could also be reassured by other mothers whose infants have out grown the problem of sleeping while eating through support groups. These measures if properly tailored may go a long way to calm mothers whose preterm infants are still struggling to stay awake when been fed.

Forming mothers support groups is an area that needs to be looked at by health care professionals working at the NICUs in Ghana. Mothers may feel comforted when they hear similar stories from other mothers‟, they may be better encouraged to hear that someone else has gone through what they are currently going through and have a success story.

Deficient feeding abilities in preterm infants such as inability to stay awake during feeding can lead to poor nutritional intake and subsequent growth failure after discharge and it is a source of worry to many mother/care givers. In the feeding of preterm infants‟ the joy and zeal exhibited by term infants are absent, there is no eagerness or aggression on the part of the preterm infant. In this study, participants

concern was that their infants sleep for long without eating, they cry because their sleep has been disturbed. Because feeding is an issue between two people, if one party is asleep it will be frustrating for the other party who may blame herself for not being able to feed her infant.

In this study participants who were multi-parous kept comparing the sleeping pattern of their preterm infants with that of their term infants and wish the preterm infant would be alert, exhibiting the same strength and enthusiasm their term infants exhibited during feeding. Though they were aware that the current infants‟ were premature and were different from the term infants‟, they still wished they could stay awake and breast feed as their term infants did. Meanwhile the ability to stay awake during feeding or respond to arousal was identified to be behavioural (Pickler, 2004).

Participants in this study were taught to cup and spoon feed their infants if they continue to sleep when feeding at breast. Most of the participants stated that they fed their infants with cup and spoon after putting them to breast. They expressed concerns about infants still sleeping whiles being fed with a spoon, that is to say even the cup and spoon feeding does not keep them from falling asleep at meal times. Mothers‟ in the current study stated that when the spoon enters the mouth, though the infant may be sleeping, they most of the time wake up briefly to drink the milk in the spoon and go back to sleep before another spoon of milk is introduced. This may go on for some time before the infant sleeps deeply and refuse to swallow the milk from the spoon.

Irrespective of the infants‟ continuous sleeping, the care giver has a responsibility to keep their infants awake during feeding times.

Another problem of the preterm infant identified by mother was regurgitation. Mothers in the present study, expressed concerns about their preterm infants constant

vomiting/ regurgitation of milk they have ingested. Regurgitation is a phenomenon that is fairly common among preterm infants (Ramireze et al., 2006). It may occur during feeding or after feeding, regurgitation was a source of worry to most of the mothers in this study. Some of the mothers‟ stated that their infants had suffered from this since their NICU days and they had been reassured by health care professionals in NICU that it will stop, but as at the time of the interview their infants were still vomiting/regurgitating. The most alarming occurrence associated with regurgitation as expressed by the participants was the ensuing aspiration of milk and the potential for difficulty in breathing that may occur with regurgitation. Morbidities such as; apnoea and aspiration pneumonia may also occur

Poet (2004) observation supports participants concerns of regurgitation in the present study by asserting that regurgitation is associated with large volumes of fluid in their meals and supine posture they are kept in. The author also supports the fact that regurgitations are grave and may lead to aspiration and cyanosis. Managements suggested for the event include posture, and a reduction in the amount of milk being fed, thickening of feeds and then medication. None of the mothers in the current study had medication for their infants to reduce regurgitation nor thickened the milk as suggested by Poet (2004). Nevertheless they stated being educated to position their infants after feeding to reduce regurgitation/vomiting**.** Most of the mothers‟ carried their infants in the “kangaroo mother care” style to help reduce regurgitation or held them over their shoulder for a long time after feeding before putting them down to sleep. Regurgitation has also been linked to „overfeeding, excessive air swallowing during feeding and crying or coughing by Indrio (2009). Excessive swallowing of air is a possibility bearing in mind that mothers in the present study fed their infants with cup and spoon. Inappropriate

latch on to the breast also has the potential to cause air swallowing. Some mothers in the current study described their infants‟ regurgitation as serious. It is essential for health care personnel to pay attention to mothers complains in order to give appropriate management, considering that excessive regurgitation has negative effect on the infant with the potential for weight loss and morbidity.

The preterm infants‟ gastro intestinal system is also maturing as the infant matures. Mothers should therefore be encouraged to feed their premature infants‟ more slowly and cautiously since this may help reduce the occurrence of regurgitation, considering that, mothers stated that feeding with the cup and spoon was not easy. As a result, they may rush through the process and exacerbate the problem of regurgitation and vomiting. Regurgitation can be severe enough to affect the weight gain of the preterm infant because persistent vomiting will reduce the amount of milk consumed.

Mothers‟ should be encouraged to burp their infants after feeding to ensure swallowed air is expelled. It is essential for health care professionals to do full disclosure of care and principles underlying the care for the mother to understand.

Preterm infants inability to latch and suck on the breast was evident in the current study. Most participants stated that their preterm infants were unable to latch and suck breast adequately. The maturation process of the preterm infant is a factor that must be considered at all times especially when rendering care. The preterm infants are maturing out of utero and therefore, have to grapple with issues that term infant do not have to grapple with. Unlike the term infant who is ready to suck immediately after birth, preterm infants may not be able to latch on to the breast and do not have root and suck reflexes among many others at the time of their birth and continue to struggle to feed till they

attain full maturity.

In the NICU, preterm infants are not fed until they are medically and physiological fairly stable. Feeding may be initiated by naso/oro gastric tube until the infant develops some oral feeding abilities. Tube feeding may be per gavage or by syringe. Harmless and fruitful oral feeding depends on maturation of reflexes of suck, swallow and breath so as to prevent aspiration. Some of the infants, who could latch fairly well, did not have well sustained suck as expected of infants. Their suck was said to be weak, others said their infants were easily fatigued when they fed at breast, sometimes they refuse to suck all together. Barlow (2009) supports the difficulty in sucking by stating that, sucking is a comparatively matured motor behaviour of a term infant and is central to attaining proficiency in feeding orally. Barlow (2009) states that, preterm infants repeatedly exhibit disorganization and inability to suck and feed orally.

Most of the preterm infants in this study still had some difficulty in sucking as at the time of discharge. Their mothers were concerned that they could not suck well as they expect them to suck.

Pickler (2004) stated that, motor subsystem and autonomic subsystem are required for feeding per bottle. If any of these subsystems are not matured it will be difficult to get the infant to suck and bottle feed successfully. Though all participants in this study did not bottle feed their infants but breast fed, the same mechanisms for feeding per bottle are required in latching and sucking the breast, thus infants‟ in this study have not yet attained maturation in all the subsystems mentioned by Pickler (2004).

Preterm infants need to be assisted whenever possible to learn to suck until all the systems are matured. Ways of assisting the preterm infant to suckle at breast as

expressed by some participants included; putting the infants to breast for some time even if the infant is not ready to suck, he/she is being reminded that he has to suck, before feeding by cup and spoon commences, arousing the infant when he/she falls asleep while feeding, and wrapping the infant well to keep warm. Since feeding by cup and spoon does not require sucking, some mothers stated that sometimes they would prefer to cup and spoon feed their infants straight up and not put the child to breast at all because it was time wasting.

Neiva and Leone (2007) stated that, Steady swallow reflexes are recognized prior to the suck reflex, this is also consistent with the present study, in that though preterm the infants could not suck sufficiently at breast, they fed fairly well by cup and spoon. Mothers stated that they were taught to feed with expressed breast milk or prepared formula, using cup and spoon at every meal time, this they did without fail. Some participants held the view that their infants get tired from sucking and when they realized this they quickly switched to cup and spoon feeding. It is worth noting that the energy level of the preterm infant is low due to the lack of stored fat needed for energy and many other factors. These may also be a contributing factor for their inability to latch and suck.

Participants in the present study voiced that; their infants may suck for some time and intentionally stop sucking to allow all the milk to pour out in their dress, this behaviour occurred even when they were fed with cup and spoon. Preterm infants learn these coping strategies which are strategic, behavioural and compensatory. Feeding tactics such as putting a loose seal on the areola to allow milk to flow out of the mouth are some of the strategies used (Thoyre 2006). Thoyre stated that, this behaviour is to allow excess milk that has either been sucked or poured in the mouth of the preterm

infant as the case may be in this study, is to allow milk to flow out of the mouth, this is to prevent the infant from aspirating the milk. Though these measures are compensatory, Thoyre (2006) stated that it does not foster growth of muscles around the lips. However, growth of muscles around the lips is required for actual spoon feeding. If care givers are aware that these mechanism are for safety, their anxiety when this occurs may reduce and they may find ways to curb it or support the infant through it. It is may also be important to allow preterm infants to mature at their own pace and not forced through the stages of maturation. Conversely it is worth noting that preterm infants who do not get enough milk per cup and spoon after feeding at breast are at risk of hypoglycaemia, dehydration, and jaundice and growth failure.

In the present study mothers complained of their infants losing weight after discharge. The preterm infant is born with no stores of fat and this puts them at a greater risk for delay in gaining weight and potential for weight loss. It is therefore important that preterm infants are adequately fed to improve on their stores of fat. Preterm infants are expected to grow at rates as they would in utero. If mothers are unable to feed their infants properly, the expected growth rate will not be achieved and the potential for weight reduction will therefore be high. Most of the participants in this study, stated that they have done all they were taught about feeding, but their infants had not gained weight since they went home and were very worried about this. Others were surprised about their infants‟ weight loss when their infants were weighed at the out-patients department during follow up clinic assessment because they were feeding just as they did in NICU. Part of the criteria for discharging infants in NICU is mothers‟ ability to feed infant well and progressive weight gain of the preterm infant. Meanwhile, preterm infants are well-

known for the potential for poor weight gain up to twelve months of age.

Feeding preterm infants‟ lesser quantities of milk than is expected is a recipe for growth failure, weight loss and developmental restrictions (Dodrill et al., 2008). It is also worth noting that sometimes different scales record different weights on the same infant. Preterm infants being discharged are weighed at NICU, but upon their return for follow-up, they are weighed at the Out-patient department with a different scale which could possibly affect the weight significantly. Care must be taken that all preterm infants‟ are weighed without their clothes so as to assess the most appropriate weight.

Weighing cards at the child welfare clinic are the same for both preterm infant and term infants. Therefore, infants who are preterm should be identified early so as not to compare the preterm infants, weight gain to that of the term infants. Nurses at the child welfare clinics should also know the preterm infants‟ high risk for weight loss and manage them appropriately when this occurs. The team approach for managing preterm infants‟, if put in place at the NICU and at follow up clinics, where infants can be seen by nutritionists may help to overcome the problem for poor nutrition and weight loss among the preterm group.

Young et al. (2013) were of the view that multinutrient fortification of breast milk after discharge to improve growth rates did not affect growth rates and weight gain in preterm infants. This was partly because infants in their study were fed directly from the breast thus the milk could not be fortified. Conversely participants in this study though did not fortify the expressed breast milk (EBM), may benefit from fortification due to the fact that all the infants were fed with EBM with cup and spoon after breast feeding. However infants in this study were given multivitamin as nutritional supplement after

discharge from NICU. Health care personnel working with preterm infants must always ensure that preterm infants are making steady progress in growth rates during and after discharge.

5.4 Feeding Challenges of Mothers of Preterm Infants

Feeding challenges identified in this current study were not solely challenges of the preterm infant, but challenges of the mothers as well. Mothers were identified to have their own challenges in the process of feeding their preterm infants. Some challenges identified on the part of the mothers in this study include; problems with lactation, prolong feeding times, difficulty identifying hunger clues, and inability to identify satiety.

One of the challenges encountered by mothers in the current study is problems with lactation. Mothers stated ill health and tiredness as some of the reasons for not having enough breast milk to feed their Preterm infants. Though participants stated that, in NICU infants were fed with formula they were advised upon discharge to feed their infants solely on breast milk. This is due to the fact that, human milk is acknowledged as the ideal meal for all infants for the first six months of life. The health benefits of breast milk to infants‟, mothers and the family as a whole is well documented.

Nonetheless, mothers of preterm infants, run into diverse lactation and breastfeeding problems leading to a decrease in the rate of breastfeeding their preterm infants. Poor milk supply can occur if the infant is not capable of sucking the breast well or regularly. In instances when the infant is unable to suck adequately, expressing the milk regularly either by hand or by the use of breast pump can help improve on lactation. Some mothers experienced reduced breast milk production irrespective of the infant‟s regular suck or expression of milk. Inadequate milk supply in the mother can be assessed

by asking the mother to express breast milk after putting the child to breast. In the NCU of Korle-Bu Teaching hospital, mothers‟ ability to express 60 millilitres of milk or more after a good suck is considered adequate milk supply. Some mothers‟ in this present study did not state how many millilitres they expressed after they put their infants‟ to breast, but they stated that they did not have enough milk and therefore give infant formula. Success in breast feeding is a permutation of tolerance, good technique, and determination. As mothers develop skill in breastfeeding, they become relaxed during feeding and produce more milk. Some mothers in the present study stated that, to improve lactation, nurses in the NICU taught them to relax and think about their infants when they are about to feed them. According to some of the mothers‟ it was difficult to relax and rest at home because there was no one to help them, even though the nurses told them to rest to improve lactation.

Mothers in this study also stated that apart from their preterm infants‟ inability to suck, expressing the milk can be painful and time consuming. These may be some of the contributory factors to mothers‟ inability to lactate adequately. Lactation consultants have been noted to assist mothers‟ with issues of lactation. In the NICU of the Korle-Bu Teaching Hospital there are no such professionals. As a result, issues of lactation and breast feeding are handled by nurses. Every nurse working in the NICU is expected to have enough knowledge and skill to help mothers with lactation, breast feeding and its associated problems. The idea of lactation consultants may be an area worth exploring in future if mothers‟ are expected to improve on lactation and breast feeding skills.

Another area of challenge experienced by mothers was the prolonged feeding times. Participants in this study voiced distress about prolong feeding times. Factors such as; poor sucking, sleeping while eating, expressing of breast milk manually or by

pump, feeding by cup and spoon, burping the infant after feeds, were associated with prolong feeding times. Some participants were of the view that expressing the breast milk was difficult and painful and time consuming. Some first time mothers thought that expressing the milk was difficult because they had not done this before. Participants thought that using the breast pump was easier and will ease the burden in expressing the milk. However, some mothers thought that it was still burdensome and time consuming.

Feeding per cup and spoon is also a slow process if mothers are not patient. This view is in consonant with Torola et al. (2012) who reported that feeding time is more lengthened and disorderly in the preterm infants than in term infants.

Identifying hunger clues was another challenge experienced by mothers. Most of the mothers in this study, expressed difficulty in knowing that their preterm infants were hungry, This was because signs shown by preterm infants when hungry are very subtle and difficult to note. In the NICU at Korle-Bu Teaching Hospital infants are fed by their mothers three hourly. Mothers‟ who were still on admission in the post-partum ward in the hospital, came from their various wards to feed their infants three hourly in NICU. Mothers who have been discharged from the hospital had to come from homes daily and stayed around to feed their infants by schedule, three hourly.

Some participants saw crying as a sign for expressing hunger but this according to them was absent in their infants because they were small and did not cry loudly enough for them to know that they are hungry. Others also stated body movement as hunger clues. Nevertheless, most of the mothers did not look out for hunger clues their infant portrayed, they rather looked at the watch to feed their infants by schedule as was done at NICU. In view of this, most of the mothers of preterm infants in this study practiced

scheduled feeding rather than feeding on demand. Feeding is therefore regulated by the mother and not infant regulated as should be, other hunger clues such as; sucking the finger, making sucking noises, were identified by Renner et al. (2006)

Mothers of preterm infants should be educated to identify such hunger clues to help them in feeding their preterm infants before and after discharge.

Some mothers expressed their inability to identify satiety as a challenge.

Participants in this study had difficulty identifying satiety in their preterm infants‟, mothers expressed interest in the quantity of milk they were supposed to give as top up after breast feeding rather than looking out for the clues the infant gave when satisfied. Kavanaugh et al. (2006) postulated ways of identifying satiety among preterm infant to include; infant stops sucking, bites the nipple, relaxes the body and goes to sleep, tongue thrust, drools, and movement of the head away from the breast during feeding. These according to the authors were signs preterm infants‟ exhibited to demonstrate satiety. Mothers of preterm infants must be taught these signs before discharge from NICU. Some participants were also hesitant in advancing feeding plan to ensure satiety for fear of vomiting, irrespective of the fact that during their stay in the NICU they learnt to advance feeding every third day by five millilitres of milk. This finding is consistent with Thoyre (2006) who also identified that; mothers had difficulty progressing with feeding plans once at home. In Thoyre‟ study however; mothers bottle fed their infants while none of the mothers in this study bottle fed their preterm infants

Mothers were taught to give top up feeds to their preterm infants with expressed breast milk or prepared formula by cup and spoon after every breast feeding. In view of this, some mothers always gave top up feeds without assessing their infants‟ satiety after

breast feeding. If mothers in the current study could identify satiety in their infants, there could be instances where their infants may not need to receive top up feeds by cup and spoon after breast feeding. Finding ways to help mother identify satiety is an important area that nurses in the NICU should consider in helping women with preterm infants before they are discharged home from NICU.

In summary, preterm infants and their mothers continue to struggle with feeding after discharge from NICU. Issues such as mothers‟ readiness to care for the infant and support systems available to the mother after discharge were identified. Other challenges were; feeding challenges of the preterm infant identified in the current study included inability to be alert during feeding times, regurgitation of feeds, and weight loss. These challenges if not handled accurately have the potential to increase morbidity and mortality among preterm infants post discharge. Challenges identified by mothers include; problems with lactation, prolonged feeding time, inability to identify hunger clues and satiety. Immediate follow up after discharge to assist mothers of preterm infants will help mothers overcome some of these challenges.

CHAPTER SIX

6.0 SUMMARY, IMPLICATIONS, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

In this chapter, a summary of the whole research has been given and a conclusion drawn. The findings of this study have implications for nursing practice, policy development, and future research. The limitations of the study have also been outlined and recommendations enumerated.

6.1 Summary

Post discharge feeding challenges among mothers‟ with preterm infants, is a Progressive problem that mothers with preterm infants have to grapple with after discharge. It has been acknowledged worldwide that preterm infants and their mothers go through difficulties with feeding their preterm infants after discharge.

The purpose of this study was to explore the feeding challenges of mothers of preterm infants after discharge from NICU in the Korle-Bu Teaching Hospital.

A qualitative approach was used to recruit nine (9) mothers‟ whose infants have been discharged from NICU of the Korle-Bu Teaching Hospital. Each of the mothers‟ was interviewed for thirty to forty-five minutes. The interviews covered issues relating to their infants and the process of feeding. The interviews were audio taped and transcribed verbatim.

Through content analysis, three major themes emerged, and these include; Mothers‟ readiness to continue with Care, feeding problems of the Preterm Infant and Feeding Challenges of the Mother. Mothers‟ readiness to continue with care was

described in the form of knowledge on care and support systems. Feeding problems of preterm infants included, inability to stay awake during feeding, regurgitation of feeds, inability to suck and inability to latch on breast. Feeding Challenges of the Mothers included problems with lactation, prolonged feeding times, inability to identify hunger clues and satiety.

Mothers in this study exhibited knowledge on care and feeding of their preterm infant, but had difficulty identify satiety and hunger clues. Assisting mothers of preterm infants to feed their infants identifying infants hunger clue and satiation are areas nurses working in the NICU will have to consider in order to improve the lives of preterm infants.

6.2 Implications

The findings of the study have implications for nursing practice, policy development and future research.

6.2.1 For Nursing Practice

Mothers in the current study were noted to have knowledge on care giving and feeding their preterm infants but, they continued to have challenges in feeding their infants at home. There is therefore the need for nurses working in the NICU to tailor their education in a way that will include scenarios that will cause mothers to think through possible problems that may occur at home. Education given at NICU must be written and given to mothers who are educated so that they can refer to them at home when the need arises. However, this should be devoid of jargon and medical terminologies. Mothers who cannot read, may also give their copies of the educational list to their partner. This may help fathers to get involved in the care of their preterm infants.

Mothers‟ in the present study stated that they were educated during feeding time. In the NICU of Korle-Bu Teaching Hospital, fathers are not allowed in when mothers are feeding their infants. Teaching times if possible can be re-scheduled to include fathers, to enable them acquire knowledge to assist their partners at home.

It was noted during the interview that mothers were of the view that they will benefit from home visit. Community health nurses will have to intensify follow up visits to capture preterm infants and their mothers after discharge from NICU to re-enforce education given at NICU and assist where necessary.

Mothers‟ in the current study were unable to identify clues of hunger and satiety exhibited by their infants. Assisting mothers to understand the behaviour of the preterm infant is an area Nurses in the NICU will have to explore to help mothers identify hunger and satiety clues that their preterm infants exhibit.

6.2.2 For Policy Development

Growth failure was noted among some of the infants whose mothers were interviewed. Growth monitoring has been mentioned in general terms by the Ministry of Health with no special attention to the preterm infant. There is the need for growth monitoring of the preterm infant to be different. The ministry of health will have to emphasize on growth monitoring of the preterm infant in the policy document „growth monitoring and promotion for child survival‟. This will help community health nurses identify preterm infants and their mothers and give them the required assistance when they come into contact with them.

Preterm infants discharged home to their mothers from NICU, are given review dates two weeks after their discharge to return for review, during these two weeks when

mothers‟ are home with their preterm infants‟ there is no monitoring until their review time is due. A referral system where every mother with a preterm infant upon discharge from NICU, is referred to community health nurses in the locality for monitoring should be considered, so that preterm infants can be monitored before they return for review.Mothers whose preterm infants have been discharged from NICU were of the view that, they will be glad to talk to health care personnel after discharge when the need arises. Management of The Korle-Bu teaching hospital will have to consider a telephone communication system where mothers of preterm infants discharged from NICU can contact health care personnel when the need arises.

6.2.3 For Nursing Research

The current study was done in the Korle-Bu teaching hospital. Further research to include other health facilities with Neonatal Intensive Care Units need to be conducted to ascertain whether mothers and their preterm infants have the same challenges as those in the study site.

In the current study, participants stated that fathers of the preterm infants were not involved in the care of their preterm infants. A research into fathers experience with their preterm infants needs to be conducted.

6.3 Limitations of the Study

One of the limitations was that the small sample size of nine (9) could not be a good representation of all mothers with preterm infants in Ghana. Therefore replicating this study in different NICU will be essential. The researcher had to stop the interview several times to allow the mother to attend to her baby when the need **arose.**

6.4 Conclusion

Findings of this study suggested that preterm infants and their mothers have challenges in the area of feeding and support. Majority of mothers‟ felt prepared prior to discharge from NICU but they had challenges at home. Some of these challenges were identified irrespective of length of stay in the hospital. Other problems reported by mothers were inability to identify hunger and satiety clues and the scarcity of written information to back verbal education. Discharge planning at NICU was done without significant others involvement. It is known that Mothers‟ of preterm infants go through considerably higher levels of anxiety. Therefore, support is needed from NICU nurses, community health Nurses significant others and other mothers whose preterm infants have been discharged from NICU and are doing well. Mothers‟ of preterm infants require a more individualized approach to their child's specific needs and their own concerns. There is therefore the need for early follow up and support from health care personnel after discharge.

6.5 Recommendations

Based on the findings of the study, recommendations have been made to Ministry of Health, Ghana health Service, Korle-Bu Teaching Hospital, and NICU Nurses.

To the Ministry of Health (MoH).

The MoH should;

Revise the curriculum of nursing school to include discharge planning of preterm infants.

- Introduce post basic paediatric nurses training in the Regions to train nurses

- with the requisite knowledge to care for the preterm infant and their mother at NICU and after discharge.
- Training Nurses to become Lactation consultants to improve lactation problems both at NICU and after discharge.
- Train Nurses in Neonatal care to work at the NICU.
- Introduce a policy on the involvement of father of preterm infants in their care by granting paternity leave for fathers with preterm infants.

To the Ghana Health Service (GHS). The Ghana Health Service (GHS) should:

- Open more NICUs to accommodate the increasing number of preterm infant's birth in the Country.
- Public Health and Community health Nurses should have a register of all preterm infants in their jurisdiction.
- Include compulsory follow-up of preterm infants throughout their first year of life.
- Introduce fortification of expressed breast milk to help reduce weight loss among preterm infant.

To the Korle-Bu Teaching Hospital The Korle-
Bu Teaching Hospital should

Organize workshops to sensitize nurses and other health professionals at the out patients department at the paediatric department on post discharge feeding challenges among mothers of preterm infants, to help improve life of both the mother and the infant.

- Introduce mother support group among mothers with preterm infants to allay anxiety among families with preterm infants

Employ and attach lactation consultants to the NICU to help improve on lactation and breast feeding issues among preterm infants and their mothers

- Nurse Managers and other health care providers at NICU and at the NICU clinic should inculcate comprehensive educational programmes to improve staff knowledge on post discharge feeding issues of the preterm infant.
- Introduce the health team concept at the NICU and the follow up clinic to get all professionals involved in managing the preterm infant and their mothers. (Nutritionist, Psychologist, Neonatal Nurses, Paediatric Nurses, Public Health Nurses etc)
- Attach NICU Nurses to the NICU clinic to help mothers and their preterm infants out at the out-patients department because the Nurses at the out-patient department do not work in NICU.
- Management of the hospital should design a communication system through which mothers of preterm infants should have twenty- four hours access to Nurses at NICU.

To Nurses at NICU. Nurses at
NICU should;

- Prepare towards discharge information and improve on it by writing information either in English or local languages so that clients can read and understand when the need arises.
- Include family members or significant others in patient educational programms before discharge.
- Nurses at NICU should role play handling the preterm infant after feeding to mothers as part of preparation after discharge.

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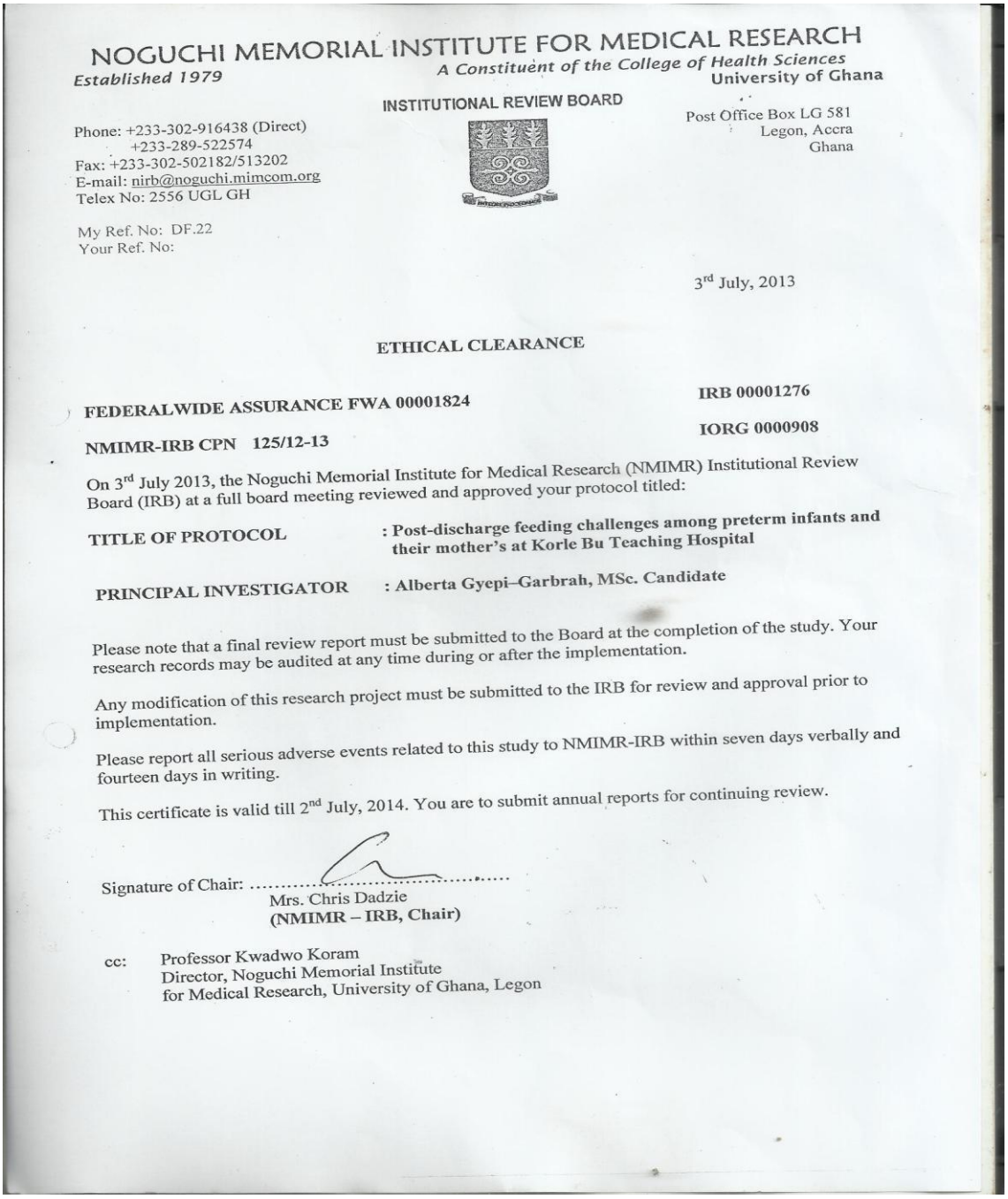
Appendices

Appendix A: Ethical Clearance



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A Constituent of the College of Health Sciences
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My Ref. No: DF.22
Your Ref. No:

3rd July, 2013

ETHICAL CLEARANCE

FEDERALWIDE ASSURANCE FWA 00001824

IRB 00001276

IORG 0000908

NMIMR-IRB CPN 125/12-13

On 3rd July 2013, the Noguchi Memorial Institute for Medical Research (NMIMR) Institutional Review Board (IRB) at a full board meeting reviewed and approved your protocol titled:

TITLE OF PROTOCOL : **Post-discharge feeding challenges among preterm infants and their mother's at Korle Bu Teaching Hospital**

PRINCIPAL INVESTIGATOR : **Alberta Gyepi–Garbrah, MSc. Candidate**

Please note that a final review report must be submitted to the Board at the completion of the study. Your research records may be audited at any time during or after the implementation.

Any modification of this research project must be submitted to the IRB for review and approval prior to implementation.

Please report all serious adverse events related to this study to NMIMR-IRB within seven days verbally and fourteen days in writing.

This certificate is valid till 2nd July, 2014. You are to submit annual reports for continuing review.

Signature of Chair: .....
Mrs. Chris Dadzie
(NMIMR – IRB, Chair)

cc: Professor Kwadwo Koram
Director, Noguchi Memorial Institute
for Medical Research, University of Ghana, Legon

Appendix B: Site Approval

SCHOOL OF NURSING
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA
LEGON

Telephone: 0302-513255 (Dean)
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P. O. Box LG 43
LEGON, GHANA

Our Ref: SON/F.11
Your Ref:

July 23, 2014

The Head
Dept. of Paediatric
Korle Bu Teaching Hospital
Accra.

Dear Sir/Madam,

INTRODUCTORY LETTER

I write to introduce to you Alberta Palmis Gyepi-Garbrah, an MSc student of the School of Nursing, University of Ghana, Legon. She is conducting a research project on **"Post-discharge feeding challenges among mothers of preterm infants' ".**

I should be most grateful if you could kindly assist her with the information that she may require.

Thank you.

Yours faithfully,

Dr. Florence Naab
SUPERVISOR

Madam
Margaret Odoi
DEPT. OF CHILD HEALTH
KORLE-BU TEACHING HOSPITAL

Appendix C: Consent Form

CONSENT FORM

Title: Post Discharge Feeding Challenges among Preterm Infants and their Mothers at KBTH

Principal Investigator: Alberta Gyepi-Garbrah MSc candidate

Address: University of Ghana, School of Nursing Legon

General Information about Research

This study seeks to assess post-discharge feeding challenges among preterm infants and their mothers. You have been selected for this study because you are a caregiver of a premature infant who is reporting for the first time after being discharged from NICU. You have the right to decide whether you want to take part in the study or not. If you are recruited into the study you will choose a venue and a time convenient to you for the interview to be conducted. The interview will not interfere with the care of your infant while you are in the hospital. If you agree to be part of the study, you will be given a consent form and you will have to give your consent by signing or thumb printing on the form, after which you will answer some questions. The questions will be centred on your experiences of feeding your preterm infant since you were discharge. The interview will last between 45 minutes to one hour.

Possible Risks and Discomforts

There are no known risks in this research. However, you may feel emotional while narrating your experience. You have the right not to narrate stories that will make you emotional.

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Appendix C: Consent Form

Possible Benefits

You may not benefit directly from this research. However, the knowledge generated from this research work will create the basis for improved education on feeding of preterm infant before discharge.

Confidentiality

The venue for the interview will be such that nobody will hear what you say .Your name will not be recorded anywhere, you will not be named in any reports and all information about you will be protected, using false names. The data obtained from this research will be kept for 5 years after the study, before they are destroyed.

Compensation

There are no compensations for participating in this research.

Voluntary Participation and Right to Leave the Research

Participation in this research is voluntary. Your refusal to participate WILL NOT affect the care your child is receiving from the hospital.

Contacts for Additional Information

If you have any questions about the study you may contact the following persons:

Dr. Florence Naab

Address: University of Ghana, Legon

Phone No. 0204522332

Alberta Gyepi-Garbrah

Department of Child Health

Korle -Bu

Phone no. 0246229923

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Appendix C: Consent Form

Your rights as a Participant

This research has been reviewed and approved by the Institutional Review Board of Noguchi Memorial Institute for Medical Research (NMIMR-IRB). If you have any questions about your rights as a research participant you can contact the IRB Office between the hours of 8am-5pm through the landline 0302916438 or email addresses: nirb@noguchi.mimcom.org or HBaidoo@noguchi.mimcom.org .

VOLUNTEER AGREEMENT

The above document describing the benefits, risks and procedures for the research title ***(Post Discharge Feeding Challenges among Preterm infants and their Mothers)*** has been read and explained to me. I have been given an opportunity to have any questions about the research answered to my satisfaction. I agree to participate as a volunteer.

_____ _____

Date Name and signature or mark of volunteer

If volunteers cannot read the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

_____ _____

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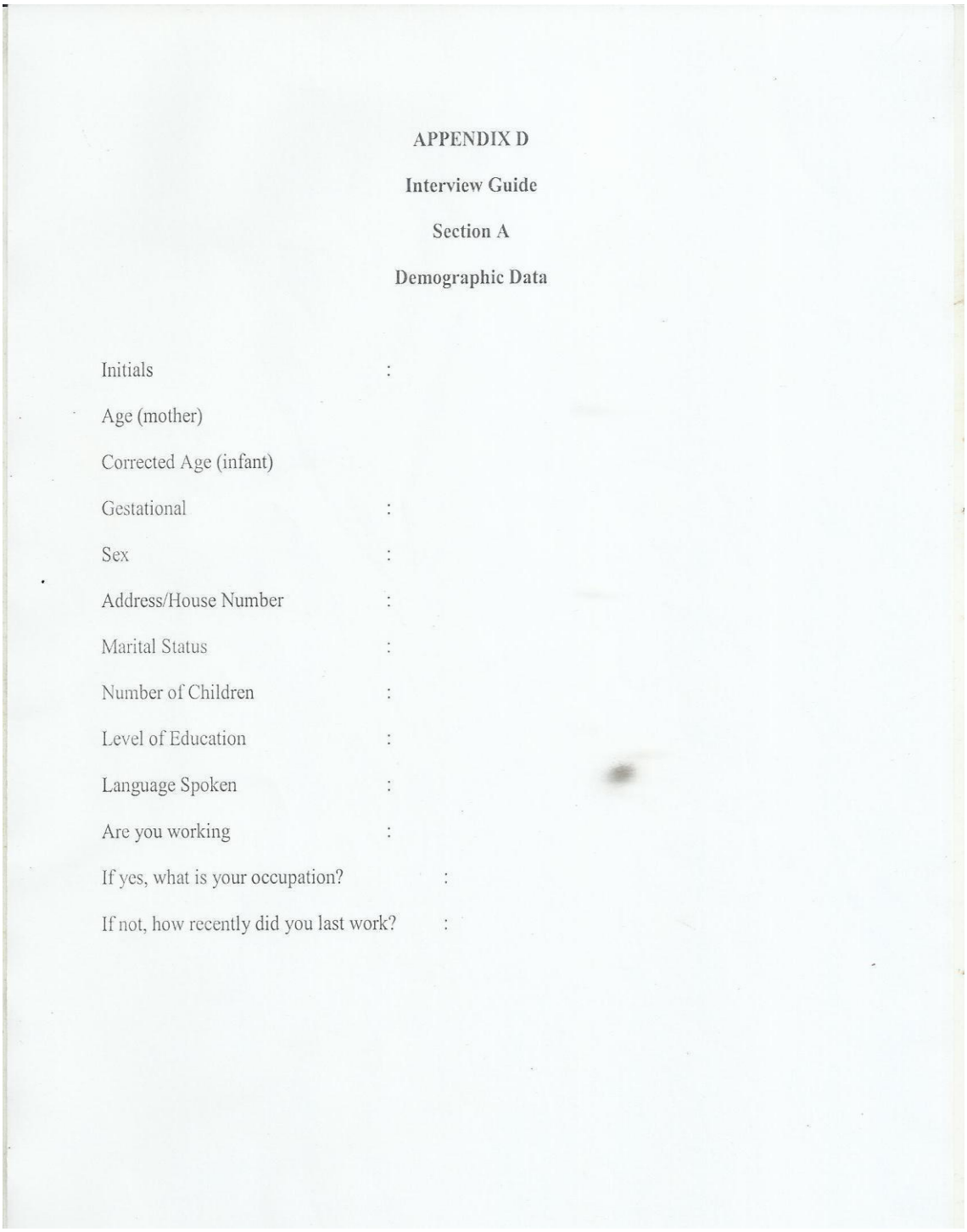
Appendix D: Interview Guide



APPENDIX D

Interview Guide

Section A

Demographic Data

Initials :

Age (mother)

Corrected Age (infant)

Gestational :

Sex :

Address/House Number :

Marital Status :

Number of Children :

Level of Education :

Language Spoken :

Are you working :

If yes, what is your occupation? :

If not, how recently did you last work? :