EXCLUSIVE BREASTFEEDING OF BABIES WITH LOW BIRTH WEIGHT AS A CORRELATE OF CHILD SURVIVAL STRATEGIES IN THE UNIVERSITY COLLEGE HOSPITAL, IBADAN NIGERIA

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ABSTRACT
This is a retrospective study which examined the exclusive breastfeeding of low birth weight (LBW) neonates as a correlate of child survival strategy at the University College Hospital, Ibadan. The main purpose was to find means of ensuring the survival of LBW neonates. Using random sampling method, 300 LBW neonates were selected as sample size. The medical case notes of participants were used as research instruments. The data were analyzed and tested using chi-square (X^2) inferential statistics at 0.05 level of significance.
The findings showed that LBW infants who were exclusively breastfed have significant weight gain than non-exclusively breastfed LBW infants. It also revealed that there is a significant reduction in incidence of morbidity in exclusively breastfed LBW neonates than in non-exclusively breastfed LBW neonates.
In conclusion, it was recommended that mothers should be supported and encouraged to breastfeed their infants exclusively.

KEY WORDS: Breastfeeding, neonates, Child survival

1.1 INTRODUCTION

According to WHO (1995) low birth weight babies are babies born with weight less than 2.5kg within the first hour of life. Before a significant postnatal weight loss has occurred, the birth weight of infant is the single most important determinant of it chances of survival, growth and development (Cohen, 2005). Low birth weight (LBW) babies often need special care during the neonatal period as they are at higher risk of mortality and morbidity in their first year of life. The World Health Organization (1995) through the Inter Agency Group for action on breastfeeding categorized the addition of fluids in form of water drops or syrups of multivitamins, oral rehydration solution to infants Nutrition or breastfeeding in the first six months of life as predominant breastfeeding. State and Williams (1997) noticed that breast milk from a well-nourished mother alone is sufficient to meet the infant nutritional needs in the first 3 to 5 months of life. WHO (1995) recommends that infant should be breastfed exclusively for the first six months of life to ensure optimum growth and development. This recommendation does not exclude the LBW infants. Infants who are exclusively breastfeed weigh more in the first four months as compared to infants with other feeding patterns (Lutter, 1992). However, despite the well known benefits of breastfeeding, its practice in low LBW infants group is very low when compared with the practice in babies with adequate birth weight (Detweller, Claudia and King (1992). The situation can be partly explained by the neonatal routines focused on hospital technicality that discourage mother's from staying at the neonatal unit and makes breastfeeding of the baby more difficult. Maternal perception that her infant is "small" also negatively influenced breastfeeding practice. Worldwide, the proportion of babies with LBW is enormous and it is an indication of multifaceted public health problems that includes long term maternal nutrition, ill health, stressful work and poor health care in pregnancy (www.breastfeedingmadesimple. com). Sanker, Agarwa, Mishrah, Ashok and Vinod (2008) found out that about 18million infants are born with a birth weight of less than 2500g globally every year. The Ottawa Coalition for the Prevention of Low Birth Weight in 2007 affirmed that approximately 6% of all life births incidence are low birth weight (Yeoung, Shill, Ehrenkranz, 1998). It was further stressed that the figure for Africa may exceed 14 percent due to prevalence of malnutrition and malaria. The LBW infants account for 60-80% of total neonatal death (Dewey, Cohen, Brown and River (2001). Abundance evidence in literature supports correlation between maternal exposure to carbonmonoxide (air pollution) in pregnancy and the incidence of low birth weight

(Tim, 2001). It has been well established that active tobacco smoking in pregnancy has adverse perinatal outcomes such as delivery of LBW infants in the developed countries. Similarly in developing countries, the risk of giving birth to LBW infants in mother exposed to heavy air pollution increased substantially by 2% (Andrew P, 2011). Low birth weight is either the result of preterm birth (birth before 37 weeks of gestation) or of restricted intrauterine growth secondary to many possible factors such as infections, malaria during pregnancies, multiple pregnancies, placenta problems, chromosomal anomalies, poor nutrition, alcohol use, cardiovascular problems and environmental factors among others (Tim, 2001). Currently, the increasing numbers of surviving LBW infants that must be fed has heightened the awareness of the problems encountered in meeting their nutritional need. Adairs and Guilkey (2011) discovered that the incidence of low birth weight infant reduced the likelihood of exclusive breastfeeding among Filipino mothers. Data showed that the increase in the occurrence of low birth weight infants significantly reduced the rate of exclusive breastfeeding. Low birth weight infant has a high incidence of breastfeeding but a significantly shorter duration than normal infant. 93% of low birth weight infant were fed breast milk at discharge and 36% at six months compared to 97% normal infant who were breastfed at discharge and 75% at 6 months. It has been observed that improved technology has enhanced the care of LBW infants but has reduced the period of mother's contact with her infant thereby increasing the chances of giving mixed feedings. In mixed feeding, LBW infants are denied the close contact of mother and baby associated with exclusive breastfeeding practices. There are ample evidences that justify the infant growth and rapid development inherent in exclusive breastfeeding practices (State and Williams,1997; Dettwyler and Claudia, 1992 and Cohen, (2005). Therefore, this study tried to examine the exclusive breastfeeding of LBW infants as a correlate of child survival strategies in the University College Hospital in Ibadan.

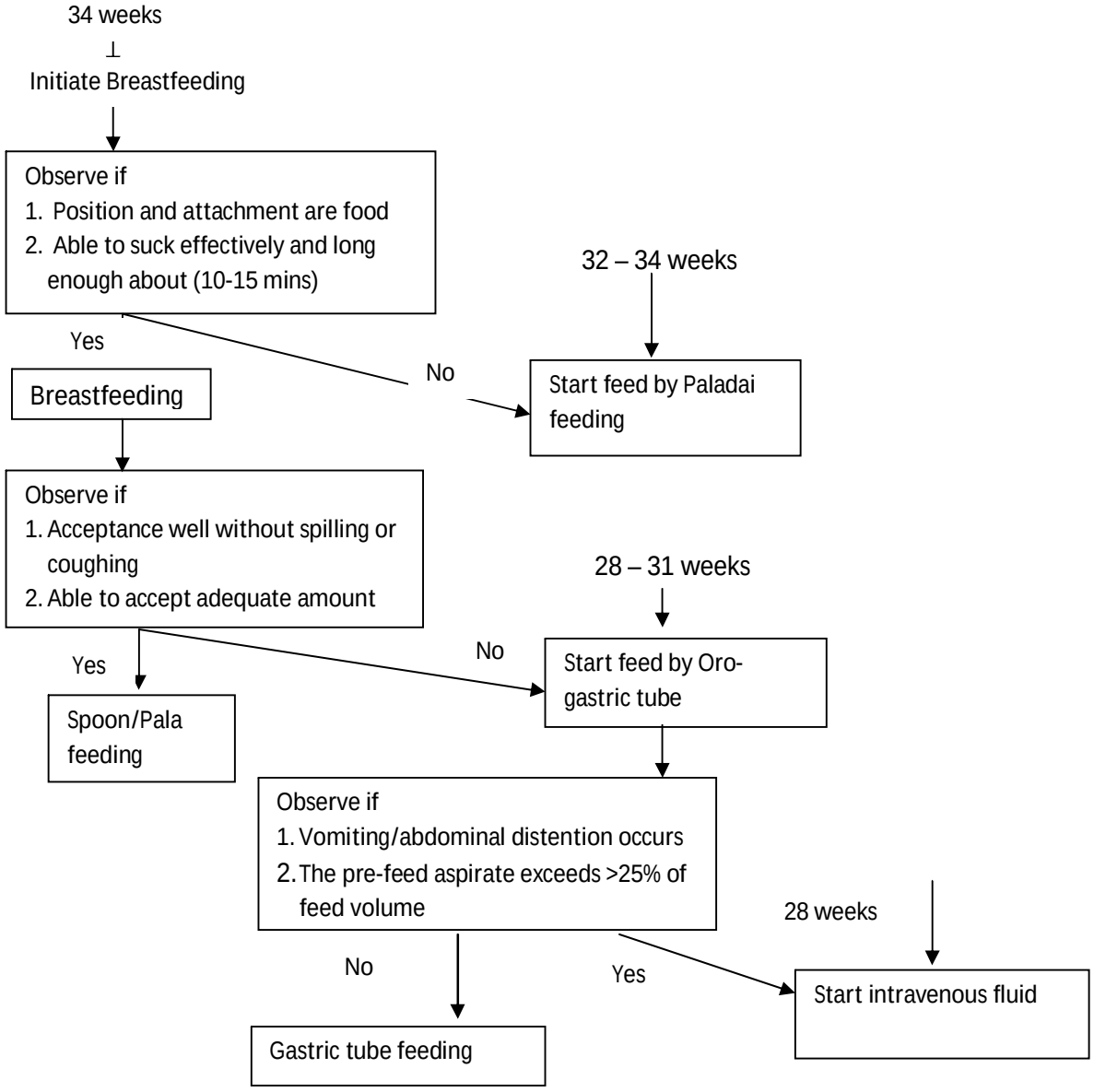
For the study, the following three null hypotheses will be tested.

- There is no significant difference in weight gain between the exclusively breastfed low birth weight neonatal and non exclusively breastfed low birth weight neonates
- There is no significant difference in the incidence of diarrhoea between exclusively breastfed low birth weight infants and non exclusively breastfed infants.
- There is no significant difference in incidence of chest infection between exclusively breastfed low birth weight neonates and non exclusively breastfed low birth weight neonates.

1.2 Deciding Method of Feeding the Low Birth Weight

The choice of feeding method of low Birth Weight infant is made using the present oral and sucking expected of its gestational age and not based on its birth weight (AIIMS-NICU Protocols, 2008)

1.2.1 Conceptual Framework on Feeding Low Birth Weight Infants



1.2.2 METHODS OF FEEDING THE LOW BIRTH WEIGHT INFANTS

1. Breast feeding
2. Paladai/cup and spoon
3. Orogastric (Nasogastric)
4. Intravenous fluids

1.2.2.1 BREAST FEEDING: All Low Birth weight are expected to be put to the mother's breast except if it is contraindicated because of the level of maturation of feeding skill or stability. If the infant could not be put to breast, expressed breast milk will be used using other methods.

STEP IN EXPRESSION OF BREAST MILK

According to AIIMS-NICU Potocol (2008) as established in www.linkagesproject.org, the following are the steps in expressing breast milk

- Mother wash her hands thoroughly
- She should hold a clean wide mouthed container near her breast.
- Ask her to gently massage the breast of or 5 -10 minutes before expressing the milk (using the pulp of two fingers or with knuckles of the first in a circular motion towards the nipple as if kneeding dough) massage should not hurt her.
- Ask her to put her thumb above the nipple and areola and her first finger below the areola opposite the thumb. She should support the breast with her other fingers.
- Ask her to press and first finger inward towards the chest wall.
- She should press her breast behind the nipple and areola between her fingers and thumb. She must press on the lactiferous sinuses beneath the areola.
- Press and release intermittently, this should not hurt. If it hurts, the technique is wrong. It may take some time before milk starts coming.
- Ask her to press the areola in the same way from the sides to make sure that milk is expressed from all segments of the breast.
- She should express on breast first till the milk flow steps; then express the other sides and then repeat both sides.
- Avoid rubbing or sliding her fingers along the skin
- Avoid squeezing the nipple itself. Pressing or pulling the nipple cannot express the milk.

1.2.2.2 PALADAI FEEDING

This is the use of a small transparent glass with a narrow and round tip to feed infant. paladai can be used to feed infant with expressed breast milk formular feeds.

STEPS IN PALADAI FEEDING

AIIMS-NICU Potocol (2008), as established in www.linkagesproject.org, also gave the following as the steps in expressing breast milk:

- Place the infant in up-right posture in mother's lap
- Keep a cloth napkin around the neck to mop the spillage
- Take the required amount of expressed breast milk by using a clean syringe
- Fill the paladai with milk little short of the brim
- Hold the paladai to pour a small amount of milk into the infant's mouth
- Feed the infant slowly he/she will actively swallow the milk
- Repeat the process until the required amount has been fed
- If the infant does not actively accept and swallow, try to arouse him/her with gentle stimulation.
- When estimating the milk intake, deduct the amount of milk left in the cup and the amount of estimated spillage.
- Wash the paladai with soap and water and then put in boiling water for 20 minutes to sterilize before next feed. –

1.2.2.3 NASOGASTRIC / OROGASTRIC TUBE FEEDING

Tube feeding is the insertion of tube via the mouth or nasal orifice into the stomach to deliver feed (formular / EBM). Orogastric is preferable as it prevents restriction of air intake via the nose. (Sanker, Agarwa, Mishrah, Ashok and Vinod, 2008)

STEP IN TUBE FEEDING

According to AIIMS-NICU Potocol (2008), as established in www.linkagesproject.org, the following are the steps in tube feeding:

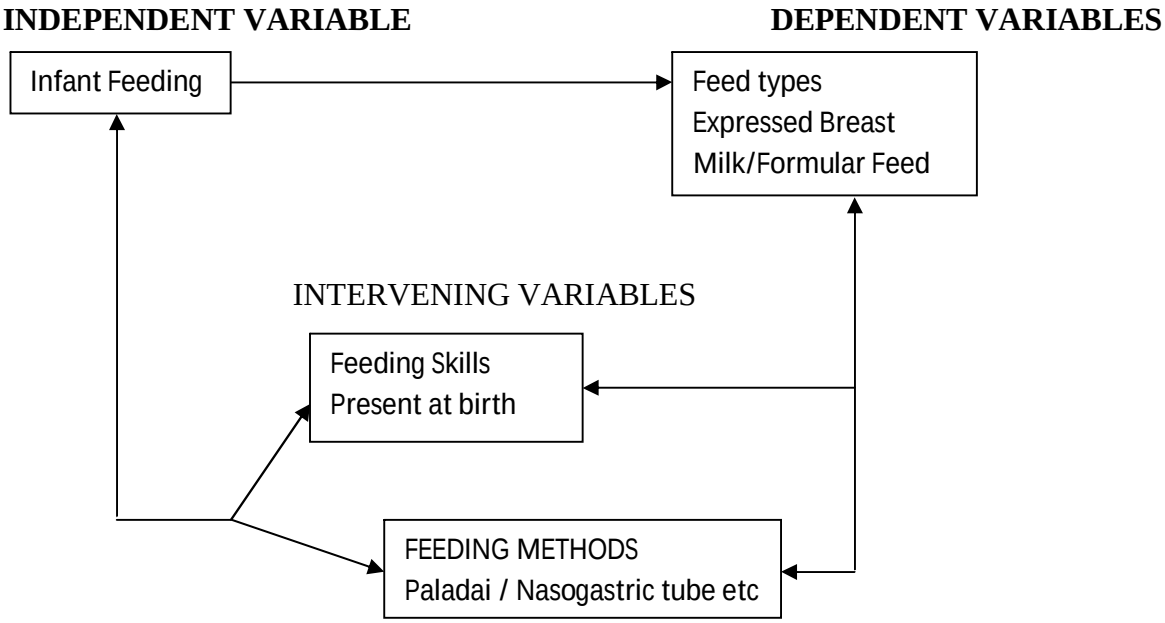
- Before starting a feed, check the position of the tube and ensure tube in the stomach
- Using a new clean syringe, remove the plunger and connect the barrel of the syringe to the end of the gastric tube.
- Pinch the tube and fill the barrel with the required volume of EBM / Formula milk.
- Hold the tube with the hand, release the pinch and elevate the syringe barrel.
- Let the milk run from the syringe through the gastric tube by gravity (Do not force the milk through the gastric tube using the plunger of the syringe).
- Control the flow by altering the height of the syringe.
- It should take about 10-15 minutes for the milk to flow into the stomach of the infants.
- Observe the infant closely during the entire feeding process.
- Avoid flushing tube with water or saline after feeding
- The tube is preferably left open after about half an hour.

1.2.2.4 INTRAVENOUS INFUSIONS

The sick infant groups, which constitute infant with significant respiratory distress, infant in shock, seizures, electrolyte inbalance surgical conditions of gastro intestinal tracts are usually started on intravenous fluid which are regulated according to their weight and need. Enteral feeds are initiated as soon as they are hemodynamically stable.

Irrespective of the feeding method, the most appropriate feed for the Low Birth Weight infant is the human/breastmilk and it should be initiated immediately after birth on healthy Low Birth Weight infant (Jean, 2012). There is support in literature for encouraging mothers of preterm and Low Birth weight to breastfeed their infants although numerous barriers to the successful breastfeeding had been well documented. The emerging work addressing short and long term health benefits for preterm infants provides scientific rationale to assist these mothers in attaining their breastfeeding goals.

1.3 CONCEPTUAL FRAMEWORK



Adapted from Watson caring Model 1979

2.1 METHODOLOGY

The University College Hospital (UCH) Ibadan, established in 1957 as a training hospital for the medical students of the then University College Ibadan is situated in Ibadan, Oyo State, Nigeria. It is managed by a board of management and the Chief Medical Director who see to the day-to-day administration of the hospital. UCH is divided into 63 various departments in which the paediatric department is one. The location of the research is the neonatal ward (Special Care Baby Unit). The unit is a ward with capacity for admitting 20 neonates at a time. It is divided into 2 wings: the incubator section and the cot section. The unit admits neonates of booked and un-booked mothers who delivered at the labour ward of the Hospital. The purpose of establishing the UCH is for tripartite functions of rendering health services, training and research works for the people of Nigeria and West Africa sub region.

The research population is all neonates admitted on this ward with birth weight of below 2500g between January 2000 and December 2010. Simple random sampling technique was used to select all Low Birth Weight (< 2500g) neonates admitted on Special Care Baby Unit between January 2001 and December 2010.

The instrument used for this study is the medical case note of admitted neonates. It was used to elicit information needed for the study. The medical case note is a confidential document that contains patients' information. It is divided into 2 sections namely: 'A'that is made up of items printed or written on the folder itself such as patient's biodata, hospital number, physician's name, consent form, diagnosis and instructions on handing of the case note. The second section (B) that

contains the treatment records and progress notes of the patient. They are records, which are inserted and attached to the folder.

The collected data was analyzed using tables, simple percentages and Peason's chi square to test the hypotheses formulated at 0.05 alpha level.

3.1 RESULTS

The results revealed that male subjects were 156 (52%) and female 144 (48%)

Figure 1 show the distribution of participants by weight at birth. The table revealed that out of the 300 participants, 52 (17.3%) were less than 1.0kg, 142 (47.3%) were between 1-1.5kg, 86 (28.7%) were between 1.51-2.0kg, 14 (4.7%) were between 2.1-2.5kg while 6 (2.0%) were 2.51kg and above showing that majority of the participants were between 1-1.5kg.
From table 1, out of the 300 participants, 180 (60.0%) were fed with breast milk exclusively, 16 (5.3%) were feed with artificial milk while 104 (34.7%) were fed with mixture of both breast milk and artificial milk. This shows that majority of the participants were fed with breast milk exclusively.

3.2 Hypotheses Testing

Hypothesis one: There is no significant difference in weight gain between the exclusively breastfed LBW neonates and non breastfed LBW neonates
Table 2 revealed that there is significant difference in weight gain between the exclusively breastfed LBW and non breastfed LBW neonates (X^2=11.109, df=4, p<0.05). Therefore the hypothesis is rejected.

Hypothesis two: There is no significant difference in incidence of diarrhoea between the exclusively breastfed LBW and non breastfed LBW neonates
Table 3 revealed that there is significant difference in incidence of diarrhea between the exclusively breastfed LBW and non breastfed LBW neonates (X^2 = 29.084, df = 2, p<0.05), therefore the hypothesis is rejected.

Hypothesis three: There is no significant difference in incidence of chest infection between the exclusively breastfed LBW neonates and non exclusively breastfed LBW neonates**.**

Table 4 revealed that there is significant difference in incidence of chest infection between the exclusively breastfed LBW and non exclusively breastfed LBW neonates (X^2=71.151, df=2, p<0.05), therefore the hypothesis is rejected.

4.1 DISCUSSION

The hypotheses form the major points of discussion since the impact of exclusive breastfeeding is revealed in the results.

The first hypothesis states that 'there is no significant difference in weight gain between the exclusive breastfed LBW neonates and non exclusively breastfed LBW neonates'. The results of the testing shows that the exclusively breastfed LBW neonates gained weight significantly more than the non exclusively breastfed LBW neonates. From table 2; chi-square (x^2) =11.109 with degree of

freedom (df) of 4 and at 0.05 level of significance. P-value is 0.00 which is less than 0.05 (0.00 < 0.05). Hence the null hypothesis is rejected. There is a significant difference in the weight gain between the exclusively breastfed LBW and non – exclusively LBW neonates in the first four months of life. This further corroborates the documented advantages of breast milk in the first six months of life as documented in literature (Lutter et. al, 1992; Dettwyler et. al, 1992, and State and Williams (1997).

The second hypothesis states that 'there is no significant difference in the incidence of diarhoea between exclusively breastfed LBW neonates and non exclusively breastfed LBW neonates'. From table 3; chi- square (x^2) is 29.-084 with degree of freedom (df) of 2 at 0.05 level of significance. The p-value is 0.00 which is less than 0.05 (0.00< 0.05). Therefore, the null hypothesis is rejected. There is a significant difference in the incidence of diarhoea between exclusively breastfed LBW neonates and non exclusively breastfed LBW neonates. This means that exclusive breastfeeding reduces the risk of diarrhea or gastrointestinal problems in LBW neonates. This is supported by Sanker et. al, (2008)and Yeoung et. al, (1998) who stress that exclusive breastfeeding reduced the risk of morbidity in LBW infants.

The third hypothesis states that 'there is no significant difference in the incidence of chest infection between exclusive breastfed LBW neonates and non- breastfed LBW neonate'. Table 4; chi-square (x^2) is 71.151 with degree of freedom (df) of 2 at 0.05 level of significance p-value is 0.00 which is less than 0.05 (0.00< 0.05). Therefore, the null hypothesis is rejected. There is a significant difference in the incidence of chest infection between exclusively breastfed LBW and non exclusively breastfed neonates. It means exclusively breastfed LBW neonates have reduced risk of morbidity. This is supported by the work of Lutter et. al, (1992).

4.2 CONCLUSION

Exclusive breastfeeding of LBW neonate is a major survival strategy in the management of LBW neonates. This study has shown that feeding of LBW neonates with human milk exclusively improved significantly the weight gain pattern of the LBW infants. It also reduced the incidence of morbidity due to diarrhea and chest infection during the period of admission of these neonates.
Although, there are some noticeable factors that tend to reduce the use of breast milk in the feeding of LBW infants, the use of breast milk was still advised for mothers of the LBW infants. These include poor lactation, HIV infection in mothers, illness of some of the infants. The nurse working in the neonatal ward should understand the immense benefits of exclusive breastfeeding and as such encourage the practice.

4.3 SUMMARY

This is a retrospective study which attempted to show correlation between exclusive breastfeeding of LBW neonates and child survival at the University College Hospital Ibadan.
The major findings were in support of the fact that exclusive breastfeeding as a major survival strategy in the management of LBW neonates at the hospital.

4.4 RECOMMENDATIONS

In view of the findings of this study, the following recommendations were made;

- Similar study should be carried out in other hospitals of the same standard in order to validate the findings of this study.

- Nurses should support mothers of LBW neonates to express breast milk for the feeding of the infants especially where the neonates cannot be put to breast immediately.
- Hospitals should make (baby friendly) policy that will ensure that mothers of LBW infants are encouraged to be parts of the care. They should be given a accommodated in the neonatal unit to be close to their infants.

4.5 Appreciation

We express our heartfelt gratitude to the authorities of the University College Hospital, Ibadan as well as the members of staff of the medical records unit of UCH for given us the permission to access the case notes of Low Birth Weight babies to conduct this study.

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Tables and Figures

Figure1: Bar chart showing the distribution of participants by birth weight

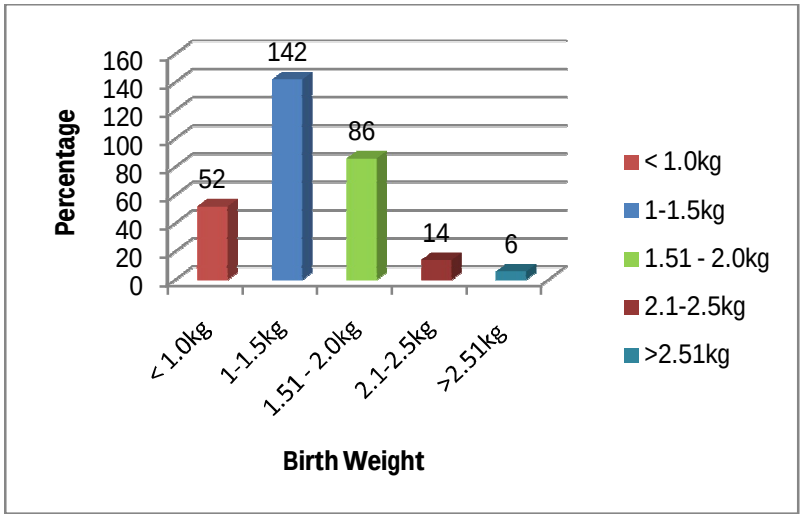

Table 1: Distribution of participants by type of feed

Type of feed	Frequency	Percent
Breast Milk	180	60.0
Artificial Milk	16	5.3
Mixed	104	34.7
Total	300	100.0

Table 2: Relationship between weight gain of exclusively breastfed and non exclusively breastfed low birth weight neonates

		Type of feed			Total	Pearson Chi-Square (X^2)	Df	sig
		Breast Milk	Artificial Milk	Mixed				
Weight gain	1	110	12	44	166			
	2	62	4	4	70	11.109	4	.000
	3	8	0	56	64			

		Type of feed			Total	Pearson Chi-Square (X^2)	Df	sig
		Breast Milk	Artificial Milk	Mixed				
Weight gain	1	110	12	44	166			
	2	62	4	4	70	11.109	4	.000
	3	8	0	56	64			
Total		180	16	104	300			

Table 3: Incidence of diarrhoea among exclusively breastfed and non breastfed low birth weight neonates

		Type of feed			Total	Pearson Chi-Square (X^2)	Df	Sig
		Breast Milk	Artificial Milk	Mixed				
Diarrhea incidence	No	166	8	78	252			
	Yes	14	8	26	48	29.084	2	.000
Total		180	16	104	300			

Table 4: Incidence of chest infection among exclusively breastfed LBW neonates and non breastfed LBW neonates

		Type of feed			Total	Pearson Chi-Square (X^2)	Df	Sig
		Breast Milk	Artificial Milk	Mixed				
Chest infection incidence	No	170	12	54	236			
	Yes	10	4	50	64	71.151	2	.000
Total		180	16	104	300			