THE UNIVERSITY OF THE WEST INDIES
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A Research Paper

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of

The University of the West Indies

Title: Breast Feeding patterns among Mothers who recently gave birth to full term infants and Barriers to Breastfeeding

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THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE, TRINIDAD

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ABSTRACT

OBJECTIVE- Despite efforts to promote exclusive breastfeeding and prolong its duration, rates remain low and are evident in developing countries. This study sought to examine whether there was a difference in the breastfeeding pattern between private clinics and public clinics and to identify breastfeeding duration rates.

METHOD- The study utilized a sample size of 150 mothers (75 mothers who visited private clinics and 75 who visited a public health center). The private clinics used in the study were from St. Augustine and the Chaguanas Health Center was used as the public facility. The study design used questionnaires to acquire data about the mothers. One-to-one personal interviews were carried out and the results were analyzed using SPSS version 16.

RESULTS- Partial breastfeeding was the most popular pattern engaged by the mothers (66.7%). Only 4.7% solely bottle fed their infants. More mothers at private clinics 49.3%, breastfed their babies than mothers at the public health center 46%. As much as 81.5% started breastfeeding right after birth. However, 71.5% indicated that they would stop at 6 months or younger. Having to return to work was the main reason why mothers at the private clinic did not breastfeed exclusively or predominantly. Mothers at the public clinic indicated that the infant was not getting enough milk. The pattern of breastfeeding was found to be significantly affected by employment status.

CONCLUSION- There was a higher breastfeeding rate at private clinics compared to the public clinic, however there was shorter breastfeeding duration rate at the private clinics.

CHAPTER 1: INTRODUCTION

Gartner et al (2005) highlighted the positive effects of breastfeeding on infants and mothers. Advantages to the infants included nutritional, immunological, cognitive developmental, psychological and social benefits. Research has shown that breastfeeding protects against common childhood illness such as diarrhea, pneumonia, infectious diseases, urinary tract infection as well as later childhood obesity (Armstrong et al 2005). It has also been associated with benefits to the mother; woman who breastfeed recover faster from childbirth and are at a reduced risk for cancer and osteoporosis (Heinig et al, 2002). Previous research has also associated longer breastfeeding duration with reduced incidence of Type I diabetes mellitus (Sadauskait-Kuehne et al, 2004).

In 2001, in the Fifty-forth World Health Assembly, The World Health Organization (WHO) strongly recommended exclusive breastfeeding for the first six months of life, followed by continued breastfeeding with appropriate complementary foods for up to two years of age. Despite these recommendations and advantages observed, breastfeeding rates continue to be low or have not increased in the past couple of years. According to the World Health Organization, the global rate is as low as 40% of mothers who breastfeed exclusively.

Several studies have been carried out to determine breastfeeding patterns among mothers. In the assessment of breastfeeding practices in periurban Mexico City, Guerrero et al. (1999) illustrated that of 150 mothers, the majority of them had initiated breastfeeding but only 2% exclusively breastfed up to four months. Findings by Arora et al (2000) in Pennsylvania indicated that breastfeeding initiation rate was 44.3% but at 6 months of age, only 13% were still breastfeeding. Regionally, in Jamaica, Kurzewski et al. (2004) found that breastfeeding was practiced by 97.8% of mothers, with 29.9% practicing exclusive breastfeeding and 70.1% partial breastfeeding. These studies indicate that initiating

breastfeeding proved successful; however few successful efforts have been made to extend the duration of breastfeeding.

The barriers to breastfeeding vary widely. For example, Henry (2005) argued, in this globalized environment breastfeeding-friendly practices can be lost, while the commercialization of infant feeding practices through breastmilk substitutes becomes the norm. The study done by Arora et al. (2000) indicated that having to go back out to work was among the reasons for not breastfeeding exclusively, indicating that maternal employment outside the home has a negative impact on breastfeeding exclusively for the recommended six months. Additionally, in some developing countries, higher socio-economic status and better education were associated with poorer rates of breastfeeding (Haider et al. 1995)[10] and (Hamilton et al. 2002). The study in Jamaica indicated that the breastmilk was not satisfying for the baby, the need to give extra water, inadequate milk supply and inconvenience were among the reasons why mothers introduced supplementary items (Kurzewski et al. 2004).

The specific aim of this study was to determine whether the breastfeeding pattern at private clinics differed to that of public clinics. The alternative hypothesis states that there is a difference in the breastfeeding pattern at both clinics. Contrary to this, the null hypothesis states that there is no difference in the breastfeeding pattern between private and public clinics. This survey was designed to test the null hypothesis, therefore determining whether the alternative hypothesis was relevant.

Additional objectives were to identify breastfeeding initiation and duration rates, to identify mothers' reasons for not breastfeeding exclusively or predominantly for six months, to determine whether breastfeeding patterns were related to parity, employment status, educational level or household income level and to identify the main source of breastfeeding information. Many mothers are not aware of the term exclusive breastfeeding and breastfeeding predominantly (Kurzewski et al, 2004). This has brought certain limitations to studies previously done as the results would have been

inaccurate and misleading since these definitions were not thoroughly explained. This study also assessed mothers' knowledge about the terms breastfeeding exclusively, predominantly and partially to determine whether accurate breastfeeding information was being delivered to these mothers.

This study was seen as important as it addressed the issues of the low prevalence of exclusive breastfeeding. From the results obtained, the main problems can be identified and proper intervention practices can be implemented in aim of improving the breastfeeding rates in Trinidad and Tobago. Interventions that would promote and prolong the duration of breastfeeding are needed to achieve optimal infant nutrition and improve maternal and child health.

CHAPTER 2: LITERATURE REVIEW

In accordance with the Global Strategy on Infant and Young Child Feeding (WHO-UNICEF 2003) the UNICEF's overall goal is to protect, promote and support optimal infant and young child feeding practices. The World Health Organization and UNICEF promote exclusive breastfeeding for the first 6 months with the introduction to complementary foods at 6 months and continued breastfeeding up to 2 years. The World Health Organization defines exclusive breastfeeding as the provision of breastmilk only and no other liquids (no water, juices, or water based drinks). The definition allows liquid based medication and syrups. Due to the benefits of breast milk, the promotion of exclusive breastfeeding has become an international effort to encourage and support mothers in adopting the practice of breastfeeding exclusively. However, despite these efforts, rates remain low. According to UNICEF, in the article, *"The State of the World Children I Special Edition"* only 37% of 0 – 6 month olds are exclusively breastfed in developing countries. The low prevalence of exclusive breastfeeding remains a problem both locally and internationally. The objective of this study was to identify whether there was a difference in the breastfeeding patterns practiced by mothers in private and public institutions, to determine the mothers' main barriers to breastfeeding exclusively and identify the breastfeeding duration rates. This review geographically identifies articles done by researchers pertaining to the breastfeeding patterns and barriers to breastfeeding exclusively. The review also addresses the breastfeeding statistics in the Caribbean and compares the rates of Trinidad and Tobago with that of other Caribbean islands for the year 2008.

The article entitled, "Breastfeeding and globalization: implications for the Caribbean" by Henry (2005) Director of Caribbean Food & Nutrition Institute focused on the threats and opportunities for breastfeeding as it relates to our globalized world. He argues that "What makes a mother breastfeed is not where she lives, but her exposure to positive and negative social, cultural and economic influences

and how she reacts to them." He indicated that through the commercialization of breastmilk substitutes, breastfeeding practices can be lost. Also, even though global communication has the potential for breastfeeding networks to find new and creative ways to ensure proper infant feeding practices, few such programs are aired in the Caribbean. However, communication through globalization has provided more resources to infant food companies to have their products and persuasions reach the public. In his article, he indicated that in the US in 2001, it was estimated that increasing breastfeeding from 29% to 50% could save a minimum of $3.5 billion. To add to this, in Jamaica in 1991, for a minimum wage worker, the cost of feeding a 3 month old was 90% of salary and this was 19 year ago. He insisted on three essentials needed to improve breastfeeding rates in the midst of globalization. These include; time for the mother, provided by the family and when the mother is employed outside the home. Employment policies need to recognize the importance of maternal leave and make employment flexible for the mother to accommodate her baby. Space and support are the other requirements; mothers should not confine themselves to breastfeeding at home only.

An article in Jamaica entitled, "*Breastfeeding Patterns among Six-week-old Term Infants at the University Hospital of the West Indies (UHWI)*," by Kurzewski and Gardner (2004) examined whether the level of exclusive breastfeeding at six weeks had been sustained after the introduction of a program in 1995 which was initiated to promote breastfeeding. The study revealed that breastfeeding was practiced by 97.8% of mothers, where 29.9% practiced exclusive breastfeeding and 70.1% supplemented their breastmilk. These figures were not far from the previous findings in 1996 where 99% of the mothers breastfed their infants at six weeks, and 61% of these mothers were supplementing their breastmilk. Breastfeeding at birth was found to be 84% which was similar to a study done in 1996. The mothers' main reason for supplementing their breastmilk in the study was to provide extra water and because their breastmilk was not satisfying for the babies. The study indicates that in Jamaica,

breastfeeding rates are high, however the early introduction of infant formula and other foods remains a problem.

Guerrero et al (1999) in their study, *"Rapid ethnographic assessment of breastfeeding practices in periurban Mexico City"* aimed to identify major influences affecting infant feeding practices. This project was designed to be conducted over a short period of time so that the findings could be used to plan and guide the development and implementation of a community-based peer counseling project to promote exclusive breastfeeding. The specific aims were to identify the following; cultural values and beliefs regarding infant feeding practices; major source of feeding advice; supplementation practices and barriers to breastfeeding. Interviews were carried out on 150 mothers whose infant were less than 5 years of age. The results illustrated that 91% of mothers initiated breastfeeding, but only 2% breastfed exclusively for up to four months of age. The reduction or cessation of breastfeeding occurred primarily on doctor's advice (68%) or when the mother had "not enough milk" (62%). Other reasons include, either the mothers had "bad milk" (56%) or because of illness of the mother (56%) or child (43%). These findings are similar to that done in Jamaica, where there are high initiation rates and a low prevalence of exclusive breastfeeding duration.

The study objective of Arora et al. (2000) was to determine the factors associated with the decision to breastfeed or bottle-feed and assess initiation and duration of breastfeeding in patients in a family medicine centre. Their study entitled *"Major factors influencing breastfeeding rates: mothers' perception of fathers' attitude and milk supply,"* was conducted in northwestern Pennsylvania in the United States of America. Questionnaires were mailed to the 245 mothers with children between 6 months and 3 years old. The breastfeeding initiation rate was 44.3% and by the time the infant was 6months, only 13% were still breastfeeding. Several reasons to breastfeed included, benefits to infants health, naturalness and bonding. Reasons to bottle-feed included, mothers' perception of fathers'

attitude, uncertainty regarding the quantity of milk and having to return to work. This study, in addition to the previously mentioned, indicates that interventions and strategies into promoting breastfeeding should focus on extending the duration of breastfeeding babies.

The UNICEF statistics for Trinidad and Tobago indicated that in the period 2003-2008, 41% of mothers initiated early breastfeeding and 13% of children ages 6 months and or less were exclusively breastfed. The percentage of mothers who initiated early breastfeeding in Cuba, Dominican Republic and Jamaica were 70%, 74% and 62% respectively. These percentages are higher than that recorded in Trinidad and Tobago. The Dominican Republic however, had the lowest percent (9%) of mothers who breastfed exclusively for 6months or less, whereas Cuba and Jamaica had 26% and 15% respectively. The statistics for early initiation of breastfeeding in Guyana (43%) and Haiti (44%) were similar to that of Trinidad and Tobago (41%). The percentage of mothers who breastfed exclusively for 6 months or less in Guyana was 21% and 41% in Haiti. The statistics for Haiti indicates that mothers maintained the duration of breastfeeding as compared to the other islands. In Trinidad and Tobago, Jamaica, Cuba and the Dominican Republic, the majority of mothers do start breastfeeding however the duration of exclusive breastfeeding remains an issue.

From these review articles and statistics provided, it can be noted that extensive experience and effort has successfully been made to initiate breastfeeding. However few efforts have been made to extend the duration of breastfeeding. Researchers and interested parties should note the barriers to maintaining exclusive breastfeeding. Different factors would play a role in the decision to continue breastfeeding. An understanding of these factors would be needed to develop or modify programs and strategies to extend the duration of breastfeeding exclusively.

CHAPTER 3: METHODS

3.1 PRETESTING

Pretesting of the questionnaires was carried out, testing their validity. Slight adjustments were made to the questionnaires. Cluster sampling was implemented at two of the three institutions in St. Augustine to represent the mothers who visited private pediatrician clinics. Dr. Lakkeram at the Austine St. Clinic, St. Augustine and Dr. Haffiz Warris at the St. Augustine Private Hospital Clinic in St. Augustine. One public clinic was used at Montrose Chaguanas, the Chaguanas Health Center. This sample was chosen conveniently to represent the mothers who visited public health clinics. This study design was chosen based on the flexibility of conducting interviews and the time period allotted to carry out the research. One disadvantage is the presence of bias due to the method utilized in the selection of the interviewee.

3.2 STUDY SAMPLE

A sample of one hundred and fifty mothers who recently gave birth to full term babies participated voluntarily in the study. The questionnaires were divided evenly between the private and public clinics, therefore seventy-five mothers were asked to participate in the survey at the private clinics and seventy-five at the public health center. A permission letter was given to the pediatricians in charge at the private clinics and to the head doctor, Dr. Aziz at the Chaguanas Health Center Administration Office for approval to use the facility to conduct the survey. The subjects were approached in the waiting room about answering the questionnaire. They were asked if they would be willing to participate in a project currently being under taken by a final year student completing her final year project, for the BSc. Human Nutrition and Dietetics. Mothers whose infants were two years or less participated in the answering of the questionnaires. The purpose of the study was introduced to the mothers and questionnaires containing thirty-three (33) questions were presented. This interview was conducted in two weeks.

Sampling Error was present in the study. The sample size cannot be representative of population size, but only represents a small section of a massive picture. The limitation of time factor was the main reason for the sampling error.

3.2 (i) Subjects

The sample selected for the study was mothers who recently gave birth to full term babies. Seventy-five mothers from private clinics and seventy-five from the public health center participated in the study. Mothers at the private clinics were mainly between the ages of 26-30 years (30/50%) while the majority of mothers at the public health center were between the ages 20-25 years (20.7/50%). The most prominent ethnic group at the private clinic was East Indians (22/50%) while the Africans (20/50%) made up the most prominent group at the public health center. Forty-seven percent of the 50% of mothers who visited the private clinics had completed tertiary and graduate school while 19.3% of mothers who visited the public health center completed this same level. The majority had completed secondary school (28/50%). Forty-one percent of mothers at private clinics were employed while 32.7% of the 50% sample of mothers at the public health center was employed. The mothers were questioned about their house-hold income level per month, 94/100% of the mothers responded to this questions, the remaining 6% felt that it was a personal question and did not give any information. Mothers at private clinics house-hold income level per month was generally more than $10,000 (26.2/50%), while mothers at the public health center house-hold income level was mainly more than $2,500 but less than or equal to $5,000 (33.3/50%). Almost half 47.7% of the entire sample had babies between 7 to 9 months, but the infants were generally two years and younger where 51% were male and 49% were females.

3.2.(ii) Questionnaires design and procedure.

The study was conducted via a census using a questionnaire as the research instrument to collect data from the respondents. The data collection of the questionnaire was carried out over a two week period by me and with the help of a colleague. The key variables; general demographics, demographics of the child bearing mother, reasons for not breastfeeding exclusively and breastfeeding initiation rates and duration and use of infant formula were distributed among thirty-three (33) questions. The definition of breastfeeding exclusively, predominantly and partially taken from the World Health Organization was orally explained to the mothers and was asked whether they knew the meaning of these terms. According to the WHO, breastfeeding exclusively is the provision of breastmilk only and no other liquids (no water, juices or water based drinks). The definition allows for liquid based medications and syrups. Breastfeeding predominantly is the provision of breastmilk predominantly. The infant can also receive water or water based drinks (sweetened or flavored water or teas), fruit juices, oral rehydration salts, liquid medicine or syrup. The WHO definition of partial breastfeeding is: “giving the baby some breastfeeds, and some artificial feeds, either milk or cereal or other foods.” The questionnaires were personally given to each mother to avoid confusion and ensure they fully understood the questions. These questions were also repeated, as to establish clarity and assist in the documentation of accurate data. This data was analyzed via SPSS version 16. The interviews took a maximum of 5 to 10 minutes per interviewee. There was a response rate of 100% (150) of each questionnaire, 50% (75) at private clinics and 50% (75) at the public health center.

3.2.(iii) Statistical Analysis

Data was analyzed using SPSS (SPSS Statistical software: Release 16.0 for windows). The frequencies for all the demographics were analyzed. Cross tabbing was done between private and public clinics against the demographic variables. Pearson chi-squared test was used to test the null hypothesis which states that there is no difference in the breastfeeding patterns between private and public clinics. The independent variables used were the private and public clinics. The dependent variable used in the study, was the breastfeeding pattern. Breastfeeding pattern was dependent on whether the mother attended a private clinic or a public clinic. Pearson chi-squared test was also used to determine whether a difference existed in mothers' reasons for not breastfeeding exclusively or predominantly for six months between the two types of clinics and to identify whether there was a relationship between breastfeeding pattern and parity, employment status, educational level and household income level. The frequency of mothers who were knowledgeable of the meaning of the terms breastfeeding exclusively, predominantly and partially was recorded. Source of breastfeeding advice, breastfeeding initiation and duration rates were also analyzed.

CHAPTER 4: RESULTS

4.1 Demographic of Respondents

Table 4.1a Show the Frequencies of demographics.

	Private		Public		Total	
Demographics	**N = 75**	**% (50%)**	**N = 75**	**% (50%)**	**N=150**	**% (100%)**
Age group						
19 and under	3	2	13	8.7	16	10.7
20-25	15	10	31	20.7	25	30.7
26-30	45	30	21	14.0	75	44
31 and older	12	8	10	6.7	20	14.7
Marital Status						
Single	10	6.7	17	11.3	27	18
Married	58	38.7	25	16.7	83	55.4
Divorced	3	2	0	0	3	2
Common Law	4	2.7	33	22	37	24.7
Ethnicity						
African	14	9.3	30	20	44	29.3
Caucasian	1	0.7	1	0.7	3	1.4
East Indian	33	22	25	16.7	58	38.7
Chinese	1	0.7	2	1.3	3	2
Syrian	6	4	0	0	6	4
Mixed	20	13.3	17	11.3	37	24.6
Education Level						
Primary	0	0	4	2.7	4	2.7
Secondary	4	2.7	42	28	46	30.7
Tertiary	34	22.7	27	18	61	40.7
Graduate	37	24.7	2	1.3	39	26
Employment Status						
Yes	62	41.3	49	32.7	81	74
No	13	8.7	26	17.3	39	26

Household income level						
Less than or equal to $2,500	1	0.7	13	9.2	14	9.9
More than $2,500 between $5,000	5	3.5	47	33.3	52	36.8
More than $5,000 between $10,000	27	19.1	10	7.1	37	26.2
More than $10,00	37	26.2	1	0.7	38	26.9
Maternal Parity						
1	30	20	41	27.3	71	47.3
2	38	25.3	21	16	59	31.3
3	7	4.7	4	2.7	11	7.4
>4	0	0	6	4	6	4

Table 4.1a represents the frequencies of demographics of the participants who visited private clinics and those that visited public clinics. From the 50% of participants who visited private clinics, the majority, 30% were between the ages of 26-30 years, while 20.7% of those who visited public clinics were between the ages of 20-25 years. There were more married women at the private clinics (38.7% of the 50% sample), while the majority of participants at public clinics were in a common law relationship, 22%. Africans made up 29.3% of the entire sample, East Indians 38.7% and mixed 24.3%. Of the 50% sample of mothers who visited private institutions, 47.4% completed tertiary and graduate school education, while most of mothers (28%) who visited the public clinic completed secondary school education. The number of mothers employed was higher at the private clinics (41.3% of the 50% sample) than those who visited public clinics (32.7% of the 50% sample). At the private clinics, 26.2% of the 50% of mothers' household income level per month exceeded ten thousand dollars compared to public clinics where most mothers' household income level was more than twenty-five hundred and less than five thousand (33.3% of the 50%). Most women had either one or two children at both clinics, 45.3% of the 50% at private clinics and 43.3% of the 50% at the public health center. From the entire sample, 47.7% of the mothers' infants were between 7 to 9 months. (**See appendix B Table 4.1b**)

4.2 Breast feeding patterns at private and public clinics.

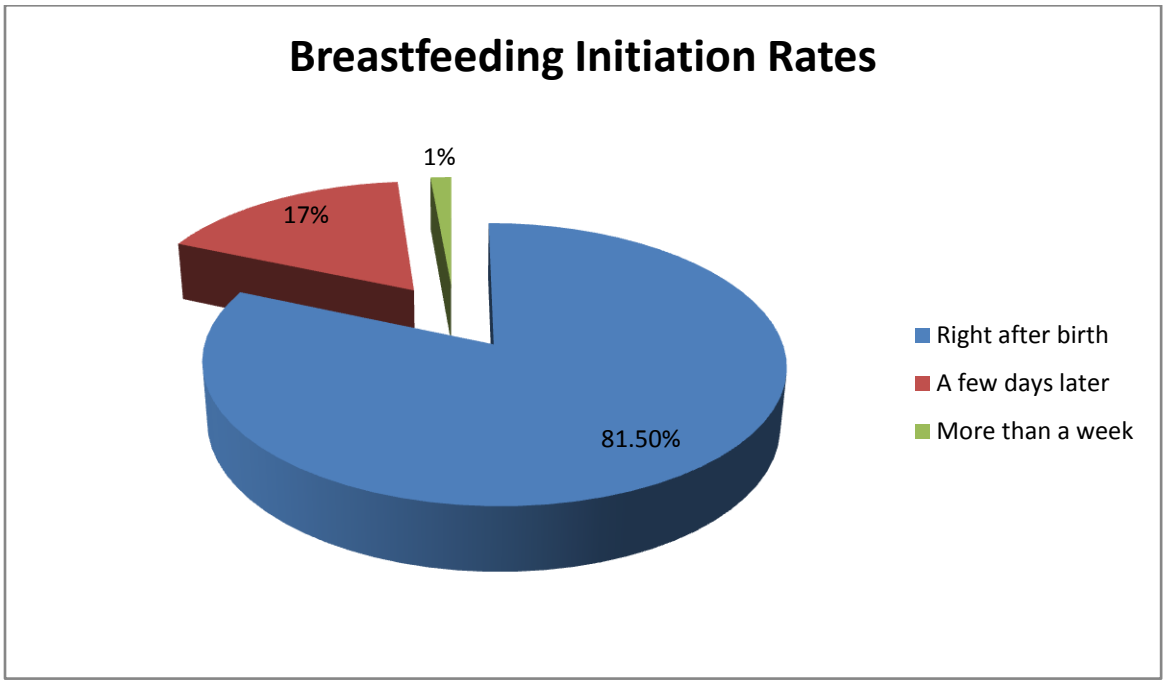
Table No. 4.2a Showing Breastfeeding Patterns Practiced by Mothers at Private and Public Clinics

	Exclusively		Predominantly		Partially		Did not Breastfeed		Total		P value (Pearson Chi-squared)
	N	%	N	%	N	%	N	%	N	%	
Private	5	3.3	23	15.3	46	30.7	1	0.7	75	50	0.043
Public	3	2	12	8	54	36	6	4	75	50	
Total	8	5.3	35	23.3	100	66.7	7	4.7	150	100	

Table 4.2a illustrates that 95.3% of the entire sample (n=150) breastfed and 4.7% solely bottle fed their infants. The results indicate that the majority of mothers breastfeed partially at both clinics, (30.7% of 50% at private clinics and 36% of 50% at the public clinic). More mothers breastfeed exclusively (3.3%) and predominantly (15.3%) at private clinics compared to those at public clinics where only 2% of 50% of mothers and 8% of 50% breastfed exclusively and predominantly respectively. Generally, more mothers at private clinics breastfed more than those at the public clinics as indicated by a p value of 0.043.

4.3 Breastfeeding initiation and duration.

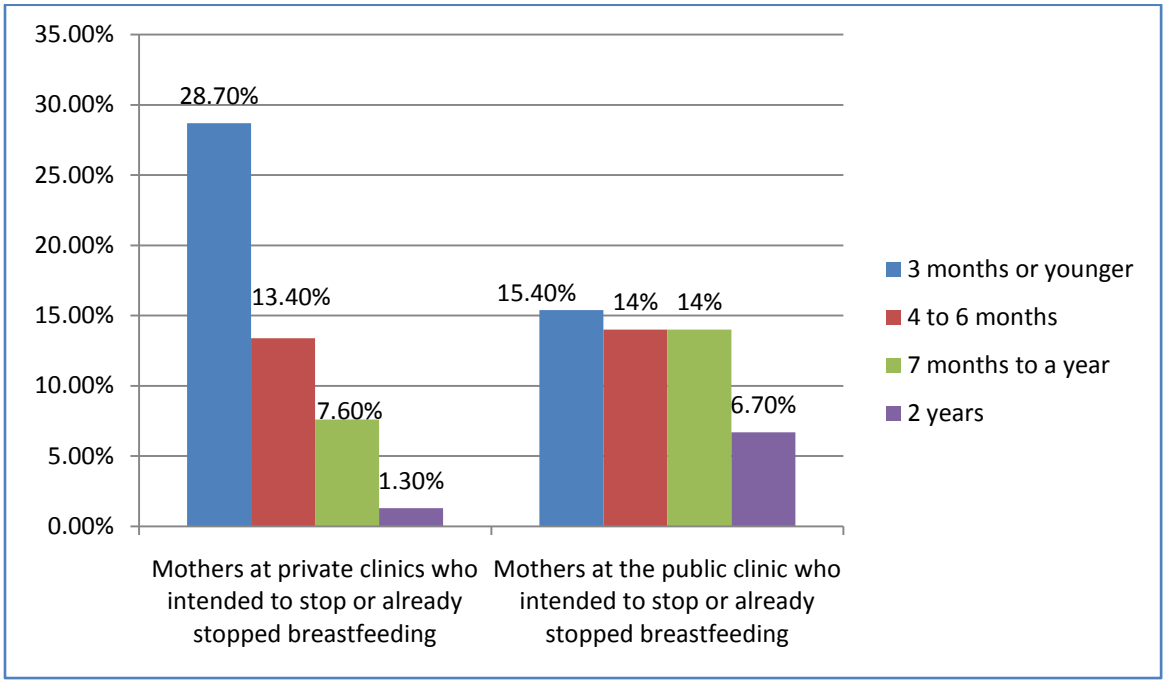
Figure 4.3a Illustrates Breastfeeding Initiation Rates at both Institutions.



N=150

Breastfeeding initiation is very high, a total of 81.5% of the entire population sample (n=150) started breastfeeding right after birth. Only 17% started a few days after and 1% started more than a week after giving birth.

Figure 4.3b Breastfeeding Duration: The infants' age mothers' intended to stop breastfeeding or already stopped breastfeeding.



By the time the infant was 3 months old or younger, 44.1/100% of the mothers from the entire sample either intended to stop breastfeeding or already did. Of the 50% sample of mothers at private clinics, more than half intended to stop or already stopped breastfeeding (28.7%) by the time the infant was 3 months or younger. At the public health center, more mothers intended to stop or already stopped breastfeeding at a later age of 4 to 7 months (28/50%). Additionally, more mothers at the private health center (6.7/50%) intended to stop breastfeeding at 2years compared to mothers at private clinics (1.3%).

4.4 Reasons why mothers did not breastfeed exclusively or predominantly for six months at private and public clinics.

Figure 4.4a Reasons for not breastfeeding exclusively or predominantly for six months at private and public clinics.

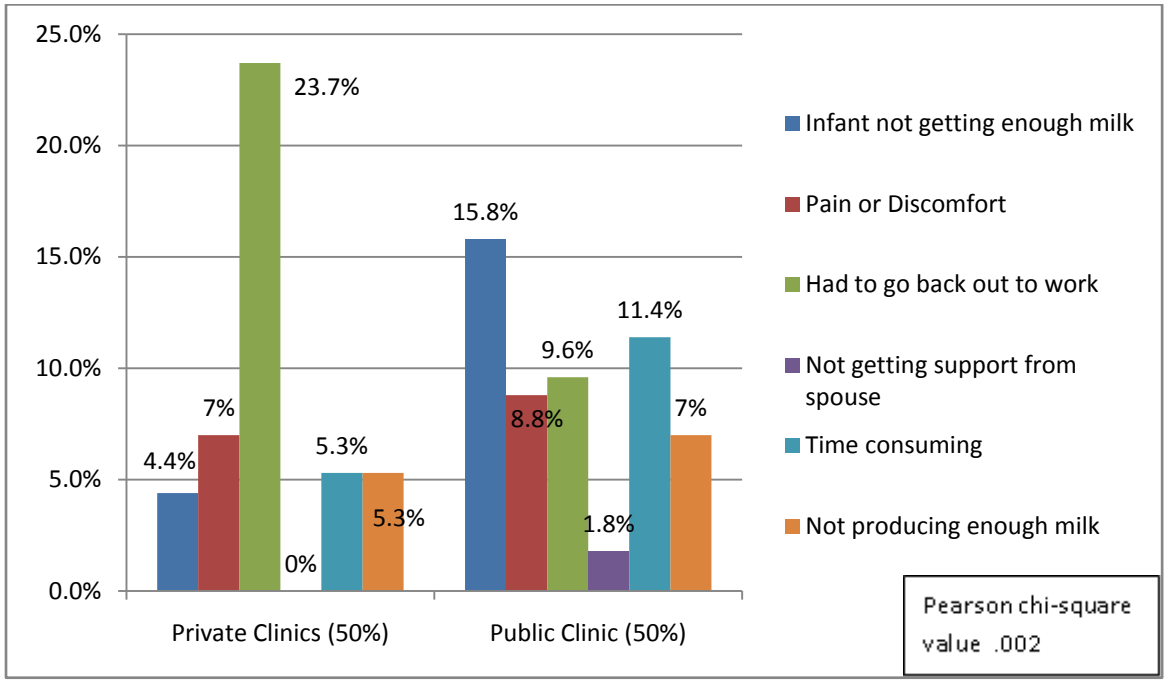


Figure 4.4a illustrates the differences in reasons for not breastfeeding exclusively or predominantly for the recommended six month period between private and public clinics. The number one reason for mothers who visited private clinics was because they had to return to work (23.7/50%), while the main reason for mothers at public clinics was because the infant was not getting enough milk (15.8/50%). A p value of 0.002 indicated that there was a significant difference between the mothers' reasons for not breastfeeding exclusively or predominantly at private and public clinics. Among the other reasons include, breastfeeding was "time consuming", the mothers experienced "pain/ discomfort", the mother was "not producing enough milk" or they were "not getting support from the spouse".

4.5 Breastfeeding pattern as related to parity, maternal education, employment status and household income level.

Table 4.5a Shows the relationship between breastfeeding pattern and parity

No. of children	Exclusive breastfeeding N	%	Predominant Breastfeeding N	%	Breastfeeding Partially N	%	Not at all N	%	Pearson Chi-Squared
1	4	2.7	18	12	46	30.7	3	2	
2	3	2	12	8	43	28.7	4	2.7	0.543
3	1	0.7	5	3.3	5	3.3	0	0	
>4	0	0	0	0	6	4	0	0	

There was no significant difference (P<0.05) between education and breastfeeding pattern.

Table 4.5b. Illustrates the relationship between breastfeeding pattern and education level

Maternal Education level	Exclusive Breastfeeding N	%	Predominant Breastfeeding N	%	Breastfeeding Partially N	%	Not at all N	%	Pearson Chi-Squared
Primary	0	0	1	0.7	3	2	0	0	
Secondary	2	1.3	9	6	31	20.7	4	2.7	0.663
Tertiary	5	3.3	12	8	42	28	2	1.3	
Graduate	1	0.7	13	8.7	24	16	1	0.7	

In **table 4.5b** no significant difference (P< 0.05) was indicated.

Table 4.5c Illustrates the relationship between breastfeeding pattern and employment status

Employment Status	Exclusive Breastfeeding N	%	Predominant Breastfeeding N	%	Breastfeeding Partially N	%	Not at all N	%	Pearson Chi-Squared
Yes	2	2	24	16	77	51.3	7	4.7	0.029
No	5	3.3	11	7.3	23	15.3	0	0	

Employment status was compared with breastfeeding pattern. From the entire population (n=150), 51.3% of those who were employed breastfed partially. Employment status therefore had an effect on the breastfeeding pattern chosen, with a statistical significance of 0.029.

Table 4.5d Illustrates the relationship between breastfeeding pattern and household income level

Household income level	Exclusive Breastfeeding N	%	Predominant Breastfeeding N	%	Breastfeeding Partially N	%	Not at all N	%	Pearson Chi-Squared
≤ $2500	1	0.7	2	1.4	10	7.1	1	0.7	
>$2,500 ≤ $5,000	3	2.1	9	6.4	37	26.2	3	2.1	0.648
>$5,000 ≤$10,000	2	1.4	7	5	27	19.1	1	0.7	
>$10,000	2	1.4	14	9.9	21	14.9	1	0.7	

There was no significant difference (P<0.05) between education and breastfeeding pattern.

4.6 Source of breastfeeding information at both institutions.

Table 4.6a Shows Source of breastfeeding information at both clinics.

	Medical Practitioner		Television/Radio/Newspaper		Family member/friend		Personal Research		Total		Pearson Chi-squared
	N	%	N	%	N	%	N	%	N	%	
Private	55	36.7	5	3.3	2	1.3	13	8.7	75	50	0.053
Public	62	41.3	1	0.7	6	4	6	4	75	50	

The majority of mothers at both institutions indicated that their source of breastfeeding advice came from a medical practitioner, either doctor or nurse. Indicated in **Table 4.6a**, 36.7% of those at the private clinics and 41.3% of those at the public health center got their advice from a medical practitioner. More mothers at the private clinics did personal research (8.7%) but this was not statistically significant. The media (radio/television/newspaper) and a family member or friend were sources of advice to only 14 mothers of the entire sample (N=150).

4.7 Knowledge of the terms: breastfeeding exclusively, predominantly and partially.

Table 4.7a Shows Knowledge of the terms; breastfeeding exclusively, predominantly and partially.

	Knowledge of the meaning of the terms.		**Knowledge of the meaning of the terms.**		**Total**	
	YES (n)	**%**	**NO (n)**	**%**	N	%
Private	27	18	48	32	75	50
Public	18	12	57	38	75	50

The mothers were asked whether they knew the meaning of the terms breastfeeding exclusively, predominantly and partially. From the 30% of mothers who indicated that they know the meaning of the terms, 18% were from private clinics and 12% where from the public health center. The majority of the mothers, 70/100% stated that they were not aware of the meanings. Most were mothers at public clinics representing 38%. **This is shown in Table 4.7a above.**

4.8 Mothers who used infant formulas.

Mothers who breastfed partially or who solely bottle fed their infants indicated that their main source of information on breastmilk substitute came from a medical practitioner, 55.6% and the second main source came from the newspaper, television or radio, 18.5% **(See appendix B Table 4.8a).** The two most popular infant formula brands were Similac, 31% and Enfamil 38% as indicated in **appendix B Table 4.8b.** As much as 98% of the mothers stated that infant formulas were costly **(Appendix B Table 4.8c)** where 41% spent between $71.00 to $100.00 a week on infant formulas. Twenty-eight percent (28%) indicated they spend more than $100.00 per week on infant formulas **(Appendix B Table 4.8d)**. More mothers purchased iron fortified formulas 39% than low iron formulas 25% as indicated in **appendix B 4.8e**. Most of the mothers used cow's milk formula, 92% and only 6% used soy based formulas **(See appendix B 4.8f).**

DISCUSSION

Previous research findings have illustrated a prevalence of breastfeeding rates. A trend has be noticed where there are high initiation rates but the majority of these infants are breastfed for a short period of time and only a few mothers have reported to breastfeed exclusively. These indications are consistent with results of this study.

According to **Table 4.2a** of the results, a total of 95.3% mothers breastfed their babies. Partial breastfeeding was the main breastfeeding pattern identified, where 66.7% of the entire population engaged in this pattern and only 8% breastfed exclusively. The research conducted in Jamaica by Kurzewski (2004) illustrated a similar breastfeeding pattern. In the study, 97.8% of the mothers practiced breastfeeding where 70.1% breastfed partially. There was a higher rate of exclusive breastfeeding in his study, where 29.9% of mothers breastfed exclusively. Contrary to this statistic in Jamaica, a low rate of exclusive breastfeeding was reported in Mexico City by Guerrero (1999) where only 2% of the mothers breastfed exclusively for up to four months.

With respect to **Table 4.2a** of the results, the Pearson chi-squared value of .043 indicates that there was significance in the breastfeeding patterns between private clinics at St. Augustine and the public Health Center at Chaguanas. The results therefore rejected the null hypothesis which stated that there was no difference. At the private clinics, breastfeeding rates were generally higher than at the public health center. From the 50% sample of mothers at the private clinics, 49.3% breastfed their infants as compared to the public health center, where 46% engaged in breastfeeding. In addition to this, fewer mothers (0.7/50%) at the private clinics bottle fed their infants than mothers at the public health center (4/50%).

High initiation rates were reported by Guerrero (1999) and Kurzewski (2004) where 91% of mothers initiated breastfeeding in Mexico City and 84% in Jamaica. The result of this study illustrates

similar outcome where breastfeeding initiation is found to be at 81.5% as indicated in **Figure 4.3a** of the results. However, the most recent statistics for breastfeeding rates in Trinidad and Tobago (2003-2008) provided by UNICEF, indicate that 41% of mothers initiated early breastfeeding. This was not consistent with the results of this study. It can be noted that the sample used in this study is not representative of the entire population of Trinidad and Tobago, hence the significant different in initiation rates.

Despite the higher breastfeeding rates seen at private clinics, the duration of breastfeeding was shorter compared to mothers at the public health center as indicated in **Figure 4.3b** of the results. More than half of the mothers at private clinics (28.7/50%) stated that they either intended to stop or already stopped breastfeeding by the time the infant was 3 months or younger. Only 1.3% stated that they would stop when the infant is two years. At the public health center where breastfeeding rates were lower, more mothers intended to continue breastfeeding at a later age. From the 50% sample of mothers at the public health center, 28% indicated that they would cease breastfeeding between 4 to 7 months and 6.7% stated they would stop when the infant is two years. In general, 71.5% of mothers of the entire sample population indicated that they intend to or already stopped breastfeeding at six months of age. Arora et al. (2000) indicated similar results where 87% of mothers stopped breastfeeding at six months. The UNICEF breastfeeding initiation rate in the Dominican Republic and Cuba was reported at 74% and 70% respectively, however when the infant was six months or less, only 9% were exclusively breastfed in the Dominican Republic and 26% in Cuba. This short period of breastfeeding, whether exclusively or partially is evident in this study as well as in research done by other individuals.

Figure 4.4a of the results indicates that there was a difference in mothers' main reason for not breastfeeding exclusively or predominantly for six months between private and the public clinics. Close to half (23.7/50%) of the mothers at the private clinics indicated their main reason was because they had to "return to work". This was similar to the research done by Arora et al. (2000), who highlighted in

their study that having to return to work was a reason why mothers did not breastfeed their babies. As previously indicated, the majority of mothers at private clinics stopped breastfeeding by the time the infant was three months or younger. Also considering the fact that maternity leave last for a period of 3 months, it can be stated that the mother's job accounts for the reason why so many mothers ceased breastfeeding at 3months or younger. In addition to this, a relationship was also identified between employment status and breastfeeding pattern at both institutions combined. The majority of the mothers who were employed engaged in partial breastfeeding, indicating that employment status affects breastfeeding patterns. The study done by Kurzewski (2004) however, stated no such relationship.

The mothers at the public clinic in this study stated two of their main reason for not breastfeeding exclusively or predominantly for six months as being "infant not getting enough milk" (15.8/50%) and because they felt it was "time consuming" (11.4/50%). Guerrero et al (1999) in their study also indicated that "not enough milk" was one of the main reasons why mothers did not breastfeed exclusively.

The main source of breastfeeding information came from medical practitioners (**Table 4.6a** of the results). However when the mothers were asked whether they knew the meaning of the terms breastfeeding exclusively, predominantly and partially, 70% at both clinics indicated that they did not know the meanings (**Table 4.7a** of the results). This is an indication that the proper message on breastfeeding is not correctly related to these mothers. Doctors and nurses should revise the information delivered to mothers in the aim of improving exclusive breastfeeding rates and duration.

Mothers who used infant formula stated that their main source of information on breastmilk substitute came from a medical practitioner (55.6%) and the second main source came from the media, 18.5% (newspaper, television, radio) **(Appendix B Table 4.8a).** Although this value was not considerable

(18.5%), it can be implied that advertisements through the media may have some influence on mothers' use of infant formulas. In addition to this their two main brands being similac (31%) and enfamil (38%) are brands used internationally **(Appendix B Table 4.8b)**. These brands have successfully acquired the interest of mothers surveyed in this study. According to **Table 4.8c** of **Appendix B**, even though 98% of the mothers stated that infant formulas are costly, the majority of them use infant formulas as opposed to saving money and breastfeeding exclusively or predominantly. As much as 68.7% indicated they spend more than $71.00 per week on infant formulas as indicated in **Appendix B Table 4.8d**. Henry (2005) highlighted in his article that globalization has provided more resources for infant food companies to have their products and persuasion reach the public. Even though it is not highly evident in this study, efforts should be made to maintain the current breastfeeding rate. According to Henry, if breastfeeding initiatives are not met, breastfeeding practices may diminish through the continued commercialization of infant formulas.

LIMITATIONS

- The sample size was too small and was not representative of the entire population of mothers who visit private clinics and those that visit public clinics. This study therefore did not give an accurate comparison of breastfeeding patterns between private and public clinics.
- Only one public clinic was used as compared to two private clinics used in the study.
- An evident problem observed at the start of this research project is the duration of breastfeeding. However, no analysis was done to identify factors that affect breastfeeding duration. The study mainly focused on factors that affected breastfeeding patterns.
- The question regarding breastfeeding duration, "When do you intend to stop or when did you stop breastfeeding", should have been separated into two separate questions to give a better account of those who stopped and those who intended to stop breastfeeding.
- Mothers whose infants were a year and older may have given inaccurate information as they may not remember due to the time that has passed.
- Depending on level of education and maturity, the respondents may have interpreted the questions differently and may have been reluctant to ask for clarification.
- Respondents may have given socially desirable responses which may or may not be truth.
- Questions 14 and 15 (**See appendix A**) of the questionnaire which was intended to be used as an assessment of the infants' growth, was not used in the study due to the low response rate.

CONCLUSION

In general, there was a higher prevalence of breastfeeding in private clinics when compared to the public clinic. The study therefore rejected the null hypothesis which stated that no difference existed in the breastfeeding patterns between private and public clinics and accepted the alternative hypothesis.

The study highlighted an important issue indicating that there was a relationship with employed mothers and breastfeeding duration. Most mothers at the private clinics intended to stop or already stopped breastfeeding by the time the infant was 3 months of age. Their main reason for not breastfeeding exclusively or predominantly was because they had to return to work. Additionally, employment status had an effect on breastfeeding pattern where the majority of mothers who were employed breastfed partially.

Parity, maternal education and household income level did not have an effect in the breastfeeding patterns practiced by the mothers.

It was also indicated in the study that improper breastfeeding information was being related to these mothers. Their main source of information came from medical practitioners. Advice given by these individuals would have a marked effect on mothers' breastfeeding patterns and even their intent to breastfeed. The medical practitioners ought to realize the importance to in relating the correct information to these mothers.

The study in general illustrated results consistent with other researchers. The issue of breastfeeding duration and working mothers remains a concern and is highlighted in this study. Efforts should be implemented to improve duration rates and to help employed mothers resolve issues that prevent them from breastfeeding.

RECOMMENDATIONS

- To obtain an accurate comparison of breastfeeding patterns between private and public clinics, more clinics can be used in future research.

- From the findings of this study, it is recommended that further research has to be done to identify the factors that affect breastfeeding duration. Different factors probably play a role in the decision to initiate or to continue breastfeeding. An understanding of these differences is needed to implement proper procedures to improve breastfeeding duration.

- Returning to work is an evident issue that affects breastfeeding pattern and duration in this study. It is recommended that research be done on mothers' perception of their jobs and how it affects their breastfeeding patterns. Identifying their problems about their jobs can be effective in developing solutions to maintain the numbers of employed mothers who breastfeed.

- Accurate breastfeeding information ought to be delivered to mothers. Health professionals, physicians, nurses, lactation consultants and other allied health professionals should take the time and relate the proper information to mothers and ensure they have a complete understanding of breastfeeding importance. Further research can be conducted on these health professionals in an attempt to identify where misinformation is being given to mothers.

- Further research can be done to assess the extent to which media influences the use of infant formula.

- Efforts to initiate breastfeeding has proven successful, mothers should therefore be reminded of the benefits of breastmilk on a constant basis to lengthen its duration. Use of positive social

pressure from local celebrities, corporations, foundations, fashion, advertising and the medical community to foster a cultural change.

- The Baby Friendly Hospital Initiative (BFHI) which was launched in 1991 by the WHO and UNCEF ensure that all maternities become centers for breastfeeding. The Sangre Grande Hospital has met the Global Criteria for the BFHI and as of April 2002. Efforts should be made to have all other hospitals, health centers and clinics meet the BFHI criteria.

- When mothers are awaiting service in the waiting rooms, video clips can be shown on information regarding breastfeeding. Peer support can also be given at the waiting rooms. Peer support can be done by women who are breastfeeding or who have already done so in the past and can include individual counseling and mother-to-mother support groups. These counselors ought to be trained and educated in this field. Peer support would provide emotional support, encouragement, education about breastfeeding and help with solving problems.

APPENDIX A

BREASTFEEDING PRACTICES AMONG MOTHER WHO RECENTLY GAVE BIRTH TO FULL TERM INFANTS AND BARRIERS TO BREASTFEEDING.

General Demographics

1) Age Group

- ☐ 19 and under
- ☐ 20 – 25 years
- ☐ 26 –30 years
- ☐ 31 years or older

2) Marital Status

- ☐ Single
- ☐ Married
- ☐ Divorced
- ☐ Common Law

3) Ethnicity

- ☐ African
- ☐ Caucasian
- ☐ East-Indian
- ☐ Chinese
- ☐ Syrian
- ☐ Mixed

4) Where do you reside? .....

5) Formal education level completed

- ☐ Primary
- ☐ Secondary
- ☐ Tertiary
- ☐ Graduate
- Other _____

6) Are you currently employed?

- ☐ Yes
- ☐ No

7) What is your income level per month?

- ☐ Less than or equal to $2,500
- ☐ More than $ 2,500 Between $5,000
- ☐ More than $5,000 Between $10,000
- ☐ More than $10,000

Demographics Of Child Bearing Mother.

8) How many children do you have?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 / >

9) What kind of feeding pattern did you engage in with your previous children?

- ☐ Exclusively breastfeed
- ☐ Predominantly breastfed
- ☐ Partially breastfed
- ☐ Use infant formula only.

10) Did you give birth ……

- ☐ Naturally
- ☐ Caesarian

11) In respect to question 10, was this your desired or preferred method of birth?

- ☐ Yes
- ☐ No

12) How old is your baby?

- ☐ 3months or less
- ☐ 4 – 6months
- ☐ 6 – 9 months
- ☐ Older than 9 months

13) What is the sex of your baby?

- ☐ Male
- ☐ Female

14) Baby's weight …….

15) Baby's height……

Awareness and reasons for breastfeeding.

16) Are you aware of the benefits of breast milk?

☐ Yes

☐ No

If yes, do you know the benefits of breast milk?_____
_____
_____

17) Where did you get your breast milk feeding advice from?

☐ Medical practitioner

☐ Television/Radio/Newspapers

☐ Family member/ friends

☐ Personal research

☐ Other

18) Did you breastfeed ……..

☐ Exclusively

☐ Predominantly

☐ Partially

☐ Not at all

19) Are you aware of the meaning of these terms?

- ☐ Yes
- ☐ No

20) Does your baby have …….

- ☐ A regular eating pattern.
- ☐ An irregular eating pattern
- ☐ Any current or past illness
- ☐ Never had an illness

21) Mothers who predominantly or partially breastfed, what did you supplement your breast milk with?

…….

22) What were/are your reasons for breastfeeding?

- ☐ Can not afford infant formula
- ☐ Breast milk is best for the baby
- ☐ Personal choice /spending more time with your baby
- ☐ Do not know much about infant formulas or other breast milk substitute.

23) Was breastfeeding started……..

- ☐ Right after birth
- ☐ A few days later
- ☐ More than a week after birth

24) When did you stop breastfeeding or when do you intend to stop?

……

Reasons why mothers did not breastfeed and their use of infant formulas.

25) What were/are your reasons for not breastfeeding?

- ☐ Infant not getting enough milk/
- ☐ Pain/ discomfort
- ☐ Inconvenience/ had to go back to work
- ☐ Not getting any support from spouse
- ☐ Time consuming
- ☐ Not producing enough milk
- ☐ Unable to breastfeed due to a medical condition (of mother or infant)

26) Does brand influence your choice of infant formula?

- ☐ Yes
- ☐ No

27) Which brand do you prefer? …….

28) Do you read the labels of the infant formula before purchasing?

- ☐ Yes
- ☐ No

29) Where did you get your information about breast milk substitutes?

- ☐ Medical practitioner
- ☐ Television/Radio/Newspapers
- ☐ Family member/ friends
- ☐ Personal research
- ☐ Other

30) Do you prefer the ……? Choose **one** only

- ☐ Iron fortified formulas
- ☐ Low iron formulas
- ☐ Does not matter.

31) Do you use …….?

- ☐ Cow's milk formulas
- ☐ Soy based formulas
- ☐ Elemental formulas
- ☐ Other

32) Do you think infant formulas are costly?

- ☐ Yes
- ☐ No

33) How much do you spend approximately on infant formula in a week?

- ☐ $20.00 - $50.00
- ☐ $51.00 - $70.00
- ☐ $71.00 - $100.00
- ☐ More than $100.00

APPENDIX B

Table 4.1b Shows the frequencies of the babies' age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3 months or less	16	10.7	10.7	10.7
	4-6 months	39	26.0	26.2	36.9
	6-9 months	71	47.3	47.7	84.6
	older than 9 months	23	15.3	15.4	100.0
	Total	149	99.3	100.0	
Missing	System	1	.7		
Total		150	100.0		

Table 4.8a Shows source of information about breastmilk substitutes.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Medical Practitioner	60	40.0	55.6	55.6
	Television/Radio/Newspaper	20	13.3	18.5	74.1
	Family/Friend	16	10.7	14.8	88.9
	Personal Research	12	8.0	11.1	100.0
	Total	108	72.0	100.0	
Missing	System	42	28.0		
Total		150	100.0		

Table 4.8b Shows the preferred brand of infant formula

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		74	49.3	49.3	49.3
	Carnation	1	.7	.7	50.0
	Enfamil	38	25.3	25.3	75.3
	Good start	1	.7	.7	76.0
	Klim	4	2.7	2.7	78.7
	Lactogen	1	.7	.7	79.3
	Similac	31	20.7	20.7	100.0
	Total	150	100.0	100.0	

Table 4.8c Whether mothers think infant formulas are expensive.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	106	70.7	98.1	98.1
	no	1	.7	.9	99.1
	4	1	.7	.9	100.0
	Total	108	72.0	100.0	
Missing	System	42	28.0		
Total		150	100.0		

Table 4.8d Shows the Approximate amount spent on infant formula for the week.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	$20- $50	2	1.3	1.9	1.9
	$51 - $70	3	2.0	2.8	4.6
	$71 - $100	61	40.7	56.5	61.1
	More than $100	42	28.0	38.9	100.0
	Total	108	72.0	100.0	
Missing	System	42	28.0		
Total		150	100.0		

Table 4.8e Shows the preference between iron fortified formulas as compared to low iron formulas.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Iron Fortified	58	38.7	53.7	53.7
	Low iron	38	25.3	35.2	88.9
	Does not matter	11	7.3	10.2	99.1
	4	1	.7	.9	100.0
	Total	108	72.0	100.0	
Missing	System	42	28.0		
Total		150	100.0		

Table 4.8f Shows the type of formula used by mothers.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Cow's MIlk formula	97	64.7	91.5	91.5
	Soy based formulas	6	4.0	5.7	97.2
	Elemental formulas	1	.7	.9	98.1
	4	2	1.3	1.9	100.0
	Total	106	70.7	100.0	
Missing	System	44	29.3		
Total		150	100.0		

REFERENCES

- Arora S, McJunkin C, Wehrer J, and Kuhn P. Major factors influencing breastfeeding rates: Mother's perception of father's attitude and milk supply. Pediatrics 2000; Vol 106; No. 5 Pages 1-5

- Armstrong A, Reilly A, and the Child Health Information Team. Breastfeeding and lowering the risk of childhood obesity. The Lancet 2002, 359(volume); 2003-2004(pages)

- Gartner ML, Morton J, Lawrance RA, et al. Breastfeeding and the use of human milk. Pediatrics. 2005; 115: 496-506

- Guerrero M, Morrow R, Calva J, Ortega-Gallegos H, Weller S, Ruiz-Pallacios G, and Morrow A. Rapid ethnographic assessment of breastfeeding practices in periurban Mexico City. Bulletin of The World Health Organisation, 1999, 77 (4). Pages 323-330

- Haider R, Kabir I, and Ashworth A. News from the region. Are breastfeeding promotion messages influencing mothers in Bangladesh? Results from an urban survey in Dhaka, Bangladesh Journal of Tropical Pediatrics 1999 45(5): 315-318

- Hamilton P, Jackson J, Lee A, Leitch J. Evaluation of the Breastfeeding programme and The Baby Friendly Hospital Initiative, Ministry of Health, Kingston, July 2002. 1-69

- Heinig M, Dewey K. Health effects of breastfeeding for mothers: a critical review. Nutrition research review 1997, 10: 35-56

- Henry FJ, Breastfeeding and Globalization: Implications for the Caribbean. CFNI Vol 38. No. 4, 2005. Pages 191-197

- Kurzewski K, Gardner JM. Breastfeeding patterns among six-week old term infants at the University Hospital of the West Indies. West Indian Med J 2004; 54: (1) Pages 28 - 33

- Sadauskaite-Kuehne V, Ludvigsson J, Padaiga Z, Jasinskiene E, Samuelsson U. Longer breastfeeding is an independent protective factor against development of type I diabetes mellitus in childhood.
  Diabetes/ Metabolism Research & Reviews 2004; 20: 150 - 157

- UNICEF, The State of the World Children I Special Edition. Table # 2. Nutrition. Pages 12-15

- WHO, Exclusive Breastfeeding.
  http://www.who.int/nutrition/topics/exclusive_breastfeeding/en/index.html (12)

- WHO Global strategy for infant and young child feeding; the optimal duration of exclusive breastfeeding. Fifty-forth World Health Assembly, Provisional Agenda Item 13.1 A54/INF.DOC./4 1 May 2001