

## Breastfeeding Patterns Among Six-week-old Term Infants at the University Hospital of the West Indies

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### ABSTRACT

*Eighty-nine mothers attending post-natal clinics at the University Hospital of the West Indies were interviewed at six weeks postpartum regarding their breast-feeding patterns and problems. Breastfeeding was practised by 97.8% of the mothers, with 29.9% practising exclusive breastfeeding and 70.1% partial breastfeeding. Only two women were solely bottle feeding. The pattern of breastfeeding was not significantly affected by maternal parity, age, education, employment or socio-economic status. An intention to wean later (at six months) or when the mother felt the baby was 'ready,' was associated with increasing parity, age and further education. Babies who were exclusively breastfed achieved greater weight gain compared with those who partially breastfed but this difference did not achieve statistical significance. Breastfeeding trends appear to have remained stable over the last several years.*

## Patrones de Lactancia Materna entre los Infantes de Seis Semanas en el Hospital Universitario de West Indies

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### RESUMEN

*Ochenta y nueve madres que asistían a las clínicas de atención postnatal en el Hospital Universitario de West Indies fueron entrevistadas seis semanas después del parto, en relación con los problemas y patrones de lactancia al pecho. El amamantamiento era practicado por el 97.8% de las madres, un 29.9% de las cuales practicaba la lactancia materna exclusivamente, en tanto el 70.1% la practicaba de modo parcial. Sólo dos mujeres recurrían a la alimentación sólo por biberón. El patrón de lactancia materna no era afectado significativamente por paridad materna, edad, educación, empleo o estatus socio-económico. La intención de destetar más tarde (a los seis meses) o cuando la madre sentía que el bebé estaba "listo", se hallaba asociada con un grado creciente de paridad, edad y educación continuada. Los recién nacidos que recibieron exclusivamente lactancia materna alcanzaron un peso mayor en comparación con aquéllos que recibieron lactancia al pecho parcial, pero esta diferencia no llegó a tener significación estadística. Las tendencias a la lactancia materna parecen haber permanecido estables durante los últimos años.*

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### INTRODUCTION

The benefits of breastfeeding are well documented and include adequate and appropriate nutrition, protection against infections, emotional well being, economic benefits,

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spacing of pregnancies and protection against breast cancer (1, 2). More recently, breastfeeding has also been associated with reduced incidence of later disease such as Type 1 diabetes mellitus (3). Recommendations by international organizations are for exclusive breastfeeding for the first six months of life (2).

Although the maxim 'Breast is Best' is well known in the Caribbean, rates of exclusive breastfeeding generally decline after the first few weeks (4-7). Early introduction of supplementary feeding usually has a negative effect on the return to exclusive breastfeeding (2). Supplements may not be given daily but they are unlikely to be withdrawn once

they are introduced (8). Supplemental feeding exposes infants to foreign contaminants and infection at a very vulnerable stage of life (9) and may likely explain the higher infant mortality rate of partially bottle-fed infants compared with exclusively breastfed infants (10).

It is better to start breastfeeding early since lack of breastfeeding in the first week of life is an indicator of poor future feeding patterns (11). Adding bottle feeds in hospital has historically been an important factor associated with bottle-feeding at six weeks though this practice is now strongly discouraged (2).

Most women cite 'inadequate milk' as the reason for cessation of breastfeeding (9-11). In Bangladesh, Haider *et al* (12) elicited more detailed reasons such as lack of financial support, too much housework and domineering grandmothers. Studies from different places including the Caribbean have found other reasons, including: having to return to work, the baby rejecting the breast, the baby remaining hungry, the perception that breastfeeding is backward or for poor people, or to entice the father to bring money for formula feed. Recent work in Jamaica suggests that fewer mothers (<10%) used the reason that they were returning to work (7). Poor weight gain during the first three months of life and male gender are factors known to predispose to earlier change from breast- to bottle-feeding (8).

In some developing countries, higher socio-economic status and better education are associated with poorer rates of breast-feeding (7, 12). The converse is true in Jamaica and in developed countries (13). Living in rural rather than urban areas also increases the likelihood of breastfeeding (9). Mothers who breastfeed longer are usually older (6) and multiparous (6, 13) but younger women are more likely to initiate breastfeeding (14). In a review of studies from all over the world, Maitch and Sims (15) found that more women who were married or in a stable relationship intended to breastfeed. They also found that parity had little effect on initiating breastfeeding but women of lower parity had a greater intention to breastfeed. In contrast, Montserratian primiparous women were more likely to want to add bottle feeds eventually (16).

In Jamaica where breastfeeding rates were high, early introduction of infant formula and other foods have remained a problem (17, 18). Other Caribbean studies of infant nutrition over the last 30 years have generally found breastfeeding rates to be less than those desired (4-6, 11, 19, 16). Grantham-McGregor and Back (4) in their 1967 study of 300 infants delivered at the University Hospital of the West Indies (UHWI) in Jamaica observed a low frequency of breastfeeding and an association between breastfeeding and good weight gain. Following this study, changes were implemented at the UHWI including the banning of 'milk-nurses' who would promote formula feeds, and better antenatal education of mothers regarding feeding. A follow-up study by Landman and Shaw-Lyon (14) in 1973 was

discouraging: 67% of mothers breastfed fully while in hospital but only 25% continued to do so at three weeks, and only 10% at six weeks. In the 1990s, the numbers had improved but only 50% of Jamaican women were breastfeeding at four months (20). As a result, in 1994, a project which included the extensive training of healthcare workers with emphasis on the commitment to the International Code for Marketing of Breastmilk Substitutes and the Ten Steps of the Baby Friendly Hospital Initiative was introduced. A subsequent study in 1996 (6) showed improved rates of breastfeeding with 99% of the mothers breastfeeding at six weeks but most of these mothers (61%) were supplementing their breastmilk. As in the 1967 study, the researchers found that exclusive breastfeeding was associated with increased weight gain among babies of normal birthweight. They did not find a significant relationship between union status nor employment status and breastfeeding patterns. Unlike previous Jamaican and Caribbean studies, they found that water was the most popular supplement given. In the Jamaican studies, the most common reason given for starting bottle feeding was 'insufficient breastmilk'.

This study sought to examine whether the level of exclusive breastfeeding at six weeks reported in 1996 had been sustained at the UHWI. Since 1995, the Baby Friendly Hospital Initiative was introduced at the UHWI with the expressed aim to promote breastfeeding at the institution. This study assessed whether there was any response to this promotion within a few years of implementing it. The specific aim of this study was to compare the current prevalence of exclusive breastfeeding with previous levels at the UHWI. Additional objectives were to investigate the reasons given for stopping or supplementing breastfeeding, to identify the substitutes given, to determine whether breastfeeding patterns were related to age, parity or socio-economic factors and to assess weight gain between birth and six weeks post-partum.

## SUBJECTS AND METHODS

An observational, cross-sectional study was carried out during January and February 1999. The study was approved by The University of the West Indies Ethics Committee. Mothers were recruited from the Postnatal Clinic (PNC) at the UHWI. Those asked to participate were mothers of infants who were six weeks old and were not multiple births nor premature (born at less than 37 weeks completed gestation). All the attendees at the UHWI antenatal clinic who fit the selection criteria and who were willing to participate were interviewed. The study was explained to mothers and written consent obtained. A questionnaire was pretested on mothers attending PNC and the Child Welfare Clinic at the UHWI before the study began and appropriately modified. We ensured that mothers who responded in the pretest were not involved in the final survey. The questions included items to assess maternal education, possessions

(presence in the home, of items including a stove, television, cable, radio, refrigerator, VCR and vehicles) and housing (level of sanitation and crowding in the home). Babies' weight gain since birth was assessed from clinic records.

Data were coded and entered using EpiInfo version 6 and data analysis was conducted using SPSS for Windows, version 6. Differences between the proportions were assessed using chi-square and differences between means using t-tests. Correlations were computed using Pearson's analysis.

## RESULTS

During the interview period, 92 eligible women attended the PNC. Three mothers declined to participate citing illness or other obligations as their reasons. The sample therefore comprised 89 mothers (97%) with an age range from 16 to 41 years (mean 26.6, SD 6.0 years). Most (62%) were between the ages of 20 and 29 years.

Parity ranged from one to five children, 58% had one child, 38% had two to three children and 3% had four children or more. Sample characteristics are shown in Table 1. Most mothers (84%) started breastfeeding on the day they gave birth. Twelve (14%) introduced breastfeeding during the first week and two (2%) started later. The reasons given for not initiating breastfeeding on day one were illness of baby or mother, or 'having no milk'. Ten babies were sick and admitted to the Special Care Nursery, three women said they had no milk and one was unwell following a Caesarian section delivery.

At six weeks of age, the prevalence of breastfeeding (exclusive or partial) had increased to 98% with only two women not breastfeeding. Thirty per cent (n = 26) of babies were exclusively breastfed while 70% (n = 61) of mothers were supplementing their breastmilk with alternative feeds. The two mothers who were solely bottle-feeding at six weeks

Table 1: Maternal characteristics of all mothers (n = 89)

	Mean	Standard deviation
Maternal age (years)	26.7	6.0
Parity	1.7	1.0
Maternal occupation score <sup>1</sup>	2.7	1.5
Maternal education score <sup>2</sup>	3.9	1.3
Possessions <sup>3</sup>	5.9	1.4
Toilet <sup>4</sup>	5.7	0.8
Water source <sup>5</sup>	5.7	0.7

1 Range from one (unskilled) to six (professional)

2 Range from one (incomplete primary) to five (some post secondary training)

3 Total number of household possessions out of a list including oil, gas or electric stove, television, cable, radio, refrigerator, video player, motorcycle, or car/bus/truck. Maximum score 8.

4 Range from zero (no toilet) to six (own inside flush toilet)

5 Range from one (nearest pipe >100 yards outside) to six (own inside pipe)

were aged 28 and 32 years respectively, both were primiparous, single and employed. They ceased breastfeeding in the first month following delivery because of 'no breastmilk' and 'baby rejected the breast' respectively. These cases were excluded from further analysis of breastfeeding patterns.

The majority of mothers (82%) fed their babies when they were hungry and/ or crying, while 19% fed according to routine or schedule. Most babies (51%) were breastfed on three to six occasions per day. However, seven mothers (8%) fed more than 11 times per day. Overnight, 68% of babies were fed less than four times, 25% breastfed five to six times and a few, 5%, fed more than seven times. The duration of suckling was mostly 16 - 20 minutes (30%), with 17 (19%) reporting less than 10 minutes, 26% reporting 11 to 15 minutes and 22% more than 21 minutes. The proportion of mothers who offered both breasts at each feed was 89%. Seventeen women (20%) complained of having experienced problems breastfeeding. The list of problems is shown in Table 2.

Parity was not related to breastfeeding at six weeks nor to the frequency of exclusive vs partial breastfeeding or duration of suckling. More mothers who were 30 years or over (49%) fully breastfed compared with mothers under 30 years-of-age (32%) but this difference was not significant (chi-square). Duration of suckling was also not statistically related to maternal age (Pearson's correlation). Employment status, socio-economic status and maternal education were not significantly related to breastfeeding patterns (chi-square and t-tests).

Both groups of babies had similar mean birthweights: exclusively breastfed 3.23 kg (SD 0.48 kg) and partially breastfed 3.22 (SD. 0.50 kg). The mean weight gain of the exclusively breastfed babies over the first six weeks after birth was 1.70 ± 0.47 kg and that of the partially breastfed babies was 1.50 ± 0.5 kg. Number of possessions, housing rating, maternal age, education and parity were not significantly related to weight gain (Pearson's correlations).

Table 2: Reported breastfeeding problems\* (n = 87)

Complaint	Frequency	Percentage
Pain	11	13
Cracked nipples	6	7
Discomfort	4	5
Insufficient breastmilk	3	3
Difficulty starting	2	2
Baby not suckling	1	1
Inconvenience	1	1
None	70	80

\* Multiple responses allowed. Total > 100%

Most of the babies (70%) were having items additional to breastmilk at six weeks. The most popular item was water which was being given to 52 babies (58%). Commercial formulas were being given to 32% and bush teas or juice to 14%. A few babies were given glucose water (4%). Most mothers (69%) introduced the supplemental feeding during the first month of life (usually between weeks two to four postpartum). Five per cent introduced supplementary feeding on the day the babies were born. Thirteen per cent during the first week and 13% during the second month.

The reasons given for introducing supplements are shown in Table 3. The most common reason was that water was given as it was felt the babies were too hot. Other reasons were: to wash the baby's tongue, because it 'felt right', to 'settle' the baby, because the baby was constipated or 'gripy', supplements were started in the hospital nursery or when mother was ill, to prevent the baby getting 'gas' from the breastmilk, or on doctor's orders.

About half of the mothers (54%) expected to stop breastfeeding when the child was between four months and one year. Ten per cent reported that they would stop before the child was three months and 36% were unsure when they would stop or said they would stop when the baby no longer wanted the breast.

One mother (41 years-old, parity five and unemployed) had introduced her child to weaning foods (cereals, porridges, strained fruit). Most of the mothers (77%) said they intended to wean their babies before age six months and the rest were unsure when they would start or said they would when the child was 'ready'.

Almost all of the women (99%) had been encouraged to breastfeed antenatally mostly by clinicians or midwives (92%), family (24%) or friends (12%). This included the two women who subsequently solely bottlefed. Only one mother (1%) had been advised to bottlefeed by family and friends. The reasons given for breastfeeding were simply 'breast is best' (92%), convenience (10%) and necessity (8%).

Table 3: Reasons given for introducing supplementary items\* (n = 87)

Reasons	Number of mothers*	Per cent of mothers breastfeeding
To give extra water	21	24
Breastmilk not satisfying for baby	17	20
Hiccups	6	7
Insufficient breastmilk	5	6
'Grandma said'	3	3
Needed to return to work	3	3
To get the baby used to the bottle	3	3
To be able to leave the house	3	3
Other	10	11

\* Multiple responses allowed

## DISCUSSION

This study aimed to survey a sample of mothers, at six weeks postpartum, to determine their current breastfeeding patterns and to compare these with previously reported findings. It found an almost universal prevalence of breastfeeding among the mothers surveyed but this was largely accompanied by additional bottle feeds of commercial infant formulae and other items.

Breastfeeding, at birth, was found to be 84%, similar to the 1996 study (6) which found an initiation rate of 75%, but lower than the 92% rate found by Landman and Shaw-Lyons in 1973 (14). The primary reason given for the relatively low initiation in both the 1996 study and the present one was infant illness. The prevalence among this small sample was 98%, very similar to the 99% prevalence found three years before (6), and an improvement on the 90% rate found 26 years previously (4). Fewer women (70%) were supplementing their breastmilk in the present study compared with the 1976 study (80%). Overall, more women were exclusively breastfeeding now (30%) compared with 10% in 1936 and only 2% were bottle-feeding compared with 10% then. These figures were similar to those of Scarlett *et al* (6) in 1996. Both the Scarlett study and the present study used a small sample size of fewer than 100 mothers.

It is likely that the various programmes introduced in Jamaica over the past 20 years including the Baby Friendly Hospital Initiative which were aimed at increasing maternal education regarding the benefits of breastfeeding are at least partly responsible for the improved rates in breastfeeding. The high cost of formula may also discourage many families from using it. This survey, like the 1996 and 1973 studies, was carried out at the UHWI and found that women fed their babies on average every three hours. This compared with Montserratian women who breastfed every two hours at this age (17). The finding that parity bore no relation to frequency of feeding was also found by Scarlett *et al* (6) and the Montserrat study. In keeping with Grantham-McGregor and Back (4) in 1970, parity and maternal age had no effect on the likelihood of breastfeeding. However, the mean age of partially breastfeeding mothers was less than those of exclusive breastfeeders, consistent with the 1996 study (6).

Employment status had no effect on the prevalence of breastfeeding. However, most of the mothers had not yet returned to work and this likely explains why only few women gave this as the reason for starting the bottle. The association between breastfeeding and employment is of greater significance at six months postpartum (4, 14, 15). The same is also true for socio-economic status which was not related to any of the breastfeeding variables investigated in this study. Grantham-McGregor and Back (4) found that a higher proportion of mothers in lower socio-economic groups were breastfeeding at six months postpartum compared with mothers in higher socio-economic groups. The fact that breastfeeding favours good weight gain has

been a common finding of the more recent studies at the UHWI (4, 14, 15) and was found here also. This agrees with information from international agencies such as the World Health Organization which states that breastfeeding, especially exclusive breastfeeding, favours the best weight gain.

In the Caribbean, a high proportion of women have always provided their infants with additional food items along with breastmilk (4, 6, 11, 14, 16) though we found a decline from previous reports. The items have changed from primarily 'bush teas' and orange juice to water and commercial formulae. This may reflect the greater urbanization of the population and greater access to tinned formula feeds.

Complementary items were most commonly introduced in the first month of the infant's life, especially two to four weeks postpartum. The primary reasons given to start additional foods have remained consistent: to give water and inadequate breastmilk (4, 11, 14-16).

Most of the women in this study indicated that they would wean their children before six months of age but increasing maternal age, parity and education were associated with an intention to wean later, at six months, or 'when the baby was ready'. This may reflect improved knowledge and experience of child weaning or more confidence in their own parenting.

Almost all the mothers quoted the slogan 'Breast is Best' as the reason for breastfeeding their babies, a figure higher than most recent Caribbean studies (4, 11, 14, 16). It was also encouraging to find that almost all the women were encouraged antenatally to breastfeed.

The population of mothers served by UHWI is not typical of the general population of Jamaican mothers. The Perinatal Survey which interviewed all Jamaican women who delivered in Jamaica in a two-month period in 1986 (21) indicated that the UHWI catered to women who were older, more likely both to be employed and to be in stable relationships. This suggests that the women in this study may have been more motivated to breastfeed than the general population. Also, there were fewer low birthweight babies (6%) compared with the national average of 10% (22) and this may have biased our findings. Although the numbers of women breastfeeding was high, a high proportion was also supplementing baby's diet. More effort must therefore be exerted to persuade mothers to continue exclusive breastfeeding for the recommended six months (2).

Subsequent to this study, an evaluation of the Breastfeeding Programme and Baby Friendly Hospital Initiative was carried out by surveying attendees at several urban and rural antenatal and post-natal clinics (excluding UHWI) (7). Those data were not presented disaggregated by clinic or area. Several findings were different compared with our study. For example, only 82% of the postnatal mothers were breastfeeding compared with 98% of our mothers, and less than 42% were nursing on demand compared with 82%

of ours. The differences may be explained by the age range of the babies in that study (from less than four weeks to over 40 weeks), the inclusion of rural mothers, the higher parity of those mothers or other factors. It would be interesting to compare these findings when more details from that study become available.

The present study had a number of limitations. The sample size was small, the population studied was not representative of Jamaica as a whole and attendees at the clinic may further skew the results. Birthweights and babies' weights at six weeks were both taken from records and there was no control over their reliability. There were too few low birthweight infants to separately analyze these and compare the finding with that of Scarlett *et al* (6) that low birthweight babies benefitted from supplemental feeds. It would be useful to investigate these findings using a larger, more representative sample in order to further study the associations between patterns of breastfeeding and mothers' education, age and parity. However, we confirmed the earlier findings by Scarlett *et al* that rates of breastfeeding at six weeks remain higher than two decades ago. There is still need to promote exclusive breastfeeding and early initiation of breastfeeding.

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