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Practices, advice and support regarding prolonged breastfeeding: a descriptive study from Sri Lanka

Martina J van den Berg^{1*}, Helen L Ball²

¹ F.D. Rooseveltstraat 29, 9728 RV Groningen, The Netherlands

² Department of Anthropology, University of Durham, Durham, UK

* Corresponding author

Email addresses:

MJB: martina.vandenberg@wanadoo.nl

HLB: h.l.ball@durham.ac.uk

Correspondence to:

M.J. van den Berg

F.D. Rooseveltstraat 29

9728 RV Groningen

The Netherlands

Tel: +31 50 5251855

Email: martina.vandenberg@wanadoo.nl

Abstract

Practice and duration of breastfeeding were examined in relation to traditional practices and modern recommendations on infant care in Sri Lanka. Semi-structured interviews were conducted among 60 Sri Lankan mothers whose youngest child was 0.5-4 years. All mothers had breastfed their infants. Most respondents introduced additional foods at 4 months, as recommended by local public health services. The median age at cessation of breastfeeding was 2.9 years, in line with public health advice. Doctors were reported to oppose breastfeeding during a subsequent pregnancy. Eighty-two per cent of mothers practiced habitual bed-sharing with their children. Night-time breastfeeding frequency was 4.8 times per night for infants aged 0.5-1 year and declined gradually over the next 3 years. Maternal working status did not influence the overall duration of breastfeeding. Sri Lankan mothers and infants were confronted with several factors opposing their breastfeeding relationship, notably near full-time work and the early introduction of additional foods. Even though exclusive breastfeeding was ended prematurely, the majority of mothers and infants managed to sustain a prolonged breastfeeding relationship. Mother-child bed-sharing and associated night-time breastfeeding is proposed as an important factor supporting continued breastfeeding.

Background

According to the anthropological view, breastfeeding until the ages of 2.5 to 7 years is the biological norm for humans when freed from cultural norms and beliefs (Dettwyler, 1995). The benefits of exclusive and prolonged breastfeeding, i.e. beyond 6 months postpartum, have been well documented (Léon-Cava et al., 2002), and breastfeeding durations of 1 or 2 years have been officially recommended (American Academy of Pediatrics, 1997; World Health Organization, 1998). Breastfeeding, especially the period of exclusive breastfeeding, protects infants against a host of infective, respiratory and diarrheal diseases (Perera et al., 1999) and plays a vital role in the maturation of the infantile immune system, a process which takes several years to complete (Jaspan et al., 2006). Furthermore, prolonged breastfeeding has been shown to increase intelligence (Mortensen et al., 2002; *Der et al., 2006*). Hence, what matters is not only whether breastfeeding is initiated but also the duration, exclusivity and intensity of breastfeeding (Cadwell, 2002).

Prolonged breastfeeding is, however, not commonly practiced in Western societies. In Germany, for instance, 50% of infants are breastfeeding at 6 months and only 13% are still breastfeeding at 12 months (Deutsche Gesellschaft für Ernährung e.V., 2000). In the United States, only 13% of infants are exclusively breastfed until 6 months and 16% receive some breast milk at 1 year (Li et al., 2005). Finally, in the UK, only 20% of infants receive any breast milk at 6 months, and almost none are exclusively breastfed by this age (Hamlyn et al., 2002).

Various factors influence whether, and for how long, women will breastfeed, including cultural aspects, social support and provision of information. These factors determine customs linked to breastfeeding practice, notably sleeping arrangements, introduction of additional foods, use of bottles and pacifiers and maternal employment. To better understand prolonged breastfeeding, we examined a society where prolonged breastfeeding is the norm (UNICEF, 2006). In Sri Lanka as in other Asian countries, traditional infant care practices are being influenced by the Western model of health- and infant care. Consequently, mothers may be experiencing advice from public health care services which conflicts with their own customs.

Sri Lankans are known to be intensely family oriented. Although the nuclear family forms the basis for most households, close family ties are maintained with extended family members. The country has widespread access to maternal health care due to the mix of health care personnel with midwives supervised and supported by nurse-midwives and a smaller number of medical doctors. Hence, 97% of births are attended by clinically trained personnel (Padmanathan et al., 2003). Maternal mortality rates and infant mortality rates are low compared to other South Asian countries or countries with similar gross national product (UNDP, 2006). The population consists of 74% Sinhalese, 7% Sri Lankan Moors, 5% Indian Tamil, 4% Sri Lankan Tamil, and 10% unspecified.

This descriptive study was designed to explore the breastfeeding experiences of women in a culture where long-term breastfeeding is the norm. The study was conducted by the first author whilst she was involved in breastfeeding support work in Sri Lanka. Her personal and professional relationships with breastfeeding Sri Lankan women, informed by her own breastfeeding experience, allowed her to conduct interviews regarding factors that could promote or hinder breastfeeding in this particular setting. By talking with mothers and by observing mothers with babies and small children in different contexts, she developed an interest in exploring the effects of traditional beliefs and practices on the one hand, and modern Western ideas and recommendations on the other hand on patterning and duration of breastfeeding in Sri Lanka. Was the island, for instance, a 'breastfeeding paradise' where little or no further information was needed or was there a wide field for breastfeeding information and support to be explored? And what could be learned from Sri Lanka for the support and management of breastfeeding in the West? The aim of this paper is to shed light on the answers to these questions by exploring mothers' experiences of prolonged breastfeeding in Sri Lanka.

Methods

Samples were taken from the districts of Kandy and Kegalle, located in the so-called mid-hills in the central part of the country and, to broaden representation in the study sample, from several districts beyond this immediate area. In locations pre-selected for sampling, potential respondents were visited at or in front of their homes along a predetermined geographic route identified for the study.

The eligibility criteria established for participation were that the mother was present in person and that she had at least one child in the age group from 6 months until the 5th birthday (0.5-4 years). Because of the study's focus on prolonged breastfeeding, i.e. beyond 6 months postpartum, infants younger than 6 months were not considered. All mothers with appropriately aged children were eligible for participation in the study regardless of their breastfeeding status which was not ascertained at the time of recruitment.. When women were approached, the nature of the study was described and, if consistent with the selection criteria, they were asked for their willingness to participate in the survey. To avoid positive bias towards breastfeeding, it was explained to the respondents orally and on paper that the survey aimed to explore early childhood nutrition. In most cases, interviews were conducted directly, following verbal consent by the respondents, and took place between 10 a.m. and 6 p.m. During each interview, responses to questions and notes about important observations were directly recorded on paper, translated into English - where needed with the aid of a local lay translator. Interviews were conducted by three local women and the first author. To ensure reliability and consistency among the 4 interviewers, regular meetings were arranged to discuss methods and interpret the outcomes of the interviews. In some cases, following face-to-face exchange with the other interviewers, contextual details of interviews were added subsequently.

The interviews were semi-structured and comprised questions and subquestions regarding the state of early childhood nutrition and other factors influencing the practice and duration of breastfeeding. The questions solicited both qualitative and quantitative types of information. An overview of topics in the interview schedule is given in Annex 1.

Data from individual mothers were entered into a spreadsheet and analyzed in relation to the type of questions asked during the interview (qualitative or quantitative). Thematic analysis was employed for the analysis of qualitative responses (e.g. use of key words and phrases relating to particular themes discussed by women in response to certain questions). Where responses could be quantified frequencies and percentages were generated. Missing data were recorded as missing, and for any given variable the number of respondents was adjusted accordingly. The results of a few questions were omitted from the analysis because, in retrospect, they seemed irrelevant to the overall picture of breastfeeding and related practices, or because information was too scarce or difficult to interpret. The omitted questions referred to daily activities of mother and child/ren, estimated expenditures on medicines per child, duration of a 'normal' breastfeeding session, mother's motivation for employment outside of the house, and presence of paid domestic help.

Our study was not specifically designed to measure the completed breastfeeding duration, because this would have required retrospective questioning about children of a post-weaning age. Nevertheless, in our sample containing both breastfeeding and weaned children, we estimated the median completed breastfeeding duration from the available data. The respondents were grouped into four age categories as in Table 1. For each category, we calculated the percentage still breastfeeding and the average age of the child. This resulted in four data points which were plotted into a graph and connected by smooth lines using the chart function in Microsoft Excel. The age at which breastfeeding was 50% was determined visually from the graph.

A post hoc stratification was made of maternal working status (working versus non-working mothers) to test the effect of working status on breastfeeding and sleeping behavior. Work was defined as a paid job outside the house of at least 10 hours per week. Differences between independent sample means were analyzed using the t test; binary data were analyzed using the non-parametric Mann-Whitney test, employing the statistical package SPSS (2005).

Results

Characteristics of the sample

Sixty face-to-face interviews were conducted among Sri Lankan mothers during February and April 2002. Three of the interviewers had children under the age of 4 at the time of the survey. One of the local interviewers was a participant of a LLL breastfeeding support group lead by the first author. Thirty-two of the 60 women interviewed resided in peri-urban and rural areas in the districts of Kandy and Kegalle. The second half of the interviews were conducted in the dry zone district of Anuradhapura (13 interviews), Colombo District (6

interviews), the southern district of Galle (6 interviews), and the highland district of Nuwara Eliya (3 interviews).

Mothers participating in interviews ranged from 23 to 45 years in age (median 30 years). Parity was 1.6 children, or 1.2 children in the target age group of 0.5-4 years. Most respondents were of the Sinhalese ethnic group (52/60, 87%); some were Tamil (6/60, 10%) or other (2/60, 3%). While in most cases the father lived in the same house with the mother and child/ren (56/60, 93%), so did either the parents or one parent of the mother or father (31/60, 52%). In a small number of cases (4/60, 7%), the mother's or father's grandparents or one grandparent were recorded as part of the household. Other family members such as brother, sister, aunt or in-laws were recorded in almost one third of cases (17/60, 28%). Sometimes, 'other non-family' lived in the same house with the nuclear family (2/60, 3%). In one case, 5 other families were reported from the same house.

Forty-five per cent of families (26/58) lived in houses smaller than 30 m²; a value obtained through *a priori* estimation of the average house size around Kandy town at the time of the survey. Socio-economic status was not recorded.

Twenty mothers (20/60, 33%) with children in the age group 0.5-4 years had resumed paid work outside the house of at least 10 hours per week, and reported work in teaching (2), in a shop (5), in an office (5), as a nurse (3), or other work (5). Working mothers reported being away from their child/ren for an average of 6.9 hours per day on weekdays. There was no difference in age (*t* test, *P*=0.4, *df*=58), gender of the child (Mann-Whitney test, *P*=0.7) or house size (Mann-Whitney test, *P*=0.7) between working and non-working mothers.

The 60 respondents described their breastfeeding experience for their youngest child, which included two twin-pairs.

Patterning and duration of breastfeeding

All 60 mothers reported having breastfed their infants. The majority of infants in the sample were breastfed beyond the age of 1 year (Table 1). Seventy-eight per cent of mothers (47/60) with children of 0.5-4 years were breastfeeding at the time of the survey. However, children of 3-4 years were under-represented in the sample. The median completed breastfeeding age was 2.9 years. The youngest child not breastfeeding at the time of the survey was 8 months; the oldest breastfeeding child was 3.1 years. The highest reported weaning age was 3.5 years.

<Table 1 about here>

Sixty-three per cent of breastfeeding infants at the age of 0.5-1 year were breastfed more than 10 times per 24 hour period; for breastfed infants older than 1 year, this figure was 23%. Average night-time breastfeeding frequency was 4.8 times per night for infants of 0.5-1 year and declined gradually over the following years (Table 1). These figures include mothers who were not breastfeeding anymore at the time of the survey. There was no difference in the number of breastfeeding episodes between working and non-working mothers (*t* test, *P*=0.9; *df*=58). The median completed breastfeeding age for working mothers was 3.1 years.

Demand-feeding during the first 6 months of life, as opposed to scheduled feeding, was reported by the majority of non-working mothers (33/37, 89%), but was less prevalent in working mothers (9/18, 50%) (Mann-Whitney test, $P < 0.01$). In addition, 16% of all mothers reported cluster-feeding at any time of the day, i.e. frequent, short feeding bouts within a relatively short amount of time, followed by a longer stretch of sleep or non-feeding activity. One mother recalled that a passage from a magazine about breast milk quantity and feeding frequency had influenced the frequency with which she fed her child: “[...] *we cannot say that breast milk is not enough for the child, although we cannot see how much he/she drinks. And, if you can feed the baby you better feed them whenever they want*”.

The majority of breastfeeding mothers (34/46, 74%) favored mother-initiated weaning of their child. The remainder favored child-initiated weaning. Mothers reported that public health personnel had regularly recommended breastfeeding for at least 2 years or until the child “*doesn't accept the breast anymore*” – suggesting that the concept of self-weaning is acceptable in Sri Lanka. Encouragement from their doctor or nurse to breastfeed for at least 2 years featured prominently in what women considered to be the most appreciated advice they received on infant feeding, mentioned by 38% of mothers (19/50). Typical responses were: “*My doctor asked me to give breast milk to my child for 2 or 3 years*”; “*My midwife asked me to feed my child even 2 years*”; “*The midwife advised me to give breast milk for my baby 'til the day she does not accept the breast*”. Similar advice from respondents' own mothers was also highly valued: “*My mother said that it is better to feed the baby for another 2 years, because boys need more milk*”, as reported by a mother whose baby was around 2 years at the time of the interview, or “*My mother-in-law asked me to feed my children for 6 years, because they are boys*”, as reported by a mother of a twin who had begun supplementing with infant formula at 4 months on advice of her nurse.

In contrast, mothers did not appreciate advice that they felt undermined their breastfeeding efforts. Six mothers recalled advice from a neighbor, friend or cousin to introduce water early on into their babies' diets, for example: “*A friend of mine told me that I have to give warm water for my baby when he was 3 months old, otherwise breast milk will not be enough for him*”. Five further mothers ill-appreciated advice to introduce rehydrated commercial cow's milk powder, not intended for infants under 1 year, as reported in the following examples: “*One of my friends advised me to give Anchor milk powder for the baby when he was 3 months, because I started working [...]*”, and “*While I was feeding my child, when she was 4 months old, I didn't have enough milk, so one of my friends advised me to give Anchor milk powder at that time*”. Moreover, some mothers were advised to restrict or stop breastfeeding: “*My friend told me that we have to stop breastfeeding when the child is 6 months. After that, we have to give them other food*”, and “*Some people say to stop feeding from 5 months, because I have twins*”.

When mothers were asked about their breastfeeding relationship with their own mothers, the average recalled weaning age, excluding cases of early postpartum death, was 2.8 years ($n=43$) which is comparable to the current weaning age, as discussed above. A fifth of the mothers, however, reported that they were weaned at the age of 4 years or beyond: “*My*

mother has given me breast milk for 5 years. After I was introduced to other food, I also had my mother's milk, because it's very important". Three women recalled receiving breast milk until the age of 6 or 7 years: *"I have had my mother's milk until I was 7 years old. Soon after school, I come home and drink my mother's milk. Other than that, I had a balanced meal".* Such long breastfeeding periods were not reported for contemporary children.

Various factors shaping the experience of breastfeeding in Sri Lanka are explored in the following sections.

Birth

Sixty mothers reported on the birth of their youngest child in the target age group of 0.5-4 years. Of the reported births only one was a homebirth. The majority of births were reported as vaginal (47/60, 78%); in one case the mother received pain relieving medication and in 11 cases (18%) labor was induced with 'cynto', i.e. synthetic oxytocin. Twenty-two per cent of births were by cesarean section (13/60); three mothers reported having had consecutive cesarean sections. In one case, the birth was first induced with 'cynto', and the baby was subsequently delivered by forceps. Two pairs of twins were among the group of natural births, born full-term. Mothers and infants are normally discharged from hospital the next day following vaginal deliveries.

Reasons for cesarean sections in the target age group ranged from maternal choice, e.g. *"I asked the doctor to 'cesar' the baby"* to risk factors in the mother such as being overweight or maternal handicaps such as one slightly shorter leg. Where births were induced, labor was precipitated promptly 'on the exact due date' to one week after the due date.

Regardless of the birth experience, breastfeeding was initiated in all cases, and no mothers reported that their birth experience had a negative impact on breastfeeding experience or duration. Five mothers with cesarean birth experiences breastfed their children into their third year. The number of daily breastfeeding episodes was not significantly different between mothers with vaginal births and those with cesarean births (*t* test, $P=0.4$, $df=57$); the completed median breastfeeding duration was 2.9 years in both groups. This indicates that there was no clear effect of birth experience on the patterning and duration of breastfeeding.

Sleeping arrangement

Our limited observations suggest that bed-sharing of mother and healthy, full-term newborn during their hospital stay is a common practice in Sri Lanka. Moreover, all mothers reported sleeping in the same room with their infants upon returning home (Table 2). At the time of the interview, the vast majority of mothers slept together in the same bed with their children on a daily basis, regardless of whether they were still breastfeeding. Some families slept 'all on the floor', and some had an arrangement where the mother and the breastfeeding child slept in one section of the house/ room and the father or one grandparent slept with the other child/ren in another section. Only a few children in the target age group were reported as sleeping in the same room but in different beds, and none slept in a separate room from their mother. The data show no significant effect of the number of household members (*t* test,

P=0.1, df=58) or house size (Mann-Whitney test, P=0.7) on mother-child bed-sharing, suggesting that there were reasons for co-sleeping beyond practical necessity due to limited space.

All children who had not been weaned were allowed breastfeeding at night, with one mother recalling advice from a television program that she particularly appreciated concerning the importance of night-feedings: “... a doctor said that it’s better if we can feed our babies during the night, because when we are feeding at night, our body supplies more milk for the next day”. There was no significant effect of bed-sharing as opposed to sleeping in the same room but in different beds on current breastfeeding (Mann-Whitney test, P=0.9) or on the number of night-time breastfeeding episodes (*t* test, P=0.4, df=57). However, there were only 7 mothers who reported that their child slept in the same room but not in the same bed, and thus further data are required on the relationship between co-sleeping and breastfeeding in the Sri Lankan context.

<Table 2 about here>

Introduction of additional foods

The majority of mothers (37/60, 62%) introduced additional foods to their infants by the age of 4 months (Figure 1), which is in accordance with the national recommendation of exclusive breastfeeding for 4 months [Ministry of Finance and Planning, 2005] but at odds with the WHO recommendation of exclusive breastfeeding for 6 months. Few mothers introduced additional foods in the 6th or 7th month (2/60, 3%). The average age at introduction of additional foods did not depend on the employment status of the mother (*t* test, P=0.2, df=58). The most common first foods and liquids were squeezed fruits such as papaya, lime or orange and, less commonly, banana, followed by vegetable soup, red rice porridge and red rice water.

<Figure 1 about here>

Mothers were asked which factors supported or opposed the onset and speed of introduction of additional foods. The two highest ranking factors in support of additional foods were ‘doctor’s recommendation’ and ‘fear of malnutrition’; these were followed by ‘return to work’, ‘tired of breastfeeding’ and finally ‘pregnant again’ (Table 3). Even in half of the working mothers, the fear related to malnutrition in the child was reported as a more important reason for the introduction and steady progression of additional foods at 4 months than the fact that they had to return to work. Main factors opposing a steady progression of additional foods were that the baby ‘liked breast milk best’ and that the mother herself ‘liked breastfeeding’; other factors were ‘doctor’s support’, ‘family’s support’ and the fact that the baby ‘can’t be pushed’ to eat.

<Table 3 about here>

Bottles and pacifiers

Daily bottle use for children in the target age group was reported by 62% (21/34) of non-working mothers and by 78% (14/18) of working mothers. Thus, the bottle was rather common in this sample; we did not obtain data on the age at which mothers introduced bottles to their infants. Within the target age-group eleven per cent (6/54) of all mothers offered a bottle sometimes and 22% (12/54) never offered a bottle. Daily use of bottles did not significantly affect night-time breastfeeding frequency (t test, $P=0.5$, $df=50$). Most common liquids offered from a bottle were rehydrated commercial cow's milk powder, followed by water and fruit juice (Table 4). More working mothers fed their infants rehydrated commercial cow's milk powder from a bottle compared to non-working mothers. Water from a bottle was given less frequently by working mothers than by non-working mothers.

<Table 4 about here>

Pacifier use was relatively uncommon in this sample (10/47, 21%) and was most prevalent among working mothers. One mother from Kandy who worked as a maid for a foreign, Western family used pacifiers for her children in the mornings and evenings as well as bottles with rehydrated commercial cow's milk powder. She fed them 'bread with butter' after work. Apart from such obvious examples of Western influenced child raising styles, pacifier use is still rare in Sri Lanka and often discouraged by public health personnel. One reason mentioned was the belief that pacifiers decrease the intelligence in the child.

Breastfeeding during pregnancy

Of 35 mothers with at least 2 children encountered in this survey, the average inter-birth interval was 3.4 years. This corresponds with the recorded 1.2 children of 0.5-4 years per mother. Most mothers had terminated breastfeeding before pregnancy or during early pregnancy. A mother of 2 reported: "*When I was feeding my eldest daughter (she was 1 year at that time), I was expecting my second baby (son), so it was so difficult for me. When I was 4 months pregnant, the doctor asked me to stop feeding otherwise it's not good for my health. When I go to bed, my daughter comes and asks for milk*". Another mother reported: "*When my son was 2 years, I was expecting my daughter. At that time, I was feeding my son. It was so difficult to stop feeding him. The doctor asked me to stop and give Anchor milk powder*". Six mothers, however, breastfed into their next pregnancy, mostly against the advice of their doctor. One mother tandem-nursed 12 months after the birth of her second child at the time of interview; in this case the mother had received positive feedback from her doctor. Tandem nursing refers to breastfeeding a new baby while continuing to breastfeed an older child, usually a toddler.

Maternal reflections on their breastfeeding experiences

The majority of mothers singled out their inner motivation as the most important factor that facilitated the process of breastfeeding in their respective situation. The second important factor was the support from husband, family or friends. The most commonly cited factors

counteracting breastfeeding were based on the perception that other food is as good as or better than breast milk for the child's health and development and that exclusive breastfeeding beyond the first 4 months of life causes malnutrition in the child.

Nine mothers reflected upon the emotional effects of breastfeeding, commenting "*breastfeeding make very close mother and child*"; [it is] "*good to give milk with a peaceful mind*"; and advising other mothers, "*do not get emotional when breastfeeding gets tough*". A less positive emotion was attributed by a working mother from Colombo who felt obligated to breastfeed: "*you have to do it no matter what the circumstances are*".

Discussion

Our results from Sri Lanka support the anthropological view that prolonged breastfeeding is the biological norm (Dettwyler, 1995). The median completed breastfeeding duration of 2.9 years was substantially longer than in Western societies. The breastfeeding relationship between Sri Lankan mothers and their children showed remarkable resilience to counteracting factors which have been offered as explanations for the early termination of breastfeeding in Western societies.

One factor undermining the mother's confidence in breastfeeding was the general recommendation by health care personnel to introduce additional foods at 4 months, and unsound advice of friends and neighbors on the superiority of water, commercial cow's milk powder or fruits and rice to the health and development of the growing infant. Moreover, the premature introduction of additional foods increases the risk of gastro-intestinal diseases and diarrhea where clean drinking water is not readily available and where the tropical climate furthers water-borne diseases and bacterial contamination of food stuffs. Despite the early introduction of additional foods, however, the majority of mothers in this sample persisted with non-exclusive breastfeeding for 2 or more years.

The use of bottles and, to a lesser extent, pacifiers was common in this sample. These devices are known to play a role as replacement methods for breastfeeding by increasing separation between mother and infant, although the causality in the case of the pacifier is still debated (Howard et al., 2003; Adair, 2003). Nevertheless, bottles and pacifiers did not prevent prolonged breastfeeding in the Sri Lankan context. Near full-time paid jobs away from home reduced contact between working mothers and their children during the daytime, and demand-feeding was less common in working as compared to non-working mothers. Work did not, however, affect night-time breastfeeding or overall duration of breastfeeding. This is at odds with Western societies where full-time work has been shown to negatively affect infant breastfeeding (Fein & Roe, 1998). Breastfeeding during a pregnancy and consecutive tandem nursing of 2 children was rare, and it was also opposed by health care personnel on the assumption that breastfeeding puts too much strain on the maternal body. The effect of breastfeeding being terminated upon a next pregnancy is aggravated by the limited period of exclusive breastfeeding, as a result of which women may be able to conceive sooner, thus reducing the overall duration of breastfeeding. Most mothers who reported that they were still

breastfeeding at the onset of their next pregnancy had heartbreaking memories of the termination of breastfeeding upon the advice of their doctor. However, breastfeeding during pregnancy is generally considered to pose no health risks for mother and unborn child, if the pregnancy is normal and the mother healthy. Moreover, continuing breastfeeding the older child after delivery, called tandem nursing, helps to prevent abrupt change for the older child which could lead to psychological trauma (Academy of American Family Physicians, 2007; Flower, 2007). Birth interventions such as cesarean sections potentially affect breastfeeding, but did not influence the patterning and prolonged duration of breastfeeding in this sample.

Various factors in support of prolonged breastfeeding in Sri Lanka were evident in our study. Support of breastfeeding by health care personnel began, intentionally or not, with routine rooming-in or, more accurately, bed-sharing at the time of birth in the hospital. This practice benefits the mother-child relationship, the onset of milk production and the continuation of breastfeeding after release from the hospital and beyond (Ball et al., 2006; Ball & Ward Platt, 2007).

The concept of prolonged breastfeeding is culturally acceptable in Sri Lanka. The doctor's or nurse's direct advice was to breastfeed for 2 years or "until the child does not accept the breast anymore". This advice was apparently consistent with the cultural norm and was reported as much appreciated by mothers.

Mother-child co-sleeping in the same bed or next to each other on the floor, even after weaning, was the norm in our study sample at least until the child was 4 years old, and was practiced by working and non-working mothers alike. A mutually reinforcing relationship between bed-sharing and prolonged breastfeeding is plausible as breastfeeding was common and frequent during the night. More work is needed to underpin this relationship.

A common dismissal of lessons drawn from cross-country comparisons is that contextual differences between cultures prevent a meaningful extrapolation of certain practices from one culture to another. Our study, however, suggests that Sri Lankan mothers are confronted with similar factors counteracting breastfeeding as mothers in Western societies; these factors include near full-time work, introduction of additional foods from 3-4 months onwards, and the use of bottles and pacifiers. Despite these challenges, the majority of mothers and children in our sample managed to sustain a prolonged breastfeeding relationship. The supporting factors acted in two ways: through reinforcement of the notion among mothers that prolonged breastfeeding is the norm and through the cultural practice of bed-sharing which fosters mother-child sleep contact and facilitates frequent night-time breastfeeding from birth and during the first years of life. Both the normative aspect and the practice of bed-sharing differ from Western societies where cultural norms prescribe independent infant sleep and where sleeping-through-the-night is generally considered an indicator of both infant development and parental competence (Ford, 2002; Rowe, 2003). We propose that bed-sharing and associated mother-child sleep contact and night-time breastfeeding in the Sri Lankan context prevents premature weaning and thus protects the breastfeeding relationship in spite of challenging conditions faced during the daytime.

Sleep laboratory studies support the assumption that co-sleeping contributes to the practice and overall duration of breastfeeding, showing that “bed-sharing, instead of sleeping in separate rooms, almost doubled the number of breastfeeding episodes and tripled the total nightly duration of breast-feeding” (McKenna et al., 1997). Co-sleeping mothers and infants have demonstrated synchrony in their sleep patterns, facilitating simultaneous arousals and frequent bouts of breastfeeding (McKenna et al., 1997; Mosko et al., 1997; Ball & Ward Platt, 2007). By sharing sleep, the infant’s basic need for physical closeness and frequent, short feeding episodes is optimally met while the mother gets more rest.

Parental lifestyles and sleeping environments may introduce risks to bed-sharing infants and, hence, safety guidelines have been developed in various countries to promote safe infant sleep. These guidelines apply to both the risks of SIDS and accidental infant deaths. It has been shown that long, uninterrupted stretches of deep sleep are associated with key SIDS risk factors such as prone sleep and exposure to maternal smoking (Horne et al., 2002, 2004). However, babies who nurse and share sleep with their mothers normally sleep in the supine position and experience frequent brief arousals, reducing the risk of SIDS (Blair et al., 2006). Moreover, bed-sharing mothers sleep facing their newborn and young baby with their body in a protective position, frequently checking on the condition of their baby, thereby reducing the risk of suffocation (Ball, 2006).

In Sri Lankan society, an educational approach to breastfeeding rather than receiving instructions about when to do what could help mothers and children enjoy more of their breastfeeding relationship (La Leche League International, 2007). Hence, mothers learn to adjust their child rearing decisions to their individual child’s cues in a changing environment where modern lifestyle and accompanying health care recommendations may conflict with established norms and customs.

In addition, evidence-based recommendations by health services are needed on the continuation of breastfeeding during a subsequent pregnancy. It is important for mothers to know that breastfeeding does not need to be supplemented or replaced before the age of 6 months, and that foods or liquids offered during the first year of life are an addition to breastfeeding, not a substitute.

Breastfeeding promotion efforts in the West have concentrated on encouraging women to initiate breastfeeding. In addition, however, women need to be educated about the benefits and determinants of prolonged breastfeeding. Our study highlights the potential value of bed-sharing for sustaining the breastfeeding relationship. The Western preoccupation with fostering long, uninterrupted and independent infant sleep from an early age and thus restricting breastfeeding to a daytime activity has undermined breastfeeding duration to an extent that is, as yet, insufficiently recognized by the majority of breastfeeding promotion specialists (Ball & Ward Platt, 2007).

Conclusions

Sri Lankan mothers in our sample were confronted with several factors opposing breastfeeding, including near full-time work, the introduction of additional foods from as early as 3-4 months onwards, and the use of bottles and pacifiers. These counteracting factors were, however, not a death-knell for the breastfeeding relationship which lasted for a median of 2.9 years. Factors in support of prolonged breastfeeding were public health recommendations and cultural acceptance. Moreover, the common practice of bed-sharing and associated night-time breastfeeding, by working and non-working mothers alike, ensured close physical contact and enabled sustained lactation. The value of bed-sharing and associated night-time breastfeeding deserves more attention within breastfeeding promotion efforts in the West where breastfeeding is chiefly seen as a daytime activity when it is most vulnerable to adverse external influences. Our study furthermore identified the need for extending the period of exclusive breastfeeding and reassessing advice on breastfeeding during a subsequent pregnancy in Sri Lanka.

Competing interests

None declared.

Authors' contributions

MJB conceived of the study, coordinated the data collection and analysis, and drafted and revised the manuscript. HLB helped to draft the manuscript and contributed to its revision. Both authors read and approved the final manuscript.

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References

- Adair, S.M. (2003) Pacifier use in children: a review of recent literature. **Pediatric Dentistry**, **25**: 449-458.
- American Academy of Pediatrics (1997) Work group in breastfeeding: breastfeeding and the use of human milk. **Pediatrics**, **100**: 1035-1039.
- American Academy of Family Physicians (2007) **Breastfeeding (Position Paper)**. <http://www.aafp.org/x6633.xml>. Accessed 26 March 2007.
- Ball, H.L., Ward Platt, M.P., Heslop, E., Leech, S.J. and Brown, K.A. (2006) Randomised trial of mother-infant sleep proximity on the post-natal ward. **Archives of Disease in Childhood**, **91**: 1005-1010.

- Ball, H.L. (2006) Parent-infant bed-sharing behavior: effects of feeding type, and presence of father. **Human Nature**, **17**: 301-308.
- Ball, H.L. and Ward Platt, M.P. (2007) Evolutionary intervention on the post-natal ward: a test of mother-infant proximity. **Evolutionary Anthropology** (accepted).
- Blair, P.S., Sidebotham P., Berry, P.J., Evans, M and Fleming, P.J. (2006) Major epidemiological changes in sudden infant death syndrome: a 20-year population-based study in the UK. **Lancet**, **367**: 314-319.
- Cadwell, C.M. (2002) Defining breastfeeding in research. In Cadwell, K. (ed), *Reclaiming Breastfeeding for the United States: Protection, Promotion, and Support*, pp. 81-89. Jones & Bartlett, Sudbury, Massachusetts.
- ((Der G., Batty, G.D. and Deary, I.J. (2006) *Effect of breast feeding on intelligence in children: prospective study, sibling pairs analysis, and meta-analysis*. **British Medical Journal**, **333**: 945-948.))
- Dettwyler, K.A. (1995) A time to wean: the hominid blueprint for the natural age of weaning in modern human populations. In Stuart-McAdam, P. & Dettwyler, K.M. (eds), **Breastfeeding: Bio-cultural Perspectives**, pp. 39-73. Aldine De Gruyter, New York.
- Deutsche Gesellschaft für Ernährung e.V. (2000) **Ernährungsbericht 2000**. Deutsche Gesellschaft für Ernährung e.V., Frankfurt am Main.
- Fein, S.B. and Roe, B. (1998) The effect of work status on initiation and duration of breast-feeding. **American Journal of Public Health**, **88**: 1042-1046.
- Flower, H. D. (2007) **A New Look at the Safety of Breastfeeding during Pregnancy**. <http://www.pregnancy.org/article.php?sid=3035>. Accessed 26 March 2007.
- Ford, G. (2002) **The New Contented Little Baby Book: the Secret to Calm and Confident Parenting**. Mackays of Chatham, Chatham, UK.
- Hamlyn, B., Brooker, S., Oleinikova, K. and Wands, S. (2002) **Infant Feeding 2000**. The Stationary Office, Department of Health, London.
- Horne, R.S.C., Franco, P., Adamson, T.M., Groswasser, J. and Kahn, A. (2002) Effects of body position on sleep and arousal characteristics in infants. **Early Human Development**, **69**: 25-33.
- Horne, R.S.C., Franco, P., Adamson, T.M., Groswasser, J. and Kahn, A. (2004) Influences of maternal cigarette smoking on infant arousability. **Early Human Development**, **79**: 49-58.
- Howard, C.R., Howard, F.M., Lanphear, B., Eberly, S., deBlieck, E.A., Oakes, D. and Lawrence, R.A. (2003) Randomized clinical trial of pacifier use and bottle-feeding or cupfeeding and their effect on breastfeeding. **Pediatrics**, **111**: 511-518.
- Jaspan, H.B., Lawn, S.D., Safrit, J.T. and Bekker, L.G. (2006) The maturing immune system: implications for development and testing HIV-1 vaccines for children and adolescents. **AIDS**, **20**: 483-494.
- La Leche League International (2007) **La Leche League's Mission**. <http://www.lalecheleague.org/mission.html>. Accessed 22 January 2007.
- Léon-Cava, N., Lutter, C., Ross, J. and Martin, L. (2002) **Quantifying the Benefits of Breastfeeding: a Summary of the Evidence**. PAHO Document HPN/66/2. Pan American Health Organization, Washington DC.
- Li, R., Darling, N., Maurice, E., Barker, L. and Grummer-Strawn, L.M. (2005) Breastfeeding rates in the United States by characteristics of the child, mother, or family: the 2002 national immunization survey. **Pediatrics**, **115**: e31-e37.
- McKenna, J.J., Mosko, S.S. and Richard, C.A. (1997) Bedsharing promotes breast-feeding. **Pediatrics**, **100**: 214-219.

- Ministry of Finance and Planning (2005) **Sri Lanka, New Development Strategy. Framework for Economic Growth and Poverty Reduction.** Ministry of Finance and Planning, Colombo.
- Mortensen, E.L., Michaelsen, K.F., Sanders, S.A. and Reinisch, J.M. (2002) The association between duration of breastfeeding and adult intelligence. **Journal of the American Medical Association, 287:** 2365-2371.
- Mosko, S., Richard C. and McKenna, J. (1997) Infant arousals during mother-infant bed sharing: implications for infant sleep and sudden infant death syndrome research. **Pediatrics, 100:** 841-849.
- Padmanathan, I., Liljestrand, J., Martins, J.M., Rajapaksa, L.C., Lissner, C., Silva, A., Selvaraju, S. and Singh, P.J. (2003) **Investing in Maternal Health: Learning from Malaysia and Sri Lanka.** The World Bank, Washington DC.
- Perera, B.J.C., Ganesan, S., Jayarasa, J. and Ranaweera, S. (1999) The impact of breastfeeding practices on respiratory and diarrhoeal disease in infancy: a study from Sri Lanka. **Journal of Tropical Pediatrics, 45:** 115-118.
- Rowe, J. (2003) A room of their own: the social landscape of infant sleep. **Nursing Inquiry, 10:** 184-192.
- SPSS (2005) SPSS 14.0 for Windows. SPSS Inc., Chicago, USA.
- UNDP (2006) **Asia-Pacific Human Development Report 2006.** UNDP Regional Centre, Colombo, Sri Lanka.
- UNICEF (2006) **Statistics, Sri Lanka.**
http://www.unicef.org/infobycountry/sri_lanka_sri_lanka_statistics.html. Accessed 31 December 2006.
- WHO (1998) **Evidence for the Ten Steps to Successful Breastfeeding.** World Health Organization, Geneva.

Tables

Table 1: Breastfeeding and night-time nursing

Number and percentage of mothers reported breastfeeding their youngest child and average night-time nursing frequency at the time of the survey, stratified by age.

Age of child	n	Number (%) breastfeeding	Night-time nursing frequency
0.5-1 year	17	16 (94%)	4.8
1-2 year	20	17 (85%)	2.6
2-3 year	17	13 (76%)	2.4
3-4 year	6	1 (17%)	0.3

Table 2: Sleeping arrangement of youngest child in relation to the mother

Sleeping arrangement	Households (n=60)
Same room	60 (100%)
Same room and same bed	49 (82%)
Same room but different beds	7 (12%)

Table 3: Factors supporting and opposing the onset and speed of introduction of additional foods

The relative importance of supporting or opposing factors ranked by mothers as an average score from 1 ('not important') to 5 ('very important').

<i>Supporting factors</i>	<i>Score</i>	<i>Opposing factors</i>	<i>Score</i>
Doctor's recommendation	4.0	Baby likes breast milk best	3.8
Fear of malnutrition	3.6	I like breastfeeding	3.2
Return to work	1.9	Doctor's support	2.3
Tired of breastfeeding	1.7	Family's support	2.0
Pregnant again	1.0	Baby can't be pushed	1.8

Table 4: Use of bottles and pacifiers in non-working and working mothers

Variable	Non-working	n	Working	n	P*
Bottle use:					
a. Anchor/Nestle cow's milk powder	39%	28	73%	15	P < 0.04
b. Water	64%	28	13%	15	P < 0.01
c. Fruit juice	46%	28	20%	15	n.s.
d. Lactogen/SMA powdered infant formula	11%	28	20%	15	n.s.
Pacifier use	10%	31	50%	16	P < 0.01

* Mann-Whitney test

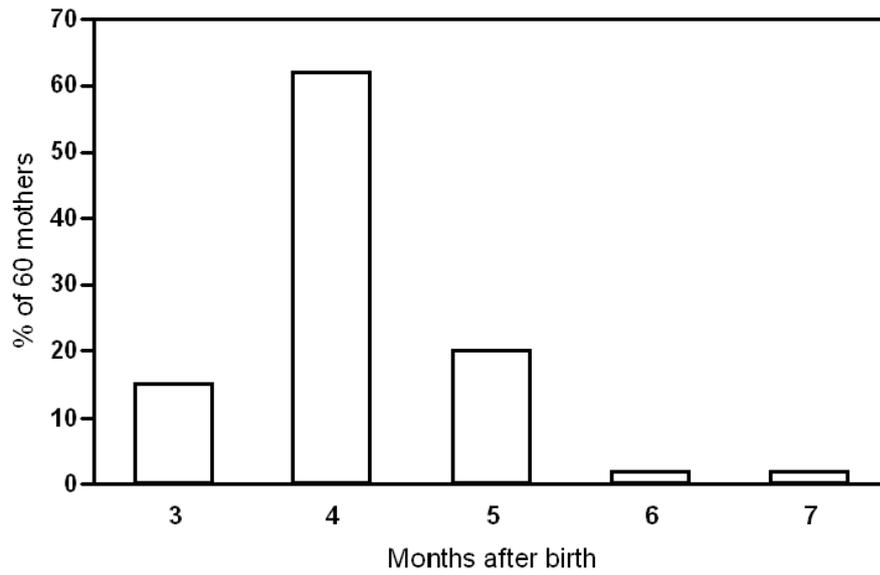


Figure 1
Babies' age at introduction of additional foods

Annex 1: Overview of topics in the interview schedule, in sequential order

- 1 Household members
 - 2 Location of birth
 - 3 Type and conditions of birth
 - 4 Experience of birth
 - 5 Age at which other foods were offered on a daily basis; how many times per day? Kind of foods
 - 6 Breastfeeding ongoing or stopped
 - 7 Reasons why a steady progression of food other than breast milk was important (priority ranking 1-5)
 - 8 Reasons why a steady progression of food other than breast milk was NOT important (priority ranking 1-5)
 - 9 Picked up work outside the house; number of hours away from the child/-ren; kind of work; reasons for picking up work
 - 10 Type of food offered upon coming home
 - 11 Use of bottles; types of food
 - 12 Use of pacifier
 - 13 Breastfeeding pattern during first six months
 - 14 Sleeping arrangement
 - 15 Breastfeeding at night; frequency
 - 16 Monthly expenditure on medicines for the child
 - 17 Activities engaged in with child/-ren (multiple-choice)
 - 18 Decision to nurse the child
 - 19 Experience with nursing during pregnancy and tandem nursing; received feedback
 - 20 Nursing frequency in 24 hours (< 10 times, > 10 times)
 - 21 Description of breastfeeding episode; average duration
 - 22 Breast problems associated with breastfeeding; how problems were dealt with
 - 23 House size (< 30 m²; > 30 m²)
 - 24 Paid helpers in the house (no; few times a week; daily)
 - 25 Plan for weaning or actual weaning of child/-ren (mother- or child-initiated)
 - 26 Sources of breastfeeding information
 - 27 Factors supporting and opposing breastfeeding (multiple-choice)
 - 28 Most satisfying and most dissatisfying breastfeeding advice
 - 29 Breastfeeding of mother in her own childhood
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