RESEARCH AND SCIENTIFIC ARTICLES

Making optimal use of breastfeeding for birth spacing: planning for action within the health sector*

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PREFACE

In an industrialized country, a health worker is responsible for doing his or her best to help patients, and more important from a legal standpoint, to avoid making mistakes. For example, in making a diagnosis, much time and money often is spent in ruling out rather rare diseases.

However, in a setting where resources are limited and where health workers' time per patient may be extremely short, the goal must be radically different: to do the most good for the most people. The achievement of many fairly good diagnoses must take precedence over the achievement of only a few very good diagnoses.

Breastfeeding counselors who are not under severe time and resource constraints, or who work in communities where near perfection is demanded, may be justified in spending a great deal of extra time achieving relatively small reductions in the "failure rate" of even the most intensive breastfeeding. In an industrialized setting, most women who want to use breastfeeding to space their babies will be willing and able to use complementary family planning methods--at the very least, other "natural" methods. Breastfeeding counselors should familiarize themselves with these methods, for some require training before they can be used effectively.

In industrialized countries, perhaps the greatest advocacy need in the field of breastfeeding and fertility is to convince the natural family planning movement to give breast-

* A report originally prepared for the WHO Inter-regional workshop on breastfeeding and fertility, Mauritius, October 21-25, 1985, whose concern was breastfeeding and fertility in developing countries.

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feeding its due. Often breastfeeding anovulation is completely ignored simply because it fails to fit into the rigid definition of "natural" family planning based upon periodic abstinence!

DISCUSSION

It is ironic that the contraceptive method considered to be responsible for "preventing" more births than all other methods combined in developing countries¹⁶ is the one most maligned by health and family planning programmes regarding its use by individual women. The universal message seems to be: "You must not rely on breastfeeding alone to delay your next pregnancy."

I am advocating a simple but revolutionary change. Breastfeeding should be included among the list of contraceptives available for use for birth spacing. As with any other contraceptive, the advantages and difficulties of using it should be discussed. Proper methods of using breastfeeding for birth spacing should be explained in detail to those who plan to rely on it for this purpose.

Recent research shows that when practiced in a specific way, sometimes referred to as "biologically" or "naturally", breastfeeding suffers from no higher failure rate than many other fully accepted and widely used contraceptives, especially in a rural Third World setting. Additionally, in many countries, a large proportion of the population will use no so-called modern contraceptive method. As the practice of bottle-feeding spreads in such societies, fertility will increase, birth spacing will decrease, and infant and young child mortality rates will stagnate or even increase.

Illustrative data are provided from the Yemen Arab Republic. The National Nutrition Survey in 1979²⁰ showed that even in its isolated largely mountainous rural areas bottle-feeding was becoming universal. The World Fertility Survey, carried out in Yemen in 1979, found that only about 1% of rural couples used any type of modern contraception.¹⁹ In a country with extremely high rates of illiteracy, especially among women, where water is rarely available and sanitation is primitive, the result is a public health catastrophe (see Table 4).

In Yemen, the effective use of breastfeeding for birth spa-

cing deserves priority ahead of nearly all other public health measures. Everywhere it deserves more attention. The rest of this paper explains in greater detail why and how this can be achieved by providing a step-by-step summary of an approach for planning action at the national level in developing countries.

STEP 1: GATHER AND ORGANIZE INTO A PRESENTABLE FORM RESULTS OF UP-TO-DATE RESEARCH ON THE EFFECTIVENESS OF BREASTFEEDING FOR BIRTH SPACING.

In the past research was greatly lacking, but new information is rapidly emerging. What is sometimes called "biological" or "natural" breastfeeding leads to one to two years of infertility.¹⁵ For most women, the postpartum return of menstruation is a signal that the contraceptive effect of breastfeeding is no longer reliable.

In about 2-8% of such women, pregnancy will occur before menstruation resumes.¹⁷ As a result, many authorities discourage relying upon breastfeeding for birth spacing. But at least four reasons can be given for taking a more positive view:

(1) When lactation amenorrhoea lasts for one year, its failure rate will be 2-8%, a percentage which will drop when amenorrhoea lasts longer. This makes breastfeeding comparable in effectiveness to many commonly used contraceptive methods.¹⁷

(2) This failure rate can be reduced by combining breastfeeding with other contraceptive or "natural" family planning methods, such as observing changes in body temperature or cervical mucus associated with ovulation.¹²

(3) If a mother wants to use a modern contraceptive, it may be advantageous to delay initiating its use until the postpartum time when 25-50% of women in her area begin to menstruate.¹⁸ This will often increase birth spaces, especially where women at an early stage tend to stop using contraceptives effectively. In rural Bangladesh, women discontinued using oral contraceptives after seven months on average and had shorter birth intervals than matched non-acceptors.²

(4) Many women will use no other method. Rather than being warned of its effectiveness, they should be encouraged and

taught how to optimize the effectiveness of breastfeeding for spacing babies.

STEP 2: PUT TOGETHER A COHERENT EXPLANATION OF HOW THE BIRTH-SPACING EFFECT OF BREASTFEEDING CAN BE OPTIMIZED, ADAPTING THIS TO LOCAL CONDITIONS.

In this area, research is inadequate, but important new findings are beginning to emerge. Part I of Table 1 lists the factors which may have a direct effect on the duration of lactation amenorrhoea. Several of these factors have seemed to be important in the few relevant research reports available to date^{10, 9, 13} but it is not possible to list them according to the power of their effects. It is likely that if one or more interbout intervals is too long (e.g. if the baby receives no night feeds or none during an entire workday), the effect is likely to be a reduction in duration of lactation amenorrhoea. Research to date on the impact of various levels and types of maternal malnutrition on lactation amenorrhoea is conflicting.^{3, 14} Yet it is possible to rule this out as a determining factor because clearly well-nourished women do achieve very long periods of lactation amenorrhoea when they practise "biological" breastfeeding.^{8, 11, 12}

Part II of Table 1 lists some of the variables likely to exert an indirect effect through the variables listed in Part I. Clearly of critical importance is the introduction of supplemental fluids and semisolids--when, how, and how much. In a research context, methods of measuring these variables tend to be rather crude. A distinction needs to be made, for example, between the age when supplements were first introduced and the age by which they were being given regularly in substantive quantities.

Other factors can in turn effect these elements. For example, the intensity of mother-infant contact is influenced by changing fashions in child carrying: use of strollers and baby carriages reduces mother-infant contact.⁷ And, the timing of supplementation and the quantity given are influenced by socioeconomic and cultural factors⁴ as well as infant-food marketing practices.⁵

Nevertheless, attention to culturally appropriate practices which recognize the factors listed in Part II of Table 1, can optimize the birth spacing effect of breastfeeding. The

following is a message based on these factors that might be useful in the Yemeni context.

"Breastfeeding will usually work quite well to delay your next pregnancy, but you must give your baby the breast as often as possible, anytime he wants it. Also, you must wait as long as you can up to age 4-6 months before introducing any supplementary food to your baby. If possible, this should be fed with a spoon, not a bottle, and quantities fed should be increased only gradually. If you must bottle-feed, use it as little as possible. If you want to begin spending longer periods of time away from your baby during the day-time before he is old enough to take supplemental food by spoon, this may result in a rather rapid return of ovulation unless you take special precautions. In particular, if you

Table 1. Major variables likely to have a direct or indirect effect on the duration of lactation amenorrhoea

I. Direct effects

- sucking time per bout
- sucking time per day
- sucking intensity
- sucking frequency
- average interbout length of time
- longest interbout period
- mother's nutritional status
- mother's age

II. Indirect effects

- baby's age at introduction of supplements
 - duration of breastfeeding
 - quantity of supplements introduced
 - method of feeding (spoon or bottle)
 - use of pacifier (dummy)
 - demand vs. scheduled feeding
 - intensity and duration of mother-infant contact
 - night feeding (sleeping with baby)
 - maternal dietary supplementation
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sleep with your baby, you can gradually increase the amount

of time you are away from him during the day and he will suck more often at night. This will minimize the amount of breast milk substitute he will need. If this change is gradual, your sleep will not be greatly disturbed. Once your menstruation returns, breastfeeding alone will no longer give you much protection from another pregnancy, so it is best to combine it with another method of birth spacing. But it is best not to use the pill during at least the early months of breastfeeding."

Such a message is appropriate only at a public health level. At the individual family level, more precision is required for such messages to be appropriate and effective. Even here, some general guidance for counselors can be offered by the two-step approach summarized in Table 2. Four categories of families are listed, each of which has important implications for the type of counseling required if optimum birth spacing is to be achieved. Too often, family planning services are oriented toward meeting the needs of only one or two of these groups (d and possibly c). It is especially unfortunate that the existence of group b is often ignored, because the needs of this group then remain unmet. In many countries a sizeable number of families may be interested in birth spacing or can readily be convinced of its importance even if they are unwilling to use modern contraceptives. They may be highly motivated to use breastfeeding to space babies, only requiring some guidance from health or family planning workers in how to do so more effectively.

A counseling issue that deserves extra clarification relates to how the weaning process should proceed. It is widely agreed that the term "weaning" refers to the process of accustoming an infant to semi-solid food in place of an all-milk diet. But it is rarely appreciated that weaning is really a two-step process, as illustrated schematically in Figure 1. Step 1 is required when the infant's nutritional needs begin to exceed the mother's ability to produce milk. This stage is often reached at a level of milk production influenced by psychological factors, feeding practices, and her current health and nutritional status. Prolonging lactation amenorrhoea involves a number of measures commonly employed by breastfeeding counselors to ensure optimum breast milk production in the early months, thus extending the period of exclusive breastfeeding as long as possible.

Table 2. Counseling Families regarding Breastfeeding and Birth Spacing

1. DETERMINE UNDER WHICH OF THE GROUPS THE FAMILIES FALL

a - Not interested in birth spacing	b - Interested in birth spacing, but not in contraception	c - Interested in contraception, but not using it	d - Using modern contraceptive method

2. COUNSEL FAMILY ACCORDINGLY

a - Dangers of close birth spacing for mother and child health	b - How to use breast-feeding effectively to space babies	c - Determine past and planned infant feeding pattern	d - Advise on breast-feeding for child health and survival
- Economic burden and maternal time constraints caused by several young children	- Complementary measures: determining return of ovulation	- Advise regarding breastfeeding for birth spacing	- Need to delay oral contraceptive
		- Advise when contraceptive is likely to be needed	- Advise when to initiate contraception among breast-feeding mothers: at menses or at time when 25-50% of women resume it
		- Advise on other options available	

Once supplementation begins, the goal becomes maintaining breast milk production at as high a level as possible, while adding only enough supplemental food to ensure that all the infant's increasing nutritional needs are met.

Step 2 involves the gradual replacement of breast milk with other foods with the goal of gradually but completely replacing breast milk with other foods. As long as the amount of supplemental food is increased during Step 1 in tandem with the infant's increasing nutritional needs, there are no nutritional grounds for setting a deadline for the beginning or ending of Step 2, although it is important that such weaning proceed gradually. Delaying the start of Step 2 and slowing its progress may extend the period of lactation amenorrhoea.

To determine when Step 1 of weaning needs to begin, note when the infant's growth seems to be faltering, i.e. when the rate of growth falls substantially below the standard.

However, it is difficult if not impossible to know when the quantity of supplemental food given is so great as to cause a decrease in breast milk production i.e., when one has moved immediately into Step 2 of weaning. The mother should be counseled to add supplements gradually and only to the minimum extent necessary to achieve an optimal infant growth rate.

STEP 3: DETERMINE LOCAL KNOWLEDGE, ATTITUDES, AND PRACTICES RELATED TO BREASTFEEDING, TO BIRTH SPACING, AND TO THE INTENTIONAL USE OF BREASTFEEDING TO SPACE BIRTHS.

In most countries it may be possible to obtain a substantial amount of relevant information from published and locally available unpublished sources. Additional studies often of a more in-depth qualitative nature may be desirable. Insights are needed into beliefs, attitudes, and deeper reasons for practices related to contraception and to breastfeeding, some of which can be sensitive and personal, and not easily revealed to strangers. But the danger of continually putting off action because of lack of research must be avoided.

Data on both modern and traditional supplementation or weaning practices are important because such practices have a powerful influence on how effectively breastfeeding will space babies. Special attention should be given to bottle-feeding and the use of pacifiers (dummies). It would be especially valuable if such data were available not only regarding the community as a whole but also about family planning and health workers. Where local data are not available, data from other countries can still be useful, especially from neighbouring or similar countries.

STEP 4: ESTIMATE WHERE THE ISSUE OF BREASTFEEDING AS A BIRTH SPACING METHOD SHOULD RANK AS A PUBLIC HEALTH MEASURE.

There is no doubt that breastfeeding as a means of spacing babies will be more important in areas where modern contraceptives are not widely used, especially where extended unsupplemented breastfeeding is common. But even where modern contraception is widely practiced, there will be a large group of women who would benefit from longer birth spaces and who could be motivated to alter their breastfeeding practices to do so. In many areas, extending the duration of unsupplemented breastfeeding is already a public health priority and promoting breastfeeding for birth spacing is an

untapped source of maternal motivation for achieving this goal.

In Yemen, perhaps an extreme case, some idea of the public health importance of the issue is seen by reviewing the illustrative exercise in Table 3.

Table 3. Use of contraceptives by Yemeni women
(Approximately 1,500,000 women of childbearing age)

A. Those currently using modern contraceptives:	20,000
B. Those not using contraceptives but possibly interested in doing so some time in the future:	300,000
C. Those currently not interested in modern contraceptives but wanting to space births:	500,000 ?
D. Those not interested in spacing births at all	700,000 ?

The World Fertility Survey, carried out in Yemen in 1979, provides some assistance in estimating the size of groups a and b; the division of the remaining mothers between groups c and d is a guess. Nevertheless, in a breastfeeding project impact survey in one city, we discovered that group c is likely to be large. In contrast to the usual survey question about why women stop breastfeeding, we asked women why they had returned to breastfeeding. The overwhelming majority responded that they hoped to delay the birth of their next baby by breastfeeding more.

For the typical Yemeni woman, modern contraceptives are not an option, being unavailable, forbidden by her husband or religious belief, or--in the case of oral contraceptives--feared because of the side-effects which have widely occurred following their unsupervised spread through private drug stores. Yet bottle-feeding has reduced the traditional 2-3 year birth space to 12-18 months even for women who continue to breastfeed for a long time. The old women do not understand why breastfeeding no longer spaces babies as it did in their day. Surveys show that large proportions of young mothers now have 3 or 4 children under the age of 5 years. This means an enormous work burden for a woman al-

ready weakened by rapid childbirth. (The National Nutrition Survey found that over 50% of rural women having at least one child under 5 years old were anaemic.)

Table 4. Effect of Birth Spacing on Infant and Young Child Mortality in the Yemen Arab Republic

[Infant Mortality 1976-1978: 157 per thousand
Young Child Mortality 1971-1975: 95 per thousand]

Length of preceding birth interval	Mortality per thousand		
	Neonatal (0-28 days)	Post-neonatal (1-12 months)	Young child (1-4 years)
<24 months	63	163	141
24-35 months	42	67	18
36-59 months	23	60	2
≥ 60 months	17	39	3

Source: Suchindran CM, Adlakha AL: Levels, trends and differentials of infant and child mortality in Yemen. (Paper funded by USAID and based on World Fertility Survey data.)

Not surprisingly, young children at the vulnerable weaning age suffer most, in part because no time is available to prepare and feed special foods. The data presented in Table 4 reveal the impact of bottle-feeding on young child and infant mortality in Yemen. In the case of the young child, the death rate falls from 14% to 0.2% and even to 0.02% when mothers achieve a reasonable birth space. With only about 1% of mothers using modern contraceptives of any kind, birth spaces of over two years are more likely to occur when women do not bottle-feed or at least delay its introduction for a few months.

A large number of Yemeni women, possibly one-third of all women of reproductive age, would like to use breastfeeding alone to space their babies. In Yemen, increased birth spac-

ing, achieved mainly by breastfeeding, appears to result in greatly decreased infant mortality and at least an eight-fold reduction in young child mortality.

Yet, a Yemeni health worker who consults a standard reference work is likely to be advised simply that breastfeeding is not to be recommended for birth spacing.

STEP 5: CHOOSE A WORKING GROUP OF HEALTH AND FAMILY PLANNING WORKERS TO PLAN AN ACTION STRATEGY.

The majority of such workers should be committed to the proposed changes before the first group meeting. Ideally, others should be experienced, have a positive attitude toward breastfeeding and toward birth spacing, and an open mind for new information. Provide them with the information available from Steps 1-4 and work together to plan a strategy likely to be most effective within the local context.

The form that this strategy takes will vary according to which problems are of highest priority, which are most amenable to change, and what resources are available to the group. Sometimes the best approach to take is to first initiate some action, such as a pilot project, in order to demonstrate the effectiveness in local context of the changes recommended. In other cases, the most efficient approach may be to attempt immediate change in policies of governments (e.g. a Code of Marketing for Infant Foods), Ministries of Health, hospital maternity wards, or family planning programmes.

In each case, it is important to propose carefully worded policies that are desirable both at the public health levels and in counseling on an individual basis. For example, for a family planning programme among a group of rural mothers known to breastfeed intensively but not to make extensive use of modern contraceptives, the importance of breastfeeding for spacing babies should be emphasized and methods for optimizing its effects taught. In counseling an individual mother who is anxious to delay her next pregnancy, breastfeeding should be encouraged. However, after the first few months of lactation, she should be informed that breastfeeding should be relied upon as an exclusive birth-spacing method only when other methods are unacceptable or unavailable. Even then, the proper methods of intense or biological breastfeeding must be explained to her.

In designing strategies for bringing about change, it is useful to take an inventory of forces already operating for or against that change, and of the group's strengths and weaknesses, resources and constraints, so that points of most effective intervention can be identified. Figure 2 illustrates one method of doing so, through the development of a "force field diagram."

STEP 6: DECIDE WHAT GOVERNMENT POLICIES, HEALTH, AND FAMILY PLANNING TRAINING PROGRAMMES AND WHAT MASS MEDIA AND TEACHING AUDIO-VISUAL AIDS WILL BE NEEDED.

A wide range of government policy options are available, first for the protection, support, and promotion of breastfeeding *per se*⁶ and then for its proper inclusion in population and family planning policies. Certain government policy decisions are crucial. For example, in countries where many women are engaged in formal market labour employment, unsupplemented breastfeeding is unlikely to continue for the desirable 4-6 months unless paid maternity leaves are that long or creches at the place of employment and breastfeeding breaks are provided¹. The extent of the changes required for breastfeeding to be appropriately considered in family planning and maternal child health (MCH) programmes should not be underestimated. The following statements, taken from widely used manuals for the training of primary health care workers and MCH workers, illustrate how far we have to go:

"Lactation is not reliable as a child spacing method..If the baby is more than six weeks old when the couple resumes sexual intercourse, they should certainly not rely on lactation as a child spacing method."

"..lactation is not a reliable method of contraception in the individual...alternative ways of contraception should be encouraged."

Figure 2
Force Field Diagram

Reprinted with the permission of the Population Council, from Deborah Jean Hales: Promoting breastfeeding: strategies for changing hospital policy. *Stud Fam Plann* 12:170, 1981.

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