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Articles

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## Breast-feeding in Asia: An Overview

*While the patterns of breast-feeding in Asia vary widely,  
there has not been a universal decline in breast-feeding  
in recent years*

By Shyam Thapa and Nancy E. Williamson\*

Breast-feeding has always been synonymous with human reproduction and the nourishment of infants. Yet it is only in the last 20-25 years that its effects on fertility and child survival have been systematically investigated. In light of the accumulated scientific evidence, the promotion of breast-feeding through family planning and maternal and child health programmes is

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increasingly considered to be a public health policy priority, especially in developing societies. In some countries, explicit policies to promote breast-feeding have been enacted. Research is being undertaken to assess the infant feeding situation, monitor changes, if any, in infant feeding patterns, and evaluate the impact of specific policies and programmes.

This review considers some of the multiple reasons why researchers and health policy makers are increasingly concerned about changes in breast-feeding. It reviews major trends and patterns in breast-feeding in selected developing countries in Asia, discusses the complementarity between breast-feeding and contraceptive use, and highlights the studies contained in this issue of the *Journal*.

### Role of breast-feeding

In developing countries, a significant proportion of women of reproductive age are lactating at any given time, suggesting that breast-feeding is an important aspect of reproductive behaviour. Within Asia in the 1970s, the proportion of married women of reproductive ages who were breast-feeding at any given time ranged from more than 40 per cent in Bangladesh, to approximately one third in Indonesia and Sri Lanka, to about one-quarter in the Republic of Korea (Pebley, Goldberg and Menken, 1985). These variations reflect both the difference in fertility levels and in cultural norms and practices regarding breast-feeding, although lower fertility levels do not necessarily imply lower initiation or duration of breast-feeding.

Demographic analyses have demonstrated that in populations without access to modern forms of contraception, birth intervals are determined principally by the duration of breast-feeding (Bongaarts and Potter, 1983).

Reproductive physiologists are uncovering the mechanisms by which lactation inhibits reproduction. Afferent neural inputs to the hypothalamus following nipple stimulation seem to cause a local release of beta-endorphin, which in turn inhibits hypothalamic secretion of gonadotrophin-releasing hormone and dopamine, which in turn suppresses gonadotrophin secretion and ovarian activity while stimulating prolactin secretion (Gordon *et al.*, 1987; McNeilly, Glasier and Howie, 1985; Robyn, Meunis and Hennart, 1985).

With the application of radio-immunoassay techniques, which became common in the 1970s, ovarian hormone levels could be measured to detect the recovery of fertility. Endocrinological studies (Howie *et al.*, 1981, 1982a, 1982b) have made two important discoveries. First, during the post-partum lactation period, the earlier a woman experiences menses, the less likely it is that the bleeding has been preceded by ovulation. Second, the earlier the first

ovulation occurs, the *less likely* the woman will have a luteal phase of adequate duration and sufficient progesterone production to sustain a pregnancy.

The contraceptive effect of breast-feeding has been well documented both in aggregate and individual level analyses (Bongaarts and Potter, 1983; Habicht *et al.*, 1985; Santow, 1987). In Asia and Africa, breast-feeding has been shown to inhibit an average of four potential births (representing 25 per cent of the total fecundity) per woman (Thapa, Short and Potts, 1988). As the use of modern contraceptives increases in a society, it tends to substitute for the contraceptive effects of breast-feeding. Yet this also means that if breast-feeding declines, contraceptive use must increase just to maintain existing fertility levels. Since in most developing countries, government policy is to *reduce* fertility, not just to maintain or prevent it from rising, very dramatic increases in contraception would be required if significant declines in breast-feeding should occur (Thapa, Short and Potts, 1988).

Aside from its contraceptive effect, breast-feeding obviously plays a very important role in child nutrition and health in developing countries. Breast-feeding provides protection against morbidity and mortality especially during the first year of life (Habicht, DaVanzo and Butz, 1986; Cunningham, 1988); even partial breast-feeding has been found to be beneficial (Habicht, DaVanzo and Butz, 1988).

The review of several research results by Shah and Khanna in this issue of the *Journal* shows that, in spite of methodological constraints and limitations, studies have found that breast-feeding is associated with consistently significantly lower incidences of infant morbidity and mortality in Asian countries. It is possible that certain types of health benefits of breast-feeding to the infant may be due to some unknown exogenous factors and that the direct effects of breast-feeding in some situations may be only modest (Winikoff, 1981). But, given our present state of knowledge, and for programmatic and policy purposes, breast-feeding must be considered an important factor in promoting good health for infants.

The maternal antibodies found in human breast-milk protect the baby against gastrointestinal illness and provide some protection against respiratory infections (Feachmen and Koblinsky, 1984; Jason, Nieburg and Marks, 1984). The enteromammary circulation ensures that the appropriate immunoglobulin-A is secreted into the breast milk within hours of exposure of the mother's gut-associated lymphoid tissue to a potential pathogen (Hayward, 1983; Walker and Isselbacher, 1977). Milk substitutes do not provide such immunological protection; they can even cause health problems if they are contaminated with bacteria or incorrectly formulated.

Recent research shows that lactating women use their dietary caloric intake much more efficiently than non-lactating women (Illingworth *et al.*, 1986). But, at the same time, it has been generally established that lactating women need much higher levels of daily nutrient allowance for many vitamins and trace metals than non-lactating mothers (Casey and Hambidge, 1983). Deficiency in nutrient content may lead to maternal depletion, especially among poorly nourished mothers, although neither the volume nor composition of their milk is detrimentally affected. In some cultures, post-partum mothers eat special diet preparations, and these diets may help to maintain the extra nourishment needed for lactation. In other cultures, lactating women are discouraged from eating certain nutritious foods. Reasonably nourished lactating mothers can feed their babies solely on breast-milk for 4-6 months and breast-milk is the best nutrient for the growth and health of almost all babies (Casey and Hambidge, 1983; Seward and Serdula, 1984).

Psychologists have postulated that breast-feeding promotes "bonding" between mother and baby, although more definite research on this topic is needed (Morgan, 1981; Post and Singer, 1983). Breast-feeding is also economical both at the societal and individual levels. In Indonesia, the fifth largest country in the world, the value of mother's milk to the national economy is estimated to be at least \$US\$20 million per year (Rhode, 1982). At the household level in developing countries if breast-feeding is not practised, the cost of buying adequate amounts of infant formula could comprise a substantial portion of income for many families.

Recently, the risk of transmission of the human immunodeficiency virus (HIV), which causes AIDS (acquired immune deficiency syndrome), from an infected mother to her child via breast milk has emerged as a new disincentive to breast-feeding. However, a recent study has shown that the infant mortality associated with HIV infection through breast-feeding is likely to be considerably lower than the mortality associated with diseases of infancy if breast milk were withheld and breast-milk substitutes were given (Kennedy *et al.*, 1990).

Historians of science have traced the fascinating history of attempts to pre-empt the nutritive role of mothers through the practice of sending babies to a wet nurse or rearing them artificially on the bottle (Fildes, 1986; McLaren, 1985). Such practices can dramatically increase the mother's fecundity and decrease her infant's chance of survival.

### Diversity and change

As a result of the work of the World Fertility Survey (WFS) in the 1970s, it became possible, for the first time on a comparative national basis, to examine patterns of breast-feeding and assess the extent to which breast-feeding regulates fertility in developing countries. The data from the Contraceptive Prevalence

Surveys (CPS) further permitted an assessment of changes in trends and patterns of breast-feeding, albeit in a limited way. For a select few countries (e.g. Thailand), regular national survey data have been available for several decades; however, for many developing countries, the WFS and CPS are the only national data sources available. The on-going Demographic and Health Surveys (DHS) will provide an even better opportunity to examine changes in breast-feeding trends and patterns for many countries, since they collect detailed information on breast-feeding.

In its simplest form, and for much of the available data, breast-feeding behaviour is defined only in terms of the dichotomy "breast-feeding/not breast-feeding" by age of the child. This definition does not distinguish between full or partial (supplemented) breast-feeding. Nor does it specify the timing of food supplementation or the duration of breast-feeding. In some cultures, liquid supplementation is introduced at a very early age. Hence, it is often difficult to make a meaningful distinction between full and partial breast-feeding.

Even if women report that they are "fully" breast-feeding their babies, their patterns of breast-feeding (e.g. frequency, feeding on fixed schedules vs. on demand, or duration of feeding episodes) are not generally ascertained in surveys. These breast-feeding behaviours have been found to be important correlates of the contraceptive effectiveness of breast-feeding and of child survival. It is only recently that attempts have been made to develop an international consensus regarding standard terminology for defining breast-feeding behaviour (Labbok and Krasovec, 1988).

The complexities associated with definitions notwithstanding, three summary measures of breast-feeding are commonly employed to analyze survey data. They are initiation, age at weaning and duration. The last measure is actually a function of the first two. A more refined way of considering duration of breast-feeding is to examine the proportion of women still breast-feeding at an exact time (usually months) post-partum. This approach can be especially helpful for gaining insights on the differential effects of breast-feeding at different ages post-partum on infant health and mother's fecundity. However, retrospective reporting, digital preferences and heaping sometimes limit the potential value of such data.

The estimates for these summary measures based on *all* births during a specific time period have been found to be less biased than estimates based on either open or closed last birth intervals (Page, Lesthaeghe and Shah, 1982). Further, the actuarial life table method is preferred over other analytical techniques (current-status or prevalence-incidence), since it takes into account the full range of information by incorporating the proportion of infants ever breast-fed, age at weaning and current breast-feeding status.

It is often difficult to get accurate information on breast-feeding behaviour, especially in retrospectively collected survey data (Lesthaeghe, 1987). Nonetheless, available data for Asia from the WFS, CPS and DHS, as well as other sources, suggest a considerable diversity of patterns of change.

In the South Asian countries of Bangladesh, India, Nepal, Pakistan and Sri Lanka, the pace of change in breast-feeding (measured in terms of initiation and duration) appears to be only modest (Ferry and Smith, 1983; Khan, in this issue; Martin, 1989; Millman, 1986, 1987; Mohiuddin, 1986). However, the differentials between urban and rural populations have been widening over time, suggesting that in urban areas, initiation and/or duration of breast-feeding are declining more rapidly.

Although systematic information regarding breast-feeding in China is still scarce, exploratory and area-specific studies have suggested that the initiation of breast-feeding remains nearly universal, but there seems to have been a gradual decline in the duration of breast-feeding, particularly in urban areas (Pasternak and Ching, 1985; Scrimshaw and Ho, 1981). In Taiwan province of China, there has been a steady decline in breast-feeding since the early 1970s (Millman, 1981). This decline is pronounced for all measures of breast-feeding behaviour, including initiation, duration and age at weaning. However, the differentials between urban-rural populations have attenuated over time. In Shaanxi province, the duration of breast-feeding appears to have increased in some rural areas in recent years (Tu, in this issue). Elsewhere in East Asia, the Republic of Korea has experienced a steady decline in breast-feeding duration, but the initiation of breast-feeding remains high (Millman, 1986).

The pace of change in South-east Asia has generally been rapid. Changes have taken various forms – from steady declines, to a lull or halt in declines, to a revival of breast-feeding. Where a revival has taken place, it has been in recent years (i.e. in the 1980s). In some countries where a revival has taken place, it has generally occurred among affluent and better educated women (a pattern also found in developed countries), while in others it has occurred among women of lower socio-economic status. Overall, there are sharp differentials between urban and rural and between more educated and less educated women in South-east Asian countries.

Malaysia, Singapore and Thailand share a common characteristic of change: a revival of breast-feeding after a steady decline. The revival has been most pronounced in Malaysia and Singapore. In Singapore, the revival has taken place almost exclusively among upper income women (Chua, Viegas and Ratnam, in this issue; Millman, 1986), a pattern also found in northern Europe and North America. By contrast, in Malaysia the revival has been among the

less educated women (Haaga, 1986). In Thailand, the overall decline has stopped, and a revival has taken place mainly among urban women (Knodel, Chayovan and Wongboonsin, in this issue).

In Indonesia and the Philippines, both the initiation and duration of breast-feeding are high. After a modest steady decline, the duration of breast-feeding in the Philippines appears to have stabilized (Williamson, in this issue). There is emerging evidence, in selected metropolitan areas of Indonesia, that the duration of breast-feeding may have increased (Joesoef, Anest and Utomo, 1989). Interestingly, this has occurred, as in Malaysia, among the mothers of lower socio-economic status.

The patterns emerging from within Asia suggest that a decline in breast-feeding was initiated in the 1970s among certain population sub-groups (e.g. urban and more educated) in many of the countries, and this phenomenon is still continuing in some countries. Nonetheless, a few countries have experienced a stabilization or actual resurgence in breast-feeding among some sub-groups. Hence, there has not been a universal decline in breast-feeding in Asia, at least in recent years.

The phenomenon of resurgence suggests one very important lesson: declines in breast-feeding are not irreversible. It is likely that appropriate policies and well-designed programmes will have positive effects on breast-feeding behaviour. In some Asian countries, the modern health sector has apparently played an important role in bringing about the change. Hence, rather than accelerate the decline in breast-feeding, this sector has shown the potential to stop or reverse the trend away from breast-feeding.

With continued efforts, the full resurgence in breast-feeding among all population sub-groups in some societies may take place. In countries where breast-feeding has declined only modestly, women need to be informed about optimum breast-feeding practices, while at the same time preventive policies should be implemented to thwart future declines in breast-feeding.

The mechanisms for the implementation of policies and the development of specific programmes may differ among settings. But the basic ingredients for the interventions necessary to bring about the changes are essentially the same across settings, although the relative importance of each of the factors could vary. Experience and research efforts in Asia and elsewhere have demonstrated that protection and promotion of breast-feeding require an integrated approach, including favourable public policies, attention to health care providers and the mothers themselves, and monitoring the results (cf. Green, 1989; Huffman, 1984; Jelliffe and Jelliffe, 1988; Winikoff, Castle and Laukaran, 1988).

Explicit public policies that discourage bottle-feeding and encourage breast-feeding need to be formulated. These include establishing policies for the modern health sector (both public and private hospitals and clinics) and formulating legislation to protect women's right to breast-feed. Health care providers should be trained and re-oriented, where necessary.

Proper attention to breast-feeding can and should be given by health professionals without romanticizing or "over-selling" it (e.g. telling mothers that their babies will have no health problems if the mothers breast-feed). Promotion programmes also should not make women feel guilty if they cannot breast-feed their babies. Finally, programmatic and socio-psychological barriers from the woman's perspective should be understood and identified before programmes are designed.

Whether a woman breast-feeds her baby is her and her spouse's decision. But health care providers can play a role by providing correct information on the contraceptive and other benefits of breast-feeding. Every pregnant woman should be considered a potential candidate for breast-feeding, and this consideration should be reflected in neonatal, post-neonatal, and family planning counselling and service delivery.

### Breast-feeding and contraception

Neither the contraceptive effects (for the mother) nor the health benefits (to the infant) of breast-feeding can continue for an indefinite period post-partum. Breast-feeding functions as a nearly perfect contraceptive under two conditions: namely, when a mother is (a) fully or nearly fully breast-feeding her baby, and (b) remains amenorrhic (ignoring any bleeding during the first two post-partum months). If these two conditions are fulfilled, breast-feeding provides highly effective contraceptive protection for the first six months (Kennedy, Rivera and McNeilly, 1989). Thereafter, the contraceptive effect decreases, although for the majority of women, the contraceptive benefits do not end abruptly with the return of menses.

Several studies (reviewed in Williamson, 1987) have suggested that up to 12 per cent of breast-feeding women may get pregnant post-partum. But these data are crude; they do not take into account specific breast-feeding duration (such as in actuarial life-table analysis) or exposure months (for example, Pearl pregnancy rate), nor do they consider whether the woman is fully breast-feeding.

Similarly, in its nutritional role, breast-feeding usually provides, as discussed previously, full nutrition for the baby only during the first 4-6 months. The in-

fant's diet beyond this time has to come from supplementary foods. Furthermore, despite their positive attitudes, some mothers may find it difficult to continue breast-feeding frequently for a long time, while others may make a fully informed decision not to breast-feed at all or to breast-feed for a short duration.

For these and other reasons, women will need to turn to modern methods of post-partum contraception. Traditionally, the choice for many women in developing countries has been either to spend most of their reproductive lives with an infant in the womb or one at the breast, as was the situation in pre-industrial Europe. Today, she has a third choice: controlling her reproduction with modern contraceptives. The benefits of breast-feeding and contraception may be enhanced by appropriate timing of the adoption of an appropriate family planning method.

Family planning programmes seldom give explicit attention to the contraceptive benefits of breast-feeding; the joint promotion of breast-feeding and contraception has remained largely a missing component in such programmes. Some may even consider breast-feeding to be incompatible with the use of contraceptives. Yet family planning workers are well placed to advise women on the complementarity between contraception and breast-feeding.

When should a new mother begin other methods of contraception? In the past, there has been no fixed answer, for the process of return to fertility is shown to vary considerably among women with different breast-feeding styles. Even women having similar breast-feeding patterns sometimes have different endocrine profiles. Similarly, women of similar durations of breast-feeding are sometimes found to have different durations of lactational amenorrhoea. The reasons for these findings are unclear. It has been difficult to develop a standard set of rules and guidelines applicable to each individual woman, especially because stochastic factors have been found to play an important role at the individual level of fertility behaviour (Bongaarts and Potter, 1983).

These difficulties notwithstanding, some rudimentary guidelines have been suggested. A woman should consider beginning contraception by the first occurrence of any one of three events: the return of vaginal bleeding after the end of lochia (vaginal discharge), initiation of supplemental feeding, or the baby's six-month birthday (Kennedy *et al.*, 1989). The use of one of these three sentinel events to initiate contraception could also avoid "double protection" when a woman is protected by both post-partum amenorrhoea and another contraceptive and help her to expand the interval before the next birth by starting contraception when she needs it the most.

The relative advantages and disadvantages of the various available

contraceptive methods for lactating women and the appropriate timing of initiation post-partum have been reviewed in detail elsewhere (Kleinman and Senanayake, 1984; WHO, 1987; Winkoff, Semerario and Zimmerman, 1988). The dynamics of the adoption of contraception among lactating women has been less well studied than among post-partum, non-lactating women. There is also a need to develop and make available new forms of contraception for lactating women.

There is generally a strong inverse association (particularly during the first year post-partum) between breast-feeding and contraceptive use at both the aggregate and individual levels (DeLeon and Potter, 1989; Millman, 1985; Smith, 1985), but the reasons are less clear (Millman, 1985). A review of the limited available data by Cleland and Rusterin (1986) suggests that this association is not necessarily caused by contraceptive use. Rather, the adoption of post-partum contraception could be in response to the resumption of menstruation, and therefore it is concluded that "the provision of contraceptives should not be held responsible for a change in breast-feeding practices which in many (developing) countries has resulted in a shortening of natural birthspacing" (Cleland and Rusterin, 1986). Rarely have large-scale studies attempted to directly ascertain the degree to which a woman's decision to stop breast-feeding is influenced by her decision to practise contraception.

For programmatic and policy purposes, it is useful to examine the proportion of lactating women using contraception by specific time segments post-partum. Within Asia, detailed analysis based on the WFS data is available for Bangladesh, Indonesia, Republic of Korea and Sri Lanka (Pebley, Goldberg and Menken, 1985). Overall, the breast-feeding women in these countries were as likely to use contraceptives as those not breast-feeding. Among currently breast-feeding women 0-3 months post-partum, the proportions using contraception (all methods) were 5 per cent in Bangladesh, 12 per cent in Indonesia, 3 per cent in the Republic of Korea and 24 per cent in Sri Lanka. Among women 4-6 post-partum months, the proportions of breast-feeding women using contraception were 6 per cent in Bangladesh, 28 per cent in Indonesia, 8 per cent in the Republic of Korea and 35 per cent in Sri Lanka. The higher proportions in Sri Lanka most probably reflected post-partum sterilization, but in other countries, the pill was the predominant method. Overall, the data show large variations across countries.

These data do not elucidate whether information on breast-feeding was given to the women and under what situations contraceptives (especially the pill) were prescribed. However, they do suggest that the introduction of contraceptive pills (the researchers believe them to be combined pills) in some settings may have been too early. This practice could result in early discontinuation (Bhatia and Kim, 1984). Too early introduction of contraceptives has a "double protective" effect, and therefore only minimal impact on fertility

Bhatia, Becker and Kim, 1982). If there were more explicit emphasis on breast-feeding by family planning workers (see Suyono and Thapa, in this issue), the situation with regard to the timing of introduction of contraceptives might be different in the future. These issues underscore the importance of examining breast-feeding patterns in relation to contraceptive use patterns.

Several comparative studies (Cleland and Rusterin, 1986; DeLeon and Potter, 1989; Jain and Bongarts, 1981) have suggested that a significant portion of women in Asia and elsewhere may be consciously using breast-feeding as a natural contraceptive method. If this is really the case, breast-feeding should be considered as a contraceptive method in the analysis of survey data, not as a reason for not using contraception (which is the typical practice in family planning survey analyses). According to recent Demographic and Health Survey reports, for example, the proportion of women of all reproductive ages not using contraception because they are breast-feeding ranges from 16 per cent in Thailand, and 11 per cent in Sri Lanka, to less than 0.5 per cent in Indonesia. As with previous survey findings (Pebley, Goldberg and Menken, 1985), Indonesia appears to be a special case. It may be related to the fact that in Indonesia, contraceptives are introduced shortly after delivery, regardless of breast-feeding status.

If the health and family planning programmes are to help women to use breast-feeding as a contraceptive method, the implications for policy, service statistics and evaluation should be considered. First, breast-feeding needs to be explicitly recognized as a "lactational amenorrhea method" (Kennedy *et al.*, 1989) in the "cafeteria" of family planning methods. Second, since the service statistics refer to programme acceptors, users of the lactational amenorrhea method need to be represented in service statistics and family planning field or clinic workers given credit for recruiting the women as family planning acceptors. Third, family planning surveys should explicitly ascertain whether breast-feeding is consciously and deliberately used for fertility regulation. Clearly, a new way of thinking would be required, if breast-feeding were to be considered as a programmatic contraceptive method.

For various reasons, breast-feeding differs from other methods of family planning (Williamson, 1987). In view of this, it has been a challenge to integrate breast-feeding into family planning programmes. But this should not prevent health (especially family planning) personnel from discussing breast-feeding while counselling women about contraceptives. A mother will be able to obtain the maximum benefits from both, if the appropriate contraceptive method is introduced at the appropriate time post-partum. In short, both breast-feeding and contraceptive use should be promoted. This calls for fine-tuning family planning policies and programmes explicitly to recognize the importance of breast-feeding for child health and child-spacing.

## Contributions of the studies

The diversity in patterns of change in breast-feeding in Asia is demonstrated by this selected collection of articles. Differences between the studies with respect to the objectives and approaches are as important as their common focus on breast-feeding.

The article by Shah and Khanna examines the role of breast-feeding in infant health and child survival with special reference to countries in the Asian and Pacific region. The authors propose a simplified framework for investigating the direct influence of breast-feeding on infant and child health through its protective effects against infectious, especially gastrointestinal diseases, and the indirect influence on infant mortality through birth-spacing. Their article points out methodological constraints in studies conducted on this subject which limit the comparability of data and render difficult the drawing of unequivocal conclusions. Nonetheless, the available evidence supports the positive role of breast-feeding in lowering the incidence of infant morbidity and mortality. High prevalence and prolonged duration of breast-feeding have helped to keep the levels of morbidity and mortality lower than they would be otherwise. Although more research efforts are needed to isolate the role of breast-feeding from the other confounding factors as well as to overcome the methodological problems, the implications of the results reviewed in their article are straightforward: breast-feeding saves the lives of infants and children.

The article by Kennedy describes clinical studies which have examined the effect of breast-feeding on the return to fecundity. The main objective of the studies undertaken in Pakistan, Philippines and Thailand was to investigate whether a simple indicator of breast-feeding behaviour could be found to serve as a proxy for the end of post-partum infecundity. While these results confirmed that breast-feeding plays a significant role in delaying the recovery of ovulation, they also showed that the frequency of breast-feeding alone is not a good indicator of the protection from pregnancy. The findings provide evidence that multiple indicators (e.g. bleeding, supplementation, or age of the infant) are necessary to signal the end of lactation-induced infecundity.

In his article, Tu analyses changes in the patterns and determinants of breast-feeding in a less developed central province of China. The results show that the duration of breast-feeding has increased in the 1980s, particularly for higher order children. At the same time, the age at supplementation has declined. He finds that male children are breast-fed significantly longer than female children, suggesting that there is a gender bias in the rearing of infants. Mothers who work in non-agricultural sectors have significantly shorter durations of breast-feeding than women who work in the agricultural sector. The author suggests that the overall change in the duration of breast-feeding

behaviour may have been a consequence of the intensive family planning programme launched after the introduction of the "one-child" policy in 1979. The use of contraceptives has helped to lengthen the birth interval, which in turn increased the likelihood of breast-feeding. This is further confirmed by the evidence that children are breast-fed until their mothers again become pregnant. Tu suggests that breast-feeding may also have been used by some women as a means to space pregnancies. To the extent that this is the case, decreases in the age at which supplemental food is introduced may have implications for earlier recovery of the risk of pregnancy during the post-partum period.

Several aspects of breast-feeding behaviour in India are reviewed by Khan. These include initiation, duration and frequency, pre-lactation, age at weaning, food supplementation and contraceptive effects as well as women's attitudes towards breast-feeding. The review is based on results from major studies carried out in different regions in India. The studies find a nearly universal pattern of initiation and a prolonged duration of breast-feeding. Though most women appear to have strongly positive attitudes towards breast-feeding, the studies also point out that the normal practice is to delay the initiation of breast-feeding considerably, at least in some parts in India, so that the colostrum will not be fed to the child. There also appears to be a relatively long delay, often exceeding six months post-partum, in the introduction of food supplementation. This article draws some broad implications for policies and programmes.

Iskandar, Costello and Nasution analyze data from a 1987 Indonesian national survey. In their detailed analysis, the authors examine variations in the proportions of children never breast-fed, by the socio-economic characteristics of the mothers, and analyze factors affecting the duration of breast-feeding. The results show that breast-feeding initiation is nearly universal in Indonesia. Higher parity children are especially likely to be breast-fed, while unwanted children are less likely to be breast-fed. Generally, Indonesian mothers belonging to lower socio-economic groups and having a more traditional life-style breast-feed their babies longer than their counterparts. There are significant differences in both the proportion of children never breast-fed and the duration of breast-feeding, by urban-rural location and by geographic region of residence. The challenges for health professionals in Indonesia lie in developing programmes that help to maintain the high incidence as well as duration of breast-feeding while at the same time promoting optimum ways to breast-feed.

The brief note by Suyono and Thapa discusses the family planning sector's initiative to promote breast-feeding in Indonesia. It argues that the family planning sector provides a good opportunity for promoting the complementarity

of breast-feeding and contraception. Family planning workers, through person-to-person communication, are well placed to alleviate misperceptions and provide accurate information regarding optimum infant feeding.

The article on the Philippines by Williamson provides an overview of the patterns and trends in breast-feeding and then describes the recent history of policies and programmes. Overall, the decline in the duration of breast-feeding, during the decade 1973-1983 appears to be halting, while the proportion of babies never breast-fed is shown to have increased slightly during the same period. The larger declines were confined to particular regions of residence and mothers having transitional types of employment. The article outlines various activities and the strategies through which breast-feeding has been promoted in the Philippines. These may be relevant to other countries as well.

The study on Singapore by Chua, Viegas and Ratnam documents a revival in breast-feeding, particularly among the upper socio-economic class, following a rapid decline in breast-feeding during the third quarter of this century. Although the data analyzed are not nationally representative, the findings are important, because the majority of the deliveries in Singapore take place in hospitals. This study underscores the importance of analyzing data on trends and patterns by major ethnic groups. The challenge for the public health workers is not only to make more concentrated efforts to promote breast-feeding among parents in the lower socio-economic classes, but to promote it among various ethnic groups as well.

The article by Knodel, Chayovan and Wongboonsin reviews trends and patterns of breast-feeding in Thailand and relates them to the policies enacted by the Government to promote breast-feeding. The decline in breast-feeding evident in the 1970s has stopped in recent years. Initiation of breast-feeding is close to universal in Thailand. Especially for urban women, there appears to be some increase in the duration of breast-feeding. There are, however, considerable differences in the duration of breast-feeding by urban-rural residence and by mothers' education. The authors note that the halt in further declines in breast-feeding practices "coincides with extensive efforts" undertaken by various agencies, including the Government of Thailand. This suggests that the new policies and programmes, particularly in the modern health sector, may be having an impact. The experiences of Malaysia, the Philippines, or Thailand may serve as good examples for other developing countries in Asia and elsewhere which would like to increase the level of breast-feeding in their populations.

Tuladhar's report discusses variations in the duration of breast-feeding in Nepal, based on the most recent (1986) survey data. The initiation of breast-feeding is almost universal. Similarly, the duration of breast-feeding for women

in both urban and rural areas remains high, although it is slightly lower for urban women. The results show that socio-economic and demographic factors play only modest roles in accounting for variations in the duration of breast-feeding. Such factors are more likely to exert a greater influence if the pace of modernization increases in Nepal.

The studies in this issue underscore the importance of not only documenting trends, but also examining variations within a country. Such efforts are often the basis for evaluating whether and in what ways the policies and programmes have had the desired effects. Even where explicit breast-feeding policies are lacking, the studies suggest alternate pathways and their potential outcomes.

One of the aims of this issue of the *Journal* is to encourage further research interest in breast-feeding practices in Asia, both in countries with little currently available information about breast-feeding and in countries with underutilized and as yet unpublished data. As the multiple benefits of breast-feeding are increasingly recognized, many surveys (e.g., nutrition surveys, demographic surveys, child survival surveys) and other types of studies have collected information on breast-feeding patterns. However, they are rarely pulled together in a coherent way to draw implications for policies and programmes. This may be considered a priority area for researchers as well as health and family planning policy makers.

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