BREAST-FEEDING IN SOME DEVELOPING COUNTRIES

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In any human society, natural fertility has never been known to have reached its biological maximum largely due to the existence of a number of socio-cultural factors and practices which operate against fertility. Had it not been the case the birth intervals of the non-contracepting fecund and exposed women could be far shorter resulting in fertility levels much higher than what has been so far known. Most important of these factors are : religious or traditional prohibition on sex during certain periods of time, social injunction on extra-marital and pre-marital sex, sexual inhibition when a woman's own children become adults, social customs such as staying in mother's house away from the husband after a child birth, breast-feeding of children, abstaining from sex till the child grows up and starts weaning and some others which have yet to be fully explored and studied. With increasing modernisation some of these traditional factors may be weakened and eroded in favour of higher fertility. If this happens then it is quite possible that a modernised section of a society (say, section which is newly urbanised) will have a fertility level higher than that of its traditional counter-part (1). The countries

which are persuing a fertility control policy naturally may be worried about such unfavourable effect of modernisation or socio-cultural changes on their national level of fertility. Fortunately the modern contraceptive technology provides the potential means to counter and offset the effects of socio-cultural changes just mentioned. But the acceptance of the modern contraceptives again requires another stage of socio-cultural change which will take its own time. Thus there is a period of transition which is likely to be characterised by high fertility and this may be quite crucial for some developing countries which are desperately trying to improve the quality of life in general and the standard of living in particular. It may be benifical for these countries to explore and study the traditional factors and their exact role on fertility with a view to evolve appropriate social policies which may help to retain or even to promote at least some of the traditional attitudes and practices. One such practice is the custom of prolonged breast-feeding of children. It is a well established fact these days that the continuous and intensive breast-feeding contributes to aggravate and prolong the post-partum amenorrhoea which in turn prevents ovulation and conception (2-9). While the bio-physiological aspects of lactation and its possible impact on fertility has been extensively studied, the knowledge about the extent and intensivity of lactation prevalent in the developing countries is extremely limited. The questions which need to be answered in this field are as follows :

A. What is the average duration of intensive breast-feeding in a given country and does it depend on factors such as education, region of residence, socio-economic status, religion, ethnicity and others ?

B. Has the incidence and duration of breast-feeding been fading recently? If so how rapidly it does?

C. How long on average does the breast-feeding actually delay the next pregnancy when contraceptives are not practised ?

The countries which participated in the World Fertility Survey (WFS) project of the International Statistical Institute, have included in their questionnaires a few questions on breast-feeding. The countries which have published or are about to publish their first country reports are South Korea, Sri Lanka, Nepal, Bangladesh, Thailand, Malaysia, Pakistan, Indonesia, Dominican Republic and Jordan. There are variations in the number and type of questions asked on breast-feeding between the countries, but the commong questions which were asked in all the countries are as follows :

1) Did you breast-feed the child (name of the next to the last child)?

Yes No

2) If yes to (1), how many months did you breast-feed?

-------months, until the child died

3) Did you ever breast-feed the child (name of the last child)?

Yes No

4) If yes to (3), how many months did you breast-feed this child?

---------months, Still breast-feeding

Breast-fed until the child died

These questions are naturally not designed to give the period of intensive breast-feeding during which the child is mainly dependent on mother's milk and not on any other milk or food. They also do not provide any information on the delay in the re-appearance of the menustrual cycle which is known to be highly correlated with the ovulation and the woman's fitness to conceive. However some countries did include a few additional questions on the starting of other kind of feeding and reappearance of the menstrual cycle. For this paper however the published data of all the countries have not been available. Besides, some tabulations which could have thrown more insight into the effects of lactation are also not available. The purpose of this paper therefore is limited to to a brief analysis of the available data and to indicate the need and scope of further research in this field.

INCIDENCE AND LENGTH OF BREAST-FEEDING

The incidence and the average length of breast-feeding of the next-to-last child (i.e. in the last closed interval) of a few WFS countries are given in table 1 below. Except Malaysia in each of the other countries the proportion of women who

Table 1 : Incidence and Duration of Breast-feeding of the Penultimate Child (last closed interval) in some Selected Countries

Country	In the last closed interval		Recent Estimate of Infant Mortality Rate (infant deaths per 1000 live births)
	Percentage of ever-married women breast-fed	Average number of months breast-fed	
South Korea	94	19.2	33
Indonesia	99	16.5	137
Nepal	96	18.6	152
Sri Lanka	95	17.0	51
Malyasia	81	7.3	45
Bangladesh	96*	18.5*	150*

Sources : First Country Reports of the WFS surveys publiushed by the perspective countries.

* Provisional

breast-fed in the last closed interval is at least 94% (calculation is confined to the ever-married women with at least 2 pregnancies earlier one resulting in a live birth). This shows that breast-feeding is universally practised in these countries. Malaysia is proving to be an exception, having a proportion of 81% women who breast-fed in the last closed interval. The detailed tabulations by age provided in the Country Reports show there is no significant variation in the proportion of women breast-feeding between various age-groups thus indicating that the incidence of breast-feeding in these countries has not been decreasing recently as might be thought.

As seen in Table 1 except Malaysia the reported average number of months breast-fed is similar between the countries varying from 16.5 to 19.2. Malysia appears to be a special case where the reported is only 7.3 months. It needs to be investigated whether in Malysia there was any stress on the intensive breast-feeding from the interviewers which was absent in the other countries. Intensive breast-feeding does not continue for long especially after the child starts taking other food. The breast-feeding which continues after the child starts taking sufficient other foods may be called "habituel" breast-feeding, because both the baby and the mother acquire a habit and the process. Such extended breast-feeding is not intensive and may not be effective in delaying the ovulation. Except Malaysia the reports on breast-feeding in all other countries appear to have included the habitual breast-

feeding also. In a country where no question was asked about the starting of other type of feeding, the two components of breast-feeding duration cannot be isolated.

The Country Reports provided tabulations of the duration of breast-feeding by age-groups of the women (not reproduced here) which show that there is very little difference in the mean duration between ages except in South Korea where the younger women tend to have lower durations. How much of this difference is due to differential reporting errors is not known however.

The detailed tabulations also show that there are substantial reporting errors in all the countries except Malaysia for which ungrouped data are not provided. There are heapings of the number of women at durations of 12,18,24,36 months in all the countries considered. Table 2 gives the proportion of women reporting the duration of breast-feeding as 6,12,18, 24,30,36 months.

Table 2 : Percentage of Women Reporting to have Breast-fed for 6,12,18,24,30 and 36 months in the Last Closed Interval.

Country	Percentage of women reporting to have breast-fed for months					
	6	12	18	24	30	36
South Korea	0.8	16.4	4.6	16.4	1.3	6.6
Indonesia	0.7	10.9	18.8	26.2	*	*
Nepal	0.5	14.7	5.7	28.4	*	*
Sri Lanka	4.6	17.4	12.5	16.4	2.7	6.5
Bangladesh	1.2	13.4	10.7	26.5	9.9	16.6

* Not available in the published tables

Obviously the actual length of breast-feeding would have a more uniform distribution over the range than what is seen in the data. Although the question was for the months of breast-feeding as quoted earlier in this paper, the respondents in all these countries appeared to have generally replied in terms of years such as one year, one and a half years, two years, two and a half years and three years, and the interviewers

probably recorded them after converting into months. In all these Asian countries it seems to be a common phenomenon to talk of breast-feeding in terms of years rather than months. Of course the pattern of heaping does differ from country to country probably because of the country's general perception about feeding. From the nature of the distribution it appears that the individual responses are partly based on the respondents perception about breast-feeding. If the same respondent is asked the same question again she might give the same rounded number or another rounded number which may be 6 months apart, because she is not basing her response on the fact (which she usually does not remember) but on her perception or the best guess about the matter. This hypothesis about the reporting of intervals is supported by the results of the Post-Enumeration Survey (PES) of the Bangladesh Fertility Survey/WFS (10). Both the PES and MS (Main Survey) distributions have similar heaping patterns but individually the two reports match only in about 35% of the cases. In 65% of the cases the PES differs from the MS and quite considerably, yet the two marginal distributions do not differ much. The average length of breast-feeding from the MS is 18.5 months and that from the PES is 18.6 months. Individually the responses vary quite often and by a substantial amount but when it comes to a group or a macro-level the difference disappears. This has been found in all the variables of the Bangladesh PES where the actual answer to the question was seldom known and the

respondent had to guess or use her perception.

Now the question arises as to how much use one can make of the reported duration of breast-feeding. Assuming that the reporting errors are of similar magnitude and direction, the relationship between the duration of breast-feeding and the birth interval concerned can be studied. If there is a positive correlation between them then it can be argued that the breast-feeding prolonged the birth interval to an extent (dependent on the size of the regression coefficient). However it is possible that the breast-feeding was prolonged, because due to reasons other than breast-feeding the conception was delayed. There could be a circular causality. In the absence of any information about the reappearance of menstration there is one way of avoiding the circular relationship and that is to exclude the cases of breast-feeding exceeding 18 months on the assumption that such breast-feeding would be habitual and not intensive or essential. Moreover breast-feeding starts during post-partum amenorrhoea when ovulation cannot take place at all. Therefore the regression of breast-feeding duration on the birth interval is not as logical as the regression of the birth interval on the breast-feeding is, especially when the habitual breast-feeding can be avoided.

Estimation of the extent of intensive breast-feeding and its impact :

In the Bangladesh Fertility Survey there were questions on the reapperance of menstrual cycle and the resumption of sex in the open interval. The data relating to these matters have not been yet tabulated. However, the PES sample data have been tabulated and analysed recently. The variables constructed are the interval between the last birth and the resumption of sex and the interval between the last birth and the reappearance of the menstrual cycle. Since these variables are from the open interval there is a truncation problem. There are cases where sex has not yet been resumed or where the menstrual cycle has not yet returned. But from the PES sample it appears that the truncation problem in these two variables are not as serious as it is in case of the duration of breast-feeding in the open interval. Only 2% respondents said that they have not yet resumed sex, 17% said that their menstrual cycles have not reappeared and 44% respondents reported to be still breast-feeding the last child. Assuming that the truncation will not affect the first two variables seriously, one can use the data. The PES sample gave an average of 12 months as the interval between the birth of the last child and the reappearance of the menstrual cycle and an average of 3 months as the interval between the birth of the last child and the resumption of sex. Thus it appears

that sex has been resumed on average 9 months before the menstrual cycle returned naturally with a very low chance of conception. In absence of any breast-feeding the usual length of post-partum amenorrhoea after a child birth would be 6 to 8 weeks and so the actual extension of the post-partum amenorrhoea due to intensive breast-feeding was probably about 10 months. This means that although the reported length of breast-feeding could be as high as 18 months as obtained from the last closed interval, the effective or intensive breast-feeding in Bangladesh could be arround 12 months only(provided the PES sample can be taken as representative). Further analysis with the help of the full MS data file would provide more reliable estimates. The conception which could happen (at least theoretically) as soon as the sex resumed, has been delayed by another 9 months due to breast-feeding and this estimate is also subject to adjustment when the MS tabulations are available.

It is possible that the situation is similar in Nepal, South Korea, Sri Lanka, Indonesia and Thailand. But without collecting more data by asking additional questions it is not possible to measure the influence of breast-feeding on birth intervals and fertility.

LENGTH OF BREAST-FEEDING AND INFANT MORTALITY :

In the last column of Table 1 the recent estimates of Infant Mortality Rates (IMR) are quoted from the WFS Country

Reports. Both the incidence and duration of breast-feeding are high in Bangladesh, Nepal and Indonesia where the infant mortality is also high. In South Korea and Sri Lanka are much lower than in any of the others which have similar length of breast-feeding and this is certainly due to better nutrition level, better public health and medical care. In Malaysia both the length of breast-feeding and the infant mortality are lower than any of the other countries. Thus the relationship between the breast-feeding and the infant mortality is not visible in the data of table 1.

However assuming that a woman breast-feeds all her children for similar durations, one can see the relationship the practice of breast-feeding and the incidence of infant death using the pregnancy history data of the WFS surveys. If a significant negative association is found then the popular hypothesis will held.

DIFFERENTIALS IN BREAST-FEEDING DURATIONS :

In the WFS surveys some differentials in the duration of breast-feeding have been detected in some countries. The mean length of breast-feeding of the penultimate child for the urban areas of Sri Lanka is 3 months lower than that of the rural area. Education also appears to reduce the breast-feeding duration. The Christians on average have shorter

duration of breast-feeding thant the Muslims, Hindus or Budhists. In South Korea the average urban length of breast-feeding is lower than that of the rural by about 3 months and the rising level of education seems to reduce the length of breast- feeding. Similar differntials are reported in case of Malaysia also where rising income of husbands appears inversely correlated with breast-feeding. However these differentiating factors themselves are likely to be associated. Without proper standerdisation or controls it is not possible to sort out the main causal factors. Some additional tabulations are necessary for such analysis.

The other important point that needs to be taken into account is the possible existence of differentials in the reporting errors and biases. The illiterate, rural and poor women could inflate the length of breast-feeding while reporting and their opposite counter-parts may be doing the opposite creating a gap which may not be there in actual terms. It is possible to detect such error differentials from ungrouped tabulations which are not available at present.

BREAST-FEEDING, USE OF CONTRACEPTIVES AND FERTILITY LEVEL :

In order to see the relationship among the three characteristics namely breast-feeding duration, use of contraception and birth interval or any other measure of fertility it is necessary to examine the appropriate tri-variate distributions. While such analysis is beyond the scope of this paper, the

South Korea Fertility Survey Report's tabulations have been examined. Table 3 gives the mean length of breast-feeding and the percentage of the women who used contraceptives in the last closed interval by age in South Korea. The women in the extreme age-groups are not expected to be worried about the exposure to the risk of conception as much as the women in the two middle age-groups might be. For the purpose of seeing the relationship between breast-feeding and incidence of contraception the two middle age-groups are important. These two groups seem to indicate an inverse relationship. By doing another calculation the First Country Report suggests: " Furthermore, a comparison of these who used contraception with those who did not, suggests that roughly 3 to 4 months may be gained in the length of the interval by use of contraception over and above breast-feeding".

Table 3 : Mean Length of breast-feeding and the percentage of women who Used Contraceptives in the Last Closed Interval in South Korea

Age	Mean Length of Breast-feeding	Percentage of women using contraceptives
Less than 25	16.5	19
25 - 34	17.5	26
35 - 44	20.5	20
45 plus	21.0	7
All	19.2	21

It is to be seen what the situation is in Sri Lanka and Malaysia which also have high level of contraception.

In absence of further tabulations, a macro-level comparison of the countries with respect of breast-feeding, ever-use of contraception and fertility level has been attempted. Table 4 gives the mean months of breast-feeding, percentage of women who ever-used contraception and the total fertility rate as obtained from the fertility surveys of the WFS.

Table 4 : Duration of Breast-feeding, Ever-use of Contraceptives and Total Fertility Rates of some WFS Countries

Country	Mean number of months breast-fed in last closed interval	P.C. of Ever-married women ever-used contraceptives	Total Fertility Rate
South Korea	19.2	57	3.6
Indonesia	16.2	18	5.5*
Nepal	18.6	4	6.8
Sri Lanka	17.0	51	3.4
Malaysia	7.3	48	4.4*
Bangladesh	18.5*	6*	6.3*

* Provisional

The three variables considered are not having the same time reference and yet some meaningful relationships appear to show up. South Korea has the highest level of breast-feeding, highest incidence of ever-use of contraceptives and a very low level of fertility. The situation in SriLanka is similar to that of South Korea. Nepal and Bangladesh have a high level of breast-feeding but since their contraception incidence is very low, their fertility level remains high. expected the Indonesian fertility is also high. Malaysia has a small duration of breast-feeding but a high level of contraception reducing the fertility level not yet to the level of Sri Lanka and South Korea. The question remains to be answered is : Will the fertility level rise with the reduction of breast-feeding duration not accompanied by a rising level of contraception ? While the answer to the question is not yet known it is interesting to see that even the percentage of women who ever-used contraceptives is making a big difference in the fertility level.

AREAS OF FURTHER RESEARCH :

As pointed out already, firmer conclusions about the influence of breast-feeding on birth interval and fertility is difficult without additional data part of which can be obtained from the existing data files of the WFS but for the remaining part new surveys have to be launched.

There is however another important area of research on breast-feeding which needs to be stressed and this relates to its influence on infant and child mortality. The question to be answered is : if due to modernisation the incidence and intensity of breast-feeding is reduced will it seriously affect the infant and child mortality? For such studies of course a different kind of investigation is necessary.

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