AN EXTRACT OF THE REPORT ON INFANT-FEEDING PRACTICES WITH SPECIAL REFERENCE TO THE USE OF COMMERCIAL INFANT FOODS

By
P.V. Gopujkar, S.N. Chaudhuri, M.A. Ramaswami
M.S. Gore and C. Gopalan

NUTRITION FOUNDATION OF INDIA

Project funded by
UNICEF
1984

This booklet is provided to you as a public service by the United Nations Children's Fund (Regional Office for South Central Asia), New Delhi.

Introduction

The importance of the subject of infant-feeding hardly needs emphasis. It is a subject which concerns not just the 25 to 30 million babies that will be born annually in our country in the next decade, and the several millions of mothers who will be rearing them. In the ultimate analysis, it is very much a subject which deeply concerns the very "quality" of the most precious of all our national assets—our Human Resources. The health and nutritional status of millions of infants, and the 'start' which will influence their subsequent growth and development through childhood will be determined by the pattern of feeding during their infancy.

The subject has acquired added urgency and relevance in recent times. The average infant mortality rate (IMR) in the country as a whole, today stands at over 120 per thousand live births and has remained more or less stationary around this figure for nearly a decade. We have obviously a long way to go before we can achieve an average IMR of less than 50—the target envisaged in the goal "Health for All by 2000 A.D.", to which we have officially subscribed.

Our family planning programmes, apart from marginal success, have generally failed to make the significant and substantial dent on our population growth, which we are desperately looking for. Our current inability to provide reasonable assurance of survival of children, especially among our poor communities, has not only denied our family planning programmes the benefit of a valuable incentive; but, indeed, it has also served to undermine the very moral and ethical basis of these programmes as far as poor communities are concerned.

The prevention of undernutrition and diarrhoeal episodes, the major factors underlying the current high IMR, would greatly depend on the successful promotion of wholesome and hygienic infant-feeding practices.

There are new pressures on traditional infant-feeding practices which should also occasion concern. The process of "development"

inevitably unleashes forces which may affect infant-feeding practices. Urbanisation, industrialisation, the bridging of the 'communication-gap' between the city and the village, increasing employment opportunities for women, and such other factors incidental to "development", are bound to exert their impact on life styles, work-pattern, family structures and value systems in our communities, not only in the urban areas but in the vast rural country-side as well; and these, in turn, cannot fail to influence infant-feeding practices. Frequent monitoring of changing trends in infant-feeding practices is, therefore, necessary in societies in a highly dynamic state of 'development'.

Till almost 60 years ago, in all countries of the world infants were invariably breast-fed; 'substitutes' for breast milk were unknown. During the last five decades, however, the practice of bottle-feeding of infants with milk formulas (baby foods) had rapidly spread in the technologically developed countries. It should not be surprising if this trend increasingly becomes part of the "development process" of poor developing countries as well. Recent researches have revealed the 'unique properties of breast milk as the ideal and inimitable food for the infant; as a result, it is now clear that all the modern technological ingenuity has not succeeded in producing a *true substitute* for breast milk. With this recognition, active movements for promotion of breast-feeding have started in the developed countries, already with significant success. In this process, the fear has been voiced that developing countries could become the happy hunting ground for enterprising multi-national "baby food" manufacturers, who are now being progressively denied an expanding market for their products in the developed countries.

Extensive studies carried out in India, nearly two decades ago, notably at the National Institute of Nutrition, Hyderabad, had shown that breast milk was the sheet-anchor of infant nutrition, especially among our poor communities. The remarkable 'feat' of Indian women of poor communities, weighing less than 40 kgs, subsisting of diets providing less than 2000 K cal and 40 g protein, putting forth 400-600 ml. of breast milk of good protein concentration, for several months on end, has been well documented in the studies carried out at the National Institute of Nutrition. In the

context of poverty and insanitary environment, the problem of undernutrition in infants and children in these poor communities would have been far worse but for this most valuable 'gift' of their mothers. On the basis of these earlier studies, it may be computed that the substitution of breast milk for infant-feeding by equivalent quantities of even animal milk would cost the poor families a minimum of Rs. 100/-per mensem per infant, at the prevailing prices; substitution by commercial infant foods would cost even more. More important than the economic implications of such substitution would be the 'health implications'—the greatly increased risks to the infant of infections arising from unclean bottles and unsafe water.

The progressive substitution of breast milk by commercial infant foods in the technologically developed countries during the last five decades, had not produced any dramatic catastrophic results, because of the vast superiority of their economic status and environmental sanitation. In developing countries like India, however, such substitution at the present state of economy, environmental hygiene and health services, could prove truly catastrophic. At the present time, when even developed countries, not beset with serious economic and environmental sanitation problems, are actively promoting movements for return to traditional breast-feeding, it will be unfortunate if countries like India fail to take adequate steps to check trends in the opposite direction.

National and international agencies have voiced concern over the possible erosion of the salutary traditional practice of breast-feeding. An International Code for the regulation of the marketing and sales-promotion of commercial infant foods has been drawn up. A similar Code, with some modifications has been adopted in India also.

Unfortunately, however, while a great deal of concern and excitement has been generated over the question of "breast versus the bottle", authentic recent data which will enable us to see the whole problem in full perspective and provide the basis for action in this area, are scanty. The important questions that need to be addressed are: "Has there been any serious decline in traditional breast-feeding practices in different communities in the different regions of India? If so, how serious are these erosions? In particular, who are the people

using commercial infant foods, why are they using, how, and with what result?

A comprehensive inter-country study on "Contemporary Patterns of Breast-feeding" organised by WHO had addressed some of these and other questions. Studies in India, carried out as part of this project, which generated a lot of valuable information, were again largely confined to the region in and around Hyderabad in Andhra Pradesh.

It must also be remembered that there are more facets to the problem of infant-feeding than the question of the use of commercial infant foods. In fact, it is the threat of possible expanding use of commercial infant foods, that has served to focus attention on these other equally important aspects of infant-feeding, such as, the adequacy of breast milk, the duration of breast-feeding, problems of breast-feeding of infants of working women, appropriate supplementation of breast milk, the state of nutrition of nursing mothers, etc. Breast-feeding was, for long, almost taken for granted. To the extent that the commercial infant food controversy has jolted health scientists and policy-makers out of this complacent attitude, it may have indeed rendered a distinct service to the cause of infant feeding.

The present Study, undertaken by the Nutrition Foundation of India, was not confined to an examination of the use of commercial infant foods alone. Obviously, this question had to be examined in the total context of infant-feeding practices in general. This Study was addressed to investigations of the patterns of infant-feeding practices in three different regions of the country and among different communities within each region. It is not claimed that the data obtained are necessarily representative of the entire country but the Study has at least covered some major centres where the impact of 'development' may be expected to be maximal.

Objectives of the Study

The objectives of the present Study were:

1) To survey the current infant-feeding practices in the community with special reference to the use of commercial infant foods, especailly those that are promoted as substitutes for breast milk in

different segments of the population and in different parts of the country.

2) To obtain qualitative data on the type of food, including milk other than breast milk, used for feeding infants under 12 months of age, and the reasons why such foods are used or are *not* used.

3) To study the manner and mode of use of different foods including breast milk.

4) To obtain information on some health indicators of the infants associated with these practices.

An Overview

In this Chapter, we briefly recapitulate some of the major findings in the Study and discuss practical steps for the promotion of wholesome infant-feeding practices in the country.

The major findings: (1) Our study shows that breast milk continues to occupy a place of pre-eminence in infant-feeding. Lactation failures are so rare as to be practically insignificant. Thus out of 1820 infants in Bombay, there were just 42 infants who were never breast-fed (2.3%), out of 1377 in Calcutta only 26 (1.9%) and out of 1729 infants in Madras only 54 (3.1%) were never breast-fed. The majority of these 'never-breast-fed' infants belonged to the highest income-group. Even these figures of 'never-breast-fed' infants may be an over-estimate of true lactation failure because 11 of the 42 'never-breast-fed' infants in Bombay, 12 out of 26 in Calcutta and 15 out of 46 in Madras were not put to breast at all in the first instance. We may, therefore, conclude that breast-feeding is the near-universal practice, especially among the poor income-groups.

(2) Breast-feeding was maintained for long periods. Thus at the age of 12 months, more than 85% of infants at Bombay, more than 90% at Calcutta and more than 70% at Madras were still receiving breast milk.

However, these findings should not give room to the complacent conclusion that traditional breast-feeding practices remain undisturbed. There are disturbing danger signals which, if not heeded in

time, could seriously worsen the current situation with respect to the health and nutrition of our infants.

(3) The practice of not putting the infant to breast within the first 24 hours and of discarding colostrum was widely prevalent especially at Bombay and Madras, and to a much less extent at Calcutta.

(4) The disturbing finding was that a high proportion of mothers did not (or could not) exclusively breast-feed their infants for even up to four months. Thus the percentage of exclusively breast-fed infants at the end of the fourth month had declined to 66% at Bombay, 35% at Calcutta and 45% at Madras.

(5) On the other hand, the undesirable practice of feeding infants only breast milk without any supplements beyond six months was also followed in a proportion of cases. Thus at the end of eight months, 21% of infants at Bombay, 14% at Calcutta and 9% at Madras were still exclusively on breast milk.

(6) 14% of all infants at Bombay, 36% at Calcutta and 42% at Madras had received supplements of commercial milk foods (CM). The use of CM was thus strikingly greater at Calcutta and Madras than at Bombay. CM had been started within the first month in 3% of infants at Bombay, 7% at Calcutta and 2% at Madras. These early CM users included the 'never-breast-fed' infants referred to above.

(7) There was evidence that more children born in hospitals—private or government—received CM and that health personnel had 'advised' CM to even poor families. Many health personnel, however, had also advised continued breast-feeding. CM users included many rural poor who could not have had access to health personnel.

(8) Commercial cereal foods (CC) were used as supplements to breast milk in 22% of infants at Bombay, 14% at Calcutta and 37% at Madras.

(9) As may be expected, the proportion of CM/CC users was much higher among the higher income-groups but since the poor constitute the vast majority of the population, when the actual numbers of CM users in the general population were considered, the great majority of users of commercial infant foods were the poor. Most of these latter had resorted to CM on the basis of such beliefs

and considerations as "unique nutritious properties of CM", "convenience", etc. Obviously CM/CC enjoyed a prestige value in the eyes of the poor. After all they were the foods which rich women were using for their infants.

(10) CM/CC use was seen in a higher proportion of the metropolitan population, but the rural environs had not escaped their impact. 22% to 30% of all infants in the villages around the metropolitan cities were receiving CM/CC, showing that the use of these foods was by no means an urban elitist phenomenon. A good proportion of the poor families was spending more than 10% of their meagre income on commercial infant foods. Most of the poor were over-diluting CM and feeding it in unhygienic ways and this was reflected in a higher prevalence of severe grades of undernutrition in such children than in those exclusively on breast milk.

(11) It was gratifying that the overwhelming majority of CM/CC users were using these foods as supplements to breast milk and not as substitutes. Indeed, among the poorest section these foods were invariably given as supplements to breast milk and not as the sole food.

(12) Our studies thus indicate that while CM/CC might not (as yet) have totally supplanted breast milk among poor communities, they have established for themselves a substantial 'beach head' in the dietary patterns of even the poorest infants in the rural environs of the metropolitan cities. At present they are only 'sharing' a place with breast milk in the dietary of early infancy. With increased income-generation they could make further inroads and progressively erode the breast-feeding practice.

(13) Animal milk was the supplement of choice in all income-groups at Bombay but CM/CC were the preferred supplements at Calcutta and Madras among the higher income-groups. Even among the poorest, CM/CC were more widely used at Calcutta and Madras than at Bombay. Taking all Centres together, animal milk, at present, has apparently a slight edge over commercial milk foods among supplements of choice. However, commercial milk foods are running practically neck to neck with animal milk in this regard; if present trends continue, they may, before long, overtake animal milk and

become the major supplement of choice. On the other hand, if special efforts are made to increase the availability of fresh animal milk and to discourage the use of commercial milk foods, fresh animal milk may further outstrip commercial milk foods to retain and improve its present first place among supplements to breast milk.

(14) A smaller proportion of exclusively breast-fed infants had suffered episodes of infection as compared to infants on supplements, especially CM. The difference in the incidence of gastro-intestinal disorders between exclusively breast-fed infants and those receiving CM/CC was significant. Thus it was clear that unhygienic use of CM/CC was taking its inevitable toll among the poor infants.

(15) Among infants less than six months of age, nearly a third at Bombay, just more than a third at Madras and nearly half at Calcutta had weights/age less than the lowest limit of normalcy on the Harvard scale. From 1% to 15% of infants below six months (1%-5% at Bombay to 6% to 15% at Calcutta, with Madras in between) exhibited what is generally referred to as Grade III undernutrition on the Gomez's scale. Exclusively breast-fed young infants showed better growth than infants receiving supplements of CM/CC over and above breast milk at Bombay and Madras. At Calcutta the growth status of infants was poor, both in exclusively breast-fed infants and in those receiving CC/CM supplements with breast milk, with the latter showing marginally better growth status. In the higher income-groups the growth status was distinctly better than in the corresponding low income-groups in all regions. Generally speaking, the growth status of infants at Calcutta was distinctly worse than those of Bombay and Madras.

(16) It was, on the other hand, gratifying that nearly 60% to 70% of infants at Bombay and Madras and 50% to 60% at Calcutta, despite most of them living in abject poverty and under highly unhygienic conditions, had attained in their early infancy a level of growth comparable to that of the best international standards of privileged North American children. The credit for this must largely go to the salutary practice of breast-feeding still widely in vogue among the poor.

(17) The two ends of the spectrum with respect to infant-feeding practices were represented by Bombay and Calcutta. The Bombay picture differed from the Calcutta picture in the following ways: (a) more intensive and extensive breast-feeding, (b) exclusive breast-feeding during early infancy in a much higher proportion of cases, (c) introduction of supplements before six months in a smaller proportion of infants, (d) much lower use of CM/CC as supplement, (e) much better growth, and much lower incidence of malnutrition in infants.

Comments

We will now address three important findings in the Study:

(A) Why do many women, who have traditionally relied on breast-feeding for rearing their infants, and who can hardly afford the expense of supplements, find it necessary to introduce supplements to breast milk well before six months?

(B) Why do poor people who can hardly afford commercial infant foods, and who certainly do not have the necessary facilities for their hygienic use, go in for them?

(C) What are the factors underlying the striking differences with respect to the level of lactation performance, use of CM/CC and growth status of infants as between Bombay and Calcutta?

These three questions may in fact be related and the answers to them may overlap; we will, therefore, deal with these questions together. We may admit, at the outset, that at present we do not have all the data necessary to permit categorical answers to these questions.

(1) As in the case of most physiological attributes, lactation performance may also be subject to individual variability and there may be a 'normal physiological range' with respect to daily output of breast milk. We may expect that where the health nutritional status of the mothers is normal, even women representing the lowest ends of the normal physiological range of lactation may be able to provide enough breast milk to meet the full needs of the growing infant in the early half of infancy. On the other hand, in situations where the

mothers are subject to severe environmental stress, dietary deprivation and undernutrition, there may be an impairment of lactation. In the case of women with lactation performance in the upper levels of the normal range, despite reduction in output consequent on such impairment, the output may be adequate to meet the needs of the infants. On the other hand, in the case of those mothers already in the lowest levels of the normal range, such impairment could affect the output of breast milk to a point when it falls short of the levels of adequacy needed to sustain normal growth and development of the infant. We admit that we do not as yet have concrete evidence in favour of this hypothesis. In this Study, we did not investigate the actual output of breast milk. However, in the absence of clear evidence to the contrary, the possibility that output of milk might indeed have been inadequate in a proportion of cases cannot be ruled out. We found many exclusively breast-fed infants showed growth-retardation even in early infancy. Such retardation need not necessarily imply inadequacy of breast milk output. It could be argued that such growth-retardation was due to repeated episodes of infection. The fact that infants receiving supplements did not have better growth status lends support to this argument.

Studies at the National Institute of Nutrition, Hyderabad, several years ago, had shown that among poor undernourished women, nutritional supplementation could increase the output of breast milk and increase the concentration of some vitamins but had no significant beneficial effect on protein concentration (Bibliography—53). Many women in this Study belonged to the poorest sections subsisting on around 2000 K Cal and around 40 g of protein daily. It will be reasonable to expect that the output of their breast milk can be significantly augmented through improvement of their diets and nutritional supplementation. We will, however, argue that irrespective of this consideration, there is a legitimate case for programmes designed to improve the nutritional status of nursing mothers.

(2) Mothers who believe (or who are persuaded to believe) that their infants are not thriving on breast milk alone will look for supplements. The choice of supplements will be naturally determined by advice from health personnel, family members and neighbours, the example set by privileged sections of the community and the

prevailing value systems. Fresh animal milk may be expected to be the most obvious choice in early infancy. We understand that the availability of fresh milk in the Calcutta and Madras regions is lower than in Bombay; moreover, fresh milk in quantities needed for adequate supplementation is also expensive. Health personnel are not equipped, at present, with sufficient knowledge to offer practical advice as to how best locally available inexpensive habitual foods of the family can be used to supplement breast milk. Under the circumstances, it is not surprising that the poor go in for commercial infant foods in the belief that these foods are so 'nutritious', that they will do good to their babies even if fed in small quantities (more like tonics than foods). The current phenomenon of considerable sections of the poor going in for these foods and stretching them for weeks on end by feeding them in overdiluted form is the result.

(3) The reasons for the striking difference between the Bombay and Calcutta regions with respect to (a) growth status and morbidity profile of infants, (b) lactation performance, (c) time of introduction of supplements, (d) use of CM/CC, can only be speculated upon. The two major possibilities could be: (1) that environmental sanitation in poor communities in the Calcutta region was far worse than in Bombay, and (2) that the poor women in the Calcutta region investigated in the Study were even poorer than those of Bombay; and that they were in a much worse nutritional state and were subsisting on much worse diets than those of Bombay and that consequently their lactation performance was poor. The follow-up studies which we are shortly undertaking in the two regions, will provide direct evidence on these possibilities. As far as we are aware, this is the first time that such a startling difference in the growth status of infants in the different regions of the country has ever been demonstrated on such a large scale.

In our present Study, we had unfortunately not included the Punjab region. But there have been some excellent recent observations on lactation performance of women in Punjab. Das and her colleagues (Bibliography—39) in Ludhiana in Punjab, had shown conclusively that "in spite of their disadvantages of poverty, poor diet, unhygienic surroundings and overwork" under-privileged mothers of Punjab were able to achieve a good state of nutrition for

their infants through exclusively breast-feeding them for six months in the case of 90% of their male infants and 73% of their female infants. On the basis of these observations these workers had concluded: "From our experience we are certain that it is our duty to teach workers not to add to the tremendous burdens of the mothers of the under-privileged community by asking them to give anything other than breast milk for six months. Our duty is to motivate these mothers towards exclusive breat-feeding throughout the first six months." The sample studied by Das *et al.* above was not strictly comparable to the samples investigated in the present Study, because Das *et al.* had included in their sample "only infants who had a favourable start, that is, full-term singletons with birth weights of 2.5 kg or more, and no congenital abnormalities and obvious birth trauma." They had also excluded 4.8% of mothers "who had failed to establish good lactation." Even allowing for the fact that Das *et al's* sample was thus a selected one, their observations suggest that lactation performance of the women of Punjab (even the underprivileged ones) is clearly superior to that of the poor women of Calcutta and Madras and perhaps even somewhat better than those of Bombay. This is another example of regional difference in lactation performance of women in the country.

There is the general impression that the women (even poor women) in the rural countryside of Punjab are much sturdier and stronger than the women of the poorest communities of Calcutta and Madras. They, like the women of Maharashtra (Bombay), do not belong to the "rice belt" of the country—the east and the south, where some of the worst ravages of malnutrition in the country are to be seen. Unfortunately, we do not have precise data on the anthropometric and nutritional status and dietary intakes of the nursing mothers in these different regions, which will help us decide to what extent regional differences in lactation performance are in fact related to differences in the mothers' health/nutritional status. Das *et al's* observations, however, clearly show that with good antenatal care and proper motivation, a high proportion of even underprivileged women can successfully exclusively breast-feed their infants for six months. Their observations indirectly underscore the need to ensure adequate nutritional status of the mother, good antenatal care and proper motivation so as to enable them to do so.

We do not believe that differences between Punjab, Maharashtra, Bengal and Madras are of ethnic origin because within each region we have instances of mothers who can exclusively breast-feed their infants for six months and some who cannot.

There is evidence of faltering of growth in a proportion of breast-fed infants in the early half of infancy; but there is also the same evidence of such faltering even in infants receiving supplements. Indeed, generally speaking among the poor income-groups, differences in growth status between the exclusively breast-fed and supplemented groups of infants within six months did not appear to be significant. Therefore, while we cannot rule out inadequate lactation as a factor responsible for growth faltering, it seems possible that this may not be the major factor. Repeated infectious episodes which are seen (though to a less extent) even in the exclusively breast-fed infants could be the major factor. If the latter is the case, supplementation may not correct the situations but may actually aggravate it. The theoretical benefit of early supplementation may be more than offset by greater risks of infection, with the result that at six months, the infant with supplementation may end up as no better, and perhaps even worse, than the one without it. A decision as to the timing of introduction of supplementation must be governed by an appreciation of the total context in which the infant is being reared. Under the circumstances, it may be prudent not to view minor degrees of growth faltering before six months as an indication for advising supplements. It may be the right strategy to motivate mothers to continue with exclusive breast-feeding for six months but such motivation must be accompanied by attempts to improve maternal diets through nutritional supplementation, where necessary. If, however, growth-retardation persists, then it must be presumed that breast milk is inadequate and supplements must be introduced.

Strategies for the promotion of wholesome infant-feeding practices

Taking into account the socio-economic and environmental conditions in which the vast bulk of our infants are being currently reared (and will continue to be reared for at least the next two

decades) our National Policy with respect to ensuring health nutrition of our infants must squarely rest on the strategy of: (a) promotion of exclusive breast-feeding for the first six months of infancy, (b) introduction of such supplements as fresh animal milk and a judicious combination of food items of the habitual family dietary such as cereals, *dhal* (legumes) and vegetables, after six months, while continuing breast-feeding as long as possible, (c) promotion of better hygiene, and cleanliness in the handling and feeding of foods of the infant, (d) education regarding avoidance of, and care during infections, and (e) regulating the use of commercial infant foods.

The implementation of the strategy proposed above will call for several steps, which we briefly enumerate here.

A. Support to mothers

(i) **Improvement and sustenance of maternal nutrition:** The complacent assumption that no matter how ill-nourished the mother is she will (and must) deliver the breast milk needed for her baby in adequate amounts must be given up. We have, so far, largely neglected what perhaps is the most important and crucial determinant of successful breast-feeding, namely, the state of maternal nutrition; if exclusive breast-feeding in early infancy and continued breast-feeding for the greater part of infancy have to be ensured, we cannot afford to neglect this aspect any more. In all "nutrition intervention" programmes directed to infants and children, it should be the policy that, where there is evidence of growth-retardation in the infants in early infancy, nutrition supplements must be provided to the mother and not to the infants and the effect on growth of the infant could be monitored. Only if it is found that such nutritional supplementation to the mother has not resulted in improvement of growth status of the infant should supplements be directly offered to the infant. If this policy is followed, the present practice of straightaway using any evidence of growth faltering in early infancy as an excuse or justification for introduction of CM/CC will be curbed. We welcome the policy of offering supplements to nursing mothers during the first six months of lactation that is now being followed in our I.C.D.S. programme.

(2) Subsidised foods for nursing women: The Government should earnestly consider a programme for providing at subsidised prices such items as fresh animal milk, bread and good-quality biscuits (see below), especially to nursing mothers belonging to the poorest income-groups. These items taken by the mothers *in addition to their habitual diets,* could help to augment the quality and quantity of maternal diet and of breast milk. If, in consonance with our Family Planning Policy, it is so desired, this facility may be limited to nursing mothers for the first and second living infants only. This step would, of course, call for considerable administrative competence, but programmes of far greater complexity have been successfully accomplished in other countries (the food distribution policy of Britain during the World War II is only one example). The questions here are: Do we consider this matter as of sufficient importance to mobilise the administrative machinery and competence needed for this purpose? Or do we wish to dismiss this as 'a game not worth the candle'?

(3) Provision of facilities for breast-feeding to working mothers: Employment of women in full-time occupations may not at present be a major factor in influencing infant-feeding practices in the country as a whole, for the reason that only a very small fraction of women in low income-groups and in rural areas are engaged in full-time occupations outside their own villages. The problem is now largely confined to a small proportion of women in urban areas. However, the situation could change in the next two decades with increasing employment opportunities for women. Women in rural areas around major cities may start commuting to their work-sites in nearby cities in increasing numbers; the practice of breast-feeding in early infancy will then come under great strain. Indeed this factor would turn out to be as much a threat to breast-feeding as the current aggressive unethical marketing practices of baby-food manufacturers. Under the pressure of their occupational needs, women will increasingly have to turn to 'convenience foods' and in such a situation baby-foods may not even need "aggressive" advertisements. Any policy for the promotion and fostering of the salutary practice of breast-feeding must take note of this possible emerging scenario in the field of infant-feeding within the next two decades.

There would appear to be only two major approaches towards meeting the possible threat to breast-feeding likely to be posed by increasing employment opportunities to women: (1) provision of facilities to mothers for feeding their infants at work sites through the setting up of creches at work places; this may not always be possible. (2) extension of the duration of paid maternity leave to cover the major part of early infancy; (the current duration of maternity leave is too short to permit exclusive breast-feeding for the greater part of early infancy). Such a facility may be granted to working women of poor income-groups at least for their first and second infants. Extension of such facilities for infants of higher birth order may be viewed as a disincentive to limitation of family size and may not be in consonance with our current national policy.

The second approach may turn out to be more feasible and less expensive. It must be remembered that the provision of creches at work sites, in addition to expenses involved in their maintenance, does imply permission for partial absenteeism from actual work. The balance of advantage may thus be in extending the duration of maternity leave to cover the major part of early infancy.

(4) Education of would-be mothers: In an earlier publication (Gopalan C., "Home Science" And Vocational Training For Rural Girls-A Proposal, *Bull. Nut. Foundation of India* 5.1.5, 1984) an imaginative programme of education beamed to girls in rural areas (between 12 and 20 years of age) who are on the threshold of marriage had been suggested. Most of our girls in rural areas enter marriage and attain motherhood with no training in mothercraft and in total ignorance of wholesome infant and child rearing practices. The real key to successful infant rearing is the improvement of the knowledge and competence of mothers. They will then no longer be easy prey to tendentious advice and advertisements. We, therefore, reiterate the recommendation in the earlier publication referred to above.

B. Promoting use of supplements other than commercial infants foods

(1) Increasing the availability of animal milk in rural areas: Fresh animal milk at reasonable prices must be available to the poor. Our

milk production policy must be such that it does not denude the rural areas of milk in order to feed the urban elite. Milk is, by no means, an unnecessary luxury for the poor infants; it is an essential food item especially in the context of the fact that the only inexpensive supplements that the poor can afford for their infants are cereals and to a certain extent pulses (these latter are getting increasingly beyond the reach of the poor). We will be doing a great deal to discourage the use of expensive commercial infant foods by the poor by making fresh animal milk easily available to them at reasonable prices.

(2) Use of inexpensive food items of the family diet: Inexpensive food items of the habitual family dietaries can be effectively used in judicious combinations as supplements for infants. Mothers should be encouraged to use these food items—like *'chapaties'* (wheat bread) dipped in hot tea (in Punjab) or rice, *dhal* (pulses) and vegetables mashed (in the rice belt). Health personnel must be provided manuals containing information regarding suitable supplements for infants based on local food items, which the mothers could use. When practical advice based on local conditions is offered (such advice is not offered at present) they may find acceptance. Vague advice will be of no value. In the absence of practical advice, mothers now turn to commercial infant foods. Home Science Colleges attached to Agricultural Universities in different States may be encouraged to prepare such manuals suitable for different regions.

(3) The training of health personnel: The health personnel, including doctors, require better practical training in the promotion of wholesome and feasible infant-feeding practices among poor communities than what they are at present receiving. When confronted by a poor woman seeking advice as to what she should feed to her baby which is not thriving on her breast milk, most of them today are in no position to give realistic advice. The theoretical knowledge which they have gained during their training proves to be of no avail when they are confronted with real-life situations. Under such circumstances, they often advise commercial infant foods—an advice which is not time-consuming and which is in consonance with what the affluent are practising. If health personnel should not unwittingly become the allies of baby food manufacturers due to such ignorance, we must improve their training and such training should be tailored

to suit local situations and local dietary habits. The fact that some health personnel advise commercial foods to infants of families they come into contact with is, no doubt, a matter of concern. But fortunately the infants so advised, at present, constitute a tiny fraction of the population. What is more disturbing is that health personnel do *not advise the non-use* of commercial infant foods to the vast bulk of the rural poor, for the reason that (a) they do not reach them and (b) they are not equipped and trained to suggest practical and feasible alternatives to CM/CC under the real-life conditions in the field.

(4) Improvement of quality of biscuits in village shops: We have found in our Study that there was extensive use of biscuits in infant-feeding especially among the poorest sections of the population in Madras and Bombay and to a less extent at Calcutta. The biscuits used were from the village shops, and were the products of small-scale industry. (The good, elegant, highly priced biscuits of the large-scale manufacturers are of course for the urban elite and well beyond the reach of the rural poor). At present there is absolutely no effort at quality control and at ensuring reasonable nutritive value of these biscuits, which are in such wide use among the poor; the poor are not getting their money's worth. The organised large-scale sector in biscuit manufacture is apparently not interested in transfer of technology to the small-scale sector which caters to the poor infants and children of urban slums and villages. The Government must look into this question. By improving the quality and nutritive value of biscuits and offering them at subsidised rates to pregnant and nursing women and infants and children of the poor, we will be utilising a ready-made channel which is already in wide use in the countryside, for the betterment of the nutritional status of the poor. It must be remembered that the poor also stand in need of ready-to-eat 'convenience foods', which will help save time, energy and fuel and which will be a supplement to the family diet. There is no danger of biscuits displacing breast-milk (as CM/CC could) because they will be used only as supplements mostly in the latter half of infancy just as they are now being widely used.

C. Augmenting health services and improving environmental sanitation

(1) Increasing the outreach of health services: If infant morbidity has to be reduced and wholesome infant-feeding practices are to be promoted, we have to greatly increase the out-reach of our health services. At present, the majority of the rural poor do not have access to basic health care and so health personnel are in no position to influence infant-feeding practices or to mitigate infant morbidity in most of our rural areas. It is only when health services reach down to our villages that a programme of monitoring growth (and nutritional status) of infants and children would become possible and the effects of morbidity can be mitigated. The control of morbidity is only next in importance to promotion of breast-feeding in ensuring good nutrition for the infant, and health personnel can make a significant contribution in this regard.

(2) Safe water supply and sanitation: If we have to reduce the present high prevalence of morbidity in infancy and childhood, we must ensure basic sanitary facilities in our villages. In particular, safe water supply is an essential requisite. In the absence of safe water, any supplement could become a source of infection. It is unfortunate that a majority of our rural population do not have access to safe water supply.

D. Regulating use of commercial infant foods

(1) Education regarding superiority of breast milk over commercial infant foods: The urban elite constitute a tiny fraction of our population, but they are the trend-setters whom the poor envy and wish to emulate. The elite must be made fully aware of the overwhelming new evidence pointing to the clear superiority of breast milk over all baby foods; a vigorous movement for return to traditional breast-feeding must be initiated among the urban elite, and maintained with sustained tempo. The prestige and aura that now surround CM/CC must be dispelled. The poor will be suspicious of advice which smacks of double standards. If programmes to discourage commercial infant foods among the poor should command credibility and make headway, they must be accompanied by parallel

movements among the rich—somewhat on the lines of the movement in USA and Europe. We must ensure that CM / CC are not promoted in a manner which suggests that they are substitutes to breast milk not only among the poor but also among the affluent. At most they could be presented as just one of the possible supplements to breast milk. In that case the disadvantages and risks arising from their use by poor communities because of economic or environmental constraints must be pointed out. The poor should not be lured into using them by planting in them the belief that these foods have unique and precious nutritional properties, and will, therefore, benefit their infants in a manner which no other food within their reach can do.

(2) Implementation of the new Code: The Code recently adopted by the Government of India is good so far as it goes. Much would, however, depend on how it is implemented. We are distressed to find that despite the Code, some brands of commercial infant foods are still being promoted in a manner which suggests that the letter of the Code is being observed (in order to keep within law) but not the spirit. Multi-national baby food manufacturers, goaded by the profit motive, may not be expected to summon the concern and care for the poor necessary to avoid unethical promotion of their products; it is, therefore, the responsibility and duty of the indigenous (national) baby food manufacturer to set the highest standards in this regard and thus show the way. If indigenous manufacturers observe the highest standards of ethics, it will be easier for the Government to deal firmly with errant multi-nationals. A truly effective machinery for ensuring the rigid observance of the Code must be set up. Otherwise the entire exercise of drawing up the Code will become a mockery much like the statutory warning on the cigarette packets. The implementation of the Code cannot be left to government agencies alone (they could also sometimes become vulnerable). There must be a people's movement to ensure that the traditional practice of breast-feeding not get eroded; consumer protection societies, voluntary agencies, the media and the enlightened lay public must take the lead and perform their watchdog duties in this regard.

(3) Enlisting support of the medical profession: The impressions that medical practitioners, paediatricians and health professionals in general tend to advise commercial infant foods too readily, and that

there could be an unholy alliance between some of them and baby food manufacturers, have tarnished the fair name of the profession. The latter allegation may, perhaps, be a bit too sweeping. However, without bothering about 'impressions', in the interests of child health/ nutrition, neonatologists and paediatricians must take the lead in spearheading movements for fostering and promoting the traditional practice of breast-feeding. It is their participation that will lend such movements prestige and authenticity. We are of the firm view that the over-whelming majority of the medical profession are public-spirited, and dedicated to the cause of promotion of national health.

(4) Changing the hospital culture: The finding that delivery in hospitals, favours use of commercial infant foods is distressing. That in some hospitals at Bombay, infants were introduced to bottles of commercial milk immediately after birth, even before their mothers had had a chance to put them to breast, is shocking. Fortunately, we found that this practice was not widespread. Government hospitals are teaching centres where medical students and other health professionals are trained. The traditions and the precedents they set must be exemplary and designed to promote health. Consumer societies headed by enlightened paediatricians must bring such deleterious practices in our hospitals to public notice and governmental attention. We do not suggest punitive witch-hunts but a constructive movement designed to eradicate current unhealthy and unethical practices.

(5) Placing commercial infant foods in proper perspective: It will be bad strategy to resort to overkill by painting baby foods as 'poisons'. Exaggerated statements and extreme positions may prove counter-productive. These foods have a place as just *one of several possible supplements* to breast milk in late infancy among those who have the means to afford them and the facilities to use these hygienically. But the poor must be disabused of the impression that these foods are unique, essential and could confer benefits which other much less expensive supplements cannot.

The potential harm that these-foods can cause when unhygienically used, and the little nutritional benefit which they can provide

when used in the small quantities which alone the poor can afford, must be highlighted by health professionals so that the poor are 'weaned away' from these foods.

The state of our infants and children is the true test of the state of our 'development'; it is also the most important determinant of our future. No national programme can be more important than the ones directed towards the betterment of their health and nutrition.

Appendix

Why breast milk is better than formula baby foods

By

C. Gopalan

This paper was written by the author at the request of the Ministry of Social Welfare, Government of India, for use by the Ministry. The Ministry was keen that the latest information pointing to the unique properties of human milk should be widely disseminated to the enlightened lay public. This article was beamed to the urban elite—the trendsetters. It has been reproduced here as it appeared relevant to the present Study.

In the long history of mankind, spread over several centuries, the practice of bottle-feeding of infants with milk formulas (baby foods) is a very recent development. This had its origin in the affluent countries of the industralised West barely 60 years ago. It is doubtful if this practice could have grown to its present dimensions if all that we know today about the unique and inimitable qualities of breast milk was known earlier.

Recent findings

Why breast-feed? Recent researches have thrown a great deal of new light on the chemical and biological properties of breast milk, and have clearly established its superiority over all milk formulas in the promotion of growth, health and development of children. Unlike milk formula foods which are inert and have a fixed composition, breast milk is a dynamic "living fluid," specially adapted to the infant, its composition and output changing with the changing needs of the infant. There are changes in its composition over a period of time, during the day, and indeed even during the course of a single feed. For example, the fat content of breast milk is low at the start of a feed and gradually builds up to its peak value towards the end. Colostrum, secreted during the first five days after delivery, has a

different composition from that of mature milk. It is lower in fat but richer in proteins and has a higher concentration of antibodies which protect against infections. It is also a richer source of zinc and vitamin A (which can be stored in the infant's liver). Zinc and vitamin A are now known to have profound influence on immunological mechanisms concerned in resistance to infections. By not putting the infant to the breast immediately after delivery, the infant is denied these benefits.

Breast milk gradually attains its 'mature' state with respect to composition and output by the fourth to the sixth week after delivery. The daily output of milk varies depending on the frequency of the feeds and the force of sucking by the infant: thus, within limits, the more hungry the infant the greater the output. The proteins of breast-milk, unlike those of formula foods, contain a relatively low proportion of casein, resulting in softer curd, easier digestibility and less likelihood of constipation; the lactose is high and helps to maintain low electrolyte concentration; the fat contains high levels of essential unsaturated fatty acids (linoleic acid), and also provides vitamin E (also concerned in defence against infections). The calcium, iron and zinc in breast milk are much better absorbed than the same elements in milk formulas. The sodium content is lower; this is important because the kidneys of the new-born cannot deal with a heavy load of solute. The stools of the breast-fed infant, unlike of those on baby foods, are acidic due to high concentration of lactobacilli, and this helps to inhibit fungal infection. Thus the chemical composition of breast milk, unlike that of baby foods, is specially adapted to the physiology of the infant.

Breast milk contains a wide range of anti-infective substances including white cells (lymphocytes) and antibodies (secretory immunoglobulins). The latter protect the absorbing surfaces of the infant's intestines (intestinal mucosa) against such deadly bacterial infections as E. Coli, Shigella and Salmonella, and Rota Virus infections, which are mostly responsible for infantile diarrhoeas and deaths. There are also antibodies against polio virus and influenza virus, certain other respiratory (lung) viruses, and against organisms concerned in meningitis and middle-ear disease (ottitis media). The antibodies in breast milk are those produced in response to infections

which the mother is exposed to in her environment. Thus the profile of antibodies in a mother's milk is specifically designed to protect her infant against the infections prevalent in its given environment—another example of how the composition of breast milk is tailored to the special needs of the infant. Formula foods do not contain these protective antibodies; and not all the money in the world can buy them.

The current Indian scene

Fortunately, in India today the great majority of our rural women have not, as yet, discarded breast-feeding. In fact, they generally breast-feed their infants for durations extending to 18 months or more. This is the brightest feature of India's current nutrition scene, and this would, incidentally, show that "lactation failure" in the affluent is largely due to psychological rather than organic causes. The problems of infant mortality and protein-calorie malnutrition will be far worse than what they are today but for this valuable asset. While commercial baby foods have not as yet, made significant in-roads into the interior rural areas of the country, the poor and middle-income-groups in the cities, urban slums, small towns and in the periurban rural areas have apparently not been so fortunate and have not been spared.

In the conditions prevailing among our poor communities, exclusive breast-feeding for the first six months yields optimal results with regard to growth and development. As a general rule, supplements need to be introduced only after six months. The supplements can consist of the habitual food items of the family—cereals, pulses and vegetables prepared and fed appropriately and hygienically, and, if necessary, top-feed of cow's milk. Even after such supplements are introduced, breast-feeding must continue as long as possible. Experience in Ludhiana has shown that with such a regimen normal growth can be ensured even in the poorest children.

There are several myths about breast-feeding and formula foods prevalent among the affluent sections of our society. One such is the belief that breast-feeding is "not good for the figure". Actually breast-feeding through helping the woman to shed the extra fat she

stores during pregnancy, will help improve her figure. Another myth is that formula foods contain special substances which breast milk does not, and so build bonnier babies; indeed, as mentioned earlier, formula foods cannot even fully substitute for breast milk, let alone excel it.

It is not surprising, therefore, that diarrhoeas, respiratory infections and deaths are far less common in breast-fed infants than in the bottle-fed. A study in Haryana showed that the incidence of diarrhoeas in bottle-fed babies was three times higher than in the breast-fed. Dehydration resulting from diarrhoea, was also more severe in the bottle-fed infants. A study from another developing country showed that bottle-fed infants were hospitalised with infectious diseases ten times more often, and spent ten times more time in a hospital in their first year than fully breast-fed infants. Even in a developed country (USA), it has been reported that of 107 infants belonging to the middle-income-group admitted to the hospital with acute diarrhoea in a given period, only one infant was breast-fed. In a London hospital, while 14% of the infants in the community served by the hospital were being breast-fed, only two of 608 infants admitted to the hospital with diarrhoea were breastfed. The protective effect of breast-milk against infections both in poor and affluent societies, has thus been well documented. In fact attempts have even been made to prevent and treat outbreaks of diarrhoeas in bottle-fed infants by feeding them breast milk. Breast milk also has antibodies which protect the infant against allergy, again by insulating the intestinal mucosa from the allergens (agents of allergy) in the gut.

Quality of breast milk

What is gratifying in our context is that, with respect to the concentration of protein, fat, lactose, calcium, and anti-infective and anti-allergic antibodies, there are no differences between the breast milk of poor and affluent mothers. The quantity and concentration of some vitamins in the breast milk of poor mothers, can, however, be further improved by improving the maternal diets. The cost of such improvement which will improve the health and nutritional status of both the mother and her infant will be a very small fraction of the cost of bottle-feeding baby foods.

Breast-feeding also promotes better 'bonding' (attachment between mother and infant) conducive to the psychological and emotional development of the child. A recent WHO/UNICEF report states, that breast-fed infants generally show more bodily activity and tend to start walking earlier. Breast-feeding is a natural (though not an absolutely reliable) form of contraception. The more frequent and intense the breast-feeding the greater the contraceptive protection, brought about through increased levels in the maternal blood of the hormone, prolactin, which inhibits ovulation and resumption of menstruation. The WHO/UNICEF report referred to earlier, mentions that breast-feeding alone, in the absence of contraceptives, could increase the interval between child-births by five to 10 months. In a middle income-group of Indian women, only 62% of those who were breast-feeding their infants had resumed menstruation by eight months after delivery as against 100% of those who were bottle-feeding their infants.

Economic implication

Simple arithmetic will show that with the current levels of income and present cost of baby foods, no working-class family can afford bottle-feeding with baby foods. The same is true of most families in the middle-income-group. Such families when they are persuaded to use baby foods, resort to overdilution in order to stretch the small quantities they can afford to the maximum extent possible. With the shortage of fuel, clean water and storage facilities, they cannot ensure strict hygienic conditions in preparation and feeding. Undernutrition and infection of the infant are the inevitable results. Even for affluent mothers, baby foods may be recommended only if breast-feeding has been attempted and found to have failed. However, some health professionals all too readily assume action failure even when it does not genuinely exist, and instead of reassuring the mothers, advise bottle-feeding with milk formulas. This has given rise to the unfortunate impression of an unholy alliance between some health professionals and baby food manufacturers. Bottle-fed babies of even affluent families do not escape diarrhoeas and dysenteries, partly because *ayahs* and servants are entrusted with the feeding. In recent years, several deleterious effects of baby foods have been reported

such as obesity, cow's milk allergy, metabolic stress in premature babies and colitis.

With increasing recognition of the clear superiority of breast milk and greater awareness of possible deleterious effects of baby foods, there are now active movements in developed countries urging return to breast-feeding. As a result, more and more women in those countries are now breast-feeding their infants. Working women even express their breast milk into sterilised cups or bottles so that the baby can have feeds even in the absence of the mother. This, together with the declining birth rates in those countries poses the threat of shrinking markets for baby foods there. The manufacturers are therefore increasingly turning their attention to the poor developing countries of Asia and Africa to expand their markets, much to the detriment of infant nutrition in these countries. The substitution of breast-feeding by bottle-feeding with baby foods at the present stage of our national development, with vast sections of our population still afflicted with poverty, illiteracy and poor sanitation, could prove truly catastrophic. Codes for regulating the marketing and advertisements of baby foods drawn up by international and national agencies will have only very limited value. Commercial firms promoting their different brands of baby food, employ the slogan " breast milk is best" as the opening gambit in their advertisement campaign in order to conform to 'codes' and 'regulations': but, after thus quickly getting over the formal ritual, business generally goes on as usual. Slogans and codes could easily degenerate into a farce, unless backed and supported by practical steps. We may briefly consider some of these steps.

Practical steps

The government, apart from drawing up codes, must enunciate a clear policy on infant nutrition, indicating its determination (a) to promote and foster the breast-feeding practice and to take all appropriate measures for this purpose, (b) to prevent undue expansion of production and import of baby foods and to institute stringent measures to check unethical practices in the marketing and advertisement of these foods. This could be part of a comprehensive national nutrition policy.

In pursuance of such a policy: (1) government should immediately set up an independent statutory commission vested with sufficient authority and powers to monitor the production, import, marketing, advertisement and sales of all baby foods, and to check undue expansion of production and import of baby foods and unethical promotion, marketing and sales practices likely to erode the practice of breast-feeding. Such a commission could be composed of independent and public sprited paediatricians, eminent social scientists, representatives of voluntary organisations concerned with problems of child health and nutrition, consumer associations and women's organisations.

(2) The media, especially the All India Radio and Doordarshan should stop all advertisements of commercial baby foods and cereal foods. All India Radio programmes reach down to the villages and the villager can hardly distinguish between a commercial advertisement and authentic governmental pronouncement. Instead of propagating such commercial advertisement of baby foods, these agencies should organise frequent programmes for propagating and promoting breast-feeding and for actively dissuading the public from discarding breast-feeding in preference to bottle-feeding of baby foods.

(3) With more women seeking employment outside their homes and with urban migration, the practice of breast-feeding will be put to severe strain in the years ahead. In all our employment programmes involving women, there must be built-in provisions and facilities for preservation and promotion of the breast-feeding practices. Creches must be provided at work-sites and women must be allowed time during working hours to breast-feed their infants. The government may seriously consider increasing maternity leave benefits from the present three months to six months for the first and the second living child (only) in the case of mothers of the weaker sections who continue to exclusively breast-feed their infants for six months.

(4) In undergraduate medical education, in the training of all categories of health personnel and, most importantly, in the training of paediatricians and obstetricians, much greater emphasis than at present, must be laid on the overriding need to preserve and protect

the breast-feeding practices. In the ultimate analysis, it is the health professionals who have to play the major role in advising and encouraging mothers to breast-feed their infants. Such advice must always be accompanied by practical suggestions for improving the diets of the nursing mothers in order to sustain their health and nutrition. Promotion of maternal nutrition must be an integral part of all programmes for the promotion of breast-feeding. All this requires adequate training of health professionals at the practical level; at present the training in this regard is wholly inadequate.

(5) However we should not depend on goverment efforts alone. What we need is a people's movement, in which vigilant voluntary organisations, enlightened citizens, educated women and the press must join hands. It is only when public opinion is thus created and people are alerted, that governmental measures can succeed.

(6) Those who extol the value of breast milk rarely speak of the poor status and low dignity now being accorded to women in our society. Women will normally wish to breast-feed their infants for as long as feasible, because of the emotional satisfaction they would derive therefrom; but they should not be faced with the agonising choice of either pursuing the interests and vocations or of breast-feeding their infants. We need to evolve a policy which will enable them to do both. The development of such a policy is the real challenge to all those interested in national development, women's uplift and child nutrition.

12/84—30.000

Printed at Rekha Printers Pvt. Ltd., New Delhi-110020