Discussion: Session 1

Paper by C. Gopalan

M.S. Trastotenoyo:

Please allow me to make a comment on "GOBI" as a slogan. In my opinion, GOBI should be understood as an integrated program and not as a slogan. For instance, GOBI is always linked with the three F's: family planning, female feeding supplementation, and female education. Therefore, if we implement this program carefully and in line with the development of the country and the local situation, I still think it will be a relevant aid to improve child nutrition and welfare.

L. Mata:

With respect to "GOBI", I would like to point to one of the several shortcomings of this program. The environmental effect is completely disregarded. I will deal with this extensively in my paper.

J.A. Kusin:

In connection with this discussion on GOBI, to my knowledge GOBI-FFF was indeed brought up as a package but I know only very few countries which implement the three F's. Also worth mentioning here is the discussion and correspondence which appeared in the last few months in The Lancet in which UNICEF has replaced GOBI by the Burmaco initiative which means comprehensive primary health care within rural development. This probably means that it was admitted that the approach of GOBI is too narrow.

A.W. Qureshi:

I would like to comment on oral rehydratation not being the solution for control of the diarrheal disease. The problems we face as clinicians are major constraints like the budgets and lack of education, and likewise the poor environmental conditions. As long as we cannot achieve these objectives, I think we have to resort to the ORS program to prevent the increasing mortality and morbidity caused by diarrheal disease.

A.A. Kahn:

In the report on one of the recent studies of the Nutrition Society of India, it was mentioned that a major contribution to the "smallness" of the low birthweight baby may take place in the last trimester. In my opinion, the first trimester is at least as important in this respect since that is the time when the growth of the brain takes place.

C. Gopalan:

I am in full agreement with this remark. In fact I would even go further than the first trimester of pregnancy, we should go back to the girl, which I also have stated in my paper. The point I was making on supplementation of pregnant women during the third trimester of pregnancy was that even if you are able to reach only the last trimester, you will still be doing some benefit. Since the actual

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situation in Asian countries is that presently we are only able to reach them at the third trimester, or in the middle of the second one, nutritional supplements will still be worthwhile, but that this is not the ideal situation, I entirely agree.

J.A. Kusin:

Please allow me to give a reaction to Dr. Kahn's remark. The experiments of Dr. Widdowson in the early fifties have clearly shown that up to 28 weeks, when the fetus reaches a weight of about 1 kg, the mother does not need too much extra energy or protein and brain development is fully protected. Therefore, from a physiological point of view, I would still prefer to consider the third trimester as the primary target for nutritional supplementation, which is also supported by the data of Noy.

Paper by D. Karyadi

C. Gopalan:

Dr. Karyadi could you please comment on the claims from Indonesia with respect to the other dimensions of the problem of vitamin A deficiency and possible other beneficial effects of vitamin A supplementation on child survival. To my knowledge this still seems to be a controversial area.

D. Karyadi:

At the present state of the art, indeed those other dimensions of vitamin A brought up by the famous "Aceh"-study, launched by our group jointly with the group from the Johns Hopkins Hospital, Baltimore, are still controversial. In my paper I already mentioned that the study to confirm this controversy is underway. Moreover, also in the Gambia, Nepal and India they are replicating the study to understand the mechanism of the decreased morbidity and mortality. We have just published a study in the American Journal of Clinical Nutrition in which vitamin A and vitamin E status were studied together with the response to oral doses of both vitamins. We found that vitamin E inadequacy, which impairs vitamin A absorption and storage, may well contribute to the high incidence of clinical vitamin A deficiency in West Javan children. Now we are investigating some immunological aspects in the children in that study which have been supplemented with vitamin E compared with the control group. In conclusion, I have good hopes that at least parts of the controversies with respect to the dramatic effect of vitamin A on mortality will be cleared up at the end of this year during the meeting of the International Vitamin A Consultative Group in Nepal. We do recognise that the dramatic decrease in mortality is not singularly caused by vitamin A alone. A challenging question we are now working on is what role vitamin E may have in this respect.

P. Bhaskaram:

I would like to point out that in the acute spread of infections, diarrhea and particularly measles, the cause for corneal lesions may be entirely different. Although corneal lesions associated with malnutrition in the post-infectious period which may occur may be prevented by vitamin A, the etiology of eye lesions in diseases like diarrhea and measles is entirely different. Therefore, though the vitamin A levels are lower in these acute infectious periods, the main mechanism involved in producing corneal lesions are more likely to be due to the disease per se, rather than to vitamin A deficiency. So, I am afraid that if we treat children with corneal lesions only with vitamin A, we are ignoring other aspects by which we can prevent blindness in these children.

D. Karyadi:

Yes, I agree with you. Because of the two factors of pathogenesis, we should not intervene in the controls with vitamin A alone. We should aim for a comprehensive approach of interventions.

J.A. Kusin:

If we talk about dietary means to obtain sufficient vitamin A, only dark green leafy vegetables are mentioned and sometimes red palm oil. In semi-arid zones, however, the availability of dark green leafy vegetables is very limited and seasonally conditioned. Since one of the staple foods in these regions is yellow maize, we expected it to be a rich source of beta-carotene. Unfortunately, we only found very little beta-carotene in the maize strains from Madura; the yellow colour is mainly due to xanthophyls. Would it not be a good idea to look for maize strains rich in beta-carotene?

D. Karyadi:

This is a very useful observation and I agree that we should especially focus on locally available vitamin sources. The search for corn variants rich in beta-carotene is just an example. We should look for plant resources rich in vitamin A as well as in other nutrients coming from the fat such as vitamin E, and also alternative sources for vitamin C should be assessed.

A.M. Molla:

Although in many Asian Countries dark green leafy vegetables are available, we still see a high degree of vitamin A deficiency in countries like Bangladesh. In spite of the consumption of dark green leafy vegetables, this is difficult to explain. Other factors like the state of the intestine, chronic malabsorption, state of diarrhea or amount of fat consumed along with the dark green leafy vegetables might also be involved.

Paper by L. Mata

S.H. Pudjiadi:

Dr. Mata, am I right in observing that you did not use a local standard growth curve but the Harvard one?

L. Mata:

In our first studies the only standard growth curve we had available was the Jackson-Kelly standard, which is the Harvard one for the first two years and the Iowa one afterwards. Later we adopted the NCHS standard. I believe that the growth potential for children in Guatemala and Costa Rica is the same and in general I do not think that it is appropriate to have a smaller standard for Latin America than for North America.

E. Suroto-Hamzah:

Could you please comment about treatment of infections in malnourished children in a hospital setting, especially with respect to the question when to start giving antibiotics. From one side you want to protect the child and from the other side you do not want to raise resistency because of the misuse of antibiotics.

L. Mata:

Actually, the treatment of acute severely malnourished children was not my primary field of interest; I am more interested to prevent this situation. However, I would mention some cases where infections in children were successfully treated with colostrum and human milk. My view is that you have to treat children with antibiotics if it is very obvious, but not by giving them in a preventive way. Further, the child with acute malnutrition should be managed with a hypercaloric diet which could be simply supplementation with milk.

M.S. Trastotenoyo:

Do you have breast milk banks in your hospitals or do you just collect it?

L. Mata:

We began doing so in 1977 when Dr. Largea from Argentina showed that by just giving full fresh colostrum and milk, the neonatal mortality could be tremendously lowered without the use of antibiotics. Nowadays we have to cope with the problem of AIDS which can be transmitted via breast milk. Although there is no good evidence for this transmission, we are now advising that the milk be pasteurized when it is pooled.

M. Gracey:

There have been some important changes in the incidence of infection and the nutritional status of the children in Santa Maria Cauque since you have studied them. Could you please comment on this.

L. Mata:

After the earthquake in 1976 the whole construction pattern of the village was changed. Houses do now have tiles or cement floors which helps hygiene and children now sleep in separate beds because the houses are warmer. However, the problem with the water still remains, so still many children suffer from diarrhea. Because of these slight changes, the weight of the women has increased and also the birth weight of the infants that have been born recently, although we still have many low birth weight infants. In my opinion we could bring about more pronounced changes if we capitalise on the knowledge that the people in the village have to improve on the way the mother handles everything around the baby, to curtail infection. I would call this maternal technology: the mother has to know how to adequately store and handle the water for drinking and cooking, she has to learn the correct handling of human and animal faeces, she has to learn about oral rehydration (preferably with respect to cereal-based ORT preparations) and she has to learn about reproductive behavior.

Paper by S. Surbakti, Y.K. Husaini and M.A. Husaini

A.W. Qureshi:

Please allow me to ask two questions. When you say breast feeding, do you mean only breast feeding up to 5 months of age with no introduction of bottle feeding? We regularly see that soon after a child is born, within one week or even the first day, some mothers give water and introduce the bottle. In some places they do not even give colostrum, they just throw it away.

M.A. Husaini:

With respect to your first question, we only asked the mothers about breast feeding. Whether this relates to exclusive breast feeding cannot be deduced from our data. About the second part: we also see this experience here in which to even one day old children, water is given or even some honey.

M.S. Trastotenoyo:

Could you please give the exact definition of breast feeding for this study.

M.A. Husaini:

In this survey we just asked the mothers whether they breast fed their infants. When they already stopped breast feeding we asked when they did stop and how long they actually did breast feed. We did not ask the mothers on the frequency of nursing or whether they breast fed their infants at least once a day.

C.-Y. Yeung:

Before I would like to ask you to what extent the infants you studied in your survey followed standard growth curves, please allow me to make some general remarks on how the effects of tradition and cultural practice influence the mother's choice of food for their infants, and as a result their growth. Recently, very striking differences were found in the growth curves of Chinese infants either living in China Town Toronto or in Scarborough, which is a new town near Toronto. In the first location, where mothers adhere to the very traditional Chinese habits of infant feeding, essentially the same growth curves were found as in much older studies with Chinese infants: about the age of 4–5 months, height starts to falter off. In the latter location, however, where Chinese mothers adopted the usual North American habit of feeding infants, growth rates up to 30 months were identical to the North American growth rates. Also, for instance, when the child is ill, according to traditional Chinese habits of infant feeding it is fed only with very diluted, very watery rice. Therefore, I believe that cultural habits are the reason why the growth curve for traditionally reared Chinese children is lower compared to those brought up in other locations.

M.A. Husaini:

We found in our survey with ten thousand children that the growth curves follow the Harvard standard until 6 months of age after which they deviate. For the children in the well-off families we see that the Harvard standard is followed much longer. We are planning to investigate this in more detail and also pay attention to the diversification and regional aspects of infant feeding practices.

S.H. Pudjiadi:

I can add to this in that we found in Jakarta that the growth curves depend entirely on the social economic condition and the education of the mothers. We have seen that until the age of 6 years, growth is comparable to Harvard standards.

P. Bhaskaram:

Looking at your data, I observe that well-clothed and educated mothers breast fed their babies for electively less time, but, however, subsequently it was found that the percentage of well-nourished children was higher in these families. In contrast, you also show that poor uneducated mothers fed their children on the breast for a longer time and subsequently malnutrition in these children was much higher. Can these two be related and what would be your message regarding the weaning.

M.A. Husaini:

We found in our study that infant feeding in quality and quantity is influenced by a number of factors, for instance by the education of the mothers and also by income. Interestingly, in rural areas we see that the education of the mothers and their income are not so closely related as in the urban regions. Further, in rural areas mothers with higher income stop breast feeding earlier but this does not result in a better outcome for the infants as was found in the urban areas. Therefore we would stress here the importance of a government policy to improve the power of the mothers to feed the children appropriately, especially in the rural areas. The nutritional status of the infants and children in our studies is the result of a number of confounding factors and not only breast feeding. In our study we found that the better nutritional status of the infants is related to the mothers' education, as is the fact that they stop breast feeding earlier. It would, however, be foolish to conclude that the improved nutritional status of the infants is caused by the fact that they have been breast fed for a shorter period.

A.A. Kahn:

Since you just answered the question I wanted to ask, please let me make a general remark that with breast feeding the growth pattern depends on the quality of the mother's milk, in particular its fat content. Many babies do very well on breast milk alone for a long time and I think in the developing countries we must encourage prolonged breast feeding.

C. Gopalan:

Mister chairman, I am pleased to hear the very last remark of the speaker which has put the whole issue in its proper perspective by bringing in the multifactoral factors. Otherwise, the interpretation could be wrong.

General discussion: Session 1

J.A. Kusin:

If you compare the growth charts from the exclusively breast fed child with that of the supplemented and weaned child during the first 6 months of life, for instance those shown by Dr. Mata, you see that growth in these infants is exactly the same. Further, if you carefully read those many articles quoting exclusively breast feeding as the ideal way of breast feeding, you find out that this only occurs in 25% of the mothers. Among others, Dr. Rowland said that they probably represent a quite selective group of good performers. In our study in Madura we found that only 5% of the infants were exclusively breast fed, the others were force fed from the first or the second day onwards. My question is why do these children also follow the same standard growth charts up to 4 months, and do not have diarrhea for the first 4 months.

L. Mata:

My experience is that in very undisturbed peaceful societies breast feeding is universal and exclusive for at least 3 months, in many cases even for 6–7 months. The growth in these infants is fully compatible with standard growth curves such as the NCHS. If supplementation is started early, the child can still show normal growth, provided it is surrounded with a marvellous protected environment like we, for instance, have seen in our study in Costa Rica. However, I do not think that you can do

this in places where cholera, diarrhea and other infectious diseases are prevalent. In those regions weaning foods are very dangerous if they cannot be prepared properly. In this respect we should also remind ourselves that even if given in only small amounts to the infant, human milk still has significant nutritional and health promoting effects. Because of its protecting and anti-inflamatory properties based on the action of secretory IgA as well as the several other active substances, such as the recently discovered hormonal and growth stimulating factors, human milk, even if given in minor amounts, has a very important function for the optimal growth of the infant.

M.A. Husaini:

From our studies that we did 10 years ago in a very poor area, we indeed obtained similar data as you mentioned from Madura showing adequate growth up to 6 months. I would speculate that perhaps next to immunity the infant received from breast milk, also some immunity is obtained from the mother during the period of pregnancy which might influence this prevention of infection up to a certain age.

A.Li Ming Cheng:

In view of the ongoing discussion about breast feeding, I would like to make some comments about the situation in Hong Kong. In the sixties, more than 50% of the mothers exclusively breast fed their infants. This figure dropped to only 5% in 1979. Since then there have been efforts to promote breast feeding and about three years ago two surveys were done to investigate its success. In our study we found that beyond one month only about 7% of the mothers still breast fed their infants completely. The other study reported a higher proportion, 28%, but beyond one month this figure was reduced to about 8%. We found that there were three reasons why mothers did not breast feed: inconvenience, embarrassment and work. Inconvenience was indicated because of social and dietary restrictions on the mother, embarrassment is something we gathered from western culture where breasts are associated with sex symbols and because of the widespread use of TV and advertisements. Work should not really be an argument since women have maternity leave for 4–6 months.

W.C. Liu:

The situation in Taiwan is highly comparable to that in Hong Kong. In 1940 to 1950 we had 60-70% breast feeding and now this figure is about 2%. We have made tremendous efforts to promote breast feeding with several programs, but unfortunately without any success.

D.R. Karunaratne:

From the above comments on the very low rates of breast feeding in Hong Kong and Taiwan, I am getting somewhat confused. Our main objective in the management of infant feeding is in my opinion to reduce infant mortality and the other is to have ideal growth in these infants. If I consider the very low rates of infant mortality in these countries, I think that they have achieved this goal. So should we continue to promote breast feeding and try to decrease infant mortality in this way? Or should we aim to follow the process Hong Kong and Taiwan has undergone which in fact succeeded in obtaining very low infant mortality and ideal growth? I think that these are quite different messages and we should make it clear which we should follow.

C. Gopalan:

I think the message is already clear, that there has been a tremendous movement towards breast feeding in the first world. I think the advantages of breast feeding, despite what you have seen with respect to growth in the first few months, have been well documented. Its superiority has been accepted very well by nutrition scientists and health scientists, so I do not think that you should just go by parameters of the type of growth performance. Although, it has never been denied that with artificial foods, if given in appropriate amounts, you can obtain satisfactory growth performance, I think the message is still that:

- breast feeding is best,
- breast feeding should be exclusive for at least 4 months and,
- in the really poorest communities in the slum areas, breast feeding should be exclusive until 6 months, since the advantage of supplementation by the fourth month may be offset by the greater chances of diarrhea.