SITE VISIT: The Integration of Psychosocial Components of Early Childhood Development in a Nutrition Education Programme of Northeast Thailand


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Overview

The impact of a series of interactive video nutrition education programs, along with the provision of a food supplement, was studied in northeastern villages in Thailand. One of the 5 modules (VTR-4) was particularly child development oriented, aimed at creating maternal awareness of her child as an individual with early perceptual ability, and at recognizing the importance of mother-child interaction, play and supplementary feeding. The total audience of the VTR-4 was 478 men, 930 women, and 3225 school children. Village mothers of under-two aged children were interviewed individually prior to the introduction of the media, and at 2, 10, and 14 months later when the VTR-4 had been shown 3, 4, and 7 times respectively in each village.

Nutritional status of the children, and maternal knowledge and attitudes toward childrearing were assessed. Some aspects of practice were observed during home visits. A significant improvement was found in maternal awareness of infants' perceptual abilities, in knowledge and
attitudes toward breastfeeding, in child play and play materials, and in supplementary feeding practices, especially a more positive approach to dealing with tongue thrusting. Random observation during home visits revealed some change in accordance with exposure to the media, i.e., mother-child interaction, existing play materials and the type of cradle used. A significant difference was also noted in the percentage of mothers intending to give their baby colostrum, in comparison to the control group at post-tests 2 and 3. Although the prevalence of malnutrition among the under-two children in these villages was not significantly decreased during the study period, it was clear that the integration of psychosocial components into the nutrition education had a considerable impact on maternal knowledge, attitudes and some aspects of their childrearing practice.

Introduction

Protein energy malnutrition (PEM) in infants and preschool children has been recognized as a major health problem in Thailand for more than two decades. Nevertheless, progress in overcoming PEM was slow. In the period from 1977 to 1980, the drop was only from 52.7 to 50.8 percent, using Thai standards and the modified Gomez classification. According to the Ministry of Health's analysis, the three major constraints were: 1) the inadequate coverage of the health system, 2) the lack of community awareness of the problem, and 3) the inadequate multi-sectorial input to the nutrition program. In recent years, new efforts have been made and a sharper drop has occurred.

The national primary health care program which includes nutrition as a major component with community-based activities such as the "village surveillance program," the supplementary food program, nutrition education, and multi-sectorial collaboration within the Poverty Alleviation Plan, has been carried out in many parts of the country during the end of the 4th and throughout the 5th National Economic and Social Development plans. As a result, PEM prevalence subsequently dropped to 36.0 percent in 1982 and 28.4 percent in 1984.

The Institute of Nutrition, Mahidol University (INMU) conducted a community-based nutrition research program in the Northeast, where the prevalence of PEM was highest, and found that nutrition education is an essential component of the integrated nutrition, health, food supply, and income generation program designed to improve the nutritional status of the most vulnerable infants and preschool children. The Institute has produced and evaluated the impact of interactive video programs and radio on the mothers of under-4 aged children in 98 villages situated in 2 provinces—Ubonratchathani and SriSaket. The results of a comparison of the modes of communication—video, video combined with radio, and radio alone—have been previously reported. The present report focuses mainly on the integration of psychosocial components into the health/nutrition education program, expanding it beyond the nutrients, food production and preparation, to include mother-infant interaction and other psychosocial aspects of feeding.

There are two main reasons for incorporating psychosocial components into nutrition education—to reduce malnutrition and to enhance the quality of life through harmonious development. The synergistic effect of a poor psychosocial environment and malnutrition on
early childhood growth and development has been recognized in the literature comparing the behavior of well-nourished and malnourished children at the same age. According to Cravioto (1981), mothers of malnourished and normal children living in the same village in Mexico were found to be different in at least 3 psychosocial aspects: fewer of them listened to the radio, they provided lower quality of home stimulation, and they were less responsive to their child. On the other hand, Brazelton et al. (1977) reported that subsequent protein energy malnutrition (PEM) could be predicted with 70-80 percent accuracy for Guatemalan babies who had low interactive ability, based on the Brazelton neonatal behavioral assessment scale. In a recent review of the literature, Zeitlin and Mansour (1986) found mother-child interaction to be important in predicting "positive deviance" (nutritional thriving found among children who are at risk). Based on the literature and also on our own experience, our first hypothesis in the study was that improved mother-child interaction would have a positive effect on child nutritional status, acting through improvements in maternal understanding of the child's need and better feeding of supplementary food.

The current concept of harmonious child growth and development which determines the quality of life beyond survival, calls for more attention to psychosocial aspects, particularly during the most vulnerable period of early childhood. Due to the previously high mortality and morbidity rates, nutrition and health education is almost always directed toward recognition of diseases and their prevention and management. At the same time, economic and social development programs usually involve income-generation and materialistic development with little concern about the child rearing practices and other aspects of family life. Our second hypothesis is that childrearing practices will be more appropriate if the mothers know their children's perceptual ability, and their learning ability, and if mothers recognize their own potential to help children grow and develop better.

Method

The IMNU conducted this action research project from 1981 to 1984 in 48 villages in Ubonrachathani and SriSaket provinces in Northeast Thailand. These villages were randomly assigned as follows: 12 control villages and 12 TV treatment villages in Ubon; 12 radio and 12 combined radio/TV treatment villages in SriSaket. General base-line data were collected in May 1981 and January 1982 from mothers of under-four children in all 48 villages. For the present report on psychosocial issues, additional baseline data was collected from mothers of under-twos in March 1982 (Pre-test) in the TV and the TV plus Radio villages. The impact evaluation was carried out in May 1982, January 1983, and May 1983 (Post-tests 1, 2, and 3, respectively).

A supplementary food product called "Luk Rak," which literally means "beloved child" and consists of rice, mung bean and sesame or ground nuts, was produced and sold at the lowest possible price of 2 bahts (or 9 cents US) as a package of separately packed ingredients. This food product has been used as an educational tool as well as an indicator to measure the effectiveness of the media experiment. Two village health communicators in each village were selected as village-based product distributors. A three-day training session was conducted concerning
general nutrition knowledge, the product, job and responsibility, record keeping, and persuasion techniques.

Five modules of videotapes and radio programs were developed and tested before dissemination. The interactive videotapes are 25-30 minutes long with 8-10 interactions, which take up another 15 minutes. The content of these modules can be briefly summarized as follows:

1. "Luk-Rak" (Beloved Child as well as the name of the supplementary food product) compared two 15-month-old boys, one malnourished, the other normal and the food each of them had.

2. "Let's Cook Luk Rak" showed the cooking of the supplementary food product and how to encourage the child to take it.

3. "Value of Breastfeeding" emphasized the promotion of breastfeeding including colostrum and adequate diet for pregnant and lactating mothers.

4. "Here comes Dr. Nit" showed the perceptual and interactive activities of newborn babies, children's needs for psychosocial stimulation and play materials. The problem of tongue thrusting and disinterest in supplementary food were dealt with.

5. "Happy Valley Village" was a puppet show presenting 5 food groups fighting the nutrition devils.

Psychosocial components are mostly incorporated into the 4th module (VTR-4) and some part of the 1st module which shows behavioral differences between the 2 boys. The interactive learning and motivation strategies used in the VTR-4 include:

- Discovery/logical conclusion. The audience is exposed to certain information and then asked to make a decision logically following that information. Example: a newborn baby can see and hear and imitate facial expression.

- Analogy/logical conclusion. The audience is reminded of something familiar that works on the same principle as the idea being taught. Then the audience is asked to draw conclusions from the new information based on the analogy. Example: Being greeted on the arrival at a house is compound with the mother-newborn interaction.

- Observation.

  - Description. The audience observes an event and reports what was seen. Example: Observe the reciprocal interaction "face-to-face" between the doctor and a 3-month old baby.

  - Comparison. The audience observes two or more conditions and reports differences and/or similarities. Example: Contrast is shown between the physical and behavioral responses of malnourished and normal boys.

  - Modeling of Desirable Behavior. The audience sees desirable behavior and is asked to describe the positive behavior or some of the elements. Example: Mother prepares the
supplementary food and feeds her baby who displays tongue thrusting behavior and disinterest. The desired behavior is gently trying to feed again and distract the child.

- **Specification.** The audience is given a general principle and asked to apply it by giving specific examples. Example: Play materials can be made from locally available plants. The audience is asked to name the plant and the play material.

- **Generalization.** The audience is given specific examples and asked to conclude the general rule. Example: The baby can hardly see anything while she is lying awake in a closed cloth cradle.

- **Personal Opinion or Feeling.** The audience is asked to give their opinions about non-threatening subjects related to the matter. Example: The audience is asked to see things through the eyes of the infant in the closed cradle.

- **Reinforcement.** After every interaction an immediate feedback and reinforcement of the correct answer is given.

Field implementation involved sending a video-van equipped with a video tape player and color monitor to visit each of the TV treatment villages once a week during the summer (February to May), and less frequently during the farming period (June to December). The videotapes were shown in 24 villages while the supply of supplementary food products was brought to all 48 villages by the same van. The interactors who went with the video-van served as motivators to encourage audience participation and to answer the questions raised in the video program. They also collected records of food sales, of videotape showing, and of resupply of the food product. Thus they were the linkage between the village health communicator and program manager. In each of the TV treatment villages, the VTR-4 was shown 3 times during the March-May period in 1982, one time during the June-December period in 1982, and another 3 times during January and May 1983. The total audience consisted of 478 men, 930 women, and 3225 children.

The evaluations for this particular module were carried out in March 1982 (Pre-test), May 1982 (Post-test No. 1), January 1983 (Post-test No. 2), and May 1983 (post-test No. 3), respectively. Mothers of under-two children were interviewed individually during home visits. The interviewers observed mother-child interaction, type of cradle used, existing play materials, and they assessed the nutritional status of the children.

**Results**

The subjects were mothers of children under two years of age in 12 villages receiving TV treatment. Sixty-five to 70 percent of them were between 21 and 30 years of age. Most of them had finished 4 years of compulsory elementary school and earned their living by rice farming. Eighty-eight to 91 percent of them were lactating mothers. The mean number of living children was $2.4 \pm 2.8$ and the mean number of pregnancies was $2.7 \pm 2.1$.

The percentage distribution of nutritional status among 0-2 year olds uses weight for age, and height for age. According to Thai standards, there was no statistically significant improvement in
nutritional status over the study period. However, the nutritional status assessment showed seasonal variation of the prevalence of malnutrition which was more pronounced after the dry summer season. Age specific prevalence showed that malnutrition occurred early even among the 0-3 month olds who were breast-fed. From the age of 7-9 months, the N+ (Normal, above 50th percentile) tended to decline steeply while the malnutrition prevalence in terms of weight-for-age increased. The same trend could also be seen in height-for-age, but at a later age of 13-18 months. By the age of 19-24 months, only 10 percent of the children remain in the N+ group both in weight and height-for-age according to the Thai standard.

When the percent of expected weight-for-height in each age group was considered, either according to the U.S. or the Thai standard, the 7-9 month old began to show a remarkably low weight-for-height after the dry season whereas children in the second year were generally below 90 percent of the expected weight-for-height in all assessments.

Maternal knowledge about, and attitudes toward infants' ability to see were significantly more positive after seeing the videos. Compared to the 1.7 percent of the subjects initially reporting that a baby can see within the first week of life, the percentage rose to 11.5, 14, and 21 percent, respectively, at post-tests 1, 2, and 3. More than a two-fold rise occurred in the percentage of mothers who thought their children could see by the age of one month. Related to this finding, more open cradles were found during the home visits.

The increase was less dramatic in the number of mothers who thought their child could hear at the age of one week, but the increase was two-fold in mothers who thought a child could hear by the age of one month.

Compared to the mothers in the control villages, a significant increase was found in the percentage of mothers reported giving colostrum to their newborns.

Moreover, significantly more mothers in treatment villages than in control villages were committed to early suckling right after delivery (60.4 as compared with 44.5 percent) as of Post-test 3.

Dealing with the problem of introducing "Luk Rak" supplementary food, the VTR-4 showed the right consistency, the right temperature, and the technique to encourage feeding in spite of the infant's tongue-thrusting reflex or turning away. Prior to introduction of the media, about 50 percent of the mothers reportedly responded to tongue thrusting or disinterest by discontinuing feeding. That percentage fell to 26 after introduction of the media at the time of post-test 1, but increased again somewhat, to about 39 percent by post-test 3. The important result is that more mothers kept trying and played with the child until the child took more food rather than just discontinuing or using the gesture of eating action. This was significantly different from the mothers in the control villages.

Although both groups of mothers received growth charts and had their children weighed repeatedly, significantly more mothers in the TV treatment villages were aware of the desirable weight for 15-month olds, as shown in VTR-1, in comparison with mothers of under-twos in the control villages.
When the subjects were asked which contents of the video show they could recall, the psychosocial components in childrearing and child play seemed to be more memorable.

This may explain the post-test finding that significantly fewer mothers reported they had never given their children any type of toys or play materials. In addition, more of them "played with" or taught their child when the child played with household items—rather than punishing or taking the things away.

A modest but significantly higher proportion of mothers in treatment villages reported making play materials from local plants than those in the control villages.

Discussion

The subjects in this study were young mothers of under-two year old children living in rural villages of Northeast Thailand. Their children were at risk of early malnutrition although the rate of breastfeeding was more than 95 percent and persisted for more than a year. (This contrasts with the urban situation where the breastfeeding rate is only 45 percent and usually lasts only one month.) In both semi-rural and rural areas, there is a declining trend in breastfeeding, particularly when more mothers work outside the home and have more income. A similar finding was reported on the lack of knowledge of the benefit of breastfeeding and misbelief about colostrum and early suckling. In our study, most mothers still practice breastfeeding but with poor understanding, and they were ready to change to bottle-feeding. It is therefore very cost-effective to disseminate knowledge and to establish a positive attitude toward early breastfeeding in order to maintain this highly desirable practice.

The integration of psychosocial components concerning newborn infant-mother interaction has been shown to be associated with increased knowledge, changed attitudes and with commitment to early breastfeeding within the first hours in our subjects. Breastfeeding, according to six of nine studies, continued for a significantly longer period for those mothers who suckled their babies in the first hour after birth. In our subjects, most of them started breastfeeding after the first 2 to 3 days in the baseline data and breastfed sooner after the media dissemination. Beside the message on the benefit of colostrum and breast milk, the recognition of their newborn as a "seeing" and "hearing" and "feeling" individual may motivate the mothers toward early contact, interaction and early breastfeeding.

However, this study has not dealt enough with the problem of too early introduction of semi-solid bulky sticky rice to infants as young as a few days old. This practice interferes with receiving breastfeeding and is the likely cause of protein energy malnutrition in early infancy (0-6 months). The other possible cause is the inadequate breast milk production in rural malnourished lactating mothers whose milk was found to be only two-thirds of their well-nourished counterparts.

Seasonal variation of the prevalence of malnutrition and different types of nutritional deficiencies was found in infants, preschool and school children in rural areas with higher prevalences during the rainy season (July-September) than during the harvest season (January-February). Our
finding also showed the changing pattern during the 2 years of the study period. The availability of food, parental attention toward the children and illnesses may be the contributing factors.

From the nutritional assessment it is clear that weight-for-age was the most sensitive parameter and the earliest weaning sign was the change in growth velocity from a higher channel to a lower one. For example, the 13-18 month old group began to shift from normal above the 50th percentile (N+) to normal below the 50th percentile (N-), but did not yet increase the prevalence of malnutrition. But the 19-24 month olds showed further downward drift and the age-specific prevalence of PEM increased significantly in all degrees. Therefore, longitudinal growth monitoring to let mothers, village health volunteers and health personnel be aware of this early change in growth velocity and to pay more attention to increased food supplementation may be an effective way to prevent subsequent PEM. From this study we found that most growth charts (95%) were well kept and considered useful at the end of the two-year study period. The question is how to make the growth charts useable and comprehensible by parents, not only for detection of malnutrition but also for growth monitoring. The video program has led to an increase in the mothers’ knowledge of what a normal 15-month old should weigh.

In Thailand from 1979 to 1984, 1.5 million children 0-5 years of age in 37,000 villages were regularly weighed by the National Growth Monitoring Programme. Parents are advised at each weighing about how to maintain their child’s growth. Cases of “poor growth” rather than only malnourished cases, once detected are examined more closely to find the cause and are managed accordingly. These measures include more intensive nutrition education, and supplementary feeding or referral to more qualified health workers. A cohort growth chart is given to each village health communicator and village health volunteer for presentation of the weighing result to the public and for monitoring by the village committee and the volunteer group. It is expected that by the end of 1986, which is the end of the 5th national economic and social development plan, all 57,000 villages in Thailand will participate in the growth monitoring programme.

The integration of psychosocial components into nutrition education in this study is an example of a strategy geared to the “total child.” Infants and preschool children in these villages are “at risk” because both their social and physical environments are impoverished. There are usually more than two generations living together in the same house or in the vicinity, the women, including the mother, aunt, grandmother, and sisters are responsible for childcare. However, these women must also do the housework in addition to participating in agricultural and other income-earning jobs. The physical and mental condition of the mothers may, therefore, account in part for the lack of interaction between mothers and infants.

Socio-cultural values and traditions may also have an important influence on interaction. For instance, the culture values subtleness more than expressiveness. Newborn infants are usually wrapped and placed in a basket lined with a blanket, close to the mother for a few days. Parents, relatives and neighbors usually do not openly express their enjoyment or admiration of the baby for fear that the spirits might take the baby away. Relatives usually say aloud, “What an ugly baby he is,” in order to deceive the spirit. Holy thread may be tied around the baby's wrist to protect the baby. This traditional practice may be another example of cultural adaptation to previously high peri-natal mortality rates. Infants are often given banana and sticky rice in addition to
breastfeeding to make them "full" and "well behaved." Children are often seen lying in a closed cloth cradle.

As we have shown in previous pages, few mothers in Northeast Thailand recognized the visual perceptual ability of infants. In the pre-test, only 1.7 percent thought the baby could see at one week and only 14.7 percent at one month. At the same period, a study in a Bangkok slum showed that 20 and 35 percent of the mothers surveyed expected their baby to see within one week and one month, respectively. In the Northeast, the percentages were also low among mothers for early perception of auditory ability. However, the data showed an impact on expectations of using the media, with a strong influence on expected age of seeing and a lesser influence for hearing. Therefore, by increasing maternal awareness of perceptual abilities, the naturally existing mother-infant relationship will be enhanced and self-perpetuating. Mothers will be more aware of a child's physical and psychosocial needs.

Rural mothers as well as their urban poor counterparts need to know their capacity to make a difference in their children's growth and development and how to make the most use of their potential and existing resources in creating a more nurturing environment for their children. Only one-third of the mothers would encourage or play with their children using household items in the pre-test and the percentage increased to more than 65 percent in post-tests 1 and 2, declining somewhat to 50 percent in post-test 3. There were no toys or recognizable play materials in more than 70 percent of the homes observed during the first home visits and almost half of the mothers reported never having given their children any toy or play materials. Subsequently, more mothers provided toys or play materials to their children but most were commercially available toys. Less than 10 percent made play materials from local plants. Mutually interactive games between the child and family members were reported in few families, although these activities did not require commercial play materials which may be limited by their economic status. The media did not emphasize these play activities and there was no significant change seen in the impact evaluation.

According to the quality and quantity of breast milk in rural Thai mothers, it is recommended that supplementary food be introduced when the infant is 6 months old if the mother is healthy, but it may be introduced one month earlier in the case of malnourished mothers. The INMU has developed 7 types of simplified supplementary food containing rice, legumes and sesame. The selection of the formula depends on the availability of local food products. They can be locally produced and supplied to children from the age of six months to five years. The acceptability is not as good as expected especially among young infants who still show a strong tongue-thrusting reflex. Mothers usually regard this as a sign of dislike compared to their response to sweeter banana or chewed sticky rice.

The most successful outcome related to health and nutrition is the striking decrease in the percentage of mothers who otherwise would discontinue feeding semi-solid supplementary food when the child turns away or shows tongue thrusting. When the mothers know the desirable behavior of continuing to feed, of distracting the child through play, and of waiting to try again, the child is more likely to receive more food and grow better.
In conclusion, the integration of psychosocial components into nutrition education has been attempted with promising impact on rural mothers' knowledge, attitudes and some aspects of their child rearing practices. This will be empowering mothers to promote more harmonious growth and development of children, especially during early childhood. Other aspects of psychosocial components should be incorporated in all health- and nutrition-related activities. From the integrated health, nutrition, agriculture and rural development projects in Ubonrachanthani, it was clear that income generation alone does not necessarily improve nutritional status of the rural poor. By utilizing curative health care as the entry point of implementation, along with preventive and promotive health care and continuous nutrition education, the nutritional status of the community can be improved. One of the most important factors in acceptance of prevention and promotion is the social preparation of villagers and the interest of community leaders.

With existing communications technology, visual messages are most effective and can result in behavioral change regardless of functional literacy and distance. The application of communications technology in modifying health behavior and childrearing practices is a challenge not only to economically developed countries but even more so in developing countries.

References


