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NUTRITION AND POPULATION IN HEALTH SECTOR PLANNING†

The central theme of this paper is that nutrition should be integrated with both health and family planning. To improve program effectiveness, there is increasing need to combine services for nutrition, health, and family planning.

For background, some developments that have occurred in recent years in health planning will be examined. Then a discussion of the evidence for integration will be presented, followed by a final section that reports briefly on three case studies of nutritional planning.

PRESENT TRENDS IN HEALTH AND NUTRITION PLANNING

Concern for human nutrition falls between the technical competence of agriculture and health. It has become evident, however, that socioeconomic development and community development require a special focus on nutrition as a neglected area.

Among agricultural experts a common attitude is that all that is needed is to provide food for everyone and nutrition problems will disappear. This all-too-common notion is negated by the general prevalence of malnutrition in food surplus areas. Providing food is only part of the answer. An important challenge is to learn to cope with economic constraints limiting the equitable distribution of food. By providing knowledge of locally available foods which are cheap and nutritious, people can be helped to solve their own nutritional problems.

On the other hand, the inordinately great prevalence of malnutrition has been systematically ignored in the health sector as well. Most nutritional research has been devoted to sophisticated laboratory biochemistry. There has been minimal nutritional epidemiological research and even less on nutrition services and their impact. Little is known about what happens as a result of multimillion dollar expenditures on feeding programs.

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The reason for this shared ignorance is that research workers have not bothered to learn what happens to people as a result of what they eat or do not eat. Much energy and expense is devoted to producing and disposing of food for the poor. The reasons for doing so, however, are often not actually to meet nutritional need. For instance, the impact of feeding programs in the United States has received little study because a primary motivation for them has been to maintain economic benefits for American farmers. This means of disposing of food surpluses has been used with only an occasional reference to the rationalization that it was also a good way to redistribute resources.

National Systems of Health Planning

The development of health planning in less developed countries in the past two decades has been notable (*19*). Whereas planning used to be characteristic only of centralized socialist countries, it has now gained general respectability. The greatest impetus for this emphasis on planning has been the international donor agencies' requirement of systematic planning as a prerequisite for loans and grants in the hope that this will increase accountability. Presumably, where resources are small, planning will help to focus them on high priority problems.

Many less developed countries have established planning units in the health ministry, but only a few function effectively. They tend to have the anatomy of the planning process without the physiology.

If nutritional planning is to be improved, more attention must be paid to how national policies are made and to how the political will to eliminate malnutrition can be generated. Intangibles that affect how decisions are made in varied cultural settings and the mobilization of political and administrative commitment are at present little understood. It will also be necessary to learn how to insure implementation once policies and programs are enumerated. Too many elaborate planning exercises end up in multiple volumes which are never implemented or implemented poorly. There is a particular need for developing management methods appropriate to local cultures and administrative patterns. But the best that can be done at this stage is to carry out further case studies designed to yield better understanding of the key factors influencing the political process and the design and implementation of health programs.

When planning first became a serious official activity, widely varying patterns and approaches were developed depending mainly on the political orientation of the country. Around the world, a fascinating convergence now seems to be occurring with a progressive moving together of methods of planning as countries learn from each other's experience. Perhaps the biggest change in health and nutrition planning has been the increasing emphasis on planning from below.

Planning From Below

Planning from below is the term that has been applied both to decentralized decision making within broad directions set by a central planning agency and to programs that call for close involvement of local people both in formulation and implementation. The rationale for adopting it is mostly negative and grows out of awareness of the deficiencies of centralized planning (*6*). Many local projects have

demonstrated that decentralized planning increases local involvement in implementation but it is not clear how these lessons can be best applied to general health services. Planning from below will never have the symmetry and conceptual integrity of a centrally generated plan. Inconsistencies and gaps will have to be accommodated. In setting priorities, professionally determined need will be subordinated to public demand. Allocation of resources will tend to be politicized. Complicated efforts have been required to get consumer representation in United States regional and local health planning agencies, but consumer representatives have learned quickly and eventually have tended to identify with the health services. The process of getting local involvement has been even slower to evolve in less developed countries. Outstanding success in involving the community has been achieved in China, but powerful central control through the Party is also strong. The writings of Freire (7), Goulet (9, 10), and Illich (12) provide challenges for future experimentation.

The question remains, how can political will be generated in mass programs to stimulate peripheral involvement and keep it channeled? It is necessary to learn how to balance responsibilities between central and decentralized parts of the system. Central planners should be responsible for defining broad goals and policies, making major allocations, and setting up data collection and quality control. Within those broad goals, local planners should have considerable freedom to set their own priorities, reflecting a community's own perception of needs, and to work out processes of implementation. Implementation should be a local responsibility, with central planners involved mainly in setting standards and targets. Evaluation can be shared, with local units evaluating concurrently for administrative control of services. Central planners also should make periodic overall evaluations to see if goals have been met and whether objectives should be changed.

The next challenge is to involve communities in their own health care. This is a major new thrust in the World Health Organization and other international agencies. Particularly in rural health services, the experience of the last 20 years has completely changed the old stereotypes away from hospital speciality care.

Growing political commitment is emerging in some countries for comprehensive care based on decentralized health centers and the use of auxiliaries for primary care. Village studies in several countries have shown that a wide gap remains between the health center and the home. Typically, health coverage reaches only 10 to 15 percent of rural populations. This has led to new efforts to identify and strengthen community capabilities to meet their own health needs. In many of the more efficient health projects there has been a tendency to co-opt village volunteers, thus weakening their capacity to carry out their original role of assisting families to solve their own problems without increasing family dependency. New patterns of work need to be developed which are designed to make better use of both organized services and village volunteers, each reinforcing the other.

Nutrition in Health Sector Planning

In the United States, nutrition has been a recognized, but minor, component of health services for many years. The problem has been that activities have

become stereotypical and repetitive with little attention to evaluation. As is true of most health indicators, in the United States nutritional status has steadily improved, and the health sector has taken credit for the improvement on the assumption that whatever it was doing was obviously right. Major activities such as feeding programs and nutrition education have been blessed by being little evaluated. Only recently has it become clear that most of the improvement was due to broad socioeconomic development and that specific measures often were irrelevant. In affluent societies people tended to meet their own needs. Now there is growing concern about the poor food habits of many Americans and the relationship to diseases of affluence.

In developing countries much less has been done to promote better nutrition. Programs patterned after those of affluent countries have not worked. Maternal and child health clinics have channeled large amounts of food to vulnerable groups but malnutrition persists. School-feeding programs seem to have been more effective in altering income distribution than in changing nutrition status. Furthermore, it is usually the preschool children who are most seriously at risk, and the children from poor families where malnutrition is more prevalent are not reached by school-feeding programs. Nutrition education may have had some favorable impact, but it has been more than negated by commercial advertising of inappropriate food and of formulas that discourage breast-feeding.

Especially where general socioeconomic development has been slow, present approaches have been unsuccessful (*4*). Specific program areas that must be taken into account in any program design and that need research attention are examined briefly in the following paragraphs.

Interactions with infections.—Since Scrimshaw, Gordon, and I published the review (*22*, pp. 367-403) and WHO monograph (*23*) that defined these interactions, additional research has confirmed their importance. Nutritional effects on host resistance, primarily through cellular immunity, have begun to be defined. Mechanisms by which infections increase metabolic demand have become somewhat more clear, and there is increased awareness of the adverse effects on food intake resulting from loss of appetite and withholding of food during periods of infection. However, there is need for further research on specific relationships such as that between malabsorption and intestinal infections.

Cultural and biological correlates of lactation.—The more that is learned about lactation, the more important it is recognized to be. Infant nutrition in poor countries depends so much on lactation that other measures are appropriately called supplemental. From a simple economic viewpoint, breast milk is one of the greatest food resources available to human beings. Because of the significant effect of lactational amenorrhea on fertility, breast-feeding also plays an important role in maintaining child spacing and should be closely related to family planning.

Food preparation.—The preparation of weaning foods needs more study. In poor families the problems of preparing separate foods for young children are great. Gathering fuel and water and cooking take a large part of a woman's day. When a child is given adult foods it often cannot cope with them because they contain too few nutrients for their volume or because they are difficult to digest. The low caloric density of weaning diets appears to be responsible for considerable malnutrition among infants and small children even within families where the total food supplement is adequate (*8*, pp. 471-78).

Food combinations.—Poverty is only one reason for the poor combinations of food consumed. Most areas grow green leafy plants that would meet many nutrient requirements, notably for minerals and vitamins. Research is needed on easily available items that can be introduced into nutritious combinations with traditional cereals. Rather than trying to make cereals behave like legumes, it would be better to do research on getting maximum production of calories, for example, through tubers, and then to add the other nutrients through available combinations of food.

Relationship between dietary levels and health.—Standards of nutritional intake have become suspect. This is especially true because most standards were developed in tests on healthy young men in affluent countries. Is bigger really better in human growth? Countries with chronic food deficiencies might be better off with children who grow up small and lean. But this may seem to be discriminatory, and too little is known about the effect of nutritional level on function.

Cultural constraints in food and nutrition.—Nutrition education that ignores local nutritional belief and introduces simplistic solutions from other situations has produced some of the worst examples of developmental colonialism. Very few programs have accommodated local concepts of "hot and cold foods," even though in most countries these beliefs really determine what people eat and when. Common cultural practices such as abstaining from food during infections require anthropological investigation. Many of the most important cultural values are related to food and yet they are treated casually as being mere superstitions.

Measurement Problems

Advancement in understanding requires better measurement methods. My inclination is to urge the use of direct measurements of nutritional status rather than to continue the past emphasis on attempts to measure food supply and demand balances. Increasingly, simple techniques are being developed which measure changes in adults and children in relation to their nutritional environment. Some examples are worth mentioning:

1. Mortality of children of ages 1-3 or 1-5 is probably the most sensitive index of nutritional improvement.

2. Reduced infant mortality follows reduction of mortality of preschool children and may be easier to record because many data systems incorporate this information. Sample surveys can give some information where vital statistics are poor.

3. Weight for age both in cross-sectional surveys and longitudinal growth charts provide some of the most convincing data on child nutrition. Growth charts can also be used as a powerful program and educational tool (*14*, *17*).

4. Arm circumference measures are crude but may help in sorting out the most poorly nourished children (*13*).

5. Eye changes with vitamin A deficiency are identifiable on survey and in some areas are of primary importance.

6. Simple laboratory tests for anemia and other specific deficiencies are already available and becoming more so.

INTEGRATED SERVICES FOR HEALTH, FAMILY PLANNING, AND NUTRITION

Most analyses of the world food and nutrition situation present a gloomy perspective on the interaction between nutrition and population. They correctly stress the negative impact of population growth on world food balances and on achieving the economic and social objectives of development. It is imperative that birthrate reduction follow mortality decline as closely as possible. Well-nourished mothers seem better able to bear children. Since one effect of better nutrition is to increase population growth by reducing mortality, it seems reasonable that nutrition workers should see to it that family planning accompanies effective nutritional programs. A natural mechanism which helps to reestablish the balance between mortality and fertility is that greater child survival increases child spacing because it reduces the frequency with which birth intervals are shortened after a child's death when the biological constraint of lactation is removed. Although breast-feeding is important because lactational amenorrhea helps to maintain birth spacing, there is now evidence which suggests that its contraceptive effect is considerably less pronounced when mothers and children are well nourished.

There are other positive interactions through which better nutrition seems to contribute to reducing fertility. Potentially fruitful topics for further study of the motivational and behavioral factors that influence family-planning practice are emerging from recent studies of programs integrating health, family-planning, and nutrition services which are summarized below.

Unfortunately, a polarization has emerged between those who favor integration of family planning with health services and those opposed (*18*, pp. 189-99; *27*, 97-100). The issue has become symbolic of a major policy issue with millions of dollars of international and national funds for family planning and health care riding on decisions which are being made currently. Some extreme positions have been taken. On the one hand there has been a pervasive but generally unspoken feeling that if health and nutrition activities lower death rates and exacerbate the population problem, then international assistance programs should not support expenditures on health and nutrition. There has also been a tendency for people in health programs to try to obtain some of the family-planning money which has been available in recent years. Such attempts were most common when personnel and facilities for laboriously developed but scantily funded maternal and child health services were co-opted by large family planning programs.

The arguments against integration are usually couched in terms of the urgency of the population problem, the relative ineffectiveness and low status of health services in many developing countries, and the need to bring the birthrate down faster than the death rate where overpopulation is already evident.

The potential advantages of an integrated approach to nutrition, health, and family planning seem much more compelling. To design an organizational structure and procedures for implementing integrated programs is admittedly a difficult undertaking, but five cogent reasons support the argument for administratively integrating this combination of activities.

Aggressive family-planning programs have created resentment and cultural backlash which in its most extreme form results in suspicions of genocidal intent.

This is most evident in black Africa, but resentment of compulsory or quasi-compulsory sterilization was a major factor in the recent national elections in India. Where such a backlash occurs, support for family-planning programs is weak and they often fail to have a significant impact on birthrates.

Efficiencies can be achieved by combining personal services which require continuing contacts in the home and clinic. Multipurpose community health workers can readily cover an aggregate of tasks—nutrition and health education, environmental sanitation, and family planning—without duplicating key supporting costs such as training, travel time, and facilities which would be required for unipurpose workers. It also should be noted that where health services are inefficient, separate family planning services tend to be inefficient also.

An integrated program is likely to have greater acceptance because village people tend to link family planning with a whole complex of activities associated with mother and child that seem naturally associated. The motivational argument for integration of services capitalizes on improved communication at the interface between the service system and the home and community. By using the rapport created by health care activities which are constantly in demand, ambivalence toward reducing family size can be overcome and acceptance of family planning enhanced. This is especially true among the demographically important younger couples who are just starting to have children.

Finally, there is the proposition that reducing infant mortality rates can contribute to a greater decline in fertility. This proposition, however, has been the subject of a good deal of controversy and needs to be considered in some detail.

Considerable attention has been given to the issue of whether a linkage between falling death rates and falling birthrates through direct and indirect effects of increased child survival can be scientifically demonstrated. In the discussion of the pros and cons of integration, uncertainty about the child survival hypothesis has emerged. At first, it was accepted as common sense, but it has recently been strongly challenged and has become moot.

The Child-Survival Hypothesis

According to the child-survival hypothesis, experience with or fear of child mortality will tend to cause parents to have additional children either to replace those who have been lost or as insurance against expected loss. At a recent conference of the Committee for International Coordination of National Research in Demography (CICRED) in Bangkok, demographers and family-planning experts reviewed much available data and concluded that there was essentially no evidence to support the hypothesis (5). They showed that much of the shortening of birth intervals following child loss which had previously been cited as evidence for the hypothesis could be more reasonably explained by the cessation of the antifecundity effects of lactational amenorrhea. It was argued at the CICRED conference that only if fear of childrens' deaths caused parents to overcompensate by replacement plus insurance births could health expenditures be justified on the grounds that they prevented more births than deaths. The main conclusion of the CICRED conference was that money invested in health care would produce net population growth. As is often true, scientists have taken great delight in debunking what had seemed to be a common sense idea. Nevertheless, the

child-survival hypothesis can be redefined so as to continue to provide an important link between child mortality and the birthrate.

As part of the original statement of the theory of the demographic transition, it had been postulated that a decline in birthrate would almost automatically follow a decline in death rate. Many have become dissatisfied with such a simplistic and mechanistic interpretation of the child-survival hypothesis. My colleagues, Jeanne Newman and Narindar Kelly, and I have attempted a redefinition of the hypothesis in terms of the following:

1. It is not true that a fall in death rates is a necessary condition for a fall in birthrates. In a few places in Europe birthrates fell before there was significant decline in death rates.

2. It is naive to think that the decision of parents to replace child loss on a one-to-one basis is simply an automatic reflex. The fact is, of course, that motivation for family planning is complex and no one variable can be expected to override other determinants of desired family size. Every partial influence must be examined. This is especially true because of the inexorable demand for improved child care.

3. The practical impact of the child-survival hypothesis is not uniform over time but seems to depend on the developmental level of the country. The insurance effect appears to be greatest when death rates are beginning to fall and birthrates are still high—precisely the situation in which population growth is most rapid. The replacement effect seems to become evident after general practice of family-planning and lowered family size norms have already placed considerable constraints on fertility.

4. Demographers have tended to classify child-survival effects with the "volitional" as distinct from "natural" causes of family limitation. The volitional causes have been defined to relate to conscious family-planning decisions. Evidence from our studies in the Punjab suggests the need for a third classification of "subconscious expectations" which would also include many of the underlying beliefs that control behavior but that people do not tend to talk about in response to questionnaire surveys (20). This category would also include the motivational influences related to the economic value of children.

5. Of most practical importance is the probability that child survival effects may be manipulable in contrast to many of the other demographic variables that have been studied. Retrospective data give little indication of the full potential of the interactions. But a direct effort to raise awareness of child survival from subconscious to conscious and personal decision-making levels may be feasible in integrated programs. This opens up the possibility of identifying and systematically using family-planning "entry points" as part of routine maternal and child health services provided by auxiliaries. These are points in the normal care routines where family-planning discussions can be introduced readily and records are designed to show whether appropriate issues were discussed. Although it is frequently alleged that health services are too expensive for low-income countries, several studies have shown that under village conditions auxiliary-based integrated services for family planning, nutritional surveillance, education, and targeted supplementation, and for simple health care can be provided for less than $2 per capita per year (20).

Evidence supporting this redefinition, with its important implications for integrated programs, has been mobilized from many sources. Time series data show a clear association between the declines in national birthrates and in national death rates. There is also a correlation between the rate of decline in infant mortality and the time that elapses between the onset of a decline in infant mortality and the onset of a decline in fertility. This time lag has averaged about 11 years in the period since World War II.

Since association does not necessarily imply causation, more weight should be given to nine in-depth studies of relationships between infant mortality and fertility with particular attention to the sequential family-building process in six geocultural areas. Similar data from four other studies associated with action programs were also analyzed. Both types of studies showed that the following wide variety of indicators of higher fertility were associated with a variety of measures of experience or fear of child loss (28, pp. 263-78). The *fertility variables* were birth intervals, number of births, ideal number of children, parity progression ratios, expected total births, approval of contraception, timing of contraception, and effectiveness of methods of contraception used; the *mortality variables* were number of child deaths, fear of child loss, loss of child born preceding the measured interval between births, community levels of child loss, perception of child survival, and approval of insurance births. The various data sets included controls for parity, sex, lactation, surviving sons, maternal age, and births in previous year, and many different approaches to statistical analysis were used. Because of the new evidence on the importance of lactation, it seems worth noting that this has its main influence on birth intervals and not on all the fertility variables studied.

There were, however, four studies by Adlakha (1), Alam (3), Heer and Wu (11), and Rutstein (21) which separated the motivational effect from the lactational effect of greater child survival on fertility variables. They demonstrated that subsequent to a child death there was a shortening of the second birth interval after an intervening child had survived, and also that when nonlactating women were separated out they too had a reduced birth interval as compared with controls.

Even more significant in program terms are findings that relate child survival to the use of family planning. Studies of the relationship between child mortality and family planning show that when couples lost a child they were less favorably inclined toward contraception, practiced contraception less often, and delayed first use after birth in comparison with couples who had not lost a child. Perception of increased child survival was associated with greater use of the more effective methods of contraception (26).

From the program point of view the practical challenge is to determine how these motivational variables can be enhanced in mass programs. The spontaneous relationships that have been measured in retrospective surveys indicate only partially what might be achieved through deliberate use of child-survival motivations in integrated programs. If the motivational mechanism is subconscious then direct efforts to make parents aware that their children are surviving and healthy can be used as a family-planning entry point in child care.

Some ten years ago the Rural Health Research Center in India set up long-term

prospective research in the Punjab at Narangwal primarily to test the child-survival hypothesis (20). Various groups of villages received different combinations of maternal and child care or family planning provided by auxiliaries in a research design intended to measure differential impact. Conclusive evidence on fertility changes in these groups of villages was not obtained because political pressures created premature termination of the project. Family-planning practice and fertility decline more than doubled in the service villages as compared with controls. In all study groups, however, family-planning practice was still increasing when the study ended. We did not have the five years of observation that we had projected would be necessary to get a plateauing of the curves showing the ultimate impact of each combination of health and family-planning services. Nevertheless, the study did indicate changes in motivational patterns. In the group of villages in which real integration of services was achieved in comparison to four other groups of villages the following differences in attitude were noted: awareness that there were more children surviving than 30 years ago increased sharply while in other villages it went down, probably because the health education was stressing hazards to child health. These differences were especially great in low caste groups. Similarly, half of the women from the group of villages with integration said that the greater child survival would influence favorably their decision about how many children they would have as compared with only one-third in other villages. Furthermore, of all women who said that fewer children are dying now than 30 years ago, more than half said this influenced their decisions about how many children to have, while less than one-fifth of those who thought more die said that this influenced their decisions.

Replacement and insurance desires should not be expected to override all other considerations as a motivational force. There is probably a spectrum of responses ranging from lower parity children who are lost even though wanted and are therefore replaced, on to children at higher parities whose births go beyond family expectations so that there presumably would be no tendency to replace further losses. These family level relationships operate within broader community norms and expectations. Where eight to nine children are born and only three to four survive, as in many African villages, insurance and replacement desires may add three or more births. Where an average of four children are born and three survive, the potential replacement desire would undoubtedly be considerably less than one. As child mortality declines, the subconscious expectation of death would also normally decline but only after a lag period. The important issue is where on this spectrum does practical decision making lead to the practice of family planning. An important program component may simply be the education of parents who must understand that survival has improved and that it is no longer necessary to have insurance births. When expectations of survival are high, then replacement desires may become more explicit.

The indirect attitudinal effects of improved health on family decisions may be more potent than the direct effects (15, 24, 25). Expectations of child survival seem to be part of a general subconscious orientation toward the future which also influences attitudes toward development planning and hard work. Field studies to quantify these effects for populations at different levels of mortality and fertility, and in different geocultural regions, could make significant contribu-

tions to our understanding of the rationale for integrating health, nutrition, and family-planning services.

CASE STUDIES OF THE NUTRITIONAL IMPACT OF FIELD PROGRAMS

The lack of success in implementing most mass nutrition programs requires reevaluation of basic approaches. In recent years I have been involved in two field studies of nutrition and have evaluated a third. These case studies illustrated the need for adjusting planning to the specific local ecology and for knowing how local causal variables act at various levels of development. They also demonstrate that nutrition interventions can produce major change in some situations, but cannot easily do so in others.

Reduction in mortality was achieved at Narangwal in the Indian Punjab with intensive, home-based comprehensive child care by auxiliaries (20). Child mortality from ages one to three was reduced by 40 percent and infant mortality by about a third by a program combining infection control and focused nutritional supplementation based on close surveillance of all children. In controlled trials where groups of villages received different interventions, infection control was more effective for children under two years of age than was nutrition alone. Nutrition alone and infection control had equal impact for children from two to three years old, but significant prevalence of malnutrition continued even after maximum program impact. Longitudinal studies showed that when the amount of grade 2 and 3 malnutrition had been reduced by about half the improvement stopped. A hard core group, mostly girls, continued to have recurrent marasmus in spite of intensive efforts by family health workers because the high parity mothers did not have time to provide adequate care. It was evident that family planning was needed if community malnutrition levels were to be reduced further. Significant improvements in health and nutrition could not have been achieved by increasing food production.

The lessons of Narangwal were applied in a much less intensive form in a Bangladesh intervention program in Companiganj Thana, an administrative unit in Noakhali District, which is described elsewhere in this issue (see also *16*). The Companiganj Project confirmed the observations from Matlab Thana that infant and child mortality falls after the rice harvest and then rises before the next harvest. Clearly here is one situation where just supplying food makes a difference. Percentages of children with third degree malnutrition also fluctuated between a preharvest level of 22 percent and a postharvest level of 14 percent. Conditions were especially bad during the famine in 1975. A health care program which includes subsidized sale of a cereal-pulse mix that is prepared in local mills has led to some improvement in nutrition, but the family-planning program takes much of the time of the project workers.

In Cornwall County, Jamaica, effective nutrition care was provided by community health aides who were rural women trained in short courses and assigned to visit regularly a group of homes in rural neighborhoods—supervised by medical students doing a field rotation (2, pp. 1166-69). Improvements in mortality and nutritional status seemed related most to the weighing of children

every month by community health aides. This identified for mothers the fact that a child who was not gaining weight was a sick child. As Jamaican mothers are very capable and food is available, they were able to correct the problem once it had been recognized.

These three case studies obviously represent a spectrum in the range of activities that need integration. In Bangladesh infant mortality ranges from 150 to 200 per 1,000 live births or more during famines. The obvious need is to provide food to target groups in association with family planning to try to change both fertility and mortality. In the food surplus Punjab where infant mortality ranged around 100 per 1,000, a more comprehensive care program of nutrition and infection control provided an opportunity to show what could be done through total integration of services. In Jamaica, with infant mortality below 40, the primary need seemed to be simple surveillance to identify lack of weight gain.

PROGRAM DEVELOPMENT

Programs which provide comprehensive coverage for rural populations must depend on auxiliaries. The Narangwal program employed auxiliary nurse-midwives who had high school education plus two years of nursing training. They learned the Narangwal routines in six weeks. The average cost for the comprehensive care was less than $2 per capita per year.[1]

At Companiganj there was no trained pool of personnel to draw on and village women were recruited and trained for six weeks. The range of responsibilities was reduced in comparison with the Narangwal pattern. About half of the village workers are illiterate but to date they are doing as well as the literate women. The costs here are about $1 per capita per year.

A major question is how much can he done to get villagers to assume responsibility for their own health and nutritional care. A first step should be that people gather the data needed to make their own community diagnosis. Then, village people can be trained for the following kinds of tasks: weighing children, providing nutrition education, giving out information and supplies for family planning, and simple health care. This approach offers hope of meeting the challenge of working at the interface between health services and communities to strengthen the capacity of the people to solve their own health problems. The key to effective implementation is supportive supervision that is primarily educational.

CONCLUSION

The integrated approach to providing health, family planning, and nutrition should fit in with broad-based intersectoral development. It has particular appeal because it is made up of a package of flexibly adjustable components which include specific measures that people already want. It promises efficiency in the use of limited resources. It provides coverage for complete populations with considerable potential for getting services to the rural poor. By improving the

[1] The cost is based on detailed functional analysis studies which included careful work sampling. We were able to record time allocation in minutes per week and detailed cost data. Detailed household socioeconomic data also were gathered over the four years of the study.

health and survival of parents and their children there is hope that the attitudes toward planning and working for the future can be changed. Another important consideration is that an integrated program resolves many of the ethical dilemmas associated with programs focused on single activities, especially family planning. Finally, the integrated approach provides an opportunity for meaningful interactions to improve mutually beneficial relationships between service personnel and communities.

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