

REACHING THE CHILD IN NEED

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ABSTRACT

"Reaching the Deprived Child" is India's theme for the year of the Child,, This paper describes the recording system employed in the Community Health Programme of Christian Medical College, Ludhiana and how it enables us to reach not only deprived children, but those in danger of deprivation, the majority being the children of the socioeconomically underprivileged. Many are nutritionally normal at 12 months but 57 per cent of the males and 75 per cent of the females suffer from malnutrition in the 2nd year, 50 per cent of females having severe malnutrition. The etiology, discerned from a study of the deprived, allowed a preventive approach to be designed for those at risk. Intensive nutrition education is given in the homes, commencing as each baby reaches 5 months, and mothers are taught to feed them on suitable modifications of the food available in Punjab homes. The results in respect of 123 babies, who had a minimum of 6 months of this care, are described. Complete compliance was achieved in 82 per cent and in the rest partial compliance was achieved. The nutritional status of these infants, compared with a control group, improved greatly, especially in females in whom the prevalence of normal nutrition rose from 26 to 61 per cent and that of severe malnutrition fell from 50 to 17 per cent. The success of this approach depends on an accurate knowledge of the community since this

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allows priorities to be selected with clarity and maximum effort to be expanded upon those in greatest need.

India's general theme for the International Year of the Child is "reaching the deprived child". There seems to be, so far, no simple and uniform method of identifying these children. Yet, until they are identified, how can they be helped?

The aim of this paper is to demonstrate as to how the simple but carefully designed system of record keeping as employed in the Community Health Department of Christian Medical College, Ludhiana, allows us to monitor the community, leading us to reach the vulnerable groups of the population. In this way, the children already suffering from nutritional deprivation, can be considered much more important because the system leads us to children in need, still nutritionally normal in infancy, but who are at serious risk of malnutrition in their 2nd and 3rd year of life.

It will be shown how identification of children with established malnutrition results in some understanding of the etiology of the problem. This, in turn, leads us to preventive approaches and evaluation of the preventive measures.

Comprehensive health care is given in this department, on the pattern of a Government primary health centre, to more than 1, 00,000 people, who are living in a slum area of Ludhiana city and in 29 villages. Every name is entered in a family folder which is maintained family-wise. In addition to the structure of the family, the folder contains basic information concerning the socio-economic status and literacy. Every home is visited once in three months by a field worker, each of whom has approximately 5,000 people in her care. As each new event, for example, a pregnancy, is detected, a card is made for the pregnant mother. For every child under five, whether born in the area or coming to live in the area, there is an appropriate card with the "Road to Health" on the reverse side so that the child's weight can be accurately and regularly monitored. While routine visiting is done once in three months, those in needs are visited as often as necessary and this is done by means of the worker's diary. This, together with the family folder and a master register

for Maternal and Child Health for each area, are the only records required, and in fact permitted, since a multiplicity of records results in inaccuracy and wastage of time.

Master Register and its Contents

The master register will contain the following:

1. *Base-line data:* When an area is taken up for care, an initial survey is made by the field worker. During the survey, family folders are made and the information on the folders transferred to section I of the master register. This base-line data provides a complete profile of the area and hence there is no need to repeat this survey.

2. *Monthly changes:* The base-line data is kept up to date by recording the changes which are found on daily home visits. Approximately 15 minutes is spent by each worker for entering these changes at the end of their home visits. There are only four changes which alter the population size, persons coming into the area, leaving the area, new births and deaths. For example, a family of five coming into the area will add five to the population total and the individual members will alter the structure of the population. The mother will add one to the important group of married women aged 15 years to menopause, and the same woman will add one to the eligible couple list. Her two-year old child will add one to the group of under five children since this is also a vulnerable group of the community about which it is important to have accurate information. The husband and the older children will simply be additions to the total population.

3. *Monthly, quarterly, annual summary:* A summary is made of the base-line data initially, for total population, eligible couples, under five children, etc, and this is updated by use of the method described above by summarizing the changes which have taken place monthly, quarterly and annually. Review of the periodic data immediately directs our attention to areas requiring urgent action.

4. *Maternal services:* While, as each pregnancy is discovered, not only is an ante-natal card made and placed in the folder, but the details of the pregnancy are entered in this area in the master register in a section according to the month when the woman is due to be delivered. This is important

since it directs the workers attention to the women who are in greatest need of care. The details include the ante-natal care attendance and emphasis is placed on getting the woman to attend at least 3 times, including once in the last trimester, protection with tetanus toxoid and arrangements for delivery. The details of the delivery, the state of the baby and the immediate post-natal visits are also recorded in this area.

5. *Children's services'*. As each baby is born or as any under five children enter the area, the details including the immunizations status are written in that part of the master register.

6. *List of eligible couples*: This is kept up to date in the standard manner.

Without this continuous assessment of the community, it would be impossible to give appropriate care to those who require it. The only alternative would be to deliver care on the "hit and run" system. A few would certainly be benefitted by the latter but, in spite of expenditure, time and money involved, inevitably many whose needs are great will be missed, since we would have no means of knowing of their existence.

Such a policy would never be tolerated inside the hospital where appropriate treatment depends on a careful history, thorough physical examination, accurate recording of findings, specific laboratory investigations and daily progress notes. If this is deemed necessary for individuals in hospitals, why not apply it to communities where it is much more difficult to identify those who require preventive as well as curative care.

Without this type of recording, we would not have been able to find out the child in need. However, as a result of this method, we are confident that appropriate care is made available to all children in our area, not only those who are deprived but, more important, those in whom deprivation might be prevented.

Scrutiny of data showed us that the B.C.G. coverage of the under five children was only 8 per cent in the area initially, whereas when the programme began, had rapidly risen

to approximately 90 per cent. The coverage with D.P.T. had failed to rise above 30 per cent. The former was given in homes by the field workers and the later at the children's clinics. Review of the children's cards in the family folders showed that less than 25 per cent of the children in the area have never attended these clinics, run particularly for the welfare of the children, "who attend and who stay at homes" was the obvious question, and this led us to the fact that, in the village, there are two distinct communities. One community comprises of socio-economic ally privileged, high caste, owning some land, not poor, and with a fairly high literacy rate. Another community is made up of the socio-economically underprivileged, the low caste Harijans, land-less laborers, most of who are poor and in whom the literacy rate, particularly of the women, is low. This data for the 11 villages surrounding the three main rural centre populations is 17,249 as shown in Figure 1.

There have been considerable changes since the 1971 census when the proportion of Harijans was less than 30 per cent. In addition to this, Harijan children under five years are 13.1 per cent whereas non-Harijaa children account for only 9.9 per cent. This shows that it is the later who have been limiting their families while family planning programme has had less effect upon the underprivileged.

Realizing that there were probably great differences in the health and nutritional status of the under five children of the two groups, we studied the growth cards of 1,199 children between 5 and 60 months. The number of under five children in these villages is approximately twice this figure. Children over one year are visited less frequently than infants, and the card of any child who had not been visited and assessed during the previous four weeks was not included in the review. This data, according to sex, and economic status is shown in Table 1 and Figures 2-4. Normal

TABLE 1
DISTRIBUTION OF 1,199 CHILDREN ACCORDING TO SEX AND SOCIO-ECONOMIC STATUS

	Non-Harijans	Harijans
Males	369	263
Females	283	284

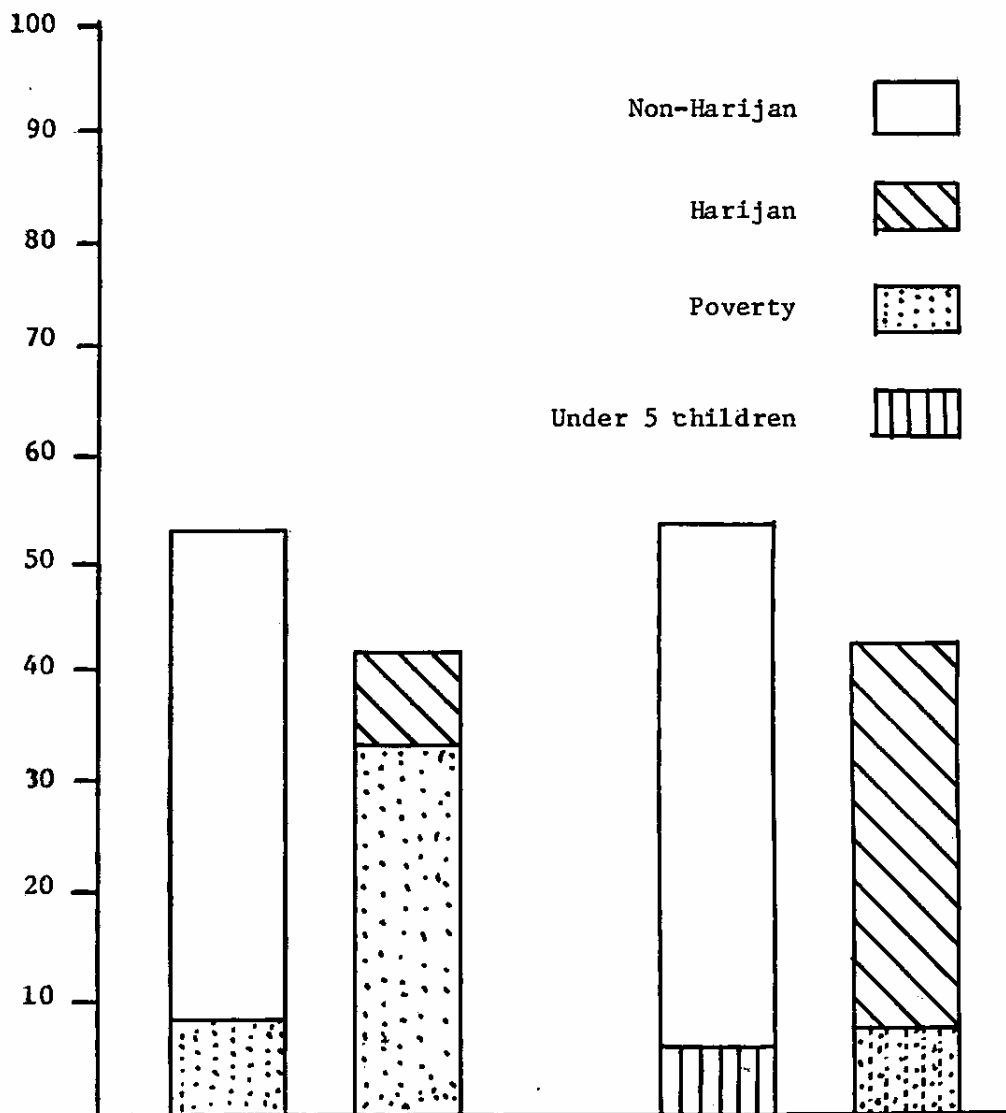


FIGURE 1

SOCIO-ECONOMIC STATUS AND UNDER-5 CHILDREN IN 17,249 RURAL PEOPLE NEAR LUDHIANA

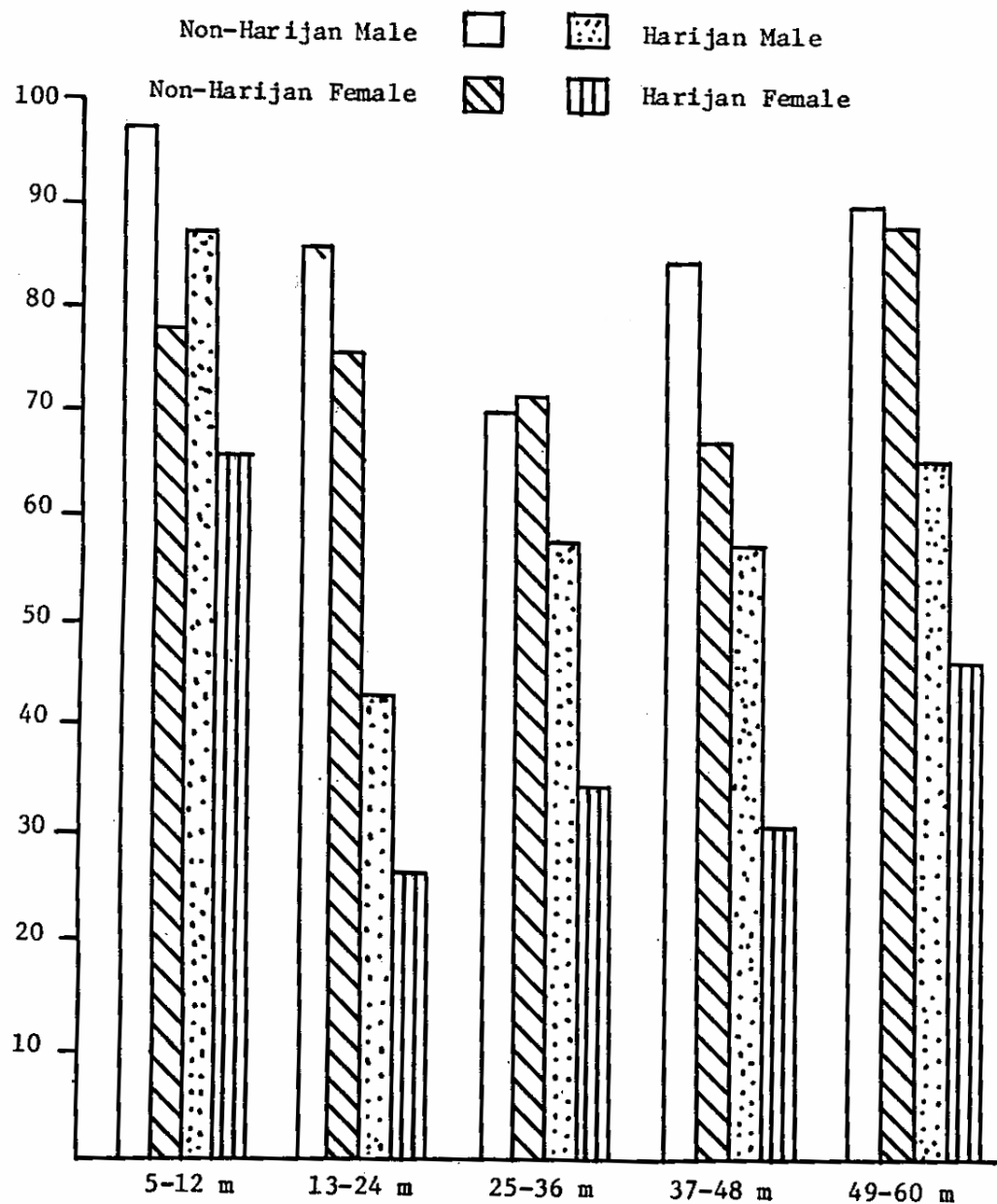


FIGURE 2

PREVALENCE OF NORMAL NUTRITION IN 1,199 CHILDREN, 5 - 60 MONTHS

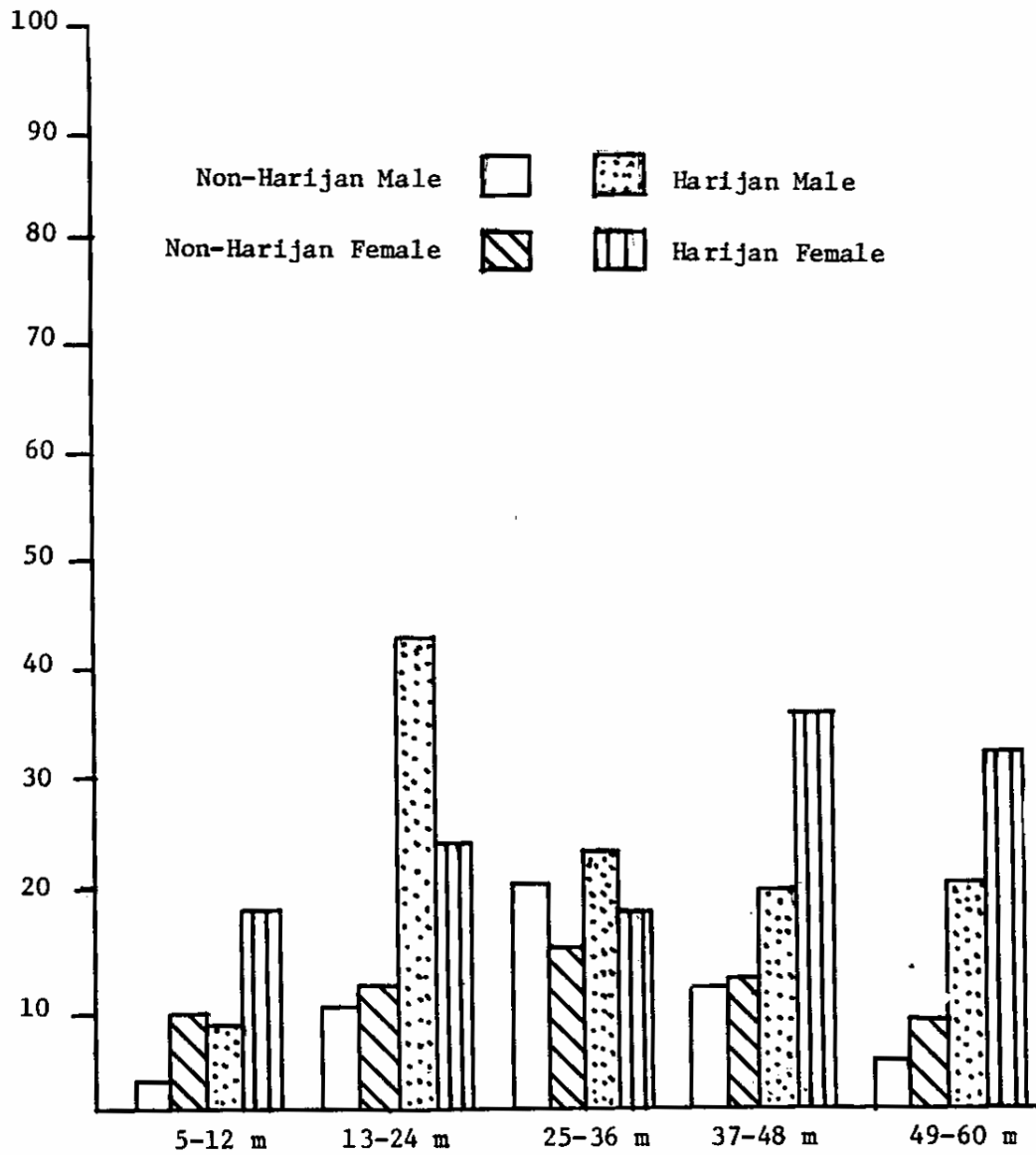


FIGURE 3

PREVALENCE OF FIRST DEGREE MALNUTRITION IN 1,199 CHILDREN,
5-60 MONTHS

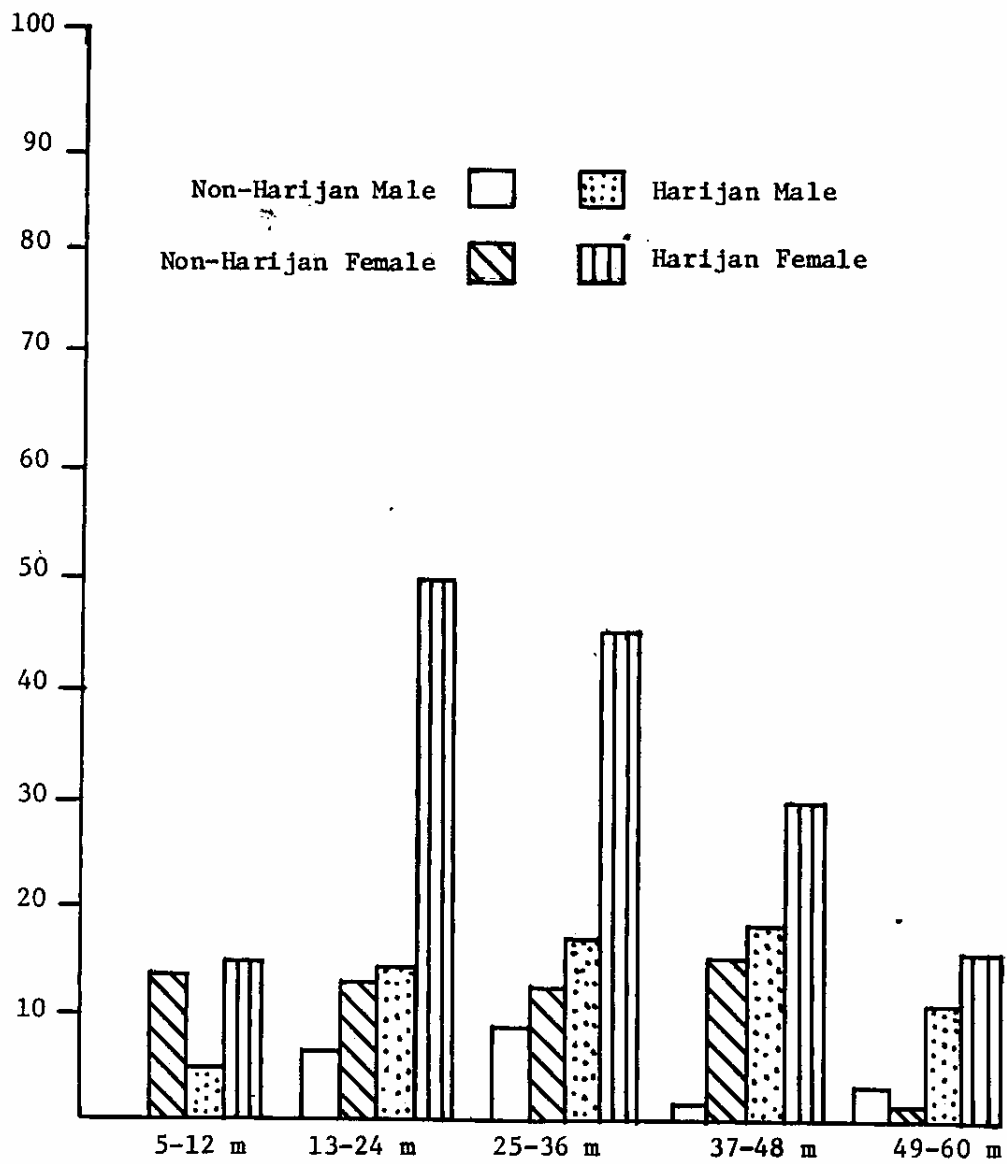


FIGURE 4

PREVALENCE OF SECOND/THIRD DEGREE MALNUTRITION IN 1,199 CHILDREN, 5-60 MONTHS

nutrition is more than 80 per cent of the expected weight for age (Harvard Standard), 1° Malnutrition, 70-80 per cent, 2°/3° less than 70 per cento

The identity of the largest group of deprived children in this part of rural Punjab is clearly revealed in these figures; female children of the low socio-economic group. Studying the factors associated with severe malnutrition in this group, we found that none received adequate calories at one year and only 11 per cent received anything other than tea or diluted milk, in addition to breast milk. Many mothers worked in the fields, leaving the baby with a sibling. Breast feeding is, therefore, infrequent and while the mother will spend some time giving a little food to a male child, she is unlikely to "waste" her precious time on a female especially, if there are already many females in this family. Deprivation of food leads to apathetic acceptance of hunger, and it is not unusual to find in this community a three year old female who weighs much less than her one year old brother. Lack of care results in increased frequency of infections, particularly gastroenteritis, and the downward spiral of neglect, deprivation of food, recurrent infections, results in a state of severe malnutrition which, if the child survives, generally persists until the fourth year of life.

While failure to add supplementary food to the baby's diet is the basic cause of malnutrition, food is available even in poor homes in Punjab. The lack is not food, but someone who will care enough for a female infant of low priority to give her food commensurate with her nutritional requirements. Have we any idea as to how many children with second and third degree malnutrition are in the country? Our figures indicate that in our 50,000 rural populations there may be almost 1,000 such children, and, in Punjab, approximately three lakhs of which more than half will be females of the under-privileged community. It is these children whose deaths account for so much of the post-neonatal infant mortality and much toddler mortality.

From the cards, it was possible to discern some of the factors associated with severe malnutrition in the children of the privileged community. Here too, few received supplementation by solid food until 12 months, but since their mothers do not go out to work, the children are breast fed frequently, and receive some supplementary food. The weight

may falter at 12 months, but thereafter food is given frequently enough to ensure good nutrition. Recurrent, gastroenteritis, measles or bronchopneumonia, particularly if these diseases occur while the weight is faltering, are the chief causes of malnutrition in the socio-economic ally privileged community.

Rehabilitation of severe malnutrition is not only expensive but attempts are not always successful particularly if, a child is of low priority. Prevention of malnutrition is, therefore, mandatory. Special clinics for these children and the feeding programmes we arranged close to their homes, had no appeal for the mothers of these children, an alternative approach had to be found.

Lack of food, whether due to ignorance of the food requirements of a child, disinterest in feeding a female baby or failure to give adequate quantities, was the basic problem. Since there is little malnutrition in older children, even in poor homes, there should be enough for a baby. Could we become agents of change in these homes, teaching mothers the importance of giving to the baby, before nutritional deprivation has had time to occur, a share of the food available in the home? We decided, therefore, to make special targets for care, babies for whose nutritional needs breast milk would soon be insufficient and use these babies as entry points into these homes. Since health and nutrition education on regular routine visits by our staff had done little to change attitudes of this community, more intensive health education was apparently required. Community Health Workers (C.H.Ws) are employed in our programme to augment the field worker's efforts with the at risk groups, especially those in the socio-economic ally under-privileged community. Most are the trained *dais* of the villages in which they work, middle aged, acceptable to the people and with few home responsibilities. Since they are given specific tasks involving pregnant women and child care and, since the only "treatment" they give is electrolyte solution to children with diarrhea, it is not difficult to train and supervise them. They were obviously the ideal extension educators for this task. Accordingly we devised a preventive approach as follows:

At the end of each month the medical officer and field workers together scrutinize the family folders and the cards of all children approaching 5 months. In such

unit of 5,000 population there will be 12 to 15 such children per month, so the review can be completed in approximately one hour. The circumstances of the home, the education of the mother, the family size, the sex of the child, the birth intervals, the sex and nutritional status of siblings, evidence of care or neglect of siblings, and deaths of earlier children, all combine to allow each baby to be classified provisionally as a "priority" for its home, or of "doubtful" or even "no priority", that is, a baby whose death might well be a relief to the family.

The purpose of this is to assess the amount of effort which might be required to prevent nutritional deprivation in each child. For example, a mother whose 3 year old daughter has no malnutrition will be expected to accept advice regarding the supplementary feeding of her first son. Much greater effort will be needed, however, to persuade a mother to "waste" time in feeding her fifth daughter when she has no sons and two previous females have died due to malnutrition.

All children of the under-privileged community are abstracted for this special approach and given to the community health worker. Each worker has one to two thousand populations, depending on the circumstances of each village, and will have only 2-4 new homes per month. In addition, all homes in the privileged community in which there are circumstances which might result in lack of care for the baby, are also given this special care.

The community health worker is introduced to each home by a health worker. To test the feasibility of this new approach, a physician in our programme has done this initial assessment, introduction and monthly supervision so far. In the home, the prognostic index given in the centre to each child, is confirmed or modified and the mother and the C.H.W. are given the first lesson regarding the need to add solid food to the infant's diet, the preparation of the food available in the home, the amount required, the frequency of feeding and the importance of using clean utensils. Thereafter, the C.H.W. visits on alternate days, with a clearly defined goal, a baby whose calorie intake will be adequate by 8-9 months, whose illness will be reported immediately and, if necessary, brought to the centre for care, who will be fully immunized and whose mother will be using contraception

in order to delay the arrival of the next baby. The training of the C.H.W. takes place when she brings babies to the health centre for immunization or treatment, but most of her instructions are given in individual homes by the field worker and physician supervisor at introductory visits to new babies and during their subsequent visits with the C.H.Ws to these "priority homes".

This special programme has been in operation in the Community Health Programme for one year and the first children given this care have reached 18 months. The data of 123, 64 males and 59 females, who are between 12 and 18 months, is presented below. These children have had a minimum of 6 and a maximum of 12 months of priority home care.

The nutritional status of almost all of these infants was excellent at 5 months, breast milk being adequate for their needs. Figures 2,3, and 4, however, show that of the healthy children of the low socio-economic community, 57 per cent of the males and 74 per cent of the females will suffer from nutritional deficiency in a few months, that is, in the 2nd year, if adequate supplementary feeding is not commenced. These are the children in need because of the danger of deprivation.

Table 2 shows that two-thirds of the males and only one-third of the females were of any priority for their parents, showing that the females are in the greater need. While we recognize that this prognostic index has its limitations, we find it of value in directing specific efforts to the child whose need is greatest instead of adopting a "blanket" strategy for all, irrespective of the need.

TABLE 2
INITIAL ASSESSMENT OF 123 INFANTS AT 5 MONTHS

		"Priority" for the home	Doubtful or "no priority" for home
Males	(64)	41 (64.1%)	23 (35.9%)
Females	(59)	16 (27.1%)	43 (72.9%)

Only one of the 123 families refused to give any supplementary food to the child, the 7th male, preferring to employ magic rituals in place of food. This child had severe malnutrition.

Compliance with feeding advice was achieved in 101 instances (82%), the children receiving calories adequate for their nutritional requirements. These are considered the "success" babies.

Twenty-one were receiving supplementary food but the calories were insufficient for their needs. In spite of the fact that they were being given some food, these and the child who was not being fed, are considered the "failure" babies.

Figures 5 and 6 show the nutritional status of these 123 babies compared with that of 101 children of the same age and the same socio-economic community, prior to the start of this special approach.

The improvement in nutritional status as a result of special care, is more striking in the case of females. It is our impression that, since most males are of high priority, the mothers frequently interrupt supplementary feeding when they feel that a certain food might be harmful for the baby. This is not so for females. A specific health education input for high priority males is, therefore, necessary. Figure 7 shows the nutritional status of the 101 children who were receiving adequate calories.

Thirty-seven (70%) "success" males had normal nutrition. The reasons why 30 per cent, while receiving adequate calories, had malnutrition were:

FIRST DEGREE MALNUTRITION - 11 children (20.8%)

Recurrent illnesses,		particularly
gastroenteritis	5	
No obvious reason	5	
Away from the village a great deal, almost always associated with a fall in weight	1	

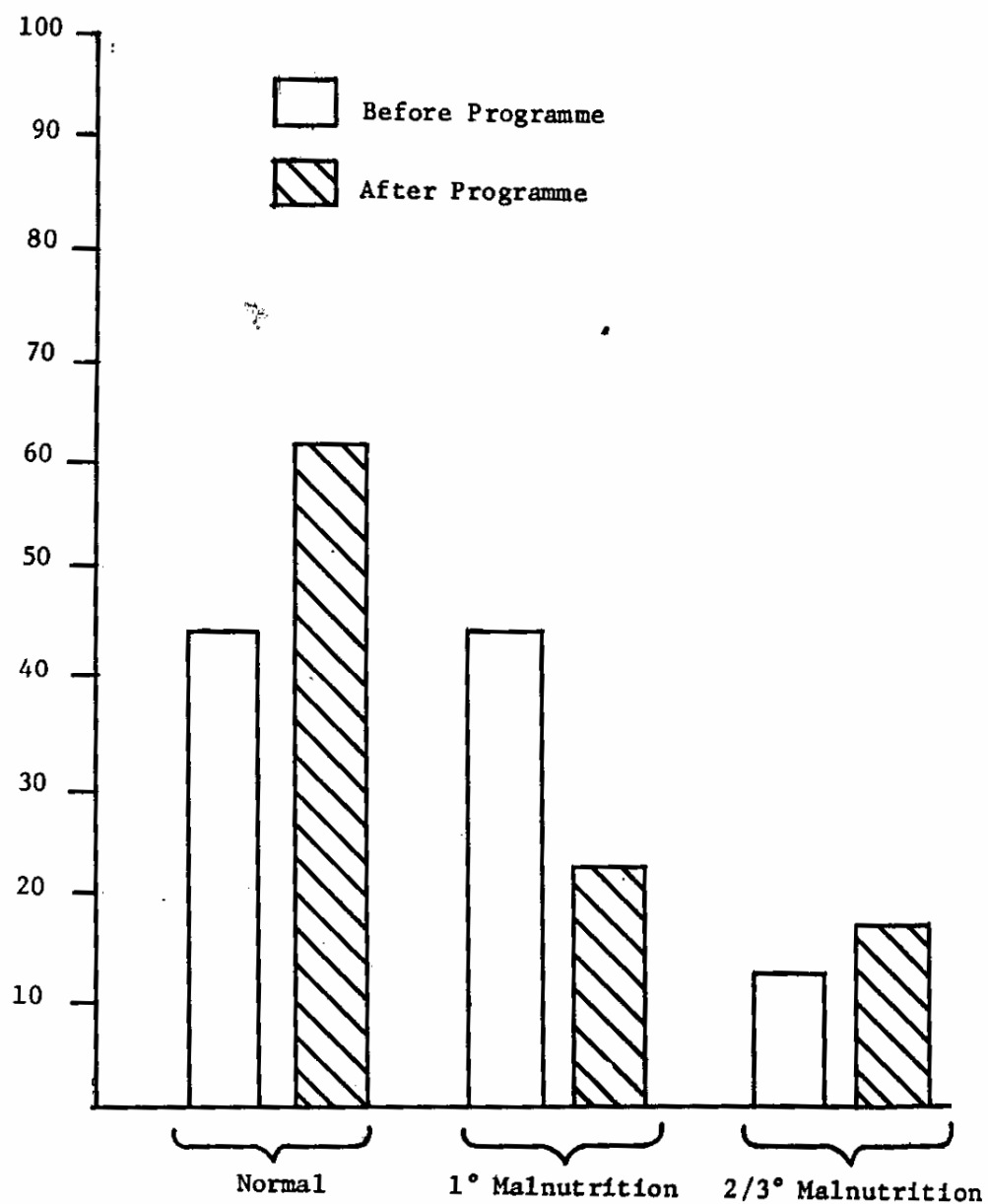


FIGURE 5

NUTRITIONAL STATUS OF 64 MALES BEFORE AND AFTER 6-12 MONTHS SPECIAL CARE

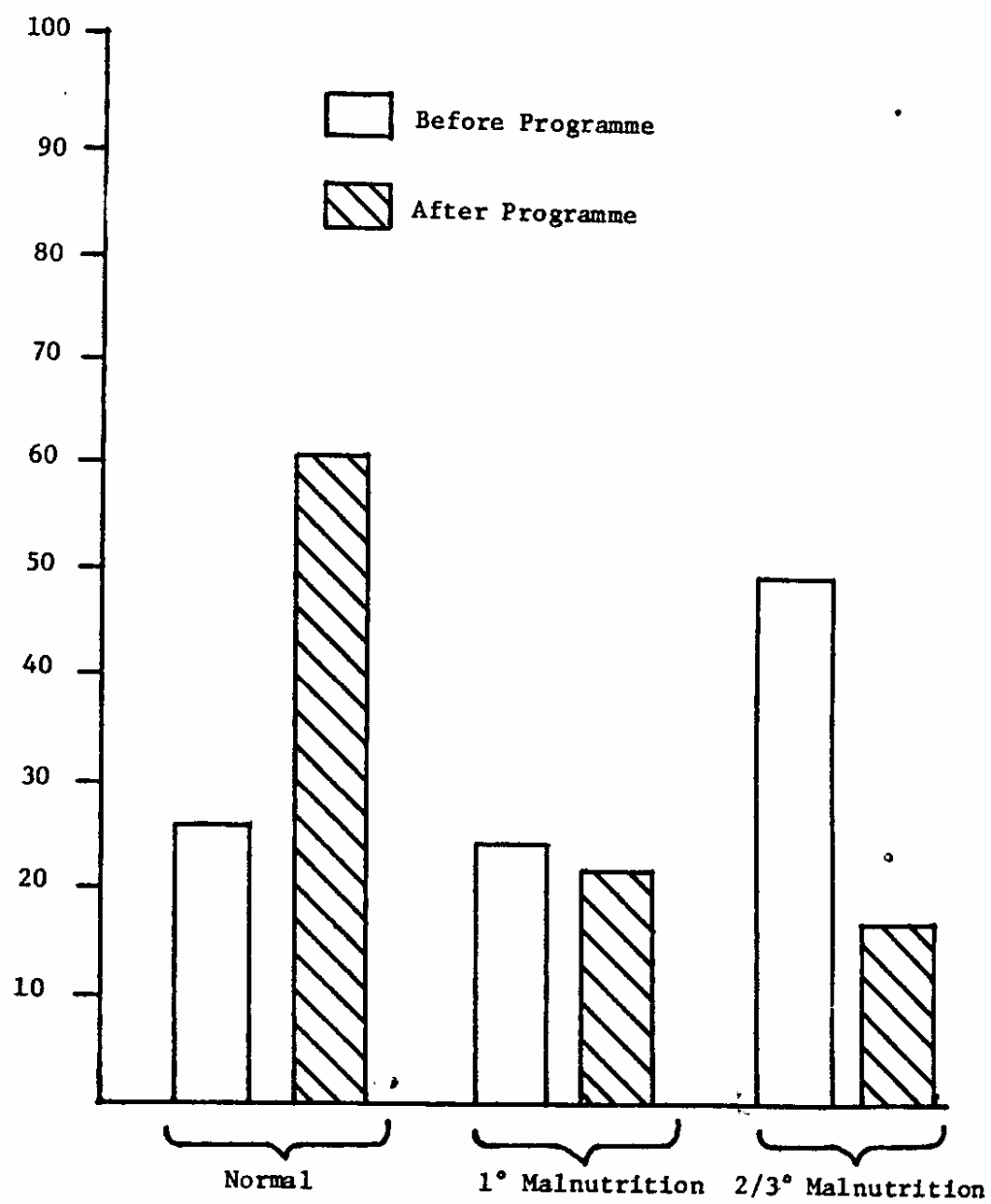


FIGURE 6

NUTRITIONAL STATUS OF 59 FEMALES BEFORE AND AFTER 6-12 MONTHS SPECIAL CARE

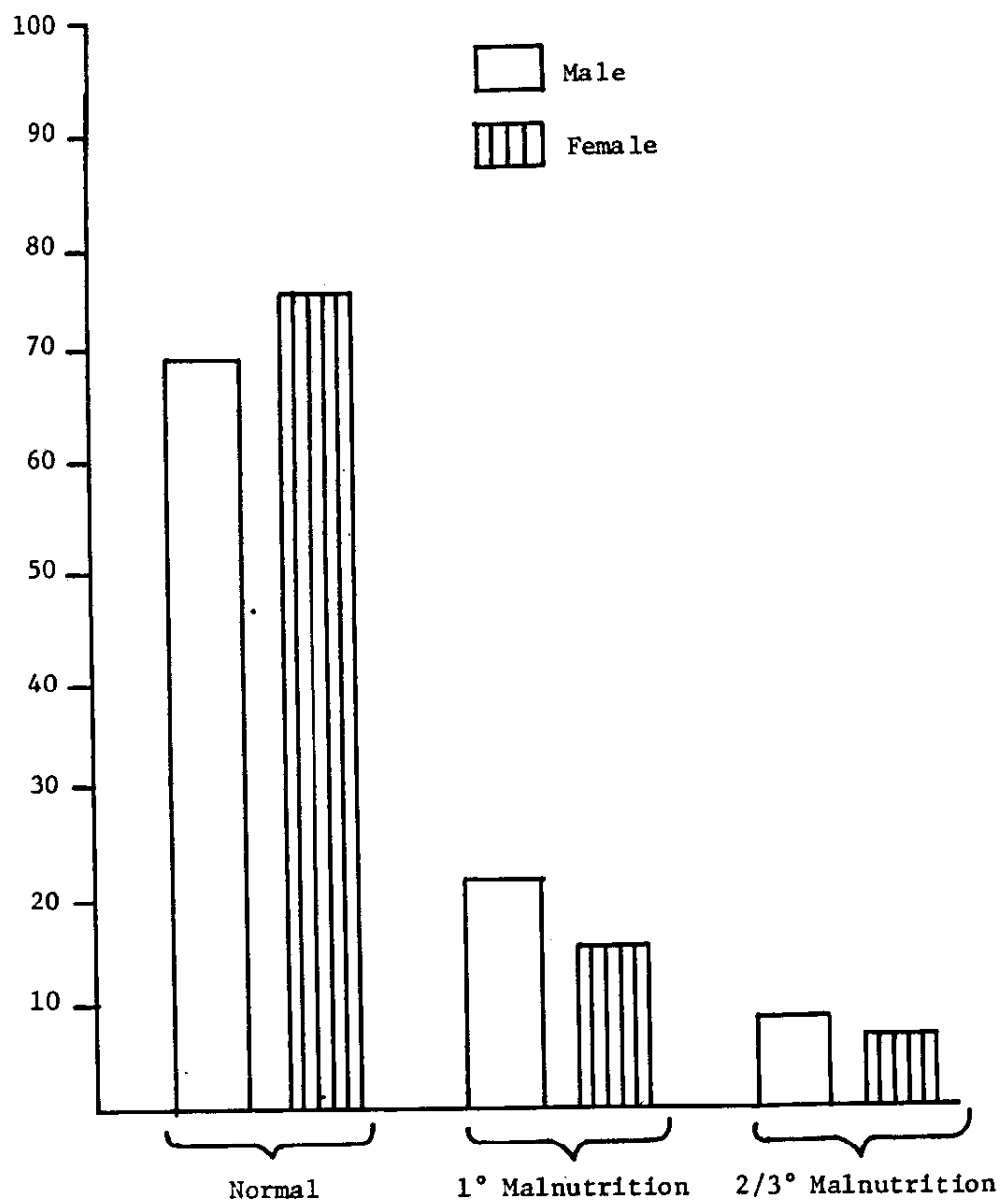


FIGURE 7

NUTRITIONAL STATUS OF 101 "SUCCESS" CHILDREN, RECEIVING ADEQUATE CALORIES

SECOND AND THIRD DEGREE MALNUTRITION - 5 children (9.4%)

Low birth weight and gastroenteritis	1
Low birth weight and measles	1
Recurrent illness and mother pregnant (Always associated with a fall in weight)	1
Recurrent illness	1
Gastroenteritis and surgery for meningocele	1

Thirty-six (75%) "Success" females had normal nutrition. The reasons why 25 per cent, while receiving adequate calories, should have malnutrition were:

FIRST DEGREE MALNUTRITION - 8 children (22%)

Low birth weight	2 (one premature and one twin)
Infected scabies	1
No obvious reason	5

SECOND AND THIRD DEGREE MALNUTRITION - 4 children (11%)

Low birth weight	2 (one had a congenital abnormality)
Recurrent illness	1
Away from village a great deal	1

All except the child with congenital abnormality are steadily gaining weight.

The state of the "failure" children is shown in Figure 8.

Most males under 12 months (Figure 2) have normal nutrition in spite of no or little supplementation of breast feed-

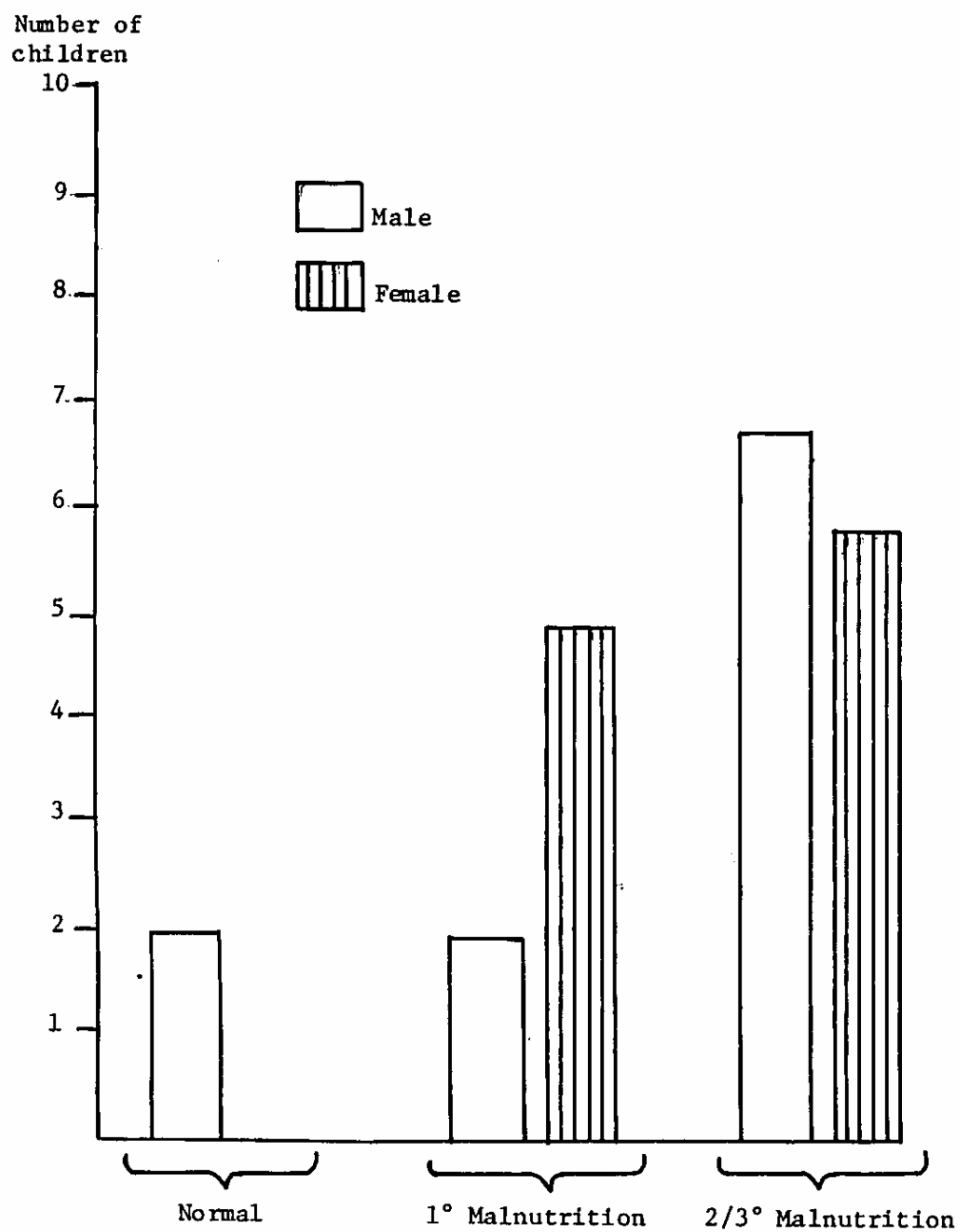


FIGURE 8

NUTRITIONAL STATUS OF 22 "SUCCESS" CHILDREN

ing, and therefore, it was not surprising that two "high priority" males, aged 12 and 13 months respectively, had normal in spite of an inadequate caloric intake. Of the remainder, seven had 1st degree, and 13 had 2nd and 3rd degree malnutrition. Most of the females were unwanted and, apart from one male who was over protected, these children should never have been born. Prevention or delay in arrival of a child who will be, like its predecessors, of low priority for its home, is a vital component of the four-fold goal of this approach, the others being supplementary feeding, immunization and early treatment of illness. The women of this community are generally reluctant to accept family planning advice, yet four had .tub-allegation and 16 accepted an IUCD during the year. Numbers are small but this is a significant achievement since those who had tub-allegation and 10 who had IUCD were mothers of low. Priority infants

The financial burden of this approach is negligible, the rewards are great. Previously every second female child of this community between 12 and 18 months had severe malnutrition, now after one year, this is found in every 6th. The greatest reward is that this change does not depend upon food supplements, but has taken place as mothers have been taught to feed their children on food available in their own homes.

Our experience leads us to believe that this approach is well within the capabilities, staffing, financial and professional, of every Primary Health Centre (P.H.C.) and, therefore, should be implemented throughout the country. The basic requirement is an accurate knowledge of the community for which Family Folder system is ideal since home visiting is already a part of the functions of the P.H.C. If the changes found on home visiting are properly recorded, an accurate and up-to-date profile of the community is always available. Any P.H.C. medical officer could implement this approach. It was only to test feasibility that a senior physician supervised our programme initially. From the family folders, the medical officer can easily prepare data on the nutritional status of the under fives in his care. From this and from enquiry into the causes of deprivation, he will learn, as we did, the specific problems, not only of individuals but of the area, and will be able to design a preventive approach relevant to local needs. There will be great differences from State to State, but problems peculiar to each area can be met in this way.

The success of this approach, while independent of monetary grants, however, does depend upon something which may be more difficult to find than money, a motivated medical team leader at the P.H.C, one who has been trained to understand the potential of this approach to children at risk of deprivation. Lack of interest on the part of the P.H.C. doctor will be quoted as the greatest barrier to country-wide success of this approach. It is true that many are just waiting for their release to city private practice or post-graduation. Where have we, the medical teachers and health planners erred in that we have failed to arouse in our graduates a concern for individual families? Why have we been unable to show them that this interest would not only make the P.H.C. more interesting and professionally rewarding, but that this concern could halt the downward spiral into misery which begins with the first delivery for many young women of the lower socio-economic community? Her lot is often a quick succession of pregnancies, malnutrition of most of the toddlers, continual illness of many and the death of some. Finally, unable to face yet another pregnancy, she seeks the help of the untrained abortionist. If she dies she is simply a statistic on the P.H.C. records. If she lives to be admitted to a teaching hospital, she suddenly becomes of immense interest to every post-graduate student, not because she is the key member of a family in a village but because she is a "case" of septicemia shock with unusual complications. Ignored in her village home when specific advice could have averted this tragedy, and in spite of an almost hopeless prognosis, she is now the target of unlimited and costly attention and even her autopsy is of interest.

Have we, the medical teachers, any share in the responsibility for the present attitudes of our graduates in the P.H.C.s? Have we contributed to this situation by our lack of awareness not only of specific problems, but of the fact that solutions are possible within the resources of the country, and that the child in need can be reached before deprivation is established.

CHALLENGE OF INFANT MORTALITY IN INDIA

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ABSTRACT

The paper analyses the existing constraints in the delivery of adequate health services to children, A strategy for containing the infant mortality due to neonatal causes, diarrheal diseases and respiratory infections is presented: suggestions are given for better training of manpower for child health services, continuous supply of drugs and equipment and adoption of the "at risk" approach for identification of children likely to die, without intervention.

It is estimated that 122 out of every 1000 infants born today in our country shall not survive to see their first birthday. In contrast, in developed countries, the infant mortality rates have reached the gratifying low figure of 22. Thus for every 1,000 live births in India, more than 100 potentially preventable deaths take place. When computed for the 21 million babies born every year, the yearly toll exceeds 2 million.

A close look at the figures shows that almost half the deaths occur in the first month of life¹. Most of these deaths are attributable to prematurity, low birth weight, asphyxia and respiratory difficulties and infection particularly neonatal tetanus². In the post neonatal group diarrheal disease, pneumonias and protein calorie malnutrition contribute 75 per cent of the deaths. Most of these causes are preventable and the vast bulk of the morbidity can be treated by simple and cheap drugs, if used correctly even by a paramedical worker. The fact that we have such high infant mortality rates is proof enough that our health services have so far not been effective in controlling the annual incidence of disease and death³.

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This raises the question of adequacy of health services for children. Pediatricians are a scarce commodity; there are probably less than 2,000 pediatricians in the country to care for 150 million children or 1 pediatrician for 7.5 lakh children. Pediatric services have, therefore, to depend upon the general practitioners and the different categories of Para-medical workers like lady health visitors, female multipurpose workers and community health workers. The ability of the average graduate doctor (MBBS) is limited in pediatrics has been voiced on many forums, thereby underscoring the need for intensive refresher courses in pediatrics and child health for these doctors. The Para-medicals on the other hand have, till recently, been only used in delivery of preventive services and were not expected to treat patients. Besides, the target-oriented responsibilities of these workers prevented such workers from taking enough interest in child health. A study has shown that 10 per cent of the total time of the health staff in primary health centers of a State was being expended on maternal and child health services⁴.

Constraints

Budget: Government of India spends 1.7 per cent of its total outlay on health. That this amount is small for the total burden of ill-health of our country is accepted by many. What is often not appreciated is that the amount allocated out of a health budget of 1,330 crores to family welfare is 765 crores . A sum of Rupees 26 crores out of this amount is earmarked for maternal and child health services, which include immunizations, prophylaxis of vitamin A deficiency and anaemia⁵. These services, though important, cannot reduce infant mortality by more than 10 per cent . It should be obvious therefore, that the funds have been allocated for children in proportion to their size or perhaps their body weight but certainly not according to the seriousness of their diseases or the weight of their numbers. This situation can be rectified by specified allocation to some programmes which need to be organized.

Quantity and quality of manpower: The shortage of personnel and the inadequacy of their training in child health need correction. Several new schools for Para-medical workers will have to be established, if the targets indicated in the plan have to be met⁵. Besides a continuing on-the-job

training is essential. At least one day in the month must be used for teaching and evaluation of Para-medical staff. As per our experience if the afternoon of the pay day is used for this purpose at the primary health centre, all the workers can be trained by the doctor in charge over a period of time. This should be supplemented by teaching by the doctors and health visitors every time they visit a sub-centre. A review of the curriculum and syllabus for Para-medical workers may prove worthwhile. The schools for Para-medicals at all levels should be staffed by full time instructors, so that training of staff no longer remains the responsibility of a district hospital matron, the chief medical officer and a "visiting professor" from the directorate of health services. These instructors should themselves be trained in well designed programmes at institutions which need to be developed at regional level. Since thousands of our Para-medical workers are to be trained at an expense of Rs.50'0 crores, the expense of Rs.10 crores in establishing regional health training institutes would seem to be very essential. Such institutions could also develop reorientation programmes for medical officers working in primary health centers.

Drugs and supplies: The budget provided to primary health centers for drugs and supplies is grossly inadequate, so that for long periods the primary health centre staff can only offer advice or prescription. Only a trickle of the supplies reaches the sub centre. Unless the drug budget is improved, it is going to be difficult to supply drugs to all the sub centers. The drug kit to be supplied should be carefully thought out so that only the most essential drugs are included. Keeping the supply line working is likely to require some training of district medical officers in management processes. The Indian Drugs and Pharmaceuticals Limited could be asked to make packs of one month medicines for community health workers and multi-purpose workers, which the latter could pick up from the primary health centre on their pay day.

Unrealistic work schedules: The work schedules of some categories of workers do not appear to be realistic. For example, the multi-purpose worker is expected to visit all the 2,000 houses under her charge at least once in 2 months. Considering there are approximately 20 working days in a month (excluding Sundays and other holidays), she must visit

at least 25 houses every day and make the relevant entries in her register. Even if we allow her a minimum period of 10-12 minutes per visit, in which she has to enquire about and examine mother and one to two preschoolers in a family, she would spend $12 \times 25 = 300$ minutes or 5 hours of her working day. Travel to place of work and running of her sub-centre would need additional time. Unless the "at risk" approach is adopted in which the community health workers notify all the "at risk" cases to the multi-purpose worker of their area, the latter would continue to collect "non-data" on her registers, which would serve little purpose, and her visits would gradually deteriorate to social occasions⁷.

Leading Causes of Death

Neonatal period: Good ante-natal care, the main components of which require to be worked out, is essential. Treat-ment of anemia of pregnancy and immunization against tetanus would appear to be critical. Natal and post-natal care in the hands of a trained birth attendant is found to lower both maternal and infant mortality.

The elements of aseptic delivery care of normal new born infant, including its feeding and recognition of danger signals must be included in the training of birth attendants. Once an infant is recognized to manifest a danger signal, the nearest place that it can be sent to at present is, the neonatal unit of a medical college, which may be more than 100 miles away. Pediatricians, therefore, need to be provided at Taluqa level hospitals where a small nursery should be organized so that the common causes of neonatal death like prematurity, birth trauma, pneumonias, and infections may be looked after. More complicated cases may be referred from Taluqa hospital to district hospital or nearby medical college. The neonatal service in these two places may need strengthening by staff and equipment.

Diarrheal diseases: Reduction of mortality from diarrhea can be achieved by concentrating on two essentials. The first is education of public regarding what is clean water and what is clean food, and secondly availability of oral rehydration mixture to community health worker and his training in its use, with clear guidelines when to refer a patient to the primary health centre.

Respiratory infections: These are not difficult to diagnose. If community health workers start referring to doctors all infants with a respiratory rate exceeding 50 per minute, very few cases would be missed. More than 80 per cent of pneumonias can be expected to recover with the use of appropriate antibiotics, if started in time.

Malnutrition: As most of the deaths occur in grade III or grade IV malnutrition, the community workers and multipurpose workers have to be trained to spot such cases during their routine home visits. Such patients need to be brought under the fold of some supplementary nutrition programme.

Our studies have shown that the burden of morbidity in rural children is very high⁸. They suffer on an average of 10.2 episodes, which keep them sick for 51 days every year. With such high morbidity rates, the need of mobile pediatric clinics visiting every primary health centre once a week from nearby Taluqa or district could serve a great felt-need.

Conclusion

The programme suggested above is not intended to spell out all that needs to be done. It attempts to high-light only a few facets, which appear critical and should form the minimum essential if a dent has to be made on infant mortality rates in India. The question, therefore, concerns more than the 2 million who die in the first year; it concerns our very existence as a healthy nation,, Can we afford to be indifferent?

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MEASLES IN INDIAN CHILDREN

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ABSTRACT

Measles affects infants and preschool children in India, Children hospitalized after measles have serious complications - bronchopneumonia, gastroenteritis, malnutrition - with mortality rates of 10-20 per cent. In the community, high mortality rates do not occur, except in isolated areas. Measles causes a high morbidity with severe weight loss, diarrhea and respiratory infections in low-income urban and rural communities. The provision of vaccine will protect these children effectively against measles and its aftermath.

Measles has the highest Infectivity of all the infectious diseases, with an attack rate between 80-90 per cent¹ Most children unless protected by vaccination have had measles before they leave primary school. In India, with its high population density, measles is a disease of infancy and the preschool years²⁻⁸, 1

In the developed world, the morbidity and mortality of measles have fallen, though the attack rate has not. In developing countries, the morbidity and mortality of measles have been recognized in the past and re-emphasized recently^{9, 10}.

In India, reports of children hospitalized after measles stress the frequent and life-threatening occurrence of bronchopneumonia, gastroenteritis, reactivation of tuberculosis and pyaemia infections²⁻⁵. Our experience at the Christian Medical College Hospital, Vellore, has been no different. On an analysis of 100 children admitted with measles, bronchopneumonia was the most frequent complication, affecting 76, followed by diarrhea (30) and encephalitis (10). Pyaemia infections, tuberculosis and cancrumoris were seen in smaller

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numbers of children. One-third of the children were frankly marasmic and 2 had kwashiorkor. The mortality rate was 11 per cent and is similar to those of 10-20 per cent reported from other hospitals in the country^{3, 5, and 6}.

Admissions to hospital do not, however, reveal the full extent of the havoc wrought by this disease, as the majority of sick children in our country are not brought to hospitals for treatment. This applies more particularly to children with measles. All over the country it is firmly believed that measles is caused by the visitation of a goddess and that to seek medical treatment would incur her displeasure^{4, 5, and 7}. In any event, it is the child with serious illness who is admitted; hospital statistics will not, therefore, give an accurate picture of the natural history of the disease.

There are several reports of the effect of measles in communities^{7, 8, 11-15}. Some of these are detailed, while others enumerate the numbers of children affected and record case fatality rates. An examination of the salient features of three of these studies reveals much of interest. These record the morbidity and mortality of measles in three epidemics, the first among children of upper and middle class parents⁸ the second among rural children⁷ and the third among children in a low-income urban community¹¹.

In the first study, 22 of the 39 susceptible children below the age of five years were affected. Twenty children had been immunized against measles and one of them had unmodified measles. Complications were few: 27 per cent of the children had otitis media, 4 per cent mild diarrhea and transient weight loss was reported in several children. Here, measles was an inconvenience, a minor illness, very similar, to the disease as it is reported in the West.

In the second report, 69 per cent of 132 susceptible preschool children, attending a day-care centre contracted the disease. The children were well nourished, having their daily energy and protein requirements at four meals a day. Nevertheless, 20 per cent of them developed serious complications of measles. One child whose parents refused hospitalization, died of bronchopneumonia and kwashiorkor, giving a case fatality rate of 1.6 per cent. The case fatality for all 194 children in the village who had measles was 3.8 per

cent. The severity and number of complications in well nourished rural children were disconcerting, and were attributed to the prevalent socio-cultural practices. Children with measles were nursed on damp floors, and no effort was made to persuade them to take fluids or nourishment. The survivors showed weight losses of 5 to 10 per cent of their original body weights, which some of them took eight weeks and more to recover. Breastfed infants showed less weight loss than those who were completely weaned. Seventy two children had been previously immunized against measles. Two had unmodified measles during the epidemic.

The third study in a low-income urban community, recorded the effect of an epidemic of measles on 67 children. Many of them had complications (85%), and these tended to be more severe in the older children. Two 5-month old babies had very mild attacks of the disease. Half the affected children had severe weight loss and anorexia, which lasted for several months in some cases. Protracted upper respiratory infections and diarrhea were also common. Two children died of pneumonia, giving a case fatality rate of 2.9 per cent.

In contrast to these three studies, there are reports of epidemics in remote areas where the case mortality rates had been extremely high^{12,13}, in rural Punjab, measles caused 17 deaths in young children over a two-year period, in a population of 12,022. Measles ranked tenth in importance as a cause of death in this study¹⁶. In yet other reports, mortality was low, but debility and weight loss, where recorded, were pronounced^{14, 15, and 17}.

Taken in their totality, the records of the disease show that, in the community, epidemics of measles occur once every 2 to 3 years, as the number of susceptible children builds up. The seasonal incidence varies from region and appears to be related to the months of high humidity. Mortality is high in isolated areas and primitive communities; low when health facilities are available and utilized. All reports are unanimous in their recording of considerable weight loss suffered by the children after measles and in the long time taken for them to regain their original body weights.

Community practices such as the withholding of water and the poor attention to the nutritional needs of the children

are normally blamed for the loss in weight. These factors, though contributory, are not entirely responsible. In a residential home for preschool children all were given their daily requirements of energy and protein, and were well nourished. When they were ill, the children were given nourishing food and every effort was made to persuade them to eat. Over a period of three years, 68 children had measles. Of them, just eight children did not lose weight. Twenty children recovered their original weight four weeks after illness, 17 after eight weeks, and 23 children took 10 to 12 weeks to reach their pre illness weights. The older children lost more weight, when calculated as a percentage of their original weight, than the younger ones (unpublished data).

The fact that an attack of measles causes considerable weight loss will gain its true significance when it is realized that malnourished children suffer more illnesses and take longer to recover from each episode of illness than well nourished children¹⁸. Infections in malnourished children, at a remote point in time from their episode of measles, obscure the true morbidity of the disease.

Maternal antibodies protect from measles for the first few months of life, and it is rare for infants below three to four months of age to get the disease¹⁹. The level of maternal antibody declines after three to six months, leaving the infant susceptible to the disease^{20, 21, and 22}.

Considering its high infectivity and morbidity, protection against measles is more important than protection against diseases like diphtheria," tetanus and poliomyelitis. On the evidence available, measles vaccine will most usefully be given during the second half of the first year of life. One dose if administered between 9-12 months will give the child life long immunity.

In this, the International Year of the Child, the provision of measles vaccine to the children of India will be a positive gesture of concern and one that will provide the highest returns in cost-benefits.

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SCHOOL HEALTH SERVICE - PLANNING AND PRIORITIES**

S.L. Chadha*

ABSTRACT

The paper deals with various aspects of school health service: its importance, present status, problems and priorities, In addition, important dimensions related to planning and administration of school health services from top to bottom and coordination at various levels has been highlighted.

Health care of children who constitute about twenty per cent of the total population in any country is the most important aspect of community health. The present health and nutritional status of children in any developing country is far from satisfactory. Incidence of under- and malnutrition and communicable diseases amongst children is very high. Mortality rate amongst children is also high. Health surveys conducted by various agencies in our country have proved the high sickness and mortality rate. In spite of the fact that the findings of these surveys show a wide disparity, the poor health and nutritional status of children and significantly high mortality amongst them due to preventable diseases and malnutrition cannot be ignored. The magnitude of the problem appears colossal, for every child suffering, from frank-signs; there are probably ten children on the borderline of malnutrition.

School children, therefore, constitute a vital segment of the population. Health and well-being of the children will

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be a solid foundation on which the future of nation depends. A well-planned and organized school health programme will offer each child an opportunity to attain maximum physical growth, development and well-being.

Present status of school health service

The first school medical inspection in India was introduced in Baroda city in 1909.

The Health Survey and Development Committee emphasized that provision of medical care for school children should not be isolated from the general health service¹. Subsequently, the Estimates Committee of the Parliament in their Forty-fourth Report suggested a comprehensive programme for improving the standard of health of school children². A detailed report covering all aspects of school health service was presented by the Renuka Ray School Health Committee appointed by the Ministry of Health, Government of India³.

It is noted with regret that School Health Programme has not received priority during the first and second Five-year Plan. It was only in the Third Five Year Plan that some importance was given to School Health.

During the last two decades some advances have been made mostly in urban areas towards medical inspection of school children and treatment. The progress, however, has been slow. School health service is organized in large Municipal Corporations, but in majority of towns, especially small towns, no such service is available. District health authorities have started school health service in some States but the coverage is incomplete. School health service is virtually absent in most of the private schools.

In the rural areas of the country, the school health service is required to be provided through primary health centers, but in most of the States, such services are provided in a perfunctory manner. The medical and Para-medical staff in PHCs in many States is inadequate. In some places, the services are only limited to the main headquarters of PHC.

It is evident from the above that while some sort of services are available in big cities and towns, the smaller

towns and villages do not have school health services in an organized manner. In most parts of the country such services are practically non-existent or imperfectly developed.

Why school health service is considered important

The school health service is considered important because of the following reasons:

1. School age is the period of growth and development in physical, mental, emotional and social aspects of children having been first exposed to community life. It is at this age when the personality of the child develops.
2. School children are a vulnerable segment of population. Next to home, school is of most strategic importance. School is their first encounter with her life. They are an organized community and easy to reach for Implementation of the programme.
3. There is a high incidence of communicable diseases and malnutrition in school children. The mortality due to preventable disease is high.
4. Poor health status of children in this age group contributes towards high rejection rate of recruits for the Armed Forces.
5. School children are exposed to -various stressful situations *e.g.* studies, play competitions, accidental injuries, indifferent behavior of co-students, favoritism and public reprimand by some teachers, etc.
6. For children to learn, good health is essential.
7. Under- and malnutrition are considered an obstacle to promotion of physical and mental health.
8. Industrialization and urbanization have led to social disorganization amongst certain families. This has an impact on mental health of children. Maladjustment and juvenile delinquency have become important problems in urban areas.

Lacunae/pitfalls and problems in school health service

While nobody denies the importance of school health service, it is surprising that it has not received due attention. The following lacunae and problems in school health programme need special mention;

1. There is lack of proper planning and administration of the programme at State and district levels.
2. The main emphasis is on curative aspects of the programme *i.e.* treatment of minor ailments. The important preventive and promotive aspects *e.g.* health protection, health promotion and health education are neglected.
3. Environmental hygiene in and around school premises is striking by its absence.
4. Medical inspections of children are carried out in casual manner.
5. Non-availability of remedial facilities and no proper arrangements for follow-up even in the cases of children declared to have defects.
6. Lack of coordination between health and education authorities. This is one of the major factors for the present unsatisfactory results of school health service.
7. No cooperation between teachers and parents.
8. Inadequate transport for the mobility of staff and conveyance of children to central school health clinics and hospitals for referral cases.
9. Health education imparted in schools has produced little and tangible results.

Planning and administration of school health, service

The following measures are suggested at all levels for planning and administration of school health service:

Central level: There should be National School Health Council with representatives from Ministries of Education, Health, Agriculture and Departments of Community Development, Social Welfare Board, Planning Commission, Welfare organisations, State Governments, voluntary organisations and experts in education and nutrition. The Chairman of this Council should be an ex-officer reputed person who may be an expert in education or nutrition.

State level: There should also be a school health Council at each State level with representatives from different ministries/agencies as for National School Health Council. In some States, school health service is amalgamated with State Health Education Bureau. In such cases, it must receive special attention in the Bureau.

District level: There should be School Health Committee in each District, headed by a District Magistrate. The members of this Committee should be Chief Medical Officer, District Education Officer and representatives from District agricultural community and social welfare authorities. At this level there should be a separate medical officer who should be designated as School Health Officer.

Block and village level: There should be Block School Health Committee with Block Development Officer as Chairman. Medical Officer in charge of primary health centre should be the Secretary of this Committee. Local leaders and Block Samites should also be represented. Similarly, at village level, there should be Rural School Health Committee and representatives from Panchayats, mahila mandal, parents and other local leaders. Medical Officer in charge of the primary health centre will be responsible for organizing School Health Programme in rural areas.

The school health service should be an integral part of general health care but for planning purposes there must be a separate cell at the State level and a separate medical officer for this purpose at district level. At the periphery, it can be integrated with the general health care through primary health centers.

It is not advisable to merge School Health Programme with the MCH services, as the MCH services are fully committed for the health care of expectant and nursing mothers and

neonates, infants and toddlers. They may not be able to take this extra commitment.

Functions of school health service

The objective is to prepare the child for education and for citizenship and also to remedy or ameliorate the environmental and other factors which militate in the home and school against the child's attaining full measure of his mental and physical development.

The important functions of school health service areas under:

Appraisal of health of school child: Medical examination of the school children for early detection of departures from health and various types of disabilities and ailments. It is recommended that instead of carrying yearly medical examination, which is unnecessarily time-consuming, and without any fruitful results, it will be better, if a detailed health check-up is given to each child at the time of entry into the primary school. After that, another such examination of the child should be carried out at the time of his leaving the primary school.

Periodic medical examination should be carried out for children who are referred by school nurses, teachers and parents for any ailment or detection of any indifferent behavior. There should also be complete dental check-up of the school children by the dental surgeon at the time of their entry into the primary school.

Special attention should be given to the care of eyes, ears, nose, throat and teeth of children. There should be proper medical documentation in the prescribed cumulative health card for each school child and proper health statistics maintained.

Restoration of health of school child: Adequate facilities must be provided for treatment in school health clinics and for referral cases in the nearest hospital on priority basis. Some beds for such school children must be reserved in the local or nearby hospitals. Special school health clinics should be arranged for carrying out medical examination with laboratory and pharmacy facilities.

Transport facilities should be provided for mobility of the school health staff for visits to the school" and also conveyance of children to school health clinics and hospitals for treatment. Follow-up examination of all children who are declared to have defects and disabilities should be properly carried out.

Special arrangements should be made available for care of physically and mentally handicapped children. Provision of vocational guidance to 4th and 5th primary school children also merits consideration.

Promotion of health of school children: This calls for creation and maintenance of hygienic environment, in and around school, such as proper class room with adequate accommodation, lighting, ventilation and seating arrangements. There should be proper disposal of wastes. Adequate sanitary facilities should be provided. Wholesome water supply should be made available to the children. In short, healthful school environment should be ensured.

Control of communicable diseases by immunization is a basic necessity. Children are usually protected against tetanus, whooping cough, diphtheria, tuberculosis, poliomyelitis and smallpox during infancy. However, a booster dose against diphtheria and tetanus combined should be given at the time of entry of the child into the school. At the same time, the child should be protected against enteric group of fevers. BCG vaccination may be done, if required.

There should be directed physical activity, such as physical training, games, sports and athletics. The daily school programme should include not only studies but also educational, recreational and social activities. The daily programme must aim also at health and growth needs of the child. Safety control measures which include prevention of accidents may be ensured. Attention should also be paid to maintenance of mental health of the school children by providing adequate recreational facilities and by early detection of any changes in their behavioral pattern.

Health education must be imparted on important health matters, such as personal hygiene, environmental sanitation, and prevention of common communicable diseases. Good personal and social habits should be inculcated. Personal hygiene

drills should be regularly organized. These children are in formative years and practice of hygienic mode of life in these years will become part and parcel of their future life. Child guidance clinics should be organized in hospitals and cases requiring counseling and guidance should be referred to such clinics.

Provision of supplementary feeding to improve the nutritional status also needs consideration. Midday meal, snacks, milk may be provided. The snacks may be prepared out of the nutritive food items locally available which are cheap. Sound dietary habits must also be taught to the children. The supplementary feeding should be given due consideration for total calorie deficiency and should not be merely based on feeding up the protein gap.

Role of school nurse

The school nurse plays a key role in the school programme. She can assist the medical officer in routine medical examination such as recording the history, determination of height and weight, detection of common ailments and defects and maintenance of health statistics. She can inform and guide the teacher regarding health care of the children. She can act as a friendly counselor to the parents. She can win the confidence of the students who will accept her as a good guide.

Role of school teacher

The role of teacher in school health programme is considered very important. He is in a unique position for his continued classroom observations of the children. With special training in school health, he can be a great asset in implementation of school health programme. He can detect departures from health and indifferent behavior in the children and refer them to the medical officer for further action. He can give first-aid to the injured students in the school. He can play a major role in imparting health education. A teacher's role in giving emotional security to the child and in development of his personality is well recognized.

Health check-up of the school teacher

An ideal school health programme should also include periodic health check-up of teachers with special reference

to communicable diseases which may be disseminated to the pupils, such as pulmonary tuberculosis.

Close coordination of official and non-official agencies

There should be cooperation and coordination amongst teachers, parents, school nurses and medical officers. There should be regular teachers-parents meetings. The community leaders and voluntary organisations should be actively involved in school health programmes.

In small towns, the services of general practitioners may be mobilized for school health programme; some of the general practitioners may be willing to accept this assignment on voluntary basis, if they are given remuneration. Coordination between health, education, agricultural, community development and social welfare authorities is considered of paramount importance in school health programme.

Priorities for school health programme

Unless the present system of school health services is considerably improved, it would be a mere waste of time and money to continue it. The following priorities are recommended:

1. Proper planning, organization and administration of the programme at Central, State and District levels. School health programme should be considered a national health programme and planned and delivered jointly by Ministries of Health, Education, Social Welfare and Community Development at all levels. Aims and objectives of the programme should be made very clear to all concerned.
2. Wide publicity needs to be given about the functions of school health service to create awareness amongst the public and its impact on the preservation and promotion of health of the school children.
3. Short orientation courses for teachers in school health to ensure their active involvement.
4. Preparation of manual for guidance on functions of

school health service and role of school nurse and teacher in this programme.

5. School health is considered as a specialized area in public health practice. Therefore, special emphasis should be laid on teaching curriculum of graduate and postgraduate students in medical colleges.
6. School health should also find a special place in teaching curriculum of nurses with special reference to screening procedures.
7. Provision of adequate medical and Para-medical staff for school health service in corporations, municipalities and PHCs. One of 3 medical officers in PHC should be designated as School Medical Officer in addition to his other duties.
8. In-service training facilities be provided for medical and para-medical staff and teachers, *e.g.* workshops, seminars and symposia on school health.
9. Improvement in environmental hygiene and provision of safe water supply in schools. Some standards for environmental hygiene in schools should be prescribed,
10. In view of wide disparity in the findings of health surveys conducted by various agencies, it is recommended that a National Nutritional and Morbidity Survey be conducted among school children to serve as baseline data. Such data will be useful for future planning of school health programme in different areas.
11. Introduction of supplementary nutritional programmes in schools in selected areas.
12. Assessment and evaluation of school health programme in different States by independent Appraisal Teams. This will assist to detect pitfalls in the programme and to suggest necessary modifications in its implementation.

Conclusion

The present state of school health service is not satisfactory. The organization and administration of the programme need to be reviewed at all levels. Successful implementation of the programmes depends on good teamwork with full understanding and active participation of all the concerned authorities. Major role will have to be played jointly by Education and Health Departments. School health services should be an integral part of general health care. Without proper organizational structure and staff for school health, the programme for protection, promotion, restoration and maintenance of the health of school children cannot be implemented. School medical officer is in unique position to provide integrated and comprehensive health care (promotive, preventive and curative) under the same roof. A well organized school health programme will make a significant contribution to the community health and will certainly turn "The child of today into a good citizen of tomorrow".

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LATE HOSPITALISATION OF CHILDREN

Some Observations and Experiences

K.K. Kaul*

ABSTRACT

The author analyses the factors responsible for delayed hospitalization of children which ultimately accounts for high rate of mortality. The problem becomes significant as 50 per cent deaths of children in hospital occur within first 24. Hours of admission

The experiences included in this paper are based on personal observations and studies conducted by B. K. Shrimati at Smt. Patel Pediatric Centre, Government Medical College, Jabalpur (M.P.).

Complaints and grievances against government hospitals are far too common. Not infrequently, these are exaggerated and, often out of proportion to actual deficiencies and lapses that may occur. Out of fear of hospitals, children are admitted late by which time the patient's condition has deteriorated and death is inevitable. This further strengthens fear of the hospital so that subsequent admission is either avoided or sought far too late, thus completing the vicious circle. That about 50 per cent deaths of children in hospitals in India occur within first 24 hours of admission bears eloquent testimony to the fact that children are brought to hospitals too late. Compounded with the high mortality among children in particular reasons which bring hospitals into disrepute are not difficult to find. The necessity of studies enquiring into the causation of delayed hospitalization of children, therefore, becomes obvious.

What constitutes 'delay' is a matter of opinion but could well be defined as "admission to hospital beyond a

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stage at which the patient could no more have benefitted from treatment ordinarily available to him outside the hospital to prevent further deterioration in his condition".

Hospital records reveal that delay is significant and mortality higher in the case of female children and this indeed is a sad reflection on the attitude of parents to a female child. More males are admitted but often more females die. Education, economic constraints, distance from hospital, emotional disturbances in the family, concurrent illness, death of a member of the family, broken home, preoccupation with social events such as wedding, guests festivities etc. and past hospital experience are factors that influence the decision to hospitalize a patient. Some people believe that since services provided by State-owned and charitable organisations are free, their quality must be inferior. Contrariety, it is also true that free services are availed of mostly by poorer sections of the community. The type of family - extended, joint or nuclear - is expected to influence the decision to hospitalize the child depending upon the personality, education and prestige of the influential member of the family. Past experience of death in the hospital has indeed a negative influence. First born and only children shown promptly to the family practitioner may be referred by him to hospitals early, if the persuasion is adequate and also depends upon his character, personality and the influence he can bear upon the family.

Increasing number of general practitioners in cities results in lowering standards of medical care. Since all seek income from private practice, it leads to an erosion of the public sector, so that more patients may make use of private fee-paying services from doctor's consulting rooms². It appears that delayed referral by a treating doctor is not always due to his unwillingness or to his incompetence to appreciate when he should refer the patient to a hospital but often due to parents' unwillingness or to the doctor's inadequate persuasion. Seeking 'private' treatment is considered prestigious and is to an extent a status symbol particularly because State-owned hospitals are considered charitable and meant only for the poor.

The nature and severity of the disease as perceived by parents may also influence early or late hospitalization. Delay in admitting a dehydrated child is understandable.

However, in the case of chronic and usually fatal disease, experience indicates that usually parents seek unconventional methods of treatment such as herbal, incantation and treatment outside hospital until the child is desperately ill when brought to hospital. As has been said earlier, erosion of the reputation of government hospitals, by private fee-seeking doctors and their politically influential clients may be one of the causes of delay in such circumstances. A classical example is treatment of liver disorders, particularly cirrhosis, with some popular liver cures¹ and several other unethically advertised products giving tall promises of cure. Since these do not always follow strict ethical standards either of manufacture or of advertising, tall promises of sure and instant cures and perhaps low cost, attract gullible people, usually the less literate and economically under-privileged. A serious illness in a young child may not be perceived as serious by his parents and may be attributed to causes such as dietary indiscretion, bad weather, and superstitious beliefs with consequent delay in seeking medical care. Home remedies, herbs and indigenous medicines are given a trial well beyond the stage at which hospital care might have prevented serious illness and death.

A study has shown that university education has little effect on practices and taboos learnt in the family circle³. Even students undergoing scientific training retain their magic mythical beliefs. A study of attitudes of infant feeding among practitioners has shown that a large proportion of medical practitioners retained their traditional beliefs⁴. It is, therefore, evident that if such myths and beliefs are retained even by those who have received technical and scientific education, their high prevalence in the community is understandable.

The image of a doctor in the minds of rural folk is that of a big man about town who, they feel, may not be easily accessible. They are, therefore, more freely communicative with the village indigenous practitioner. First contacts are often made with quacks i.e., practitioners who are unqualified and do not follow any system of medicine but whose practice includes all kinds of remedies. This is alarming, indeed, since this ubiquitous category of practitioners appears to be expanding further to the detriment of quality of medical care. Such 'practitioners' are in a comfortable position in that they have no hesitation in administering any

form of remedy, remain unsupervised and are not subject to any ethical standards. They learn (if at all!) by trial and error and cash in on common illnesses which are transient and in whose case recovery at any rate is spontaneous. Since legal action against them is difficult to take, for a number of reasons that are beyond the scope of this discussion, their tribe continues to multiply.

'Hospital phobia is quite frequently observed particularly among the rural folk. Many of them may not have visited a metropolis or even a district headquarter town. To reach the hospital they must overcome fear and hesitancy and be aware of the services available to them. They often look for a 'guide' or a 'contact man' who knows and can help. When the child is finally hospitalized the parent finds himself in an alien situation with no place to cook meals or wash clothes and have a bath. He is often accompanied by his wife and sometimes a couple of friends and helpers. The mother sleeps on the ward floor and bears all hardship with fortitude for the sake of her ill child. Such experiences are hardly conducive to a subsequent decision for hospitalization,' should the need arise in future.

Most communities in India are socially very closely knit. The joint or extended family structure, social mores, customs and ways of life are such that in rural societies there is much interdependence between people. In the matter of decision making, influence of friends, neighbors and relatives is the rule rather than the exception. Since views are often conflicting, decisions are difficult to make and consequently delayed.

It is indeed unfortunate that among causes of delay, those relating to State-owned health services are not uncommon. This may largely be due to the disrepute to which hospitals are subjected to by vested interests who consider successful working of government hospitals a threat to their earnings. Partly, however, economic constraints which limit purchase of drugs and equipment and lower priority allocated to health are also responsible for this state of affairs. The least that can be said is that adequate representation of doctors among policy-planners and fund controlling administrators is very necessary and can bring about the much-needed improvement in this regard.

To restore their reputation, hospitals need to develop a strong system of public relations and intimate involvement with the community they serve. There is an urgent need to appreciate and study the difficulties faced by parents, especially mothers, in large and medium sized hospitals admitting children in India. If mothers are indeed welcome rather than passively accepted, active arrangements need to be made for their comfort, their involvement in the care of their children in the hospital and their education for continued health care after discharge.

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A STUDY OF LOW BIRTH WEIGHT INFANTS IN AN URBAN COMMUNITY

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ABSTRACT

The study concerns the problem of low birth weight as seen in a prospectively studied cohort from a South Delhi urban community covering 23,700 families and 1,19,799 population over a four year period from 1969-72.

The incidence of low birth weight was 22.9 per cent of which 2.7 per cent had a birth weight of 2000 gms. or less and 20.2 per cent had a birth weight 2001-2500 gms. Maternal height of 140 cms or less and pre gravid weight of 35 kg or less were associated with the occurrence of low birth weight infant.

The mortality was related inversely to birth weight and the gestation affected the outcome directly. The mortality rates declined sharply in infants of birth weight 2001-2500 gms but was still high as compared to infants of birth weight more than 2.5 kg.

The later physical growth was affected by the initial birth weight. The study was conducted under the research project 01-658-2 funded by the National Centre for Health Statistics, 3700 East West Highway, Hyattsville, Maryland-20782, U.S.A.

Low weight at birth amongst our infants remains a burning problem. Several investigators have identified their problems in neonatal period, high mortality in first year, poor physical growth in preschool years and the occurrence of developmental dysfunction in later years of life 1, 2, 3, 4, 7, 17, 18, 19, and 20. Besides several workers from India and developing

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world have questioned the validity of the World Health Organization definition of low birth weight for adoption and application in our country²¹⁻²⁵. Their reasoning has been based on the prevalent mortality and physiological behavior of these infants especially in first few weeks of life. However, most of these studies have been retrospective and hospital based with the resultant bias due to the kind of patients who attend these hospitals.

Community based studies either from urban or rural settings have been few and information on many vital aspects referred to earlier is not available^{3,25}. The present longitudinal urban community based study attempts to cover some of the lacunae of this problem.

Plan of the Study

The study covers 23,700 families covering a population of 1, 19,799 residing in nine South Delhi localities. The study period was four years effective from November, 1969 to March, 1973.

Each family was registered after a house to house census of the population. Complete information was obtained regarding the family, type, size, income, occupation, and housing condition. For each ever married woman, a card was made with details concerning religion age, education, occupation, current marital and pregnancy status as well as other information such as the menstrual and past obstetrical history.

The follow up study about the menstrual cycle was done every two months $\pm$ three days and the first day of the last menstrual period was noted. In the event of a missed period, the case was handed over to a Lady Health Visitor (LHV) or Public Health Nurse (PHN) who booked her as a pregnant woman on a separate pro forma for further studies.

Each pregnant woman was followed every two months three days for recording morbidity such as anemia, urinary tract problems, bleeding per vaginum and so forth. The blood pressure and hemoglobin were checked once during the third trimester.

All infants were examined within 72 hours of birth and measurements including weight, height and head circumference

were recorded using standard techniques. The weight was recorded on lever type of scales, length by aluminum infant meters and head circumference by steel tape. Subsequent measurements for growth studies were taken at 3, 6, 9, 12, 18 and 24 months $\pm$ 2 weeks.

Mortality and survival pattern were recorded at the specified age for early and late neonatal period and one year. The follow-up of the infant was done by the LHV/PHN once in every month.

The entire information was collected on predesigned coded preformed for analysis by computer.

Observations

In general, the families were nuclear in 79.3 per cent, and the average family size was 6.6 in a joint family and 4.6 in the nuclear families. About 37 per cent of the population was living in houses comprising one room with separate kitchen facility and another 15.7 per cent had to make cooking arrangement within their single room accommodation. The per capita income per month was Rs.50 or less in 25.6 per cent cases, Rs.51-100 in 35.8 per cent and 11.8 per cent had income above Rs.200 per month. In all 41.7 per cent of the women were matriculates/graduates or above and 17.3 per cent were illiterates.

Incidence

Birth weights of the infants were available in 6,026 cases. Amongst these the infants born with low birth weight (Birth weight 2.5 kg or less) were 1,883 giving an incidence of 22.9 per cent.

A further break up showed only 165 (2.7%) to be born with a birth weight of 2000 gms. or less and the remaining 1,718 (20.7%) with a birth weight of 2001-2500 gms.

Maternal Pregnancy Factors

Extremes of maternal age (< 20 years and ≥ 40 years) primiparity maternal height of 140 cm. or less maternal pre gravid weight of 35 kg or less and maternal anemia with a hemoglobin of 6 gms or less were significantly associated

with the occurrence of low birth weight (Table 1).

Mortality

Birth weight: The birth weight was inversely related to mortality at all periods of this study. It was almost 100 per cent in extreme low birth weight and declined with the increase in birth weight. The most significant finding was, however, the sharp drop in the prenatal, neonatal and infant mortality rates for the group with birth weight of 2001-2500 gms and the rates declined by as much as 4 to 10 times than the previous birth weight group of 1501-2000 gms. (Table 2)

TABLE 1
DISTRIBUTION OF BABIES BY MATERNAL FACTOR AND BIRTH WEIGHT GROUP

	Birth weight group in gms.							
	2000		2001-2500		2500		Total	
	No.	Percent- age	No.	Percent- age	No.	Percent- age	No.	Percentage
Maternal age								
<-20	28	6.2	128	28.2	298	65.6	454	100.00
20-29	113	2.6	867	20.2	3305	77.1	4285	100.00
>30	24	1.9	221	17.2	1038	80.9	1283	100.00
Parity								
PrImigara	56	4.3	326	25.2	912	70.5	1294	100.00
2-4	75	2.2	645	18.6	2746	79.2	3466	100.00
5+	34	2.7	247	19.5	985	77.8	1266	100.00
Maternal Height								
<140	3	7.1	15	35.7	24	57.1	42	100.00
140-154	84	3.3	552	21.4	1944	75.4	2580	100.00
>154	26	2.6	137	13.7	840	83.8	1003	100.00
Maternal Weight								
<-35	3	8.6	12	34.3	20	57.1	35	100.00
35-44	20	4.1	130	26.8	336	69.1	486	100.00
>44	27	3.3	127	15.3	675	81.4	829	100.00
Mother's HB								
<6	A'	7.3	12	21.8	39	70.9	55	100.00
6-10	38	2.7	268	19.1	1100	78.2	1406	100.00
>10	9	1.7	89	16.5	440	81.8	538	100.00
Total	165	2.7	1218	20.2	4643	77.0	6026	100.00

Birth weight and gestations: Table 3 highlights the influence of gestation on various mortality rates. It is evident that the mortality was directly influenced by the gestation irrespective of birth weight. The mortality in similar birth weight groups was almost 2-4 times when the gestational age was less than 37 weeks. The influence of gestation was visible at all periods up to infancy.

TABLE 2
MORTALITY PATTERN IN DIFFERENT BIRTH WEIGHT GROUPS

Birth Weight (gms.)	Prenatal period			Neonatal period			Infant period		
	Total Cases	No. of deaths	Rate	Total cases	No. of deaths	Rate	Total cases	No. of deaths	Rate
<. 1000	7	7	1000.00	3	3	1000.00	3	3	1000.00
1001-1500	27	19	703.70	13	6	461.54	13	8	615.38
1501-2000	118	21	177.97	106	16	150.94	103	25	242.72
2001-2500	914	14	15.32	908	20	22.03	861	15	60.39

TABLE 3
MORTALITY PATTERN IN DIFFERENT BIRTH WEIGHT GROUPS BY GESTATION

Birth Weight gms./gestation (Weeks)	Prenatal period			Neonatal period			Infant period		
	Total cases	No. of deaths	Rate	Total Cases	No. of deaths	Rate	Total cases	No. of deaths	Rate
≤ 1500 gms.	34	26	764.70	16	9	562.50	16	11	687.50
1501-2000gm.									
a. < 37 wks.	33	9	272.73	28	6	214.28	27	7	259.26
b. ≥ 37 wks.	69	11	159.42	63	9	142.86	62	15	241.93
2001-2500gms									
a. < 37 wks.	145	7	48.27	144	9	52.50	140	16	114.28
b. ≥ 237 wks.	681	6	8.81	678	11	16.22	646	30	46.44

Linear Physical Growth in 0-24 Months

The number of surviving infants for growth studies during first 24 months was 1,361. Amongst these infants with birth weight < 1500 were 26, 1501-1700; 117, 1750-2000; 300, 2001-2250; and 918, 2251-2500 gms. Since the number of surviving infants with birth weight 1500 gms or less were not sufficient the same have been excluded for growth studies.

Table 4-6 highlight results on linear physical growth amongst these children. It is observed that the birth weight affects the later physical growth, and lower the birth weight greater the handicap when compared amongst them (Low Birth Weight groups) and normal control. Thus, the weights of infants with birth weight 1500-1750, 1750-2000, 2001-2250 and 2251-2500 gms at two years of age were respectively, 7.8 kg. 8.1 kg. 9.0 kg and 9.5 kg respectively

A similar trend was noted for length and the respective lengths were 76.0 cm. 76.9 cm. 77.3 cm. and 79.5 cm. amongst 1500-1750, 1750-2000, 2001-2250 and 2251 to 2500 gms

The head growth followed a pattern similar to height and weight but the difference at 24 months was not remarkable.

Comments

The incidence of low birth weight infants in this study was 22.9 per cent which is significantly higher as compared to the incidence from developed world^{4, 5, and 17}. However, when compared to other Indian studies the incidence is lower¹⁶⁻¹⁸. Various workers in this field from our country have suggested a cut off point for low birth weight varying from 1800 gms. to 2250 gms. Instead of 2500 gms as suggested by WHO and their appears to be unanimity of regarding 2000 gms. as the appropriate dividing line for use for Indian infants^{21,23,24}. The results of this study when considered in the light of mortality at various periods (Table 2, 3) also suggest 2000 gms to be a dividing line for identifications of high risk infants as the mortality declines sharply in higher birth weight infants between 2001-2500 gms. However, the mortality even in this group (2001-2500 gms.) is still significantly higher when compared to infants with birth weight more than 2500 gms from a similar social economic and cultural background and would suggest inclusion of this group also as Low Birth Weight for reasons of high mortality and uniform national and international comparison.

The prevalence of births with birth weight of 2000 gms. or less was only 2.7 per cent as against 7.10 per cent as reported from other series which were largely hospital based 21-23. It is difficult to explain such a low incidence of births with a birth weight of 2000 gms or less as community based information is scantily available. It is possible that some very low birth infants may have died within 72 hours, before these could have been examined or weighed. This is an inherent problem of a field study where it is not possible to examine all infants at birth or within few hours. However, our results are comparable to those of Baumgartner and Gruenwald in similar series and may be regarded as reflective of an urban community, since the data has been collected prospectively and from women whose pregnancies and outcome were closely followed^{26, 27}.

TABLE 4
WEIGHT (IN KG) OF BABIES AT DIFFERENT AGES BY BIRTH WEIGHT OF BABIES

Age in months		Birth weight in gms.			
		1501-1750	1751-2000	2001-2250	2251-2500
At birth	No.	26	117	300	918
	Mean	1.636	1.918	2.147	2.406
	S.D.	0.074	0.077	0.068	0.076
3	No.	9	69	199	611
	Mean	4.351	4.336	4.547	4.884
	S.D.	1.056	1.539	0.902	0.680
6	No.	9	60	160	519
	Mean	5.299	5.451	5.828	6.262
	S.D.	0.981	1.047	1.095	0.909
9	No.	7	49	143	465
	Mean	5.694	6.529	6.691	6.940
	S.D.	0.923	0.973	1.119	1.011
12	No.	5	41	129	426
	Mean	6.604	7.036	7.328	7.603
	S.D.	0.586	1.129	1.102	1.043
18	No.	4	26	83	288
	Mean	7.535	7.884	8.351	8.525
	S.D.	0.661	0.946	1.328	1.590
24	No.	1	13	53	199
	Mean	7.840	8.113	9.090	9.572
	S.D.	—	2.293	1.308	1.460

The association of extremes of maternal age and the prim parity with the occurrence of low birth weight infant has been documented in this as well as several others studies^{3,5,6,7,18}. However, our findings of maternal height of 140 cms or less and maternal pre gravid weight of 35 kg or less to be significantly associated with the occurrence of low birth weight infants are of extreme interest and have clinical implications. Most of the earlier studies have recommended a maternal height of 145-155 cms and maternal weight of 45 kg. or less to be associated with this phenomenon and suggested them to be a useful marker for identification of 'at risk' mothers.

TABLE 5
HEIGHT (IN CMS) BABIES AT DIFFERENT AGES BY BIRTH WEIGHT GROUP

Age in months		Birth weight (in cms.)			
		1500-1750	1751-2000	2001-2250	2251-2500
At birth	No.	16	93	254	778
	Mean	42.3	44.2	45.8	47.1
	S.D.	2.0	2.3	2.4	2.5
3	No.	9	69	199	613
	Mean	55.4	55.0	56.0	57.4
	S.D.	4.6	2.5	2.9	2.8
6	No.	9	60	160	520
	Mean	59.9	60.8	61.9	63.0
	S.D.	3.7	2.9	3.0	3.0
9	No.	7	49	143	465
	Mean	62.4	65.4	65.4	66.5
	S.D.	3.3	2.6	3.2	2.6
12	No.	5	41	129	426
	Mean	67.2	67.4	67.8	69.0
	S.D.	3.3	2.6	3.2	2.6
18	No.	4	26	83	291
	Mean	72.5	71.5	72.5	73.6
	S.D.	1.5	3.6	5.0	3.8
24	No.	1	14	55	211
	Mean	76.0	76.9	77.3	79.5
	S.D.	—	3.1	4.2	4.6

Mild to moderate anemia did not significantly increase the incidence of low birth weight, though a higher incidence was noticed in severely anemic mothers. These findings are at variance than other studies but appear to be due to smaller number as many mothers did not agree for even one blood examination.

The mortality for all births weight groups at all age periods was significantly higher as compared to other studies from west but was comparable to similar reports on low birth weight from other centres^{5,1, 6, and 18}. Gestation period seemed to be more crucial in determining the survival than the birth weight alone, as infants of shorter gestation (<37 weeks) had almost 2-6 times higher mortality as compared to infants of longer gestation (>37 weeks) but similar birth weights. The influence of gestation became particularly marked as the birth weight increased as for example in the birth weight group of 1501-2000 gms the mortality was only two times in shorter gestation but it became almost 5-6 times for the group with a birth weight of 2001-2500 gms. (Table 3)

TABLE 6
HEAD CIRCUMFERENCE (IN CMS.) OF BABIES AT DIFFERENT AGES BY BIRTH WEIGHT GROUPS

Age in months		Birth weight (in cms.)			
		1500-1750	1751-2000	2001-2250	2251-2500
At birth	No.	16	90	253	774
	Mean	28.6	31.5	32.2	32.9
	S.D.	5.5	1.9	1.7	1.3
3	No.	9	69	199	613
	Mean	36.2	37.2	37.5	38.2
	S.D.	2.3	1.3	1.5	2.4
6	No.	9	60	160	520
	Mean	39.7	39.7	40.1	40.7
	S.D.	1.9	1.4	1.6	1.4
9	No.	7	49	143	463
	Mean	40.7	41.8	41.7	42.2
	S.D.	1.0	1.4	1.5	2.7
12	No.	5	41	129	425
	Mean	43.0	42.7	43.0	43.2
	S.D.	1.4	1.8	1.6	1.4
18	No.	4	26	83	291
	Mean	44.2	44.1	44.2	44.4
	S.D.	0.4	2.0	1.8	1.5
24	No.	1	14	55	211
	Mean	45.0	44.8	45.3	45.4
	S.D.		2.1	1.4	1.3

The higher mortality in shorter gestation is not unexpected since the death largely results from prenatal and intranatal problems related to maturity of physiological function and suggests the necessity of identifying simple clinical parameters for assessment of gestation of a preterm infant even in a community and field with a view to prevent mortality.

The later physical growth when compared to normal infant seemed to be affected by the birth weight and the degree of handicap in physical growth was directly dependant on the initial birth weight. The physical growth retardation was evident in all the parameters of weight, height and head circumference.

These results are comparable and are almost similar to those obtained from another sample of low birth weight infants followed similarly but obtained from hospital births¹⁸. The results thus suggest that the birth weight *per-se* is the determining factor to a poor outcome than the place of birth of • such an infant either in a hospital or community.

The results of this study once again bring to fore the problem of low birth weight which itself predisposes an infant to a poor survival and physical growth during the first crucial year of life, and indicates the dire necessity of measures for improving the birth weight of our infants rather than only the care of such infants which is difficult and economically not feasible.

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EXPANDED PROGRAMME OF IMMUNISATION FOR CHILDREN

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ABSTRACT

The Expanded Programme of Immunization for Children (EPI) operates as part of the maternal and child health programme and budgeted under it. It has been assured that there shall be no constraints of finances for it. This programme will become the touchstone to prove the concern and commitment of the medical and health administrators for the cause of child health in the country. This paper deals with the background of the EPI, recommended schedule of Immunization and Programme for the future.

The 27th World Health Assembly meeting in Geneva in May, 1974 passed the resolution on Expanded Programme of Immunization (EPI) recommending Member States to develop or maintain immunization and surveillance programmes against some or all of the following diseases; diphtheria, pertussis, tetanus, measles, poliomyelitis, tuberculosis, smallpox and others, where applicable according to the epidemiological situation in their respective countries. Subsequently, World Health Assembly also decided to merge the Smallpox Eradication Programme which was nearing completion with the Expanded Programme of Immunization, with a view to make use of the machinery and experience of smallpox control. Special funding was also established to support the EPI and a global advisory group set up as an additional means of involving representatives of States in the guidance of the programme.

The Expanded Programme of Immunization for children is not a time-bound programme but a long-term continuing programme to provide ever-increasing Immunization coverage and thus achieve a constantly decreasing incidence of morbi-

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dity and mortality in childhood diseases. The Government of India has taken up the programme of EPI directed against the following diseases - diphtheria, whooping cough, tetanus, tuberculosis, poliomyelitis, measles and smallpox.

Epidemiological Situation

Information about the epidemiological situation of the diseases is very limited, because of the inadequacy of the health intelligence system. Diseases are not notifiable in all the States and Union Territories. And, where some of them are made notifiable, these are applicable only for urban areas. The multiplicity of systems for medical care also complicates the situation. In the rural areas, generally, practitioners of Ayurveda, Homoeopathy, Unani do the treatment of the diseases. Only a small proportion of cases seek medical relief from primary health centers and Government dispensaries. Naturally, the epidemiological situation gleaned from the records of hospitals does not reflect the true picture. Often in the hospitals the clinical diagnosis is not confirmed by bacteriological and serological examinations. The data available have to be used keeping in view their limitations.

Diphtheria: On an average over 24,000 cases were treated annually in hospitals during the period 1974-77. The average incidence rate is 4.1 per 1,00,000 population. The case fatality rate is about three to four. As per the records of admission to hospitals in Delhi and Calcutta, the disease has a seasonal incidence. Highest incidence is being reported in the rainy season In the months of July, August, September and October. The lowest number of cases is reported in the month of February. The maximum cases are reported in the age-group 0-4 years, followed by the age-group 5-14 years. Beyond 15 years of age, the incidence of diphtheria is negligible. Case fatality is also found to be highest in the age-group 0-4 1 2 years-^{1, 2}.

Schick test surveys conducted by the Central Research Institute, Kasauli in urban and rural areas of Punjab have shown that children in the age-group six months to about three years have very little immunity (70% Schick positive)³. As age advances, they acquire Immunity in increasing numbers and by the age of six years over 70 per cent become Schick negative. This gives an indication of the group that needs attention for immunization.

Pertussis: The average incidence rate of the disease during 1971-74 as gathered from hospital records was 48.7 per 1,00,000 population. The fatality rate was reported to be generally less than one per cent. A few surveys and studies on the prevalence of pertussis are also available. General health surveys done in West Bengal in villages near Singur during 1963-64 and 1965 showed morbidity rates ranging between 55.24 to 111.24 per 1,00,000 population. A longitudinal morbidity survey in a group of villages in Vellore in Tamil Nadu conducted during 1965 to 1968 has recorded an incidence of 25,000 per 1,00,000 population. The study has reported the incidence to be 115 per thousand children under five years of age and 35 per 1,000 children under ten years of age.

Cases are reported throughout the year. However, in some parts of the country, an increase in prevalence is reported during the period September to December. Epidemics of the disease occurring every two to three years have been observed in this country as well as in other countries like the USA and UK. The prevalence is maximum in below five years of age and case fatality is highest when it affects infants.

Tetanus: Tetanus affects all age-groups and is prevalent throughout the year without any seasonal variations. However, it appears to be more in the younger age-group below 40 years of age. During the reproductive period in the females, incidence of postpartum and postabortal tetanus is reported to be high. Mortality from postpartum tetanus has been found to be significantly more than in non-puerperal tetanus.

TABLE I

MORTALITY IN POSTPARTUM AND NON-POSTPARTUM FEMALE TETANUS CASES IN THE SAME AGE-GROUP IN DELHI

Type	Cases		Mortality	
	Number	Per cent	Number	Per cent
Postpartum	102	49.0	60	88.8
Non-postpartum	106	51.0	42	39.8
Total	208	100.00	102	49.6

Tetanus in the new born is found to have the highest mortality compared to all other age-groups.

In some parts of the country, tetanus neonatorum ranks high among causes of infant deaths. In a study in Punjab villages, it was reported that 30 deaths resulted from tetanus neonatorum among 103 neonatal deaths. In another study of infant death in the villages of Maharashtra, 31 were attributed to tetanus out of 220 neonatal deaths⁴.

Analysis of 100 cases of neonatal tetanus admitted in Medical College, Bhopal, during 1970-72 showed that 94 per cent of cases were delivered at home and six per cent in the hospital. The fatality rate was 50 per cent for hospital delivered cases as compared to 89.1 per cent in the case of home delivered infants.

Tuberouloie: The National Tuberculosis Survey conducted during 1955-58 and other subsequent surveys in different areas have shown that nearly 1.5 per cent of the population of India is suffering from active radiological tuberculosis of whom one fourth are Sputum positive cases. From the above findings, it is estimated that there are about 8 to 9 million active cases of tuberculosis in the country. It: is also estimated that nearly 50 per cent of the total population is Infected by tuberculosis although apparently healthy. The mortality rates are estimated to be 80-100 per 1, 00,000 population.

TABLE 2
NEONATAL TETANUS

Author	Place	Number of Cases	Mortality %
Matveyer & Panb.	Delhi	47	86.6
Vakil <i>et at.</i>	Bombay	17	88.2
Nazireth	Bombay	16	56.2
Phadiee <i>et at.</i>	Poona	11	81.8
Patel <i>et at.</i>	Bombay	705	86.5
Vaishnav <i>et at.</i>	Delhi	465	79.5

Poliomyelitis A number of studies have been conducted in different parts of India on various aspects of the epidemiology of polio virus infection and poliomyelitis. Except in certain metropolitan cities, the polio virus infection and poliomyelitis are predominantly seen in children below eight years of age in the rest of the country. There is relatively low susceptibility to the development of paralytic illness in infants and children. The incidence of poliomyelitis is considered to be low in India. However, with improved standards of living in the population the incidence is likely to go up in future and age distribution of cases may also alter. Such a shift in its pattern has already occurred in several developing countries with the highest susceptibility to the disease in adolescents and adults. This has also been observed in certain large urban centers in India, namely, Delhi and Bombay. The incidence of poliomyelitis is not dissimilar in urban and rural population.

On an average, 12,550 cases of paralytic poliomyelitis are reported from hospitals every year. Based on this, the incidence rate varies from 0.3 to 4.0 per 1,00,000 population. The Enter virus Research Unit at Haffkine Institute maintains regular surveillance in the city of Bombay. According to the Institute's records, since 1971 the attack rate has varied from 11.3 to 21.6 per 1,00,000 population. Epidemics have been reported in 1968 and 1972. Ninety per cent of cases are reported to occur before the age of three years. There is a seasonal variation with a late summer and monsoon pattern with most cases occurring from July to September. Case fatality was 9 per cent among 2,998 cases during 1971 to 1975.

Smallpox: Due to the National Smallpox Eradication Programme, the country is free from smallpox from June, 1975. The last case was reported in May, 1975 from Karimganj town in Cachar District of Assam. The International Certification Commission visited India during April, 1977 and submitted their report to the Government.

Measles: The disease is widely prevalent and most of the children contract it during early childhood. Very few measles cases are reported to the hospitals unless they are associated with complications and sequelae. The reports from hospitals for the period 1973-77 are summarized.

Even though measles by itself is a minor disease, it becomes a grave problem of early childhood in view of the prevalence of varying degrees of malnutrition among them. Complications and long-term sequelae occur more in such a situation, even if, the disease does not kill.

Typhoid; Typhoid fever is a major communicable disease prevalent throughout the country and occurring all the year around. Lack of protected water supply and sanitary latrines contribute to its pandemicity. The morbidity rate is reported to vary from 102 to 2,219 per 1, 00,000 population.

TABLE 3
CASES AND DEATHS DUE TO MEASLES REPORTED FROM HOSPITALS DURING 1973-77

Year	Cases	Deaths
1973	78,563	115
1974	84,831	164
1975	95,414	185
1976	1,13,247	229
1977	1,72,241	170

TABLE 4
CASES AND DEATHS REPORTED FROM HOSPITALS DUE TO TYPHOID DURING 1973-77

Year	Cases	Deaths
1973	2,21,924	1,445
1974	3,33,697	924
1975	2,23,255	782
1976	2,61,800	800
1977	1,72,241	170

Recommended Immunization Schedule

The Schedule of Immunization recommended for use in the country is given below:

TABLE 5

RECOMMENDED SCHEDULE OF IMMUNISATION

Age	Vaccination	Doses
Pre-natal		
16-20 weeks	Tetanus Toxoid	1 st dose
20-24 weeks	Tetanus Toxoid	2 nd dose
36-38 weeks	Tetanus Toxoid	3 rd dose
(Children)		
3-9 months	Smallpox vaccine	
	BCG Vaccine	
	Diphtheria-Pertussis-Tetanus- (Triple vaccine)	3rd dose at an interval of 1-2 months; Polio (Trivalent oral vaccine) 3 doses at an interval of 1-2 months.
9-12 months	Measles vaccine: one dose	
18-24 months	Diphtheria-pertussis-tetanus (triple vaccine)	
	- booster dose	
	Polio (Trivalent oral vaccine) - booster dose	
5-6 years (school entry)	Diphtheria-tetanus (bivalent vaccine)	
	- booster, dose	
	Typhoid (Monovalent or bivalent vaccine)	
	- one dose	
	After an interval of 1-2 months the typhoid vaccine	one dose.
10 years	Tetanus Toxoid Booster dose	
	Typhoid (monovalent or bivalent vaccine)	
	- booster dose	
16 years (school leaving)	Tetanus toxoid booster dose	
	Typhoid (monovalent or bivalent vaccine)	
	- booster dose	

Pre-natal: When mothers are registered late in pregnancy at least two doses of tetanus toxoid should be given. For a mother who has been Immunized, one booster dose of tetanus toxoid should be given in subsequent pregnancy preferably four weeks before the expected date of delivery.

Children: Ages indicated are considered to be the best times. However, if there is any delay in starting the first dose of triple vaccine the ages may be adjusted accordingly. It should be the aim to ensure that a child receives smallpox BCG, DPT and Polio-vaccination where available before it reaches one year of age. The different vaccines indicated against the various age groups can be given simultaneously: example, BCG, .Triple vaccine and polio vaccine; smallpox, triple vaccine and polio; etc.

When typhoid vaccine is being given for the first time, two doses at an interval of 1-2 months require to be given.

BCG Vaccination: This was provided as part of the National Tuberculosis Control Programme since its inception. BCG teams based around District TB Centre had the responsibility for giving the BCG immunization. In addition, BCG vaccination was given to new born infants in many maternity hospitals. It has now been decided that BCG vaccination will be provided in rural areas through the Multipurpose Workers working in the primary health centers. The BCG technicians are currently giving training to the Multipurpose Workers and other peripheral health workers in rural areas in the techniques of giving BCG inoculation. BCG vaccination is given to children and young adults below 20 years of age without any prior mantoux testing. BCG immunization has been given since the inception of the programme to about 240 million infants and children.

Smallpox Vaccination: Following the eradication of the disease, smallpox vaccination is given to newly born infants only. Re-vaccination is given on request for purposes of international travel etc. During 1978-79, 157.9 lakh primary vaccinations were done.

Diphtheria, Pertussis and Tetanus; The immunization against diphtheria, pertussis and tetanus among children and tetanus among pregnant mothers was initiated on a small scale in the Fourth Plan as part of the Family Welfare Programme. The immunization coverage was expanded in the subsequent plans as given below.

Initially, DPT (triple vaccine) was used for primary immunization to children in the age group of 0-5 years and bivalent, and D.T. vaccine for older children enrolled in the primary schools. From 1978-79, the age group for triple vaccination has been reduced to 0-2 years with a view to catch, at the most, vulnerable period. Bivalent (DT) vaccine is used for the age group 3-8 years. The goal is to complete triple vaccination before the first birthday and give boosters subsequently. Immunizations are provided through the MCH clinics at hospitals and PHCs and through periodical Immunization sessions organized in villages.

Poliomyelitis: The Ministry of Health and Family Welfare has not sponsored any national programme of polio immunization. The States and Union Territories have, however, taken up immunization mostly in urban towns. Voluntary organisa-

tions like Rotary Club, Lions Club etc., take up polio immunization in their areas of operation. About 30 lakh doses of oral polio vaccine are reported to be used annually.

Typhoid: Inoculation against typhoid paratyphoid is taken up generally in situations and places, where outbreak of typhoid is suspected following floods, in times of fairs and *Mela's* etc. Children covered by school health programme in urban towns are regularly immunized. The general practice is to use TAB vaccine. Based on the recent knowledge, Director General of Health Services has advised the use of only ant typhoid and paratyphoid vaccine.

Programme for Future

Except smallpox, other immunization programmes covered only a small proportion of the children at risk. The National Policy Resolution on Children as well as the Policy Statement on Family Welfare have emphasized the need to expand immunization coverage to protect children from the common communicable diseases of childhood. The expanded programme of immunization will bring the policy statements to fruition. More pregnant mothers and children will be given immunization against the on-going centrally sponsored programmes of immunization against diphtheria, whooping cough, tetanus, smallpox and tuberculosis. In addition, immunization against typhoid, poliomyelitis and measles will also be taken up. The proposed programme for the current Five Year Plan is given below:

Cold Chain: A successful immunization programme needs an effective cold chain. The vaccines have specific storage requirement as given below;

TABLE 6
PLAN-WISE IMMUNISATION COVERAGE

Number Immunized	IV Plan	V Plan (Figures in lakhs)	VI Plan (1978-79)*
Pregnant mothers (T.T.)	10.08	81, 70	33.51 (T.T.)
Children (DPT + DT)	40.70	270.80	61.10 (DPT) + 66.07 (DT)

*Figures are provisional.

The vaccines have to be stored at the prescribed temperature at the Central Storage, during its transportation to the intermediate storage places and finally to the vaccination centre. Cold rooms and refrigerators storing the vaccine and cold boxes and thermocole boxes for carrying vaccines from place to place are also required at various levels. Dial thermometers for monitoring the temperature within the refrigerators are also used. Inventory of the cold storage facilities available with the State Governments at various levels have been made. International organisations like UNICEF and WHO have helped in establishing the cold chain by providing refrigerators, dial thermometers, cold boxes etc. A workshop has already been organized in New Delhi to orient the State level officers on the various aspects of cold chain management with participation of WHO and UNICEF.

TABLE 7
IMMUNIZATIONS - V PLAN - PROVISIONAL PROPOSALS - BENEFICIARIES TO
BE COVERED (in lakh)

Immunization	Population at Risk**	1978-79	1979-80	1980-81	1981-82	1982-83
T.T. for pregnant mothers	212.2	50.00 (23.6)*	60.00 (28.3)	70.00 (33.0)	80.00 (37.7)	90.00 (43.4)
DPT - for children (0-2 years) (Primary + 1st booster)	550.3	90.00 (16.35)	120.00 (21.8)	145.00 (26.4)	150.00 (27.3)	150.00 (27.3)
D.T. for children*** (3-8 years)	1184.1	130.00 (11.0)	200.00 (16.9)	150.00 (12.7)	140.00 (11.8)	120.00 (10.1)
(Primary + IInd booster) Polio (0-8 years)	1736.9	20.2 (1.2)	37.00 (2.1)	38.00 (2.2)	39.00 (2.25)	40.00 (2.3)
BCG (0-20 years)	3119.0	150.00 (4.8)	150.00 (4.8)	150.00 (4.8)	160.00 (5.1)	160.00 (5.1)
Typhoid (5-14 years)	1594.5	nil	75.00 (4.7)	100.00 (6.3)	100.00 (6.3)	100.00 (6.3)
Measles (0-2 years)	550.3	nil	2.00 (0.4)	10.00 (1.8)	10.00 (1.82)	10.00 (1.8)
Smallpox	157.9	320.00				

**Total population in the age groups is taken to be the population at risk.

*Figures in brackets indicate the percentage to be covered against total population.

***Primary immunization with D.T. vaccine shall be phased out so that only second booster dose will be given at school entry.

Availability of Vaccines: The country is self-sufficient regarding smallpox, BCG, tetanus toxoid and diphtheria toxoid. There is some shortage in respect of triple vaccine. UNICEF helps to fill in the gap between requirements and production. The Central Research Institute, Kasauli, the major production unit for triple vaccine has planned for increasing the production of triple vaccine. UNICEF have gifted the equipments, chemicals etc. necessary for this. The Ministry of Health and Family Welfare has also initiated action to start production of DPT vaccine at the Pasteur Institute, Coonoor. Haffkine Bio-pharmaceutical Corporation, Bombay has also planned to expand their triple vaccine producing capacity as also various firms in the private sector. The Central Research Institute, Kasauli is in a position to produce the typhoid vaccine necessary in the programme. Polio vaccine is imported at present. Haffkine Bio-pharmaceutical Corporation is also engaged in preliminary work for producing polio vaccine. Measles vaccine is not produced in the country. UNICEF have offered to supply the requirement of measles vaccines.

TABLE 8
STORAGE TIME AND TEMPERATURE FOR VACCINES

Vaccine	Central Store	Vaccination Centre
BCG	8 months at 4 - 8°C	only a few hours after re-constitution
DPT*	18 months at 4 - 8°C	one week at room temperature
Tetanus*	18 months at 4 - 8°C	one week at room temperature
Smallpox	24 months at 4 - 8°C	only a few hours after re-constitution
Oral Polio	24 months at - 20°C	one week at 4 - 8°C
Measles	24 months at - 20°C	one week at 4 - 8°C

*Never freeze DPT, DT or Tetanus Vaccine

Training: The immunization programme will be implemented through the usual channels for delivery of health services, the immunization clinics and children clinics attached to hospitals, the primary health centers and sub-centers, village immunization centers, school health programme etc. Voluntary organisations which have the facilities will also be involved. But for officers at the National and State Health Directorate Level, there are no other full time personnel employed for EPI.

As a first step, the personnel of the erstwhile National Smallpox Eradication Programme have been re-oriented on the expanded programme of immunization through short-in-service training courses organized at various levels with the assistance from WHO. More orientation courses will be organized at various levels in the country. With WHO assistance, officers managing the immunization programme will receive specialized training through the regional training courses conducted in countries of South East Asia region.

Health Education: Information needs to be disseminated among the parents about the immunization programme in order to allay the fears and misgivings in their minds. Acceptance of preventive health programme among the community is of a low order. Inter-personnel communication through health personnel as well as use of the different types of media will be utilized for this purpose. Posters and pamphlets on some of the diseases have already been printed in the regional languages and distributed for the benefit of the public. All India Radio puts out 'spots' on immunization as sponsored publicity for maternal and child health.

Evaluation: The effectiveness or otherwise of the immunization programme will be assessed by the reduction in the prevalence of the diseases. The health information system which is weak at present has to be strengthened. In addition to improving the recording system in hospitals and primary health centers, special sample surveys of the vaccination coverage and prevalence of the disease will also be undertaken. Independent evaluation through national and international teams shall also be taken up.

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INTEGRATED CHILD DEVELOPMENT SERVICES

M.S. Dayal

ABSTRACT

The author highlights the objectives, purposes and the functioning of the Integrated Child Development Services (ICDS) Schemes, as a package of services to children below six years of age, pregnant women and nursing mothers,

- Editor

According to the 1971 census of India, there were 228 million children up to 14 years of age, including 115 million up to six years of age. It is, In early childhood that the foundations for physical, psychological and social development of the human beings are laid. Various surveys have indicated a fairly high incidence of malnutrition amongst children below six years of age, pregnant women and nursing mothers, particularly in urban slums, tribal areas and backward rural areas. Vitamin A deficiency amongst small children and nutritional anaemia among children, pregnant women and nursing mothers has also been noticed. Keeping in view the high incidence of mortality, morbidity and malnutrition among children, the scheme of ICDS was conceived as an integrated approach to the health, nutritional and educational needs of children below six years of age in the Fifth Five Year Plan.

ICDS is an attempt in integrated early childhood services as a step towards human resources development. Its objectives are:

1. improvement in the nutritional and health status of children below six years of age;
2. laying the foundations for proper psychological, physical and social development of the child;

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3. Reduction in the incidence of mortality, morbidity, malnutrition and school dropout;
4. Effective coordination of policy and implementation amongst the various departments
Co promote children's development; and
5. Enhancement of the capability of the mother to look after the normal health and nutritional needs of the child.

To achieve these objectives, ICDS provides a package of services to children below six years of age, pregnant women and nursing mothers. It includes supplementary nutrition, immunization, health checkup, referral services, nutrition and health education and non-formal preschool education.

Supplementary nutrition is given to pregnant women and nursing mothers belonging to poorer socio-economic groups, malnourished children below six years of age, and other children in the age group 3 to 11 attending the non-formal preschool educational activities - severely malnourished children are entitled to greater quantity of nutritional supplements as per needs. The type of supplementary nutrition depends upon availability, category of beneficiaries, administrative feasibility, etc.

Health services in ICDS include antenatal, natal and post-natal care as well as health care of children, including immunization, periodical health check-up, necessary treatment and referral services. Detailed schedule of these services for pregnant women, nursing mothers and children have been prescribed. Individual health centers to be maintained for all pregnant women and children and the physical development of each child is required to be monitored through a growth chart.

Non-formal preschool education is meant to provide active play and intellectual stimulation to children in the age group 3 to 5. Its aim is not to impart formal learning but develop in the child desirable attitudes, values and behaviour patterns, provide him environmental stimulation, and satisfies and channels his curiosity in a creative direction, by making use of locally available inexpensive materials.

The nutrition, health and educational services are supplemented with functional literacy for adult women and applied nutrition. The functional literacy programme aims at imparting non-formal education to adult women, through the medium of functional literacy, in the subjects of health, hygiene, food, nutrition, child care etc. The applied nutrition programme aims at increased local production and consumption of nutritious foods. Efforts are also made for the convergence of rural drinking water supply programmes in the ICDS project areas.

The project area may be community development block in a backward rural area, a tribal development block or for a group of slums in a city. It is obvious that no uniform model of social services can be effectively applied to different parts of the country with varying socio-economic, agro-climatic, geographical and administrative situations. There is, therefore, sufficient flexibility in the scheme to adapt the model to local conditions and adjust the budgetary provisions accordingly.

As ICDS required considerable organizational and coordination efforts from the village to the Central Government level, only 33 experimental projects (4 in urban slums, 11 in tribal blocks and 18 in community development blocks) covering a population of about 3 million were sanctioned in 1975-76 with a view to testing the management efficiency and cost effectiveness of the ICDS approach, maintaining an element of flexibility so that modifications could be introduced as and when necessary and making subsequent experimental projects by the Programme Evaluation Organization of the Planning Commission. An information system has been evolved for monitoring the experimental projects through a regular monthly feedback from each project. The Programme Evaluation Organization of the Planning Commission undertook in mid 1976 a study of the status of preparedness of the experimental projects and is currently engaged in an evaluation study thereof. In the meantime, in the light of interim reports, 67 additional projects are approved for the year 1978-79.

The focal point for the delivery of the ICDS package- of services is an anganwadi in every village, subject to necessary adjustments if the population of a village is too

small or too big. The number of anganwadis differs from project to project according to topography and population.

On an average there is one anganwadi worker for a population of about 1,000. The anganwadi worker is a lady preferably from the same village in which she works. She gets an honorarium of Rs.175 per month if she is a matriculate and Rs.125 per month if she is a non-matriculate. She gets an additional honorarium of Rs.50 per month if she takes the functional literacy class for adult women. She is assisted by a helper, a lady from the same village, who gets an honorarium of Rs.50 per month.

A child development project officer is directly in charge of each ICDS project. The block development officer has the overall responsibility as for other schemes in the block. The work of anganwadi workers is supervised by mukhyasevikas, whose work in turn, is supervised by the child development project officer.

In rural project areas, the health infrastructure is strengthened by adding one medical officer, preferably with diploma in child health, at the primary health centre and by providing additional Para-medical staff so that there is one auxiliary nurse-midwife for a population of about 5000 and one lady health visitor for supervising the work of 1-5 auxiliary nurse-mid wives.

ICDS relies heavily on the involvement of local voluntary agencies and representative bodies. It also envisages effective linkages with primary schools.

The ICDS Scheme is implemented through State/UT Governments/Administrations. ICDS is basically an inter-sectoral endeavor. Coordination amongst various departments at all levels of administrations is crucial to its success. Coordination committees are set up at Central, State, district and project levels. Several national and regional workshops of State level health and social welfare officials and project level personnel have been organized to the strengthen coordination processes.