

NUTRITION PROGRAMMES IN INDIA RETROSPECT AND PROSPECT

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ABSTRACT

The extent and magnitude of the malnutrition problem in India, a matter of continuing concern, has led to a marked "nutrition awakening" and a diversified nutrition programming. The author has traced the development of various facets of such programmes in India, and has made a critical appraisal of the major activities, highlighting the lessons learnt or should have been learnt. The future of nutrition programmes in India has been discussed.

Nutrition on the Indian Scene

For those who are interested in nutrition or more precisely in the control of malnutrition, India today is an extremely interesting case for study. While the victims, especially the young children, continue to be afflicted with all forms of human misery and degradation, including a high mortality rate as a result of malnutrition, there is a corresponding increase of awareness in all quarters in the problem of malnutrition. The conventional nutritional technocrates like medical and public health specialists, nutritionists, home scientists, biochemists, food and agricultural scientists, have been pushed in the background, with some justification, by a new band of "nutrition specialists" - among which the prominent ones are statisticians, economists, planners, journalists, communication specialists and social scientists. Nutritional problems are now being discussed on numerous platforms in India even by the politicians. It is virtually impossible to keep track of all scientific articles on nutrition since these appear in technical journals of almost all conceivable disciplines. For a nutritionist, who has seen at close quarters the gradual?

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evolution of nutrition from a medical or biochemical specialty to the present stage, this is certainly a matter of satisfaction.

However, with all this "awakening" and multi-disciplinary interest, is there any corresponding impact on the malnutrition problem? Has this led to newer concepts and strategies for combating malnutrition? At the governmental level, both at the Centre and in the States, is nutrition programme being given a high priority? Are the nutrition programmers not committing the same mistakes year after year for the simple reason that a particular nutritional activity is apparently the cheapest and simple thing to do (*e.g.* nutrition education) or an activity will attract quite a lot of public attention (*e.g.* feeding programme)? These are some of the questions which will be analyzed in this paper - not for the sake of criticism but to identify the causes of failures or successes in the past in order to suggest a strategy for the future.

The Malnutrition Problem - How Big?

Any discussion on nutrition programme will lose its relevance without first considering the problem for which the programmes are being developed and implemented. What is the extent and degree of malnutrition problem in India, today? All those interested in nutrition must be aware of the recent unfortunate controversy in India based on statistical calculation, interpretation and projection. One must have heard the statement that the magnitude of the malnutrition problem in India has been greatly exaggerated - and that, In fact, not more than 20 per cent of the population is consuming diet with i?uct. lower calorie intake than what is necessary. The counter-statements have brought out the fallacy of such calculations and arguments. Even the rationale of the existing nutritional requirements has been questioned in this context. It is a common fact that lowering the recommended allowance will, overnight, make millions of existing malnourished population well nourished! This is not a very rare method of reducing malnutrition. Some years ago, the abysmal "Protein Gap" projected by the UN was, in a single stroke, bridged by a downward revision of the protein requirement by FAO/WHO.

In the midst of all these mathematical and statistical arguments and interpretations, a point of great concern is

missed. Even if one million young children in India at any given point of time go through the agonies of malnutrition leading to an untimely death, or if even a thousand young children in different parts of India, go blind *every year* as a result of Vitamin A deficiency, certainly this is a matter of grave concern for politicians, administrators and scientists. It is unpardonable and intolerable, if the State and the Society, who year after year, are crying hoarse over Children's Right and Child Welfare neglect to do something. Any attempt to minimize the gravity and magnitude of the malnutrition problem in India is a grave crime. The scientific community, irrespective of their disciplines, should realize that they are the one who influences and motivates the decision makers and the administrators in allotting scarce resources for nutrition programmes in the face of stiff competition. Any statement belittling the problem can be a potential reason for losing the Interest of decision makers and thereby losing priority.

It would be useful to consider the following facts in this connection. Firstly, the assessment of the magnitude of the malnutrition problem on the basis of calorie and protein consumption of the adults is a very unrealistic approach. This automatically leaves out a huge segment of malnourished people - especially the very young child population. Secondly this approach ignores the deleterious effects of infections and infestations on marginally nourished state. Thirdly, the entire category of malnutrition due to specific deficiencies like nutritional blindness as a result of Vitamin A deficiency, nutritional anemia due to iron and folate deficiency and endemic goiter and cretinism due to Iodine deficiency, has absolutely no relevance to calorie and protein level in the diet. The magnitude of these problems cannot be assessed from dietary consumptions data, on the basis of which the earlier mentioned projections are made. Needless to say, results of specially conducted surveys to assess these deficiencies are already available in India. Finally, the only competent people who can really talk about the magnitude of the malnutrition problem are the nutritionists and health workers, who themselves go out into the field for conducting actual surveys or for programme implementation. Any worker from these categories would be able to confirm whether or not the problem is of vast magnitude. To summarise this important question as to the magnitude of the malnutrition problem in India, one can safely state, that it is colossal. Even with

20 per cent of the population having sub-standard calorie consumption, the number is 135 million. The actual percentage is very much higher. To this should be added about 65 million of malnourished young children and those with the afflictions of specific deficiencies. The recent and a very modest estimate of 13,000 children under five years going blind every year in India, is certainly not a fact which can be ignored. India has the largest endemic goitreous area in the world - the Goitre Belt in the north inhabited by millions of people. Even the most recent surveys in certain areas of this Goitre Belt indicates a high incidence of goitre, and cretinism.

Malnutrition problem has a distinct draw-back in not attracting public attention, and thus, is of not much interest to politicians and decision makers. Five cases of cholera in a city result in public agitation forcing the authorities to do something. In the same locality, hundred children silently suffering from malnutrition and dying go unnoticed. The effects of malnutrition are insidious and unromantic and this is the reason why the problem hardly gets a priority place - even in the health sector. On top of this, any academic exercise to minimize its magnitude, without having this thoroughly discussed among persons who are expected to know more about the problem and its extent, is not a wise step.

Nutrition Programmes in India - How Did They Develop?

As mentioned earlier, India is an interesting case study for nutrition programming. The country has nutritional expertise of the highest order. The standard of nutrition research done here is of very high standard. The country has a vast network of nutrition training centers for almost all disciplines. India can boast of a national nutrition institute, which is of international eminence. In the National Plan document nutrition features prominently. The national Planning Commission has a set-up in Nutrition. In the field of nutrition programming, India again is possibly the first among the developing countries to have gone in a systematic way, starting with the definition of the problem through diet and nutrition surveys. Even in the thirties, different persons, institutions and sometimes the State Health Services started conducting these surveys and developing methods for this purpose. By the early forties, large

amount of data became available indicating the extent of the problem. The early reports of the Indian Council of Medical Research (earlier known as Indian Research Fund Association) and the Annual Reports of the Provincial Medical and Health Services dealing with nutrition should be of great interest to all "nutrition historians".

Coming specifically to nutrition programmes, it is difficult to decide precisely as to when such programmes *per se* started. Roughly, the records give indication that during the mid-thirties, nutrition programmes started appearing in India within the Provincial Health Sectors. Going through the nutrition programmes from then on to the present stage, four distinct phases could be identified. These are:

- i. Medical/Clinical Phase - supported by bio-chemist and laboratory specialists.
- ii. Food Production and Technology Phase - supported by Food technologists.
- iii. Community Development Phase.
- iv. Multi-sectoral Phase with emphasis on socio-economics of malnutrition.

In each phase, the concerned sector took the predominant role. Thus, in the first phase, nutrition programming was more or less the responsibility of the medical or health sector. In the second phase, food and agriculture sector took the leading role*. In the third, the community development and in the present phase, all related sectors with social welfare as the nodal agency. The success or failures of each phase led to the strategy of the next phase.

Phases of Nutrition Programmes in India

A little description of each of the phases will indicate how nutrition programmes in India developed in each phase and what were the lessons learnt.

Medical/Clinical Phase - As mentioned earlier, this is the first phase of nutrition programming and was almost completely predominated by clinical studies on various types of malnutrition associated with laboratory studies to understand

the causes, course and methods for diagnosis of nutritional deficiencies. It should be recognized that all the activities during this phase were directed towards the victims of malnutrition as individuals. The concept of prevention and the importance of the community were unknown. It is no "wonder that during this period the nutrition programmes were mostly concentrated in hospitals and health centers and were directed towards the treatment of malnutrition. The health programme consisted mostly of distribution of Vitamin tablets. In fact, during this phase, even the First Expert Committee on Nutrition of FAO/WHO recommended that the developing countries should be assisted to produce synthetic multi-vitamin tablets. The lessons learnt from this phase were that malnutrition is a community problem and that an individual approach of diagnosis and treatment will not even touch the fringe of the problem. Moreover, it was being increasingly realized that causes of malnutrition do not lie within the purview of the health sector and that other measures outside the health sector are necessary.

Food Production Phase - During the late forties, there was a distinct change in nutrition promotion strategy in India. It was felt that unless and until food is produced in abundant amount, the health sector can do very little in combating malnutrition. One should realize that during those years the food production in India was at a very low level and there was always a deficit of a big magnitude. Thus, the nutrition programmes in India were more or less equated with food production, and a few years later, it was followed by technological advances in improvement of the nutritive value of foods. During the fifties, the nutrition programmes in India, thus, included a number of food processing and food fortification measures which later on culminated in the production of processed, fortified and enriched food. It may be mentioned here that even during this phase there was international influence and this time from the United Nations urging the solution of "Protein Gap" and "Protein Crisis", Measures like lysine fortification of wheat, protein rich weaning food, production of unconventional protein food from leaf, algae and even petroleum were the prominent achievements during those years. The "nutritional atmosphere" was saturated with "impending protein crisis" and all nutrition programmes were directed to solving protein problems.

As expected at the end of this phase there was disillusion. Firstly the benefit of increased food production, which was achieved very rapidly in India, did not touch the poorest segments of the population. Even the Green Revolution made the rich farmer richer, and the poor farmers and the landless agricultural rural labor remained where they were or possibly sided down on the economic scale. Euphoria of processed protein food and of the other novelties quickly died down when it was realized that these technological novelties are indeed excellent achievements but for a country like India it is useless since their prices are beyond the reach of the population for whom these were being designed. It is much easier to produce a processed nutritious food on the laboratory bench than to make it commercially viable. Lastly, was there really a "protein crisis" in India during those years? It is interesting to observe that during the end of the first and the second phases mentioned above, India was learning the lesson that the solution of malnutrition problem is not the responsibility of one sector. Another lesson learnt was that any nutrition programme which is designed to have impact on the population must be directed towards those who are in the lowest economic level.

Community Phase - During the mid sixties there was again a change in the concept for nutrition programming in India. This is best reflected by the Applied Nutrition Programme sponsored by the UNICEF in collaboration with FAO and WHO and with the very active support and a huge investment of the Government of India; During the later part of the sixties the programme covered almost all the States of India. It should be mentioned that this is the first programme in India which is based on a coordinated approach towards malnutrition represented by three thrusts -

- a. Production at the village and family level.
- b. Education for better consumption.
- c. Feeding of the vulnerable.

For about ten years this programme' completely dominated the nutrition scene in India and one must admit that it created the impression amongst the decision makers in all sectors, that everything possible for malnutrition is being done

through the Applied Nutrition Programme and there is no need for any further action. In fact the evaluations of Applied Nutrition Programme in various parts of the world have indeed brought out the fact that most sectors during this period neglected to do what normally they are expected to do in the field of nutrition. It created a sense of complacency in other sectors and it is clear that during this period, other sectoral programmes in nutrition remained almost dormant. What was the contribution of the health sector in India during those years? The Applied Nutrition Programme is almost in the finishing phase now and undoubtedly the lessons we have learnt are not a very heartening one. Presently, the programme is continued at a very minimal level by the Ministry of Rural Reconstruction. However, one positive point during this phase was the increasing realization that combating malnutrition needs community participation and involvement, and that at the governmental level there is need for coordination between relevant sectors. It may be mentioned here that the Applied Nutrition Programme was then the responsibility of the Department of Community Development of the Government of India but with the collaboration of the Departments of Food, Agriculture, Health and the Ministry of Education. However, one must confess that though on paper coordination and collaboration were the predominant feature of the Applied Nutrition Programme, in actual practice this was not the case. This fact came out very convincingly during the numerous evaluations of the Applied Nutrition Programme in various countries.

The lesson learnt from this phase is that though in theory inter-sectoral collaboration is an important strategy for malnutrition control, it is difficult to achieve. The Applied Nutrition Programme, though on paper a multisectoral coordinated programme, in actual practice it emphasized predominantly on production. Thus, school garden, kitchen garden, backyard poultry, etc. completely dominated the scene.

Multi-sectoral Phase

With the lessons learnt from the previous three phases, it was increasingly clear that nutrition programmes to be effective must be an integrated programme and not merely inter-sectoral. Moreover, the first step should be to protect the weakest economic segment in areas known as economically

backward areas. It is of interest to note that the crash nutrition programme during the early seventies personally sponsored by our Prime Minister is an example of this thrust. The Supplementary Nutrition Programme, as it is known, is continuing even now and is based on providing supplementary feeding to the vulnerable population in the economically backward areas. However, this is based on a wrong conception that feeding the potential victims of malnutrition will prevent the problem. Malnutrition is a result of the effects of various manifestations of poverty like low-purchasing power, high incidence of communicable diseases, illiteracy, living in poor environments and families with large number of children. Any of these factors might precipitate malnutrition either in the mothers or the child. Mere provision of food supplements in the midst of a high incidence of gastroenteritis and diarrhea would produce almost no impact and can be compared to an oft quoted statement "pouring water in a leaky pot".

The present phase in India, however, can also be considered remarkable from another point and that is to make the Social Welfare sector directly responsible for nutrition and this recognizes the fact that malnutrition is a social ill.

The Integrated Child Development Services (ICDS) programme started during mid seventies in India is possibly the most rational approach towards malnutrition in children and mothers. The strategy consists of directing the programme to economically backward areas - rural poor, urban slums and tribal areas - and the beneficiaries of the programme are young children and mothers. The programme is an integrated one with main components of nutritional care including supplementary feeding, nutrition and health education health monitoring and care, immunization and pre-school education for psycho-social stimulation. It is interesting to note that this integrated service consisting of nutrition, health and educational activities is being given by just one sector - Social Welfare Sector - in order to minimize the inter-sect omissions and commissions mentioned earlier, but of course with the collaboration and cooperation of other sectors. But by and large, the implementation of this integrated package is the responsibility of one single sector.

During the seventies, apart from these two programmes, there has been numerous other programmes developed and implemented by the State Governments, non-governmental organizations, certain universities but all programmes have the concept of community involvement and participation and an integrated approach. This phase is also remarkable in that increasing importance is being given to the formulation of food and nutrition policy within the framework of national development. Malnutrition is now recognized as a national problem - and not a sectoral problem. Thus, control of malnutrition is only possible through a nutrition oriented national development plan. The WHO publication, Food and Nutrition Strategy for National Development, is an excellent treatment of the subject*. It is increasingly becoming clear that malnutrition and socio-economic deprivations are virtually the cause and consequence of each other.

Nutrition Programmes in India

It would be useful to briefly describe the important nutrition programmes in India today. These would be described under the different sectors of the Government responsible for their implementation. No description would be given excepting a small explanatory note:

Ministry of Health and Family Welfare

1. Programme for the control of nutritional blindness due to Vitamin A deficiency by administering a massive dose of 200,000 i.u. of Vitamin A every six months to children under six years.
2. Provision of iron folate tablets for young children and pregnant and lactating women for combating nutritional anaemia.
3. National Goitre Control Programme for providing iodized salt to the entire Goitre Belt of India for controlling the high incidence of endemic goiter and cretinism among the population.

Ministry of Social Welfare

1. Integrated Child Development Service Programme which has been already described and presently covering 200 blocks but going to be expanded to 1000 blocks very soon

2. Supplementary Nutrition Programme for providing feeds to vulnerable population in the economically backward areas hut only in limited areas pf the country.

Ministry of Education and Culture

The School Feeding Programme with the assistance of food commodities provided by CARE.

Ministry of Rural Reconstruction

The Applied Nutrition Programme in limited areas of the country.

Department of Food in the Ministry of Food and Agriculture

1. Production of Bal-Ahar, a processed food specially designed for supplementary feeding.
2. Nutrition Education and Extension Programmes in various parts of the country through mobile units.
3. Food Fortification Programme with special nutrients.

In the above list only the important programmes with substantial coverage have been included. In addition to this list, there are in the country various nutrition programmes mostly community based and with excellent results. However, they are mostly projects and have not so far reached a stage of replicability.

Indirect Nutrition Programmes

It should be mentioned that there are programmes which are of very great indirect effect on malnutrition prevention. Special mention should be made of the family planning activities of the Department of Family Welfare of the Government of India. Needless to say, nutrition programmes and programmes for birth spacing are the "two sides of the same coin". It is an accepted fact that without the improvement in the family health, nutrition improvement of the children is impossible. Again there cannot be any family health if the mother in the family conceived year after year a large number of children to take care. The correlation between

nutrition and family size has been well documented not only in India but in various parts of the world. There has been during the last ten years continuous efforts to integrate duration and family planning programmes with mutual benefits to either programmes.

Again, mention should be made of the Expanded Programme of Immunization of the Department of Health of the Government of India which will, it is expected, break the vicious circle between malnutrition and infection. It should be remembered that a condition like measles which is a passing episode in the life of a child in well-to-do families is a great killer among the poor community. Immunization, thus, is a definite nutrition promoter. Provision of safe water can be also a powerful nutrition promoter in an indirect manner. Gastroenteritis is the commonest cause of mortality and morbidity among children in India and to a large extent it is caused by unsafe water. Provision of safe water will drastically reduce the incidence of gastro-enteritis and diarrhea and this will automatically improve the nutrition situation of the child population. In fact based on this, the World Food Programme has implemented several massive programmes in different parts of the world to promote provision and delivery of safe water to the population through the food aid supplied by the World Food Programme. This is possibly one of the best examples of development programme promoting health and nutrition. Illiteracy is a manifestation of poverty. There are evidences to show that malnutrition is more common among the children of illiterate mothers and that in a community the incidence of malnutrition automatically reduces with the introduction of literacy programme. Thus, the programmes which are now in operation in India for removing the massive illiteracy in this country and also the functional literacy programme implemented in various parts of India can also act as indirect nutrition programme.

Lastly, the public food distribution system, can be a very powerful weapon to remove the problem of malnutrition from the weakest, economic sectors. As mentioned earlier, these segments have low food purchasing power and any measure to provide adequate food and of a reasonable quality to them would greatly enhance their dietary consumption. There are in the world various examples of such programmes to help the economically weaker segments. In food *e.g.* the Food Stamps in the United States or Subsidized Food programmes in many other

countries. However, the fallacy of such a distribution system in India - the Food Rationing System as it is known, will be discussed in subsequent sections.

Lessons Learnt in Nutrition Programming

Through these numerous projects and programmes, some of purely *ad hoc* nature and others for long periods with national coverage, many lessons have been learnt. It would be useful to list the important ones, some of which are concepts and others are operational experiences:

- a. Excepting some specific nutritional deficiencies like iodine deficiency, all types of malnutrition prevalent in India are manifestations of socio-economic deprivation. Malnutrition is truly a social ill.
- b. Any programme to combat the problem by direct measures like feeding programme, will only touch the cause superficially - and can be regarded as *ad hoc* temporary measure with no lasting solution. The real causes of malnutrition can only be tackled by socio- economic measures.
- c. One of the manifestations of poverty is low purchasing power and this restricts adequate dietary consumption. However, other manifestations of poverty like illiteracy, living in unhygienic environments, suffering from frequent attacks of communicable diseases and having large number of closely spaced children - can act powerfully in producing malnutrition. Thus, any measure for counter-acting these adverse manifestations of poverty are also indirect nutrition promotion measures.
- d. Thus, without measures for provision of safe water, for better environmental sanitation, for immunization of children against common infectious diseases, for adequate birth spacing, direct nutrition programmes like feeding programmes and nutrition education - will have very little impact.

- e. Supplementary feeding programme, the most common nutrition activity, is an expensive measure. The Integrated Child Development Service Programme of the Ministry of Social Welfare, has this component, and though it is just one out of six components, cost-wise it absorbs almost half of the total budget and certainly a major portion of the time and energy of the Anganwadi Worker. Does this activity justify this cost - knowing well that it is only a stop-gap measure? Supplementary feeding for therapeutic purpose is certainly justified, but certainly not the general feeding as it is done now. A global survey conducted recently by the UNICEF has brought out many revealing features of this activity. Supplementary feeding in most cases, is not really a supplement to the home diet, but a substitute and as such the impact of such feeding is hardly palpable in majority of cases. How can one justify this huge investment in the name of nutrition promotion only to provide substitute for the home diet? True, feeding programme is very attractive to the sponsors since it attracts quite a lot of public attention and produces a sense of complacency. Cost-effective wise feeding programme for nutrition promotion is certainly not a good investment. Let this be mentioned at this stage that the feeding programme is one nutrition activity which is vulnerable to dishonest practice and corruption. Even the earliest programme with UNICEF donated skimmed milk powder showed that the commodity goes most often for black marketing. Supplementary feeding programme is one nutrition activity which is being continued in spite of the lessons learnt. This is one example of a mistake being continued for reasons other than nutrition.
- f. If nutrition programmes are to really make a dent on the problem amongst population where the problem is most acute, special efforts should be made to cover that population who are mostly "unreachable". Lessons have been learnt that the tendency is to take the programme to areas which are most convenient to reach. The feeding programme is one such example of activity organized in convenient places. If nutrition services are to be taken to those who need them most, then the most important requirement is an immense

increase of programme coverage. It would be interesting to take a similar example from the health care. The very objective of the Primary Health Care, a concept and approach unanimously adopted by all nations of the world during the recently held Alma-Ata Conference, is based on provision of health care to those who need them most. The strategy of the ICDS programme of the Ministry of Social Welfare to pick out the economically and nutritionally backward areas as the target for the programme as a first step is a very sound one. Furthermore, to concentrate on the most vulnerable segments of children under six years and pregnant and lactating women, is a very rational approach. However, what is really and urgently needed is an increased coverage of the potential vulnerable population.

- g. Any nutrition programme to have the desired impact must have components which would mutually reinforce each other, if delivered in the form of a package. The integrated programme is based on this concept. Again, the example of the ICDS programme is appropriate in this context. The programme has the components of nutritional care, health care, immunisation, health and nutritional education and psycho social stimulation of the children through pre-school education. The absolute necessity of integrating feeding programme with nutrition education and environmental sanitation is well accepted. Again, integration of nutrition programme with family planning programme is recognized as a most desirable organizational step.
- h. A nutrition activity from which quite a few lessons have been learnt is nutrition education. This activity has the longest history in India, and is equally popular in all sectors of the Government and also among the voluntary organizations. It is widely practiced in the health care systems. The Department of Food of the Government of India has a vast network of Mobile Nutrition Extension Units scattered all over the country and operating for years.

An inquisitive mind would naturally pose the question that with this vast investment of resources and efforts

spread over years to induce better eating habits among the population, what impact has this produced on the problem. Frankly, no one knows and ironically no one is interested to know this. In other words, nutrition education is done as a routine and it is taken for granted that the desired changes would occur leading to better nutritional status. A recent view of nutrition education in health care systems reveals that evaluation of its impact is rarely attempted and that this activity is undertaken most for some logistics and administrative advantages. In most cases, it is done in a perfunctory manner on "captive audience" based on methods which have been shown to be highly defective and undertaken by people most of whom have no training or exposure to communication techniques. In spite of all these, nutrition education is being conducted almost as a routine, either singly or as a component of a programme (e.g. in ICDS programme). It is amusing, and at the same time ironical, that even now this activity is evaluated on the basis of number of sessions held over a given period, number of persons attending each session, number of topics discussed etc. Not once, there is an effort to know whether desired food habits have been induced and in what percentage of the audience. Thus, nutrition education is one nutritional activity which is continued in the same way ignoring all the lessons learnt. Undoubtedly, this needs urgent rectification, since nutrition education properly conducted can be a powerful tool in inducing better dietary practices.

A word about food processing and technology. As mentioned earlier, Indian food scientists and technologists have made considerable progress in many areas relating to nutrition promotion. Thus, production of protein concentrates from groundnut, protein isolate for formulated foods, etc. are examples of these advances. The Food and Nutrition Board of the Department of Food of the Government of India has been sponsoring various projects of this nature. How far these advances are relevant to the efforts in combating malnutrition in India? Frankly, these are of very limited importance. These processed products are not usually within the reach of those who suffer most from malnutrition - unless these are supported by Government subsidies. Moreover, these foods are produced in very limited amount and can hardly reach even the fringe of the vast number of victims of malnutrition. Acceptability is another big question. Undoubtedly, these types of products, e.g. Balahar, can be of

good help in emergency feeding, and in some special situations. But, for the vast population in under-privileged societies, such products have very limited value. This is not only the Indian lesson, but a global experience.

The most important experience is the essentiality of community involvement and participation in the solution of malnutrition problem. Unlike many other programmes, malnutrition can only be controlled, if the people are motivated to do certain things themselves *e.g.* better feeding of their children, better child care, better personal and food hygiene etc. In ultimate analysis, no nutrition programme, excepting measures like fortified foods, can succeed until and unless the people are motivated. This is a point entirely ignored in nutrition programmes of the past. Thus community motivation and involvement should not only be a must for nutrition programmes but also be the central core of the primary health care. In fact, the very concept of the primary health care is community oriented.

Nutrition Strategy - What Prospect for the Future?

With what has happened in the past and what is happening now in nutrition programming in India, what are the prospects for the future? One can definitely predict that the prospects are bright, if of course, certain mistakes mentioned earlier, are not continued. Quite often, it is remarked that malnutrition can only be eradicated if drastic socio-economic reforms are made to provide at least some measures of social justice to all. It implies that till then the nutrition planners and administration can sit back and relax. This is an erroneous interpretation. Even with the existing situation, effects of malnutrition could be definitely moderated by adopting certain nutritional measures.

Continuation of Specific Deficiencies is Intolerable

Some examples should be cited here. It is really unfortunate that some types of deficiencies for the control of which know-how is available and for which no socio-economic adjustments are necessary, are allowed to continue year after year. What is needed is a firm determination and managerial competence and dedication. Vitamin A deficiency causing blindness, iron/folate deficiency causing nutritional anemia

and iodine deficiency causing endemic goitre and cretinism are examples of such scandalous failures. Instead of spreading national resources for numerous nutrition programmes, some of which have very doubtful impact, the Government of India should concentrate only on these for a specified period - say five years, and bring down their incidence to a negligible level. The three specific deficiencies just mentioned come under this category. This can be done and have been done in many countries and there is no reason why India will not be able to do the same. It is depressing to note that the national goiter control programme, after about 20 years run, is having a critical look for its relative failure to make a good impact. Enough experiences are available in the world to rectify the mistakes.

Protein-Energy Malnutrition and General Under-nutrition -Difficult and Time Consuming

Compared to these three, PEM and general under-nutrition are much more difficult to combat since the causes are deeply rooted in the matrix of socio-economic deprivations. The measures should come from different sectors and should be delivered to the sufferers in an integrated manner. But here again, the feeding component usually has the lion's share in terms of finance and time of the peripheral worker. The fallacy of feeding programme has been mentioned earlier. Anyone visiting an Anganwadi would be sad to see that the feeding and the pre-school education are the two activities done with vigour - and the other important elements of nutritional monitoring, nutritional and health care and nutrition education are relegated to the background. Decisions at the higher level should be taken to rectify this.

Vastly increased coverage is what is needed in the future strategies of nutrition programmes in India. With 200 blocks of TCDS programme, the fringe of the problem is being touched. Even with 1000 blocks, if this is possible ensuring the requisite standard and efficiency, millions of sufferers would still be out of any integrated nutrition programme. Time has come, when a much closer link is to be established with the health sector which is going energetically with the primary health care concept and approach. Mention must be made here that the Alma Ata Declaration has very clearly indicated the essentiality of nutrition as a vital component of primary health care³. It is left to the nutrition and

health services research specialists to determine what should be the nutrition components of the PHC and how these should be integrated within the total framework of Primary Health Care. A number of operational research are being sponsored by the WHO in various countries to get satisfactory answers to these questions. India has gone ahead in creating community health workers, developing appropriate training programme for them with a good component of nutrition and placing them in the community. With the exception of supplementary feeding and pre-school education, these peripheral health workers are expected to do what the Anganwadi workers do. The future operational strategy in India should be to have a closer link between Social Welfare and Health Sectors to explore each other's advantages with the sole objective of increasing the coverage.

An important question can be raised at this stage. To provide all these integrated services is very good, but basically the poor segments also need adequate food and certainly these services are no substitute of food. In a country like India, with more than 50 per cent of the population below the poverty line, this is a vital question. India has spectacular food production, but for the poor, this record production has no meaning since the prices are beyond their capacity. On the other hand, the food prices have to be kept at a certain level to motivate the farmer to produce more. Experiences in various countries have shown that this poverty-stricken segment will have to be protected by some measure through which the staple foods could be made available to them at a controlled or subsidized price. There are many ways through which this could be done - amongst which the public distribution system of food is important. This is known as Food Rationing System in India. However, the way it is practiced in India has numerous loopholes. The system does not always reach areas where the needy population lives. Rationed foods are open to all and hence the upper economic segments have the capacity to absorb most foods - legally and illegally. Moreover, the public distribution system in India today takes up about 10 per cent of the total cereal foods, whereas the population below the poverty line is more than 50 per cent. Thus, the nutrition strategy at the national level must also include a more rational system of making the optimum amounts of foods available to the lowest economic segment at a price affordable by them.

Any discussion on the future nutrition strategy will not be complete without referring to some national programmes with which nutrition is intimately linked. The family planning programme, the Expanded Programme of Immunization and the programme for the provision of safe water have probably the same effect, if not more on the nutritional status of population. What is urgently needed is an active integration of nutrition programme with these national measures.

Nutrition - A Back-bencher in the Health Sector

This paper will be concluded by mentioning an unfortunate but continuing trend - very low priority of nutrition in the health sector. To a large extent, this is due to the inability of the nutritionists to project the importance of nutrition along with the dangers of malnutrition. The senior health administrators and the decision makers, even now, in many countries, have doubts about what the health sector can do in combating malnutrition. Quite often, the prevailing tendency is to equate malnutrition with food deficiency. The net result is that nutrition is a backbencher in the health sector both in importance and in getting resources. Nutritionists in the health hierarchy hardly get the proper status and recognition. It is unfortunate that now in India, Social Welfare, Food, Agriculture, Planning and related sectors have given due recognition to nutrition, but health sectors continue to treat nutrition as a back-bencher. The time has come when health sector should realize its responsibility in nutrition[^].

REFERENCES

1. WHO Q-976) Food and Nutrition Strategies for National Development, Ninth Report of FAO/WHO Expert Committee on Nutrition, Technical Report Series No. 584, Geneva-.
2. BAGCHI, K. (1977) Nutrition Education through the Health Care System, WHO Offset Document, NUT/777, Geneva.
3. WHO/UNICEF (1978) Alma Ata - Primary Health Care, Report of the International Conference, Alma Ata,
4. WHO (1981) The Role of the Health Sector in Food and Nutrition, Report of a Expert Committee, Technical Report Series, 667, Geneva.

CERTAIN PSYCHOLOGICAL CORRELATES OF CONTRACEPTIVE BEHAVIOUR AMONG WOMEN

Pramod Kumar* and Lata Gairola**

ABSTRACT

The study attempted to examine the relationship between certain personality variables -anxiety, intelligence and need for dominance - and adoption or non-adoption of family planning. The sample consisted of 150 adopters and 150 non-adopters of contraceptives among women in the age group of 20 to 45 years. The results showed that the adopter women tended to be less anxious, more intelligent and having a stronger need for dominance than the non-adopter women.

It is now being increasingly felt that the family planning adoption or non-adoption does not depend solely on the socio-demographic factors but more so on the attitudinal, motivational and personality factors, characterizing the individual.

The test anxiety does bear significant relationship with the attitude toward family planning among high anxious and low anxious post-graduate male students on Sarason's test anxiety questionnaire. It has been found that high anxiety does associate with less positive attitude toward family planning¹. In another study, it has been reported that women who have large number of children, have no formal schooling, have got low family income and have lived to ten or more years of married life show more of anxiety toward unwanted pregnancy than women who have small number of children, have had at least primary level education, have got high family income and have lived less than ten years of married life. This study also shows a more positive attitude toward family planning². Fawcett has, however, failed to report any meaningful relationship between anxiety and number of children desired and fertility planning success³.

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Chilman has reported that dominance relationship and role differentiation affects the decision of husband and wife to practice family planning⁶. Michel, however, has found that equality in husband-wife relationship relates directly with the couple's realization of family planning goals⁶. Rainwater in his study has observed that urban couples with little role differentiation practice contraception more effectively than the couples with sharp role differentiations⁶.

In an study Kumar and Gairola have revealed that intelligence is a relevant factor affecting the time of adoption of contraception among women⁷. The variables like neuroticism, extroversion and marital adjustment have also been found to associate meaningfully with contraceptive behavior among women⁸.

The present study, a part of larger project, attempts to examine the relationship of certain personality characteristics - anxiety, intelligence and dominance need - with adoption and non-adoption of family planning measures among women. The relationship between extroversion, neuroticism, masculinity-femininity and marital adjustment and contraceptive behavior has been reported elsewhere⁸.

Materials and Methods

Sample: The sample for the study consisted of 150 adopters and 150 non-adopters of family planning among women in the reproductive age of 20-45 years. The spouses were drawn from the city of Jodhpur.

The adopter group consisted of those women who were present users of any of the contraceptive methods for the purpose of spacing or limiting their family. All these women had been contacted through the family welfare centres in the city of Jodhpur which they had been visiting for advice on family planning and/or for supply of contraceptives.

The non-adopters group consisted of those women who never used any method of birth control, though not sterile as they were either undecided or opposed to contraception.

Test material: The following psychological measures were used to study the variables of anxiety, intelligence and

dominance need as related with adoption or non-adoption of family planning.

1. *Sinha's Anxiety Scale*

The anxiety scale developed by Sinha provides a handy tool to measure the manifest anxiety of the subject⁹. It consists of 100 positively worded, highly, discriminating 'YeB-No¹' type items. The scale has been standardized on a sample of 203 male students belonging to an Engineering Institution. The split-half reliability is reported to be .85 (N-239) with an index of reliability of .92. The retest reliability is found to be .73 (N-88) with an index of reliability of .85. The scale* is reported to correlate well with the modified Taylor's Manifest Anxiety Scales. Separate norms for men (310) and women (475) have been provided by the author for score interpretation.

2. *Raven's Progressive Matrices*

The standard progressive matrices test has been developed by Raven to measure a person's capacity to apprehend the inherent relationship in incomplete meaningless figures presented for his observation and to complete each of them developing a systematic reasoning¹⁰. The scale consists of 60 problems (matrices) divided into 5 sets of 12 each, to be completed by the subject. The scale has been standardized on a large sample of various age groups, ranging from 6 to 65 years. The test-retest reliability of the scale is reported to range from .83 to .93 for different age groups. It has been reported to correlate with Terman-Merrill Scale as high as .86 with a 'g' saturation of .82.

3. *All-port's A.S. Reaction Study*

The Hindi version of all port's A.S. Study for women adapted by Saran to assess the disposition of an individual to dominate in various face-to-face relationships in daily life has been used¹¹. The scale consists of 34 highly discriminating items -each item presenting an inter-relational situation.

The subject is required to answer each item by selecting one of the given responses which most nearly characterizes his usual behavior in that situation. The scale has got two forms - one for male and one for female - both being standardized separately. The test-retest reliabilities of A.S. Reaction Study have been reported to be fairly high.

Procedure: The personality tests were administered individually to the spouses. They were assured that their replies would be kept confidential and used for research purpose only.

Results

The relationship of anxiety, intelligence and dominance with the adoption of family planning measures among women is shown in table 1.

The mean difference between anxiety scores for the adopter and the non-adopter groups is found to be significant at .01 level. The lower anxiety mean score (32.8) for the adopter group indicates that the family planning adopters tend to be less anxious as compared to the non-adopters.

A significant relationship between intelligence and adoption or non-adoption of family planning has also been observed ($t = 9.25$; $df = 298$; $P < .01$). The adopters of family planning are found to be more intelligent than the non-adopters. It may be said that a woman with high intelligence seems to have a greater likelihood of adopting the family planning measures than the women with low intelligence.

The adoption of family planning seems to be affected by the dominance need also in a woman as the t value of 7.03 is found to be highly significant at .01 levels. The differential in mean dominance score shows that the adopters of family planning tend to be more dominant and assertive than the non-adopter among women.

The inter-correlation matrix as shown in table 2 further shows that anxiety associates negatively with intelligence ($r = -.18$) and positively with dominance need ($r = +.17$) in the adopter group.

In case of the non-adopter group, intelligence has been found to be negatively correlated both with anxiety ($r = -.19$) and dominance need ($r = -.31$).

TABLE 1
MEAN SCORES OF ADOPTERS AND NON-ADOPTERS ON ANXIETY,
INTELLIGENCE AND NEED FOR DOMINANCE

	Factors	Groups	N	Mean	SD	t	p
Anxiety	Adopter		150	32.8	15.47	4.96	< 0.01
	Non-Adopter		150	40.7	13.94		
Intelligence	Adopter		150	40.35	9.06	9.25	< .01
	Non-Adopter		150	30.00	9.70		
Dominance Need	Adopter		150	40.00	13.10	7.03	< .01
	Non-Adopter		150	29.00	14.00		

TABLE 2
INTER-CORRELATIONS FOR BETWEEN PERSONALITY FACTORS
ADOPTER GROUP

Factors	Anxiety	Intelligence
Dominance need	+ .17*	.01
Anxiety	-	-.18*

* p < .05

TABLE 3
INTER-CORRELATIONS BETWEEN PERSONALITY FACTORS FOR NON-ADOPTER
GROUP

Factors	Anxiety	Intelligence *
Dominance need	.02	-.31**
Anxiety	-	-.19*

* p < .05

** p < .01

To sum up, the adopter women have been found to be less anxious, more intelligent and more dominating. The non-adopter women, on the other hand, have been found to be more anxious, less intelligent and less dominating.

Discussion

The adopter women have been found to possess lower anxiety level than the non-adopter women. The non-adopter women who predominantly come from lower economic groups, with large number of children may find it difficult to fulfill family obligations and realize desired family goals relating to health care, economic betterment and family welfare⁷. This difficulty in the realization of desired personal and familial goals probably results in increased anxiety in the non-adopter women. Not only this, the non-adopter women always face the risk of unwanted pregnancy because of the non-observance of contraception which might make a difficult situation even more difficult for them. This fear of unwanted pregnancy may further add to the anxiety of the non-adopter women. It has also been found that women who have got large families show more worry and concern about unwanted pregnancy than women with small families². The adopter women, who on the other hand, come from better economic background with limited family size may possibly find it much easier to realize the personal and familial goals. They may also enjoy their sex life in a better way, with no fear of unwanted pregnancy. And hence they might rightly be expected to suffer less from anxiety than the non-adopter women, as the study has shown.

The adopter women seem to possess more intelligence than the non-adopter women. It has been reported that a positive relationship between intelligence and knowledge exist regarding governmental activities^{-^}. A similar relationship between intelligence and information on five questions relating to the field of foreign affairs has also been reported^{!3}. It has also been observed that persons with superior intellectual capacity with better ability to draw inferences are easier to be influenced when exposed to persuasive messages which are supported by sound arguments than those with low intelligence and better educational attainments; the adopter women may be expected to possess better information and clearer understanding about the aims' and objectives of family planning and hence would show greater likelihood to adopt family planning measures to control their family than the non-adopter women, as the results show.

The adopter women have also been found to be more dominating than the non-adopter women. This strong need to dominate or assert with higher intelligence and better education would give the adopter women a better status in the family to participate and contribute in the decision making process relating to important family matters, including when to have a child or how many children to be had in a family. The non-adopter women, on the other hand, who are less dominating along with lower intelligence and poor education would not enjoy an equalitarian status as enjoyed by the adopter women in the family relationship, and hence would not be able to assert their views while deciding about family matters including the observance or non-observance of family planning. The results agree with Michel who has reported equality of wife dominance among couples to be directly related with couple's realization of family planning goals or with Rainwater who has found little husband-wife role differentiation to be directly related with adoption of contraception^{5, 6}. Dubey and Chold in have rightly argued that in family relationship the dominance of husband precludes the wife an equal part in the decision making activity and consequently the effective practice of contraception becomes a much more difficult task than when the decision to contraception is taken in a mutually agreed manner¹⁴. Weller has also observed that a woman who enjoys greater influence over family decision making has got more likelihood of adopting contraception than otherwise¹⁵.

The adoption of contraception, thus, seems to be affected by anxiety, intelligence and dominance need in a woman or may be seen as a function of the personality of the respondent too.

REFERENCES

1. SINHA, N.K. & KRISHNA, K.P. (1973) Attitude toward family planning and anxiety. *Indian Journal of Applied Psychology*, 10: 1, 24-25.
2. KUMAR, A. (1969) *So do-economical and demographic differentials in level of manifest anxiety as related to unwanted pregnancy: A Survey Study*. Bombay, Demographic Training and Research Centre.

3. FAWCETT, J.T. (1970) Psychology and Population. Behavioral research issue in fertility and family planning. New York, The Population Council.
4. CHILMAN, C. (1968) Fertility and Poverty in the United States: Some implications for family planning programmes, evaluation and research. *Journal of Marriage & the Family*, 30: 207.
5. MICHEL, A. (1967) Comparative data concerning the inter action in French and American families. *Demography*, 4: 615.
6. RAINWATER, L. (1965) *Family Decision*. Chicago, Aldine Pub. Co.
7. KUMAR, P. & GAIROLA, L. (1978b) A Study of socio-demographic factors in family planning adoption among women. *Perspectives in Psychological Researches*, 1:1, 37
8. KUMAR, P. & GAIROLA, L. (1981) Some psychological correlates of family planning among women. *Indian Journal of Social Work*, XLII, 1, 81.
9. SINHA, D. (1968) *Manual for Sinha W.A. Self-Analysis form Anxiety Scale in Hindi*. Varanasi, Rupa Psychological Centre.
10. RAVEN, J. C. (1960) *Guide to Standard Progressive Matrices*, London: H.K. Lewis & Co. Ltd.
11. SARAN, M.B. (1972) Dominance of Spouse and marital happiness. *Indian Journal of Psychology*, 47: 423.
12. SWANSON, C. E. (1951) Predicting who learns factual information from the mass media. In H. Guetzkow (Ed.) *Groups, Leadership and Men: Research in Human Relations*, Pittsberg, Carneige Press.
13. HYMAN, H.H. & SHEATSLEY, P.B. (1947) Some reasons why information campaigns fail. *Public Opinion Quarterly*, 11: 412.

14. DUBEY, D.C. & CHOLDIN, H.M. (1967) Communication and diffusion of IUCD: A case study of urban India. *Demography*, 4_: 2, 601.
15. WELLER, R. H. (1968) Psychological factors affecting .fertility. *Milbank Memorial Fund Quarterly*, 46: 308.

PUBLIC RELATIONS IN HOSPITAL

R. C. Anand* and A. Chakravarti**

ABSTRACT

In this paper, the authors have dealt with the salient features of public relations function in a hospital situation while providing health care services to the patients. Public relations are an important function to build up corporate image of the hospitals in the minds of the public and the patients. The authors, therefore, suggest that proper attention may be paid to this aspect for greater appreciation of the services by the community at large.

Almost all the major advances in medical and hospital procedures have been in the area of physical technique. Till recently, the medical profession in general and hospitals in particular have given relatively little thought to the deeper psychological demands of the average adult patient, his relatives and those who are directly or indirectly concerned with medical care.

Patients, relatives and community usually form a rather permanent impression of the entire hospital either from their initial contacts which may be with the Outpatient Department, Accident and Emergency (i.e. Casualty) or even Enquiry Office. A hospital is often judged by the standard of efficiency or courtesy offered by these departments. The inpatient area is no less important but as this is not a first contact point, it gets comparatively less attention from public relations point of view.

Hospital clientele, today, is aware of its rights and the expectations are rising. As consumers, the society has

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absolute and inalienable right to demand better services. A feeling is growing among the masses that hospitals are not functioning properly as evident from an increasing number of patient complaints. The press and public opinion appears to be largely against hospitals. Scanning of these reports reveal that the complaints are mainly:

1. rough behavior of lower category of staff;
2. neglect in patient care by the staff;
3. undue delay in rendering service; and
4. Influence, poor information and guidance system.

Public Relations: Meaning and Nature

Before public relations are described in its proper context, the word 'Public'¹ has to be understood in real perspective. The term public, though frequently in use, is not easy to define. The general public is vague. In the case of hospitals," the term ¹ Public' includes staff members, patients and relatives, and the governing board whereas the wider public will embrace all such groups as In case of any other Government and social organizations. It is implied that the community in general Is also included in 'Public'¹.

Public relations are the management function which evaluates public attitudes, identifies attitudes and procedures of an Individual and organization with the public interest, and executes programmes of action to carrypublic understanding and acceptance (Scott, 1965).

In other words, public relations is simply finding out what people like and doing more of it, finding out what they do not like about and doing less about It. Public relations is essentially ah effort in understanding and letting understand. It is both an art and science. Art in the sense that one has to conceive and use creative ideas in building the bridges of understanding and science to design technologies which help people to continue understand each other.

Need for Public Relations

Not many years ago, management decisions took no consideration of public attitudes but today management cannot

ignore the views of employees, and the community in making - policy decisions. It has been estimated that eighty per cent of the problems confronting management have public relations implications. Management has to foresee the impact of policy decisions on the opinion of the public.

Almost every enterprise is actively concerned with securing the satisfaction from its constituency and in case of hospitals, the constituency is the community it serves. Hospitals cannot serve in isolation and hence it need to assist the society and to gear itself to meet the expectations of the society to give them fullest satisfaction. Good services coupled with sound working practices and fair treatment of employees and medical staff is not enough unless a sound programme of public relations is developed and practiced.

There is normally four distinct reasons for ever increasing necessity of public relations:

- 1 . Increased governmental activities.
- 2 . Population explosion creating communication problems.
- 3 . Increased educational standards resulting in rise in expectations.
- 4 . Progress in communication techniques.

Responsibility of Public Relations

Every hospital employee has a responsibility towards gaining the confidence of public by discharging his duties efficiently. Every action by each employee is an art of 'operating trustee' and an irrevocable ingredient of public relations. However, the major responsibility for carrying forward a sound public relations programme rests with the highest governing body of the organization. Public relations responsibilities can be identified as primary and secondary. Primary responsibility is a combined affair between the trustee, the administration and the public relations staff concerned whereas secondary responsibility rests with all other hospital functionaries. Many authorities over the world feel that the clinicians should also be involved more actively in total hospital public relations efforts because

they are the viable and visible links with the patients, families and visitors and hence with the rest of the community.

Methods of Improving Public Relations in Hospitals

High quality of patient care will ensure simultaneously good public relations. Obviously, a patient will never accept public relations programme in lieu of indifferent hospital care. Thus, good patient care is a *sine qua non*. No amount of smiles, cheers and propaganda will compensate for bad administration and poor professional care in a hospital.

A patient comes with certain definite expectations to the hospital. The reception is normally the first contact point but often he may have made earlier contact with the hospital by getting into correspondence or by contacting over the telephone. All courtesies must be extended to him on these occasions to project a good image of the hospital.

A lot of valuable information can be and should be furnished to patients even prior to their admission. Certain details with regard to time and date and the person to whom he should contact with exact place will help in achieving favorable opinion about the hospital. Equally important is the fact that the person who is to receive the patient should be available on right time or else this will lead to just opposite effect, and the patient may go back home disgruntled.

Most of the hospitals have their own telephone exchanges. The experience of a telephone call may be the first impression of understandable importance. Telephone operators should answer calls promptly and politely and promptly respond to the queries of the caller. This would avoid waste of time and frustration.

Environmental sanitation, cleanliness and physical comforts provided to patients create good impression. Well kept lawns, clean surroundings are reflection of good administration which helps in building initial confidence.

Reception, Enquiry and Admission Office should be established as one single unit. The staff posted there should be specially selected and trained in human relations. They should

be courteous, cheerful and above all efficient in their work. Persons working here should have full knowledge of the routine procedures of the hospital so that information to the patients or their relatives is furnished without any delay.

The Outpatient Department is the most sensitive place from the public relations point of view. Largest number of people visits this department. According to the estimation of Mc Gibony (1969), for each bed in a hospital there are 500 visitors to a hospital in a year. This would explain the gravity of the situation. More frictions and misunderstandings arise in this department than anywhere else. Separate parking space for the staff and the public, adequate waiting space and seating arrangements and facilities of wheel chairs and trolleys should be made available. Public toilets, drinking water, cafeteria, and public telephones are essential in this department. Waiting time of the patients should be rendered to minimum. Maximum number of doctors should be available during the peak hours. Help of paramedical and non-medical staff is a must. Voluntary agencies may be required to help the patients in finding out various areas of the hospital. This department should be organized in such a manner that there is free flow of traffic and cross traffic is avoided or minimized. In addition to the help from staff and volunteers, suitable guidance aids like supply of information brochure in local community centers and other sign postings will definitely help in creating a good impression. A responsible member of the staff should be available to explain the reasons of delay or listen to public grievances.

Measures should be taken to avoid queue jumping and influence of 'pull'. To avoid public resentment separate counters should be opened for the hospital, employees.

The Accident and Emergency Department or 'Casualty' is another very sensitive area. People coming here are charged with emotions, anxiety and sense of urgency. This department should be staffed and equipped for round-the-clock services. It should be supported by an efficient ambulance service. Prompt medical relief and sympathetic behavior of the staff is very important in building good public relations. In one of the studies, it was observed that consumers were dissatisfied due to misunderstandings, rough behavior of lower cadre staff and poor information and guidance system in this department.

Most patients entering the hospital have many questions and concerns. Hospitals must strive to answer their questions. A hospital information booklet provides information that is helpful to patients and their relatives. Often, patients are admitted in an elective basis and they have time to plan their admissions. They can take advantage of these booklets in planning and preparing for their hospital stay. The booklet can be of various types and the information to be incorporated therein will depend upon many factors. The hospital administrator should decide, after careful study, as to which information should be provided through these booklets.

There are certain other aspects which need careful consideration which are described in brief as under.

Name Labels and Uniform: All functionaries should wear uniforms and name labels. This creates initial good impression on patients and reflects good administration. It also infuses among the employees a pride and sense of belonging to the institutions. These also help in identifying the staff by name and their status. These are particularly useful in OPD and ancillary departments.

Importance of Color: Color effects many of our moods and emotions. Proper choice of color can transform depressing and monotonous atmosphere into pleasing and exciting one. It stimulates employee's productivity. Hospital is one area where color can be used with measured success not only in appearance but for the psychological uplifting which it brings to patients.

Delay in Admission: Anxiety and distress is the result of delays in admission due to long waiting list. In allotting priorities for admission, hospitals consider the physical state of the patients but forget the social background and as a result, social emergencies have to wait. Adequate facilities in efficient use of present resources can resolve this problem to some extent.

Ward Reception: Patients are generally vulnerable to anxiety and fear on arrival in the ward. The reception they get tends to leave a deep impression. Prompt reception improves the morale of the patients.

Privacy: It is normally observed that majority of the patients are dissatisfied with the type of privacy provided in the ward. Provision of screens around each bed would afford greater privacy. To have the privacy and at the same time provide the advantage of companionship of other patients in the ward, would go a long way in creating a feeling of warmth and understanding.

Food: Good food, well prepared and attractively served to patients, makes a very favourable impression. Presence of dietician or a nurse at the time of service, creates good impact on the patients.

Cleanliness: Cleanliness is much a desired thing in a hospital. It not only enhances the image of the hospital but also helps in controlling hospital infection. Frequent cleaning and liberal use of detergents and deodorants eliminates the stink which is most dissatisfying.

Information about Illness: The most important thing to a patient is to know as to what is wrong with him and how long will it take to recover. Information in this respect will always be associated with fear, anxiety and thus, will help in building patients confidence. A doctor or a nurse should be available in the ward during visiting hours to furnish information regarding illness of the patients to their relatives.

Visitors: Relatives and friends come rushing to the hospital the moment they learn about the illness of their near and dear one. This is to show their loyalty, affection and strength of ties. It also satisfies emotional needs of the patient. The relatives etc. are allowed to visit their patients for a short while. The visiting hours policy should be more liberal for the visitors to the serious patients and relatives coming from distant places. Too rigid visiting policy makes the public* critical of the hospital.

Complaints and Suggestions: The best way to deal with complaints is to do everything possible to avoid getting them by anticipating the problems. In spite of the best intentions of everyone and as it happens everywhere else, sometimes things go wrong. Any complaint and suggestions should receive prompt attention and wherever possible remedial actions be taken. Equally important is that whatever action is taken, the same is communicated to the complaint.

Mortuary and Chaplain Facility: The disposal of the dead is influenced by religion, social and cultural beliefs and practices. It is necessary to provide within the hospital or its premises a place to which a dead body can be moved quietly so that other patients do not get upset. Disposal of dead has a great bearing on public relations of the hospital. This is a sensitive area for the relatives and friends. Even unintentional neglect or delay may carry unpleasant impression about the hospital. Utmost care is needed by all members of the staff to ensure that prompt and proper disposal of the dead is arranged.

Conclusion

Too often not much of attention is paid to the public relations aspect in a hospital. In our country, demands are many and resources are few. Particularly in the health sector, almost all the hospitals remain crowded and the necessity of creating good impression about the hospital does not cross the minds of the staff. Very little do we realize that with a good public relations system, the hospital does not only get good name but it also helps in early recovery of the patient. It is very vital that all the staff of the hospital is made aware of this aspect in order to get their full support and active help.

TIME SERIES ANALYSIS OF OUT PATIENTS AT URBAN HEALTH CENTRE, STJRAJ KUND, MEERUT

B.S. Garg*, J.V. Singh and S. C. Gupta*****

ABSTRACT

Time series analysis of out-patients at Urban Health Centre, Suraj Kund, Meerut, was done using the out-patient attendance of last five years, with the aim to find out the values to help in coping up with the problem of health administration and management.

The least square method and ratio-to-trend method were adopted for calculating the secular trend and seasonal variations respectively. There was an increasing trend in out-patients attendance indicating the increasing popularity of the Urban Health Centre. It was found that in second and third quarter of the year the out-patient attendance increased extraordinarily due to various reasons.

The two more aspects of time series, i.e. cyclical trend and irregular fluctuation could not be analyzed due to their insignificant impact over the health management system.

Many problems that are faced during the day-to-day management of any hospital, a problem, though of limited scope but of serious consequences, is of trends in the number of outdoor patients. In fact the whole hospital is prone to changes in the outdoor attendance and it will always be useful for the hospital administrator to get an advanced knowledge of the trend and variation in the outdoor attendance.

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The aim of this paper is, therefore, to analyze the outpatient attendance of urban field health centre, Suraj Kund, of the Department of Social and Preventive Medicine, LLRM Medical College, Meerut. It is anticipated that this type of analysis will be of some help in coping up with the problem of health administration and management.

Materials and Methods

The analysis is based on the record of month-wise attendance of outdoor patients at Urban Health Centre, Suraj Kund. The Centre is a part of the Department of Social and Preventive Medicine, LLRM Medical College, Meerut and is being utilized for demonstration and teaching of health care to undergraduate and post-graduate medical students as well as for research purpose. A total of 619 families of five localities of Suraj Kund areas are registered at Urban Health Centre with a total population of 3,812.

Time series analysis was applied to the out-patient data of the Centre. The least square method was applied to obtain the trend equation and trend values. The seasonal variations were obtained in the form of ratio to trend value in order to make the comparison easier. However, there is a drawback in this method that the cyclical variations are absorbed. Since in the out-patient attendance there is a small probability of the existence of cycles, we have adopted this method because of its ability to explain the seasonal variation*.

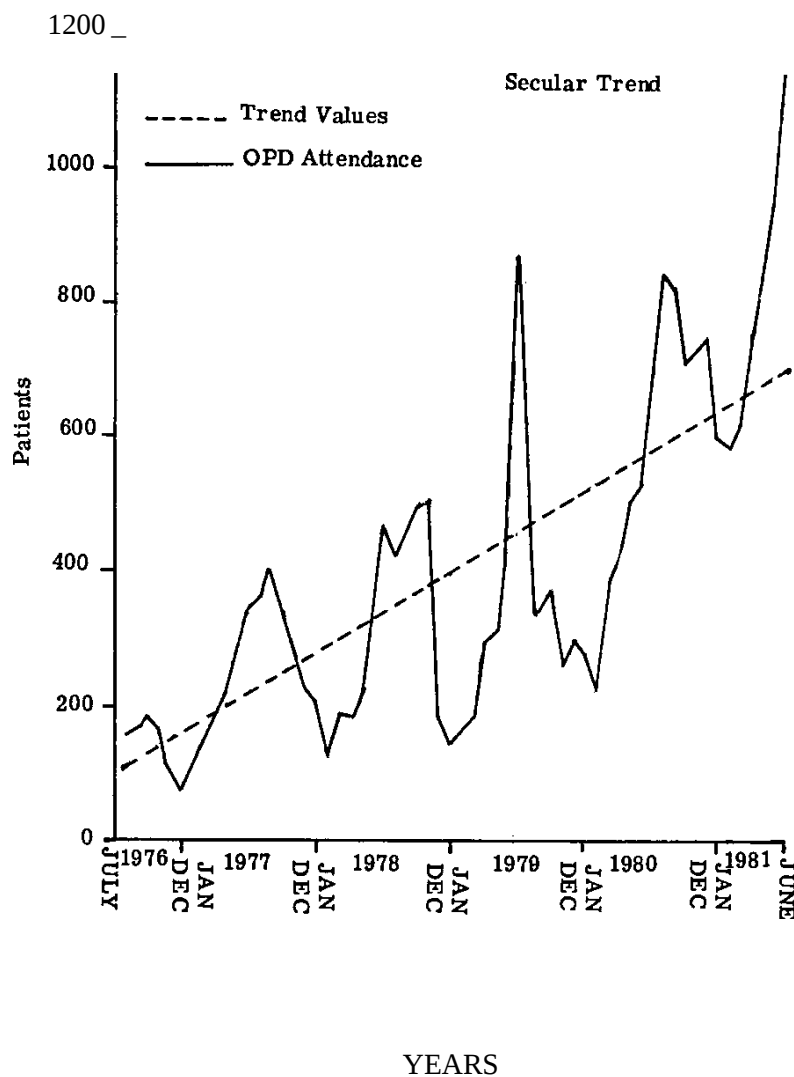
While using the curves for finding out the trend values there is a question of deciding about the trend type, whether it should be a straight line or a polynomial or something else. Some useful suggestions in this regard are given by Croxton *et al*, and on the basis of these suggestions it was decided to fit a straight line to measure the trend values and equation².

Results and Discussion

The trend equation as obtained, on analysis of the data is:

$$Y_c = 406.1 + 32.90 x$$

When Y_c designate the trend values. $b(32.90)$ represents the slope of the line of the amount of change in Y variable that is associated with a change of one unit in X variable. The X variable represents time, beginning from July 1976. The trend values are plotted on the graph in figure 1 and it is evident that the trend line gives a good fit to the observed data which was later on found to be statistically insignificant ($P = L.001$) 406.1 represent the arithmetic mean of Y .



TREND OF OUT PATIENTS AT URBAN HEALTH CENTRE

Fig. 1

After calculating the trend values, the seasonal variations were obtained by ratio-to-trend methods. This method assumes that seasonal variation for a given method is constant fraction of trend and has a cent per cent variation. Calculating in this way, we have the quarterly trend values and given values expressed as the percentage of the corresponding trend values as shown in table 2.

It can be seen from table 2 as well as from equation that on an average approximately 270 patients increase every year. This very well explained the increasing popularity of the Urban Health Centre in the area concerned and, secondly, the increase was also due to the non-registered patients. The other reason may be due to increase in incidence of illnesses. Otherwise, considering the growth rate of 2 per cent in a population of 3,812, it should not be more than 75. This increase in OPD attendance is of much help in working out a health policy and management and also in providing necessary facilities at the proper time.

The other variation which has a higher significance than trend values, is the seasonal variation *i.e.* Variation within the year. This variation, if explained, is not only helpful in providing extra resources to cope up with the additional rush but also plays a key role in anticipating the morbidity status of the community. Besides this, such type of explanation serves as a warning signal against the outbreak of any epidemic. In the present study, the analysis shows that it is the late second and early third quarter of the year *i.e.* the month of May, June, July and August in which the outpatient's attendance extraordinarily increases. These may be some environmental factors and climatic conditions responsible for this increase, but certainly it cannot be left to the chance and needs further investigation. In addition, the analysis has divided the whole year into lean, average and overcrowded month which again can serve as a guiding factor in providing basic minimum facilities to the hospital. Thus, in lean months some unused manpower may be utilized in survey and motivational work while in overcrowded months extra resources may be mobilized to fulfill the additional demand.

Summary and Conclusion

We have discussed only seasonal variation and secular trend in the present article. There are two more aspects of

TABLE 1
OUT PATIENTS ATTENDANCE at URBAN HEALTH CENTRE, SURAJ KUHD, MEERUT

Year	January	February	March	April	May	June	July	August	September	October	November	December
1976	-	-	-	-	-	-	160	172	185	108	107	73
1977	113	150	298	228	305	352	368	409	346	301	235	210
1978	127	195	190	229	325	475	413	463	500	315	190	143
1979	164	190	301	313	411	876	518	339	380	266	306	285
1980	228	384	423	515	536	670	846	830	715	733	754	601
1981	580	616	759	901	993	1142	-	-	-	-	-	-

TABLE 2
SEASONAL VARIATION (RATIO TO TREND VALUES) MONTHLY

Year	January	February	March	April	May	June	July	August	September	October	November	December
1977	70.9	91.0	175.0	125.0	163.3	183.0	163.5	176.6	146.5	121.8	93.4	81.4
1978	43.8	65.6	62.9	73.1	102.1	146.6	115.8	127.7	136.0	83.2	49.6	36.7
1979	38.8	44.4	69.4	70.4	91.3	192.3	106.1	68.6	79.3	52.1	59.3	54.7
1980	40.8	71.6	74.3	88.4	91.5	113.3	136.5	132.7	113.3	114.2	116.5	92.0
Total	914.3	272.6	381.6	357.6	448.2	635.2	521.9	505.6	475.8	371.3	318.8	264.8
Average	48.6	68.2	95.4	89.4	112.1	158.8	130.5	126.4	118.8	92.8	79.7	66.2
Seasonal Index Adjusted	49.1	68.9	96.4	90.4	113.3	160.5	131.9	127.8	120.1	93.8	80.6	66.9

time series analysis *i.e.*, cyclic trend and irregular fluctuation because they do not have any significant impact over the management of day-to-day problems. Moreover, the cyclic trend are absorbed in present analysis in seasonal variation as we have taken percentage of trend values as seasonal variation.

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REFERENCES

1. MORONY, M. J. (1953) Facts from figures, Penguin, London, 328.
2. CROXTON & CROWDEN (1969) Applied General Statistics, Prentice Hall.

INFANT MORTALITY AND FERTILITY LIMITATION: AN EMPIRICAL INVESTIGATION

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ABSTRACT

Fertility reduction in the developing countries is the focus of attention in many recent demographic discussions. Many demographers are of the opinion that higher incidence of infant and child mortality leads to higher levels of fertility. Further, it is believed that unless infant mortality levels are reasonably reduced the couples would not seriously think of limiting their size of family. The present study, therefore, examines whether lower infant mortality correlates with fertility limitation through the acceptance of any family planning method.

The findings have shown that the experience of or fear of mortality has not pressurized couples to have a large number of children.

Fertility reduction in the developing countries is the focus of attention in many recent demographic discussions. Along with many other factors, association of infant mortality with fertility is also mentioned in such deliberations. Of late, there have been several attempts to investigate the relationship between infant mortality and fertility limitation. A good number of studies while analyzing the causes for fertility decline, regard infant mortality as one of the factors affecting fertility². Jain has found that higher incidence of infant and child mortality leads to higher levels of fertility. According to him, child mortality is an important element in the demographic picture of India and has great significance in the present struggle to curb the population growth by reducing fertility¹. Another attempt to review the nature of relationship between infant mortality rates and fertility levels by Srinivasan has

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revealed that a reduction in infant mortality rate below the level of 60 appears a pre-requisite for achieving sustained and substantial reduction in the number of higher order births and fertility levels. Taylor, Newman and Kelly argue that so long as parents do not expect most of their children to survive it is unreasonable to expect them to be interested in fertility reduction. Experience with child mortality may pressurize parents to have additional children either to 'replace' those who have already died or as an 'insurance' against expected deaths. Both these effects, 'replacement effect' and 'insurance effect'¹ operate upon the ideal family size norm prevailing in a society.

The present endeavor, therefore, seeks to examine whether lower infant mortality correlates with fertility limitation through the acceptance of any family planning method as well as to study the various correlates of infant mortality.

Sample Design

The data used in this paper were collected in the first round of a Longitudinal Sample Survey (LSS) conducted, during May-December, 1975 by the Population Centre, Bangalore. The Bangalore Revenue Division in Karnataka formed the study setting. The Division consists of five districts, namely, Bangalore including Bangalore city, Chitradurga, Kolar, Shimoga and Tumkur.

The LSS adopted a multistage-stratified-systematic sample design. The sample included 5,200 households, of which 3,200 were from rural and 2,000 from urban areas. The rural sample was composed of the households selected from sample villages of four PHCs in each of the five districts listed above. Bangalore city and the District Headquarters constituted the urban sample. The details of sampling design and sample size have been published in an earlier article by Reddy, *et al*.⁶

The current study has been carried out using the rural sample data. The sample included 696 acceptors and 1,826 non-acceptors of family planning. Acceptor group includes both temporary and permanent method users.

Findings

It has been found that infant death experience and family planning acceptance are, by and large negatively associated as shown in table 1. It could be seen that the proportion of infant death within one week and after one month but before one year is more among the acceptors than the non-acceptors. Among the non-acceptors the proportion of post-neo-natal deaths is more than that of the acceptors. However, it is clear from the table that between the two groups the variation in the proportion of infant deaths which are 'within one week' of birth is not very wide. Whereas, in case of infants below (after one week) and above one month, variations are found relatively wider. In terms of socio-economic status there is ostensibly little variation between the two groups.

The data on the distribution of acceptors and non-acceptors by the number of infant deaths are shown in table 2. It could be seen from the table .that maximum acceptance has resulted amongst those who have had no experience of infant death. Further, relatively more acceptance of family planning has resulted amongst those who had only one infant death. In other words, data reveal that the proportion of couples who have experienced more Infant deaths by accepting any family planning method is comparatively very small. It is amazing, however, that the infant death trend amongst non-acceptors is very much akin to that of the acceptor group. There is very little variation between these two groups and this demonstrates the fact that infant mortality correlates with the family planning acceptance. In fact, as can be seen, with two, three and five infant deaths there is better proportion of acceptance. Nevertheless, the variation is negligible.

Data pertinent to the proportion of acceptors and non-acceptors of family planning by child mortality are presented in table 3. The experience of child mortality also presents an identical picture where the maximum acceptors have had no child mortality experience. Amongst those who have had the experience of a child loss there is relatively better proportion of acceptors. As found in the case of infant deaths, here also it can be seen that even the non-acceptor group presents a similar picture. Veritably, there is no significant difference between the proportion of acceptors and non-acceptors by the experience of child mortality.

TABLE 1
PROPORTION OF INFANT DEATHS AMONG ACCEPTORS AND NON-ACCEPTORS

	Acceptors	Non-Acceptors
Died before one week	38.1	37.9
Died after one week but before the end of first month	11.9	19.3
Died after one month but before the child is past one year	50.0	42.8
Total	100.0	100.0

TABLE 2
DISTRIBUTION OF ACCEPTORS AND NON-ACCEPTORS BY NUMBER OF INFANT DEATHS

Infant Deaths	Non-acceptors	Acceptors	Difference
0	62.4	61.4	+ 1.0
1	25.4	24.9	+ 0.5
2	8.3	9.5	- 1.2
3	2.3	2.7	- 0.4
4	1.3	1.2	+ 0.1
5	0.2	0.3	- 0.1
6	0.1	0.0	+ 0.1
7	0.1	0.0	+ 0.1

TABLE 3
DISTRIBUTION OF ACCEPTORS AND NON-ACCEPTORS BY CHILD MORTALITY No. of child

children dead	Non-acceptors	Acceptors	Difference
0	76.5	76.1	+ 0.4
1	17.1	16.4	+ 0.7
2	4.7	5.3	- 0.6
3	1.4	1.7	- 0.3
4	0.3	0.3	0.0
5	0.0	0.1	- 0.1
6	0.0	0.0	0.0
7	0.1	0.0	+ 0.1

It could be seen from table 4 that infant deaths in general is more amongst the acceptors in the age groups 20-24, 35-39 and 40-44 than the non-acceptors while the proportion of the said deaths is more amongst the non-acceptors in the remaining age-groups. However, the infant deaths amongst both the acceptors and non-acceptors are more in the age range 35-39. The table further reveals that the proportion of infants dying after one month is more compared to those which are past one week and less than one month amongst both the groups under study.

It is found that proportion of babies dying before one week is more In the age group 35-39 among both acceptors and non-acceptors. This could be an account of the anemic conditions of many a pregnant woman and repeated conception. The proportion of babies dying before the end of one month is found relatively more In 25-34 age groups among the non-acceptors. As regards infant deaths relatively large proportion could be seen in the age range 30-39 among the acceptors and in the age group 29-34 among the non-acceptors also.

The proportion of deaths religion-wise is shown in table 5. A very small number of Muslims were available in the sub-sample. However, data reveal that the proportion of infant deaths is comparatively lower among Muslims than that of Hindus although the two groups are not comparable for want of representative character.

The data on the proportion of Infant deaths and the type of family are shown in table 6, It is evident from the table that a higher proportion of infant deaths is in the nuclear families followed by stem families among both the acceptors and non-acceptors. It is interesting to note that the proportion of infant deaths is the lowest in the extended nuclear, stem joint and joint families. This might be ascribed to the presence of additional caretakers who would have better knowledge of child rearing practices. It is also noteworthy that the proportion of infant deaths at various intervals as mentioned in the table is the maximum In the nuclear families among both the acceptors and non-acceptors.

The infant mortality and illiteracy of the parent are positively correlated as can be noted from table 7. Among both the acceptors and non-acceptors the largest proportion of infant deaths has resulted in the illiterate parent group

TABLE 4
PROPORTION OF INFANT DEATHS BY AGE OF WIFE

	Age of Wife													
	Acceptors							Non- acceptors						
	20-24	25-29	30-34	35-39	40-44	45-49	Total	20-24	25-29	30-34	35-39	40-44	45-49	Total
Died before one week	12.4	12.4	18.8	31.3	18.8	6.3	38.1	5.7	24.5	18.9	34.0	7.5	9.4	37.9
Died after one week but before the end of first month	0.0	40.0	0.0	20.0	40.0	0.0	11.9	3.7	29.6	29.6	14.8	14.8	7.5	19.3
Died after one month but before the child is past one year	9.5	23.8	28.6	28.6	9.5	0.0	50.0	1.7	23.3	31.7	28.3	8.3	6.7	42.8
Total	9.5	21.4	21.4	28.6	16.7	2.4	100.0	3.6	25.0	26.4	27.9	9.3	7.8	100.0

TABLE 5
PROPORTION OF INFANT DEATHS BY RELIGION

	<u>Acceptor</u>			<u>Non-acceptor</u>		
	Hindu	Muslim	Total	Hindu	Muslim	Total
Died before one week	100.0	0.0	38.1	96.2	3.8	37.9
Died after one week but before the end of first month	100.0	0.0	11.9	96.3	3.7	19.3
Died after one month but before the child is past one year	90.5	9.5	50.0	96.7	3.3	42.8
Total	95.2	4.8	100.0	96.4	3.6	100.0

TABLE 6
PROPORTION OF INFANT DEATHS BY TYPE OF FAMILY

	Acceptor						Non-Acceptor					
	Nuclear A	Nuclear B	Joint	Stem	Stem-Joint	Total	Nuclear A	Nuclear B	Joint	Stem	Stem-Joint	Total
Died before												
One week	50.0	6.2	25.0	6.2	12.6	38.1	54.7	1.9	30.2	7.5	5.7	37.9
Died after one												
week but before												
the end of first												
month	40.0	20.0	20.0	20.0	0.0	11.9	63.0	3.7	25.9	0.0	7.4	19.3
Died after one												
month but												
before the child												
is past one year	81.0	0.0	19.0	0.0	0.0	50.0	60.0	0.0	28.3	8.3	3.4	42.8
Total	64.2	4.8	21.4	4.8	4.8	100.0	58.6	1.4	28.6	6.4	5.0	100.0

TABLE 7
PROPORTION OF INFANT DEATHS BY EDUCATION OF 'R'

	Acceptor					Non-acceptor				
	Illiterate	Primary	Middle	High School	College	Illiterate	Primary	Middle	High School	College
Died before one week	81.3	12.5	6.2	0.0	0.0	92.4	3.8	3.8	0.0	0.0
Died after one week but before the end of first month	100.0	0.0	0.0	0.0	0.0	92.6	7.4	0.0	0.0	0.0
Died after one month but before the child is past one year	85.7	9.5	4.8	0.0	0.0	93.3	6.7	0.0	0.0	0.0
Total	85.7	9.5	4.8	0.0	0.0	92.9	5.7	1.4	0.0	0.0

and no death has occurred in the high education groups (high school and above. The table also obviates that maximum deaths at different points of reference has resulted among the illiterates.

Relatively larger proportion of infant deaths has been among the housewives followed by agricultural laborers and cultivators in both the groups under study as shown in table 8. The expectation is that mostly housewives in a rural setup are illiterates and less exposed to the various media of mass communication and education. This naturally results in keeping their knowledge mitigated and attitudes unaltered. Lack of knowledge in the infant hygiene amongst them might, therefore, result in higher infant mortality. The peasant class, on the contrary is quite exposed to various media. Although they may not have higher level of education by virtue of economic prosperity, they can have very good access to different media and gain worldly knowledge.

Summary of Findings

The study has revealed that the variation in the proportion of infant deaths and child mortality amongst the acceptors and non-acceptors is rather less. Infant mortality as a cause for non-acceptance of family planning sounds more a myth than a reality. The results of the survey recently conducted by the Population Research Centre, Baroda support this finding. The survey revealed that child mortality experience does not exert profound effect on fertility.

TABLE 3
PROPORTION OF INFANT DEATHS BY OCCUPATION OF THE 'R'

	Acceptor			Non- acceptor		
	House- wife	Culti- vator	Agriculture Labourer	House wife	Culti- vator	Agriculture Labourer
Died before one week	56.3	18.7	25.0	39.6	15.1	45.3
Died after one week but before the end of first month	40.0	20.0	40.0	55.6	25.9	18.5
Died after one month but before the child is past one year	42.9	23.8	33.3	45.0	26.7	28.3
Total	47.6	21.4	31.0	45.0	22.1	32.9

Further, the infant mortality experience seems to have much lesser influence on the contraception although this variable exerts a significant effect. On the contrary, the study found that the marriage duration and the children ever born were found to be the determining factors for the acceptance of family planning method⁷.

The present study has, however, brought forth the various correlates of infant mortality. It has been observed that the proportion of infant deaths is more in the age group 35-39, a period at which family planning acceptance should have resulted. The findings have revealed that this phenomenon exists even among the acceptors. The possible reason for such a relatively larger proportion of Infant deaths could be emaciated health of the mothers consequent of anemia and repeated pregnancies. It was amazing to note that the proportion of infant deaths in nuclear families is more. As stated in the earlier paragraph, it is the extra guardian care that perhaps supplements to the child rearing and hygiene. The study has also illustrated that female education can partly combat infant mortality as the larger proportion of infant deaths is amongst the illiterate mothers. Female education coupled with proper exposure to the various mass media and education programmes can enhance the mother's knowledge about the infant and its needs at the various stages, as poor nutrition, unsatisfactory housing conditions and sanitation, poor water supply are said to be the major contributory factors to the existing level of infant mortality⁸.

It could be said in conclusion that the fear of mortality as a reason, for non-acceptance of family planning needs further evidence, for the present study did not notice wide variations in the proportion Of infant deaths and child mortality between the acceptors and non-acceptors of family planning.

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REFERENCES

1. MADHUREE, TALWALKER K. (1981) Association of Infant Mortality and High Fertility: An Empirical Investigation. *Newsletter*, HPS, Bombay, 22: (1).
2. MAULDIN, W. PARKER & BERELSON, BERNARD (1978) Conditions of Fertility Decline in Developing Countries 1965-75, *Studies in Family Planning*, 9_(5).
3. JAIN, S.P. (1979) Levels and Differentials of Infant and Child Mortality: Determinants and Demographic Impact, *Child in India*, K. Srinivasan, P.C. Saxena and Taraka-nitkar (Editors), Himalaya Publishing House, Bombay.
4. SRINIVASAN, K, (1979) Association of High Fertility with Infant Mortality: A Review and an Empirical Investigation. *Child in India*, Himalaya Publishing House, Bombay.
5. TAYLOR, F. CARL, NEWMAN, S. JEANNE & KELLY, U. NARINDER (1976) The Child Survival Hypothesis, *Population Studies*, 30: (2).
6. REDDY, P.H. *et al*, (1975) Fertility, Mortality and Demand for Family Planning: A Longitudinal Study in Progress, *Newsletter*, 1st 04, Population Centre, Bangalore.
7. POPULATION RESEARCH CENTRE, BANGALORE (1980) Influence of Infant and Child Mortality on Fertility in India, *Baroda Reporter*, No. 13.
8. BHATTACHARJEE, P.J. (1979) Factors Influencing Infant Mortality, *Child in India*, Himalaya Publishing House, Bombay.'