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PRIMARY HEALTH CARE IN INDIA

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ABSTRACT

Although the concept of and the concern for health development and primary health care in India date back from the ancient period, the earlier developments got completely disrupted for various reasons. In modern time the basis for health services delivery through primary health care approach had been laid down in the recommendations of the Bhore Committee (1946). Since independence a great deal of development and expansion has occurred in the health services infrastructure in the country and various parameters of health have improved considerably. However, for attaining the goals of Health for All (HPA) by the year 2000 AD, to which the country is committed, greater and coordinated efforts have to be made in the health sector as well as in other health-related social and economic development sectors.

In this paper the basic principles of HP A development, the concept and essential components of primary health care, and the supporting activities required for its successful implementation have been elaborated. The current status in the country in regard to each of these aspects has been reviewed and the possible remedial measures for the existing problems have been suggested. There is an urgent need that the people working at different levels in the field of health and other related socio-economic development sectors should be properly oriented and motivated to develop a sense of social commitment for achieving the set goals.

HISTORICAL PERSPECTIVE

The experience and concern in health development and primary health **care** in India date back to the Vedic period, in the Indus-Valley Civilization as **far** back as 3000 B.C., one finds evidence of well-developed environmental sanitation programmes such as underground drains, public baths in the cities etc. 'Arogya' or 'health' was given **high** priority in daily life and this concept of health include physical, mental, social and spiritual well being. This cherished value regarding health is also enshrined in an ancient **Sanskrit** verse, Sarve Santu Niramayaha', which means 'Let all be **free** from disease/let all be healthy', and which was often used **to** express good wishes.

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The life style was conducive to health promotion and in the advocated daily activities of life called 'Dina Charya' the following essentials of health care were emphasized: health education, personal hygiene and habits, exercise, dietary practices, food, sanitation, environmental sanitation, code of conduct and self-discipline, civic and spiritual values, treatment of minor ailments and injuries etc. In Ayurveda ***i.e.*** the 'Science of Life', one finds even in 1400 B.C. emphasis on health promotion and health education.

Unfortunately, for various reasons and particularly because of the onslaught of series of foreign aggressions and regimes leading to disruption of pre-existing health services as a part of social and cultural interactions and exchanges, the great era was lost to darkenss. Ayurveda not only failed to develop, but infact, it languished because of want of adequate state patronage and recognition.

During the middle of the 18th century, the British Government in India established medical services which were primarily meant for the benefit of the British nationals, armed forces and a few privileged civil servants. But the vast majority of the native population was denied access to the Western medicine. Indigenous systems of medicine were totally neglected and allowed to languish. Services which were available in general hospitals located in big cities and commercial centers were largely curative for the care of the sick and injured. Later on, some preventive measures were provided for the control of epidemics, and dispensaries were opened in some remote villages. Provincial health departments were established in 1919. But neither health planning nor medical education was related to the health needs of the people. This strong Western bias was largely responsible for blind adoption of sophisticated modern medicine for a few, neglecting the vital interests of the vast majority.

BASIS FOR PRIMARY HEALTH CARE IN INDIA IN MODERN TIME

India gained independence in August 1947 after a long colonial rule. Although the National Health Policy in India was not framed and announced until 1983, the policy intent and framework, and the strategies were provided over the past three decades mainly by the following important organizations: the Constitution of India (1950), the National Development Council, the Planning Commission, several advisory bodies and consultative committees, the Ministry of Health and Family Welfare and the legislature.

Keeping in view the constitutional obligations, the Government of India planned several approaches for the health care delivery. However, the basis for organization of health services in India through the primary health care aDDroacn in modern time, was laid by the recommendations and guidance provided by the 'Health Survey and Development Committee' (Bhore Committee) in 1946. The community development programme was launched in October 1952 as the first integrated all-round rural development programme. It was proposed to establish one primary health centre

(PHC) for each community development block. At that time, the operational responsibilities of the PHC were to cover medical care, control of communicable diseases, maternal and child health (MCH), nutrition, health education, school health, environmental sanitation and the collection of vital statistics. Each PHC had three sub-centers, being looked after by a trained midwife for providing MCH services.

Subsequently, over the past three decades the health services organization and infrastructure have undergone extensive changes and expansion in stages following review by a number of expert committees, namely the Mudaliar Committee (1961), the Mukherjee Committee (1966), the Kartar Singh Committee (1974), and the Srivastava Committee (1975). Progressive changes have been introduced into the programme over the six five-year plan periods. The first five-year plan (1951 -56) initiated a process of all-round balanced development to ensure a steady improvement in the living standard over a period of time. New programmes for the control of communicable diseases such as malaria, filaria, tuberculosis, leprosy etc. were instituted. Health and medical care infrastructure and facilities, and water supply and sanitation were expanded with a view to improve the accessibility and availability of services. Education and training facilities for medical and paramedical personnel and other health functionaries were also instituted and expanded.

The subsequent five-year plans aimed at extending health and family planning services to bring these increasingly within the reach of all the people for improving their health status. During the fifth plan (1974-80), removal of poverty and achievement of self-reliance on the part of the community were given emphasis. For preventing and correcting nutritional deficiencies, supplementary feeding programmes for the children and expectant mothers were initiated on a countrywide basis. The family planning programme was integrated with the MCH and nutriton programmes.

India is a signatory to the *Alma Ata Declaration* of 1978, and it is committed to attaining the goals of 'Health for All' (HFA) by the year 2000 through the primary health care approach Consequently, while formulating the sixth five-year plan (1980-85), a critical review was made of the approaches in the first five-year plans Based on these, a long-term perspective plan was outlined by the Government for achieving the HFA goals. Also efforts were initiated for the formulation of the National Health Policy keeping in view the HFA principles and strategies. The National Health Policy was officially adopted by the Parliament in 1983. These strategies were also incorporated in the sixth five-year plan.

HEALTH FOR ALL BY 2000 A.D.

Concept of Health for All by 2000 A.D.

Since 1975, the WHO had been developing the concept of achieving health for

all by 2000 A.D. In the 30th World Health Assembly in 1977, it was decided that the main social goal of the governments and of the WHO should be the attainment by aH the people of the world by the year 2000, of a level of health that will permit them to work productively and to participate actively in the social life of their community. This is popularly known as 'Health for All (HFA) by 2000 A.D.'.

In the International Conference on Primary Health Care, jointly organized by the WHO and UNICEF in Alma Ata, U.S.S.R. in 1978, this concept of HFA by 2000 A.D. was endorsed and it was further stated that primary health care would be the key to attaining this target. The *Alma Ata Declaration* and subsequent WHO communications clearly stated the basic principles and strategies for HFA development, and defined the concepts and characteristics of health and primary health care. These also spelt out the minimum essential components of primary health care and the supportive activities needed for their successful implementation.

Basic Principles and Strategies of HFA Development

1. The HFA is to be attained in a spirit of social justice and as an integral part of social and economic development of the community.

2. An acceptable level of health cannot be attained through the health sector alone, but it would require the coordinated efforts of the health sector and relevant activities of other social and economic development sectors. Therefore, for achieving the ultimate social goals the strategies of the health and other developmental sectors should be mutually supportive.

3. There is a great need for a strong political will at ail levels for promotion of health, and health development must be considered as a positive investment for socio-economic development.

4. There should be an equitable distribution of health resources, and preferential allocation of resources to those in greatest social need. The health system should cover all segments of the population.

5. HFA development is based on self-determination and self-reliance of the individual and the community. Active community participation, encouraging the people to assume greater responsibility for their own health, would be crucial for success.

6. Social orientation of different categories of health workers to serve the people properly would be important. They should also be properly reoriented to HFA principles and strategies, and should receive adequate technical training.

7. The emphasis should be on preventive and promotive aspects of health well integrated with curative, rehabilitative and environmental measures.

8. The primary health care would be the key to the success of HFA, and it has to be an integral part of the country's health system, of which it should be a central function and the main agent for delivering health care. For attaining the desired level of health, every individual must have access to primary health care and through it to all levels of comprehensive health system. The concept of primary health care should be the driving force behind determining policies and the basis for formulating strategies and plans of action.

9. Approrpiate technology needs to be developed and applied through well defined health programmes integrated into a country-wide health system.

CONCEPTS AND DIMENSIONS OF HEALTH AND PRIMARY HEALTH CARE

Health

Health is a state of complete physical, mental and social well-being which is essential for leading a productive life, and it is not merely the absence of disease or infirmity. Provision for health should be considered a fundamental human right, and attainment of highest level of health is a most important social goal.

Primary Health Care

It has been defined as an essential health care which should be based on practical, scientifically sound and socially acceptable methods and technology. It should be made universally accessible to the individuals and the family in the community through their full participation. It is to be made available at a cost which the community and the country can afford to maintain at every stage of its development in a spirit of self-reliance and self-determination.

Primary health care is the first level of contact of the individuals, the family and the community with the national health system bringing health care as close as possible to where the people live and work. It constitutes the first element of the process of continuing health care, and this should get full support from the rest of the health system. This support would be required in the following areas: (a) consultation on health problems; (b) referral of patients to local or other specialized institutions; (c) supportive supervision and guidance; and (d) logistic support and supplies.

For achieving success in HFA development, at least eight essential components of primary health care need to be properly implemented. For this the cooperation and support of other social and economic development sectors, such as education, social and women's welfare, food and agriculture, animal husbandry, water resources, housing, rural development, energy, environmental protection, industry, communication, etc. would be vital.

It would be well to recognize that planning, organization and operation of primary health care is a long process, and total population coverage may be achieved progressively in stages, both in terms of geographical coverage and the contents.

INFORMATION ON SOME HEALTH-RELATED ISSUES AND PROBLEMSMN INDIA

For proper appreciation of the milieu in which the health development is to occur in India, consideration of some of the relevant health-related issues and problems would be useful. These are highlighted below:

a. India is a vast country with an estimated population of around 746 million as of March, 1985. The decennial growth rate for 1971-81 was 24.7 per cent. Yearly addition to the population is to the tune of about 15 million.

b. About 77 per cent of the country's population is settled in about 576,000 villages, nearly half of which have a population of about 500 or less. Rural areas lack socio-economic development and have poor communication and transport facilities. In 2,07,286 villages electricity supply has not reached, and about 86,000 villages have yet to be covered with potable water supply.

c. Inspite of the fact that relatively large proportion of resources have been deployed for the medical and health care in urban areas, the people living in urban slums and the urban poor have been largely neglected. They are the victims of poverty and disease, and are socio-culturally maladjusted to urban life. They need specific health care programme.

d. The country has a large dependency ratio; about 39 per cent of the population are in the age group of below 15 years and only 38 per cent of the population constitute the working force. Barely 14.41 per cent of the working population comprise female as main workers. Being predominantly an agricultural country, about 51 per cent of the employment generated is from the agricultural sector.

e. The per capita availability of foodgrains is 178 kg. per annum. Using calorie consumption as a criterion, it is estimated that about 37 per cent of the population live below the poverty line. Certain disadvantaged groups in the society like the scheduled castes and scheduled tribes continue to suffer from social disabilities and poor economic status.

f. Even though primary education has been made compulsory and enrolment of children has improved over the years, a large percentage of these children subsequently dropout for various socio-economic reasons. The literacy rate is still very low; only 46.7 per cent of the males and 24.9 per cent of the

females are literate. In rural areas female literacy rate is still lower. This, coupled with highly dependent status of the women, acts as a barrier to communication and kills their initiative and enthusiasm for any social change.

g. Environmental sanitation is poor in rural areas and urban slums; less than 10 per cent of the rural population have sanitation facilities.

h. The per capita public sector expenditure on medical and public health during 1981-82 was hardly Rs.28/- per annum, although it has been considerably increased from Rs1.50 in 1955-56. Even these limbed resources made available to the health sector were largely spent on urban curative services. However, during the Sixth and Seventh Five Year Plan periods larger proportion of funds has been allotted to rural health care.

i. As mentioned earlier, historically, the health care services in India had been developed on a Western model. Till recently these were mainly hospital-based and disease-oriented, heavily dependent on borrowed technology leading to over-sophistication and making these ill-suited to the needs of rural population.

HEALTH SYSTEM INFRASTRUCTURE

The country is divided into 22 major States and 9 smaller union territories which inturn are divided into administrative districts. At present, there are 431 districts. Each district is divided into sub-districts or talukas, under which are situated the community development blocks. There are about 6,000 community development blocks in the country.

As mentioned earlier, over the past three decades the health services infrastructure and health care facilities have been expanded considerably. It is aimed to further improve the facilities as noted below (see also Table 1):

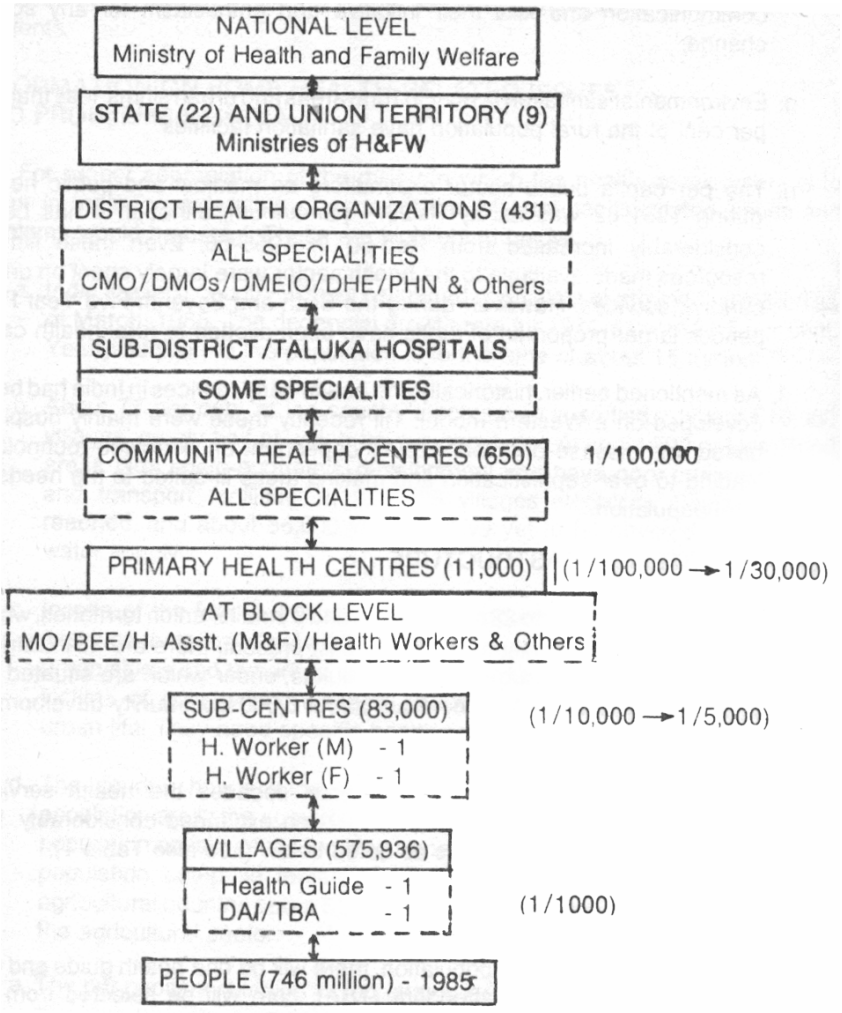
Facilities at Village Level

In a village, for about 1,000 populations, there will be one health guide and one trained *dai* or traditional birth attendant (TBA); both will be selected from the community. They will be tra;ned at the level of the primary health centre (PHC) and the sub-centre. These two village level functionaries are to receive technical support and continuing education from *he multi-purpose health workers (male and female) posted at the sub-centre. Other administrative control and supervision should ideally be carried out by the village health committee or the village panchayat.

Facilities at Sub-centre Level

The most peripheral health institutional facility will be at the sub-centre.

TABLE 1 HEALTH SYSTEM INFRASTRUCTURE



LEGEND

The health services organization in the country extending from the national level to a sub-centre level is diagrammatically represented in this table. Sub-centers constitute the most peripheral governmental health institutional facility. The village level health functionaries *i.e.* Health Guides and Trained Dais form the interface between the people and the governmental set up. The figures within the solid boxes represent the number of centres etc., whereas figures in parentheses outside the boxes on the right hand side represnt the number of institutions in proportion to the population, which are currently available and which are aimed to be established by the year 1990. The type of the health and family welfare personnel that are available at different levels are given in the boxes marked by the dotted lines.

manned by one male and one female multi-purpose health workers. At present, in most places there is one sub-centre for about 10,000 populations. It is, however, aimed to have one sub-centre per 5,000 populations (3,000 population in hilly and desert areas, and difficult terrain) by the end of the Seventh Five Year Plan *i.e.* 1990. To date, about 83,000 sub-centers (both on the old and new patterns mentioned above) have been established.

Facilities at PHC Level

At present there is one PHC in each community development block, which covers about 1,00,000 or more, population. It is aimed to establish one PHC for every 30,000 population by the year 1990. Many rural dispensaries are being upgraded to create the subsidiary health centers or these new PHCs. Each new PHC will have one medical officer, two health assistants - one male and one female, and the health workers and other supporting staff. For strengthening preventive and promotive aspects of health care, a new non-medical post called community health officer (CHO) will be provided at each new PHC. To date, there are about 11,000 PHCs (both old and new combined).

Facilities at Community Health Centre

For a successful primary health care programme, effective referral support is to be provided. For this purpose one community health centre (CHC) will be established for every 1,00,000 population, and this centre will provide the main specialist services. The CHCs will be established either by upgrading the sub-district /taluka hospitals or some of the block level PHCs, or by creating a new centre wherever absolutely needed.

Facilities at District Level

District health organization is to be appropriately strengthened to cater to the needs of the expanding rural health and family welfare programmes. Not only the planning and implementation and monitoring of health and family welfare programmes are to be carried ou* at the district level (preferably on a decentralized basis), all the referral services from the periphery *i.e.* PHCs. community health centers and taluka hospitals, are to be attended to satisfactorily.

The primary contact care will be provided by the health functionaries at the village level and by the multi-purpose workers at the sub-centres level. The cases needing further help will be dealt with at the PHC, and that needing referral support by the specialists would be referred to the community health centre. The second and third level referral supports will be provided at the district hospital and the medica' college/specialised hospitals respectively.

Organization at State Level

Under the Ministry of Health and Family Welfare in each State, there is one

technical directorale functioning under the Director(s) of Health Services, and one executive wing headed by the Health Secretary, who has also the overall administrative control.

Organization at National Level

Under the Union Ministry of Health and Family Welfare, there are two technical departments - the Health Department is headed by the Director General of Health Services and Family Welfare Department is headed by the Commissioner, Family Welfare. The executive wing as well as the technical departments is under the overall administrative control of the Secretary to the Government of India.

ESSENTIAL COMPONENTS OF PRIMARY HEALTH CARE

In the ***Alma Ata Declaration***, it is stated that at least the following components should be included in primary health cars:

1. Education of the people about prevailing health problems and methods of preventing and controlling them.
2. Promotion of food supply and proper nutrition.
3. Adequate supply of safe water and basic sanitation.
4. Maternal and child health care and family planning.
5. Immunization against major infectious diseases.
6. Prevention and control of locally endemic diseases.
7. Appropriate treatment of common diseases and injuries.
8. Provision of essential drugs.

CURRENT STATUS OF VARIOUS COMPONENTS OF PRIMARY HEALTH CARE IN INDIA AND REMEDIAL MEASURES

Education of People about Health Matters

Problems **-** People in general, particularly in rural areas and urban slums are rot knowledgeable about health matters, such as what are the prevailing health problems in the community and how to prevent and control these, what are the needs for the maintenance and promotion of health; what are the resources available and how and when to utilize these etc. Socio-economic backwardness, ignorance, traditions and superstitions had been acting as blocks to progressive thinking including development of the concept of positive health. Health education

efforts have been very inadequate. Illiteracy, particularly of the women, has acted as barriers to communication in health and related matters.

Remedial measures - Appropriate educational programmes are to be organized for different groups of people. Health education to the community should be a prime function of the health workers and village level functionaries. In this endeavor, functionaries of other sectors such as social and women's welfare, education, agriculture and animal husbandry, panchayats and voluntary agencies like *mahila mandals* and youth clubs can contribute very significantly. Health education in schools and adult education sessions should incorporate various health problems, and the methods for their prevention and control.

Promotion of Food Supply and Proper Nutrition

Problems - Nutritional deficiency states of varying degrees in regard to protein-calorie malnutrition, vitamin A and iodine deficiency and nutritional anaemia are prevalent in a wide section of population. Nutritional deficiency states are particularly noticeable among pregnant and nursing mothers, and in infants and children. Available statistics indicate that of the deaths occuring among the age group of 0 to 5 years, in 7 per cent of deaths malnutrition is the causative factor and in another 46 per cent it is an associated factor.

Remedial measures - This dismal condition can be substantially improved by organizing and conducting nutrition education in the community and in the schools; encouraging people to make kitchen gardens and community gardens; and educating the people on food hygiene. Steps also need to be taken to encourage growing locally more foods such as cereals, pulses, vegetables, fruits, milk, fish and poultry products through cooperative and other efforts so as to make these easily accessible and affordable to the people. Simultaneously, the purchasing capacity of the families might be improved through a variety of income generating schemes. In addition, for the moderately and severely malnourished groups, special nutrition programmes **aie** to be organized.

In these endeavors functionaries from other sectors such as agriculture, animal husbandry, irrigation, banks and cooperatives, social and women's welfare, panchayat and voluntary organizations can play **a** very significant role.

Supply of Safe Water and Basic Sanitation Measures

Problems - Many health problems have their roots in various aspects of community life and cannot be influenced by medical or health interventions alone. Safe and potable water is not available to a majority section of the population. Many of the water borne diseases prevalent in the country are preventable, but the

importance of the use of pure and safe water as well as the personal hygiene is not properly appreciated. Environmental sanitation is very poor, particularly in rural areas and in urban slums. In most of the places, there are no proper arrangements for disposal of human and animal wastes, sewage and sullage etc.

Remedial measures **-** Systematic approach should be made to survey and identify resources of safe water and to carry out proper analysis of the water. Arrangements should be made for regular purification of water through chlorination etc. before using for drinking and other household purposes. People at all levels including the village leaders, women, and children at schools should be educated on continuous basis about the importance of proper maintenance of water resources, simple means of purification of water and the use of safe water Observation of personal hygienic practices should be emphasized.

It would be important to organize the people and the resources for constructing household and community latrines, and making arrangements for collection and disposal of human and animal wastes. Proper and imaginative disposal of waste water is also very important. Construction of composting facilities, soakage pits and use of some of the waste water in kitchen gardens should be encouraged and helped. Educating the women about the proper maintenance of water sources and the importance of kitchen garden would be helpful. Proper educational programmes on all these aspects for the children, youths, adults and the mothers should be organized in a systematic manner.

In these programmes cooperation of the workers of other stores such as irrigation, engineering department, village industries, agriculture, education, social and women's welfare, rural development, panchayats and cooperatives would be most vital.

Maternal and Child Health Care Maternal Care

Problems **-** Compared to develop countries as well as some developing countries the current maternal mortality rate of 4 to 5 per 1000 live births in India is quite high. No valid information on morbidity data on mothers is available. Maternal care - antenatal, natal and post-natal, in rural areas and urban slums, is totally inadequate. In rural areas, majority (about 80 per cent) of births are occurring outside the institutions, and are being attended by untrained birth attendants.

Some of the important causes of maternal mortality are sepsis, haemorrhage toxaemia, illegal abortion and malnutrition. Liberalization of abortion laws and enactment of medical termination of pregnancy (MTP) act in 1971 were the direct outcome of the realization of the fact that induced abortion performed by unqualified persons under unhygienic conditions significantly increased maternal mortality and morbidity.

Remedial measures **-** Systematic efforts are to be made to progressively increase antenatal registration and care of pregnant women from the present level of 35 to 50 per cent to 100 per cent. It is also to be ensured that progressively almost all deliveries are conducted under aseptic conditions by trained health personnel *I.e.* the *dais* or female multi-purpose workers. Pregnant and nursing mothers should get prophylactic ally two to three doses of tetanus toxoid, and iron and folic acid supplement for nutritional anemia. During post-natal check-ups, mothers are to be educated on breast feeding, growth monitoring, proper weaning practice and immunization of the child; and on personal hygiene, exercises, proper diet and family planning.

Facilities for MTP services by properly trained and skilled doctors are to be provided, wherever needed, in rural areas and urban slums.

Infant Care

Problems **-** The infant mortality rate (IMR) of 105 per 1000 live births (as per estimates of SRS in 1982) in India is very high and this figure will be much higher for rural areas. About 50 to 60 per cent of this is caused by mortality during the neonatal period (0-28 days) and particularly in the first week of life. Several factors contribute to this mortality and these include poor maternal health during pregnancy, frequent child births, inadequate care of mothers at risk, poor infrastructure facilities, lack of care of newborn at birth and practically no facilities for newborn care from primary to tertiary levels.

Low-birth-weight infants, either due to prematurity or due to intra-uterine growth retardation, result from various factors such as low maternal weight and height, frequent pregnancies, maternal malnutrition and anemia, chronic maternal diseases and pregnancy complications. Low birth weight if particularly associated with prematurity is a major underlying factor for neonatal or infant mortality. Non-immunization of pregnant women with tetanus toxoid may result in death due to tetanus neonatorum.

Remedial measures -For dealing with these problems, the *dais* and female health workers and health assistants have to be properly trained in perinatal and neonatal care adopting a high-risk approach. Proper facilities for referrals to the secondary and tertiary levels are also to be developed and organized. Communities are to be properly educated about the importance of antenatal and neonatal care, and be encouraged to actively participate in these programmes.

Care of Young Children

Problems - Among the children aged 0-5 years *i.e.* the pre-school children, the major problems are the morbidity and mortality due to malnutrition, diarrhoeal diseases, respiratory infections and other preventable infections. Malnutrition predisposes the children to infection, the morbidity rates being three times higher in malnourished children.

Remedial measures **-** Two types of intervention programmes would be needed: (a) prevention and treatment of malnutrition, and (b) reduction of mortality due to diarrhea, respiratory infections and other infections preventable by immunization.

The strategies for reduction of prevalence rate of malnutrition in pre-school children would be: (a) to provide nutrition education to the mothers; (b) to detect the cases of malnutrition and to grade them; (c) to rehabilitate grades I and II cases by supplementary feeding from home resources; (d) supplementary feeding of grade III cases at sub-centers; and (e) referral grade III cases associated with diarrhea or infection to secondary level of care *i.e.* the community health centers or district or taluka level hospitals.

The strategies for reduction in infant mortality due to diarrheal diseases and respiratory infections would be (a) to educate the mothers how to prevent and treat diarrheal and respiratory diseases; (b) to train the health functionaries about how to recognize and treat these disorders, and to judge which patients would need referral to higher levels of health services; (c) to create facilities for secondary level care to referred cases; and (d) to provide drugs, oral rehydration salts (ORS) and other supportive measures.

All children, preferably at the age of under one year must be immunized against tuberculosis, poliomyelitis, diphtheria, tetanus, whooping cough, and measles (where feasible).

Family Planning

Problems **-** Even though India was the first country in the world to take up family planning as an official programme in 1952, achievements over the past 33 years have not been as good as would be desirable. Currently, the crude birth rate is around 33 per 1000 population. For reducing the birth rate to 21 per 1000 population and to achieve a net reproduction rate (NRR) of unity by 2000 A.D., 60 per cent of the eligible couples in the reproductive age are to be effectively protected through contraceptive practice. It is estimated that about 32 per cent of the couples in the reproductive age group have been protected by contraceptive measures. Out of this nearly 27 per cent have been protected by sterilization alone, and only 5 per cent have been using spacing methods. More than 80 per cent of the acceptors of sterilization had three or more living children. Obviously, we may not expect the desired demographic gain from such contraceptive measures.

Remedial Measures - Now more concentrated attention has to be given to younger couples with low parity - *i.e.* the newly married couples, and one-child and two-child families for contraceptive protection with spacing methods.

The acceptance and continued use of contraceptives are influenced by several factors such as the character of the method including its advantages and

disadvantages; individual and social acceptability; provider's knowledge, skill and attitude; effective communication, motivation, and counseling; the nature and quality of delivery services including supply logistics and follow-up care; and the cost.

Small family norm has to become a way of life; for this purpose, organization of population education in the schools and colleges, for the out of school youths and in adult education programmes would be most vital.

For creating favorable atmosphere conducive to adoption of small family norm, and acceptance and practice of effective contraception, the following means may be adopted:

a. for educating the community, the family and the individual couples, systematic and coordinated use of mass media, group orientation and inter-personal communication would be important. The goal of the family welfare workers would be to: (i) supply necessary information for education and motivation; (ii) assist the client to evaluate contraceptive information and services, and to make an informed choice and decisions about these; and (iii) to encourage them for continued contraceptive use;

b. the health personnel should be properly trained with a view to strengthen their knowledge and skills in properly educating and motivating the prospective users, and to develop in themselves a proper attitude and faith in the programme;

c. the service agency should be properly geared for effective implementation, monitoring and evaluation of contraceptive services, and the logistics for procurement and supply should ensure continued regular supply of contraceptive;

d. effective delivery of contraceptive services at the door-steps of the people is considered to be an important measure for promotion of small family norm;

e. for promoting acceptance of family planning the infant mortality rate has to be brought down speedily and the chances of child survival have to be substantially improved;

f. enforcement of universal primary education and prevention of drop-outs would be an important step towards acceptance of small family norm; special attention needs to be given to the girls and women;

g. studies have shown that optimum age of the mothers for reproductive outcome is between twenties. Therefore, enforcement of the law on the minimum age of marriage as well as counseling the women not to bear any

child before the age of 20 would be an important strategy; and

h. since women have been found to be important instruments for social change, raising the social status of women and involving them in various welfare activities including family planning would be important.

Immunization against Major Infectious Diseases

Immunization of the children and pregnant mothers has already been referred to earlier. India has a long history of vaccination programmes. In the sixties vaccination against smallpox and tuberculosis was started, and in mid-seventies vaccination against diphtheria, pertussis and tetanus was taken up. Polio vaccination was initiated in 1980 and, in a limited scale, the measles vaccination in 1985. Presently, the package of immunization services for infants includes vaccination against tuberculosis, diphtheria, pertussis, tetanus, poliomyelitis and measles. Expectant mothers are to be given two doses or one booster dose of tetanus toxoid. In some endemic areas immunization against cholera and typhoid has also to be considered.

The immunization schedule presently being followed in the country is given below:

Beneficiaries	Age	Vaccine	Doses
Pregnant women	16-26 weeks	TT	2*
Infants	3-12 months	DPT	3
		Polio	3
		BCG	1
	9-15 months	Measles	1
	18-24 months	DPT	1
		Polio	1
Children	5-6 years	DT	1**
		Typhoid	2
	10 years	TT	1**
		Typhoid	1**
	16 years	TT	1**
		Typhoid	1**

* One booster only if vaccinated previously.
** Two doses if not vaccinated previously.

According to the new initiative on Universal Immunization by 1990, which has been dedicated to the memory of late Mrs. Indira Gandhi, it is planned to immunize 85 per cent infants and expectant mothers against six vaccine-preventable diseases by the year 1990. For achieving these goals, it is estimated that approximately 22 million infants and 24 million expectant mothers are to be covered annually. Presently the coverage is not adequate and some of the major states are lagging far behind. Furthermore, even among those who are being contacted there are dropouts and a significant proportions of them do not complete the multi-dose schedules.

For successful immunization programme regular supply and proper storage of vaccines with effective maintenance of cold chains for preservation of the potency of the vaccines must be ensured. Considerable amount of ingenuity and innovative approaches may be required for adopting appropriate logistics and supply management considering the locally prevailing conditions. For expanding the coverage as well as foe preventing the dropouts, there is an urgent need for properly educating the people and particularly the mothers, and motivating active community involvement and participation.

For the organization of appropriate educational activities as well as for providing services and follow-up support and care, the help and cooperation of other sectors such as Education, Social and Women's Welfare, Panchayat and Voluntary Organizations would be very valuable.

Prevention and Control of Locally Endemic Diseases

Although the prevalence of endemic diseases will vary from one region to another, some of the important ones are: tuberculosis, malaria, leprosy, filaria, scabies, guinea-worm infestation, rabies, iodine deficiency goitre etc. People are to be educated for their early diagnosis and treatment health functionaries are to be trained for early detection and the services and follow-up care are to be organized.

The Government has launched various national programmes for the control or eradication of these endemic disorders, A few of these are elaborated below

Leprosy eradication programme - Leprosy is a major public health as well as social problem in India. It is estimated that in India there are about 4 million cases of leprosy, out of estimated 12 million cases spread over 70 countries of the world. This disease continues to be associated with high degree of ignorance, prejudice and social stigma leading to ostracization of the victims within the community. Leprosy is prevalent in all the States and Union Territories in the country, with the States of Andhra Pradesh, Tamil Nadu, Orissa, Maharashtra and West Bengal having high endemicity contributing about 60 per cent of the total case load.

The Government of India have accorded due priority to the problem of leprosy and it has been included in the new 20-point proaramme of the Prime Minister. The strategy for eradication programme includes. va) early detection and regular treatment of cases at home; (b) patient care in hospitals and rehabilitation of deformed patients wherever necessary; (c) health education of patients and their families and the community; (d) early detection, prompt, regular and complete treatment, and acceptance of leprosy like any other communicable diseases; (e) removal of ignorance, social stigma and superstitions; and (f) training of personnel working in the programme.

Tuberculosis control programme - Tuberculosis is a major public health problem in India. Except for a national sample survey conducted by the ICMR during 1955-58, no other survey has been undertaken till today. However, it is estimated that at present nearly 10 million persons are suffering from active tuberculosis of the lungs, of which about 2.5 million are sputum positive. It is further estimated that 40 per cent of the total population is infected with T.B. bacilli, though they may be apparently healthy. Earlier it was estimated that mortality rates for T.B. infection was about 80 per 100,000 population. As per results of a recent study it seems that the mortality rates have come down to about 53 per 100,000 population.

National T.B. Control Programme has been in operation since 1962 and it has established T.B. Centres in every district to organize T.B. programme inassociation with all existing medical and health institutions. The main aim of the programme has been: (a) to detect as large number of patients suffering from T.B. as possible, (b) to treat them effectively to reduce suffering, disability and death from this infection, and (c) the District T.B. Centers to serve as nodal centres for case finding and treatment activity.

Programme for control of blindness - According to a survey undertaken by ICMR (1971 -73), India has about 9 million blinds and another 45 million people who suffer from visual impairment. Roughly 8 out of 100 persons need some form of eye care. National Programme for Control of Blindness was launched throughout the country by the Government of India in 1976 with the object of reducing the prevalence of blindness from 1.4 to 0.5 per cent by the year 2000 A.D. The aim of the programme is to provide immediate relief to the needy by camp approach and establishing permanent eye care facilities with graded expertise of different levels, coupied with health education measures. Each PHC and district hospital is to be provided with one Ophthalmic Assistant each. About 37 Trained Schools have been established throughout the country for training the Ophthalmic Assistants.

Malaria eradication programme - Modified plan of operation for National Malaria Eradication Programme was launched in 1977 with the object to reduce the morbidity and mortality due to .malaria and to maintain the achievements gained during the eradication era. For achieving these objectives the following activities are organized: (a) insecticidal spray in areas recording two cases per 1000 population

per year; (b) fortnightly surveillance of fever cases - including examination **of** blood smears, administration of presumptive treatment to fever cases and radical treatment to positive cases; (c) public cooperation for opening fever treatment **and** drug distribution centers; and **(d)** research for strengthening malaria eradication programme.

For success in these activities, cooperation of different sectors **such** as Education, Social and Women's Welfare, Animal Husbandry, Panchayat and VoluntaryOrganisationsJndustry and business houses should **be** ensured.

Other diseases control programmes - In addition to the above there are programmes for the prevention and control of other endemic diseases, such as goitre, diarrhoeal diseases and guinea-worm infestation.

Appropriate Treatment of Common Diseases and Injuries

Treatment of minor ailments and first-aids may be given at village level. Treatment of common diseases and injuries are to be provided at the sub-centers and PHCs, and appropriate referral services are to be organized. People need to be educated about the availability of local remedies and other facilities to meet these needs. Other sectors such as Education, Social and Women's Welfare, Panchayat, Voluntary Organizations can play an important role in educating the people and school teachers etc. and in organizing of resources.

Provision of Essential Drugs

For local health care and treatment of common diseases and disorders, at least 20 drugs should be available within one hour's walk and travel. Utilizing locally available remedies and using indigenous system of medicines should be considered. Considering the financial constraints from Government sources, community's participation through cooperative funding etc. may be explored.

SUPPORTIVE ACTIVITIES RQUIRED FOR THE SUCCESS OF PRIMARY HEALTH CARE

The WHO has identified a number of supportive activities essential for successful implementation of primary health care which are enumerated below:

1. Community involvement and participation.
2. Intra- and inter-sect oral coordination.
3. Development of effective referral support.
4. Development and mobilization of resources.
5. Involvement of managerial processes.
6. Health manpower development.

7. Medical and Heaitn Services Research including innovative approaches.
8. Development and application of appropriate technology.

Community Involvement and Participation

For the success of primary health care, community involvement and participation will be most vital. So far meaningful community participation in various programmes has been largely lacking, except in certain parts of the country where village panchayats and voluntary agencies have taken some interest.

Ideally, true participation means that the people should be knowledgeable about their health problems; they should identify the needs, draw out plan of action according to the priority, and the resources available, organize and implement programmes, monitor and control the progress, and periodically evaluate and do the reprogramming. Initially, there may be passive involvement which has to be gradually and progressively made more active participation. Some of the recent developments would be conducive to increasingly greater participation of the community in the health care programme. The Health Guides and the trained Dais are local people. With the activation of the village health committees, mahila mandals, youth clubs etc., it should be possible to get greater active participation of the community. The community should be able to mobilise resources and gradually try to become self-reliant in matters of health and family welfare in a spirit of self-development. Health and family welfare personnel working within the community have to develop credibility among the people and act as catalytic agents. Although in the primary health care approach emphasis has to be given to preventive and promotive aspects of health care, curative services which are the felt-need of the community are to be provided satisfactorily and this will serve as an entry point for establishing credibility of health personnel.

Some of the advantages of community participation which may be emphasised are as follows:

a. Experiences have clearly demonstrated that community participation can significantly contribute to bringing about general developments and to health development in particular.

b. It increases the understanding of the users - perspective in the management of health. It also renders the services more accessible and acceptable to the people.

c. It promotes and strengthens self-reliance in matters of delivery of health services. Participation also develops a sense of responsibility for the health care programme.

d. It can also bring down the cost of the health care, as the indigenous knowledge and local resources are utilized by the community.

e. For the preventive and promotive aspects of primary health care, the people in the community have to play the main role.

f. It is important to recognize that the integration and coordination of different sectoral activities necessary for making adequate and sustained impact on health, can be brought about only at the community level and through community actions and organization.

Intra-Sectoral Coordination

Within the health sector, besides the national health system, a number of nongovernmental agencies are functioning and catering to the health needs of a large proportion of the population. These agencies include voluntary organizations, nongovernmental organizations, professional bodies, private praotitioners of modern medicine and indigenous system of medicine, many university departments and specialized institutions (Table 2). Studies have shown that in some rural areas as much as 60-70 per cent of the health care is being provided by such nongovernmental agencies. Unfortunately, no systematic efforts have been made for establishing proper linkages and coordination with these non-governmental agencies. There is an urgent need to evolve processes for effectively linking their efforts and activities in the national health care delivery system for ensuring coverage of all sections of the population through primary health care.

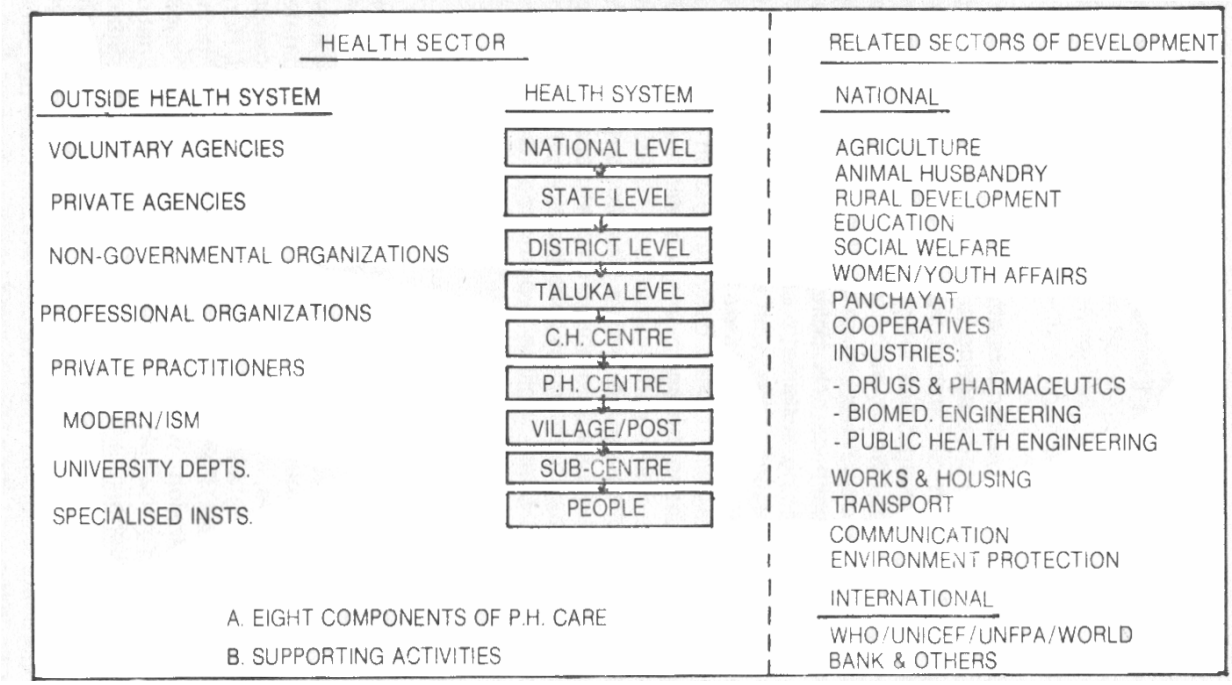
Even within the existing health system itself, there is a great scope for integrated and coordinated efforts. In many situations it is observed that separate vertical programmes are in operation without establishing any linkage among themselves. In some places, even the health and family welfare programmes are being run independently without any integration.

Inter-Sectoral Coordination

Health and family welfare programme cannot stand on its own in an isolated manner. The activities of other developmental sectors directly as well as indirectly influence health development. Therefore, primary health care has to become a part of the overall socio-economic development process, and it demands coordinated efforts of all sectors such as Agriculture. Irrigation, Animal Husbandry, Education. Social and Women's Welfare, Housing and Public Works, Communication, Rural Development, Cooperatives, Industries, Panchayats and Voluntary Organizations, etc. (Table 2). At present, extension workers and functionaries of these sectors/departments are operating in the field without any linkages or coordination among themselves. While some mechanisms for coordination at the Central, States and District levels are to be developed, functional linkages and coordination in the activities of the workers/functionaries of all these sectors at the grassroots level should be possible. Arrangements should be made for their working in the periphery as a team, each member knowing who is doing what and for what purpose, so that programmes could be implemented in a more complimentary manner avoiding

TABLE 2

HEALTH DEVELOPMENT NETWORK IN INDIA INTRA-SECTORAL AND INTER-SECTORAL LINKAGES **AND COORDINATION**



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Intra-Sectoral Linkages and Coordination - In the country we have at present a reasonably well developed health system infrastructure. However, within the health sector a number of nongovernmental agencies are functioning and catering to the health needs of a large proportion of the population unfortunately, no systematic efforts have been made for establishing proper linkages and coordination with these non-governmental agencies. Even within the existing health system, there is a scope for more integrated and coordinated efforts.

Inter-Sectoral Linkages and Coordination - Health development is influenced directly as well as indirectly by the activities of other developmental sectors. Therefore, the primary health care has to become a part of overall socio-economic development process and its success depends upon establishing proper linkages with and coordinated efforts of all sectors.

unnecessary duplication of efforts. Some suggested outlines of the activities of different sectors are given below.

Agriculture, irrigation and engineering **-** These workers can help in the following:

a. growing more food locally - cereals, pulses, oil seeds, vegetables, fruits etc.;

b. identifying water resources for drinking and other purposes;

c. providing seeds for kitchen garden and community garden;

d. educating the people for composting;

e. their extension workers could also educate people on health problems and
about health and family planning practices.

Animal Husbandry - The workers of this department could help in:

a. developing poultry farms, procuring milking cows/buffalos etc.;

b. immunizing domestic animals and catties against rabies etc.;

c. preventing zoonotic diseases;

d. promoting health education.

Cooperatives and Banks - These can provide funds for:

a. making farms for poultry, fisheries, milk, vegetables, fruits etc.;

b. community composting, soak pits, community gardens etc.;

c. drug procurement and supply;

d. health insurance.

Education - Workers of this department can help through school and college education and adult education programmes in the following:

a. health education covering nutrition, use of safe water, personal hygiene and environmental sanitation;

b. education about various health problems in the community and their prevention and control;

c. early diagnosis of tuberculosis, leprosy, malaria, scabies, visual and physical handicaps etc.;

d. immunization against communicable diseases and the advantages thereof;

e. disposal of waste water and excreta, by making soakage pits and composting etc.;

f. population education, advantages of small family etc.;

g. providing first-aid and treatment of minor ailments and the knowledge of
local health resources.

Social and Women's Welfare - The workers of this department can help in:

a. mobilizing women, mahila mandals, mother's club etc. for propagation of
health, nutrition practices, special nutrition programmes for vulnerable groups, maintenance and use of water resources; proper disposal of excreta, composting, kitchen garden etc.

b. educating mothers on maternal and child care; and

c. spreading the knowledge about the communicable diseases and their prevention and control, treatment of minor ailments and the use of available
health care facilities.

Panchayats - These can play a very important role in providing funds and giving organizational, administrative and other support for:

a. nutrition programme, kitchen and community gardens, water supply, community latrines, waste disposal, composting, soakage pits etc.;

b. providing building for health posts, creches, sub-centres etc. for MCH&FP activities;

c. opinion building, motivation, decision-making through peer pressure;

d. propagating messages on health problems and practices, family planning etc. through group meetings, circulars, posters etc.;

e. procurement and supply of essential drugs; and

a. mobilizing transport and other support for referral services.

Communication - This department has a very important role in organizing

information, communication and education activities for motivating people for adopting positive health practices and small family norms.

Rural Development **-** This department can play a role in various ways such as:

a. environmental sanitation;

b. development of rural communication;

c. developing income generating schemes for poverty elimination; and

d. others.

Development of Effective Referral Support

For the success of primary health care one of the essential requisites will be development of proper referral support at secondary and tertiary levels. This has to be built in a systematic manner. Adequate two-way referral support is to be provided. For this a system needs to be devised linking various relevant institutions, starting from individuals and simplest of health institutions in small communities and continuing through increasingly complex institutions along the health system chain. Particular attention has to be given to those institutions which provide direct support to primary health care. For organizing a proper and effective referral system, it would be useful to review the functions, staffing plan, design, available equipment etc. and the organization and management of health centers and district hospitals, in order to prepare these for their wider function in support of primary health care.

Presently, there are various problems which need to be sorted out:

a. people and the community are often not satisfied with the services being
provided at the primary and secondary contact levels;

b. they are bypassing the local facilities causing overcrowding at referral centers/urban centers, as a result of which the quality of care at referral hospitals is suffering;

c. there is lack of physical facilities, back-up support and supervision; lack of mobility of health personnel; lack of communication and transport for emergency cases; lack of effective logistic and supply system; lack of flexibility etc.;

d. low priority is given to the referred cases by the consultants of the urban/referral centers; and

e. lack of proper resources in terms of health manpower, finances and equipment.

For developing an effective system for referral care, the following issues need careful attention:

a. establishing network of institutions
b. developing appropriate record system
c. identification of referred cases
d. transportation of patients
e. building teams and movement of specialists
f. providing support for services
g. Involvement of private practitioners and voluntary agencies.

Development and Mobilization of Resources

For obtaining relatively larger investments in health development programmes from the public resources, strong political commitments are necessary. It is often noted that due to lack of knowledge and persistent efforts, available funds for many development projects remain unutilized. Furthermore, from the community itself substantial financial and human resources can be mobilized; some of these, such as the enthusiasm and the energy of the youth and the women for community action, may otherwise remain unused.

Communities with institutional structures, such as local body or council, a cooperative etc. can mobilize resources for community purpose more easily than those relying on individual and voluntary contributions. In some voluntary projects, small regular contributions by rural families have served as a kind of 'group insurance schemes' and have substantially covered the cost of primary health care in the community. Such an approach may bring out a radical improvement in the quality and coverage of health care among the rural people.

Involvement of Managerial Processes

Management is a process for purposeful and effective utilization of resources -manpower, material and money, for accomplishing a pre-determined objective. The managerial processes involve the the following steps:

(a) Situational analysis; (b) Policy formulation; (c) Setting goals/objectives/ targets; (d) Framing of strategy; (e) Making Plan of Action; (f) Broad, programming; (g) Budgeting; (h) Detailed programming; (i) Implementation-organization of resources; and initiation and directing of activities; (j) Monitoring and control; (k) Evaluation and feedback; and (I) Reprogramming. Proper information support is needed for all these steps.

In the organization and development of national health care delivery system, the application of different components of the above mentioned managerial-processes will vary with different categories of personnel working at different levels. Functioning at different levels would also require blending of varying degrees

managerial and technical skills. The higher the level in the organization the greater is the need for managerial function and lesser the need for technical skill. Conversely, the lower the level in the organization, the lesser is the need for managerial function and higher the need for application of technical skill. However, even at the grassroots level development of well coordinated and systematic style of functioning by various categories of personnel would be very important for proper management of the programme. Furthermore, in participatory management the principles and different components of managerial processes should be well understood by all concerned.

It is being increasingly realized that management training alone for the health personnel may not be sufficient for achieving the objectives. What is needed is management development. According to this concept besides improving the managerial capabilities of the manager, management practices and culture of the organization or the system are also to be changed and improved.

Health Manpower Development

Vigorous action is to be taken to ensure availability of adequate numbers of appropriate health personnel required to devise and implement the plans of action. This would require reorientation of the existing health workers, development of new categories of workers in health and related sectors, and motivation and training of all manpower to serve the community. For social orientation of all categories of health workers to serve the people as well as to improve their technical skill, the cooperation of the Ministry of Education and of all educational and training institutions has to be ensured. This may need reform of educational curriculum and programme.

While dealing with manpower, the useful role of the traditional medical practitioners, the birth attendants, and even the family members needs to be considered. The last category assumes importance particularly from the point of self-care as a part of primary health care ***i.e.*** taking of responsibility by the individuals and families for their own health care.

Obviously, keeping in view the above considerations three main types of approaches are to be made;

a. pre-service and in-service training of the newly recruited and existing health
and family welfare personnel as a part of continuing education;

b. appropriate basic professional training of medical, nursing and other paramedical personnel in future; keeping in view the contemporary needs
reform of educational curriculum may be warranted.

b. development of new categories of workers, as exemplified by the health guides, community health workers etc.

Continuing education provides means of equipping workers to perform competently in their current and future jobs with the object of increasing the efficiency of the individual as well as the organization. It is the planned provision for systematic learning in the job, and is an essential element for personal and organizational development. An important factor for achieving Health for All by 2000 AD would be the ability of the individual and the organization to recognize and respond to changes in advancing technology for health maintenance and promotion, new pattern of diseases, disabilities etc., new social policies, expectations and programmes for better health services.

New competencies are to be developed at different levels to be able to observe, analyze, interpret realistically and react intelligently to human behavior, events and environments, be able to effectively perform as a member of the team, and to address to the priority community problems and concerns; and to develop proper attitude for continuous learning. The concept of life-long education is being increasingly accepted as an indispensable supplement to basic education. Although in the country there exist some programmes of continuing education, these are piecemeal, largely ineffective and sometimes inappropriate.

For maintaining high level of competence and performance and to strengthen national will to achieve Health for All by 2000 AD through primary health care, development of adequate systems for continuing education and to integrate it with 'supervision' at all levels would be most vital for proper Health Manpower Development. Such education or systems should be based on identified real community problems and needs; the task to be performed; the methods, techniques and equipment to be used; and continuing education should be provided to all health workers and their supervisors. The responsibility of providing competency-based continuing education should be shared by the individuals, the health care system, the educational institutions/system and the professional bodies.

Medical and Health Services Research

A network of comprehensive health care system based on primary health care approach and integrating preventive, promotive, curative and rehabilitative aspects is to be developed covering all sections of the population. Although there are some micro level experiences of successful implementation of all the components and principles of primary health care approach, these have not been developed systematically within the health system and not been extended to larger areas of districts or state level. There is a need for evolving, through appropriate operations research programmes, replicable and viable models that could be adapted in the health system in an incremental fashion.

The health services infrastructure has been and is being expanded and manpower is being deployed on arbitrary basis. There is an urgent need for undertaking systematic works study at different levels such as sub-centre, primary health centre, community health centre etc. for evolving a more rational basis for determining job functions, staffing patterns etc.

Many of the existing programmes under the health services are not progressing properly. There is a need for systematic evaluation of these programmes with the object of improving the existing model or developing suitable alternatives, wherever needed. In fact, health services research should play an important role in the process of planning, implementation, monitoring and control, and evaluation and feedback, with the object of strengthening primary health care.

Development and Application of Appropriate Technology for Health

While formulating the strategies and programmes and designing the services, it would be helpful to review the existing technologies and identifying those that are appropriate; and to indicate and promote the type of research required to develop alternatives to replace inappropriate technologies, in this endeavour, it would be useful to promote participation of the government departments, research and academic institutions, the industry and the non-governmental organizations both in health and health related sectors.

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भारत वर्ष में यद्यपि स्वास्थ्य विकास तथा प्राथमिक स्वास्थ्य देखरेख की अवधारणाओं प्राचीन काल से प्रचलित हैं, किन्तु पूर्वकाल में इस क्षेत्र में जो कुछ उपलब्धियां हुई थी उस समय के साथ–साथ अनेक कारणों से छिन्न–छिन्न सेवाएं उपलब्ध कराने का विचार भोर समिति (1946) द्वारा अपनी सिफारिशों में प्रस्तुत किया गया था। स्वतन्त्रता प्राप्ति से लेकर अब तक देश की स्वास्थ्य सेवाओं के अवसंरचनात्मक ढांचे में काफी बड़ी मात्रा में विस्तार किया जा चुका है तथा स्वास्थ्य के विभिन्न मानदण्डों (पैरामीटरस) में काफी हद तक सुधार हो चुका है फिर भी 2000 ईसवी तक सभी को स्वास्थ्य सेवायें उपलब्ध कराने संबंधी लक्ष्य को पूरा करने के लिए (जिसके लिए हमारा देश प्रतिबद्ध है) स्वास्थ्य क्षेत्र तथा इसके साथ–साथ स्वास्थ्य से संबंधित अन्य सामाजिक एवं आर्थिक विकास के क्षेत्रों में और अधिक बेहतर तथा समन्वित प्रयासों की आवश्यकता होगी।

इस लेख में' सभी के लिए स्वास्थ्य ' लक्ष्य के विकास संबंधी मूलभूत सिद्धान्तों, प्राथमिक स्वास्थ्य देखरेख की अवधारणा तथा इसके आवश्यक पहलुओं और इस कार्यक्रम के सफल क्रियान्वयन के लिए अपेक्षित समर्थक–गतिविधियों आदि पर प्रकाश डाला गया है। देश में उपलब्ध इन सेवाओं के प्रत्येक पहलुओं की वर्तमान स्थिति की समीक्षा की गई है तथा वर्तमान समस्याओं के समाधान के उपाय सुझाये गये हैं। इस बात को अत्याधिक आवश्यकता महसूस की गई है कि स्वास्थ्य क्षेत्र तथा इससे सम्बद्ध अन्य सामाजिक–आर्थिक क्षेत्रों में कार्यरत विभिन्न वर्ग के लोगों को इन लक्ष्यों को पूरा करने की दिशा में उन्हें सामाजिक प्रतिबद्धताओं से अवगत कराया जाये तथा उन्हें इस दिशा में प्रेरित किया जाये।

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INFANT AND CHILDHOOD MORTALITY IN KARNATAKA: LEVELS, TRENDS AND DIFFERENTIALS ASSESSED THROUGH INDIRECT TECHNIQUES

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ABSTRACT

An attempt has been made in this paper to assess the levels, trends and differentials in infant and childhood mortality by analyzing different surveys conducted from time to time in Karnataka. It is observed that infant mortality rate (IMR) for the State of Karnataka was around 200 per 1000 live births before 1950. The estimate of IMR from 1972 Fertility Survey of India is around 128 for rural and 83 for urban area. The analysis of 1981 census data gives us the estimate of IMR as 95 for rural area and 59 for urban area.

It was observed that infant and childhood mortality in Karnataka has not declined substantially till late 1940s but after 1950, it has been quite substantial. Now for mortality decline with same pace, the government has to put additional infrastructure to cover up remote villages and also under-privileged people in urban area.

The IMR for male from 1981 census data is higher than female irrespective of area. The mortality differentials beyond infancy is not very clear. The analysis of 1981 census data by religion shows that infant and childhood mortality is higher for Hindus followed by Christians and Muslims. The lower child mortality among Muslims cannot be explained but it is observed at all India level also.

Infant and childhood mortality may be considered as the most sensitive indicator of not only a nation's socio-economic development but also of the public health services. The reduction in mortality, especially infant mortality, is one of the universally accepted goals of development. It is, in fact, this vulnerable section of the population which contributes maximum to the general mortality and is also subject to rapid change whenever there is an improvement in public health services as well

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as in economic capacity of parents to pay for medical care. International and national organizations emphasise the need for reducing infant and childhood mortality in order to promote small family norm. Infant mortality may be considered as an important determinant of fertility and the reduction of infant mortality up to a certain level may be a pre-condition for accelerating fertility decline. For all major States in India, it is found that the regulators of fertility invariably have high survival probability compared to non-regulators. It is advocated that at early stage of demographic transition, child survival is the main factor for accepting family planning programmes'. Another study shows that in a State where family planning programme is successful, acceptors have lost less number of children before accepting any method compared to poor performing States2.

In view of the direct relation between levels of infant and childhood mortality and success of population control programme, it is essential to study improvement in mortality over a period of time at district level. But, at district level we have data from civil registration which is far from its completeness. Due to lack of data we restrict our analysis to State level. At State level, we have information from sample registration system for the recent period and also from surveys namely Mysore Population Study, Fertility Survey of India, Bangalore Population Study, etc.3,4,5. These surveys provide children ever born and children surviving data. Applying Brass type techniques to such data, an attempt is made to study infant and childhood mortality right from 19506,7,8. Earlier to 1950, some estimate would be provided to understand the extent of mortality decline in Karnataka. The information from 1981 census is used to examine the recent levels, trends and differentials by residence rural/urban, sex and religion. This study consists of following sections:

a. Sources of data and their limitations.

b. Levels and trends in Infant and Childhood Mortality (x o).

c. Differentials in Infant and Childhood Mortality (x o).

d. Summary and Conclusions.

SOURCES OF DATA AND THEIR LIMITATIONS

For this study, the data is mainly taken from the following sources:

a. Mysore Population Study (U.N. 1961)

b. Fertility Survey of India (R.G.I. 1976)

c. Bangalore Population Study (Srinivasan ef *al.* 1977)

d. Census of India, 1981 (Karnataka, 1984)

The main problem in the application of Brass type techniques to estimate infant and childhood mortality to the data from Mysore Population Study and Bangalore Population Study is that the children ever born and children surviving data are not available in 5 year-age groups. In such case P_1 / P_2 or P_3 (where P_1, P_2 and P_3 are average children ever born per woman in age groups 15-19, 20-24, 25-29 respectively) cannot be calculated. In the absence of such data from these two studies, we have used f_1 f_2 ratio of age specific fertility rate of 15-19 to 20-24) which is calculated after converting age-specific marital fertility rate to age-specific fertility rate9. Mention may be made that only Brass procedure can be applied whren data are available in 10 year-age groups.

Fertility Survey of India has published average number of children ever born and children surviving data for ever married women4. The average children ever born per ever married woman are converted into average children ever born per woman by using marital age distribution from 1971 census. Due to difference in marital age distribution of 1971 census and fertility survey, the converted children ever born would be affected which inturn effect P_1 /P_2 and P_2/P_3**.** Such an error will have more effect on estimates of infant and childhood mortality obtained from Trussell or Sullivan methods compared to estimates from Brass procedure.

The data from 1981 census are as required. However, mention may be made that the estimates of x% obtained from Brass type procedures will be distorted due to poor quality of data. These estimates, wherever required are smoothed using Weibull function[10,11,12]"

LEVELS AND TRENDS IN INFANT AND CHILDHOOD MORTALITY

Before we discuss the results presented in Table 1, it may be mentioned that the estimates of infant and childhood mortality obtained using Brass procedure are smoothed with Weibull function except for 19819. Further, it may be mentioned that the estimates for 1981 are obtained using Trussell procedure. For studying levels and trends, it may not make significant difference because the estimates through Brass and Trussell are quite close to each other.

It may be noted from Table 1 that, infant mortality rate (IMR) in early 1950s for four regions of Karnataka is above 200 per 1000 live births. This seems to be slightly high, specially for urban area. Nevertheless, this indicates that the IMR for Karnataka would have been around 200 before 1950. This may be justified by comparing these estimates with other estimates available for the period before 1950. The estimates through regression lines given by the authors of other studies13,9 are presented in Table 2. It may be observed that some cities like Bangalore, K.G.F. and Mysore experienced very high mortality till 1940. The estimates of IMR for Karnataka during 1941-50 come out to be well above 180 indicating higher infant and childhood mortality till late 1940s in Karnataka.

After 1952, we have estimates of infant and childhood mortality from 1972 Fertility Survey of India. The estimates of IMR from this survey come out to be 118 for Karnataka which is slightly higher than that obtained from SRS (IMR 103). For 1975, however, we have estimates for four zones in Karnataka; though not strictly comparable with the area included in 1952 survey. The IMR for this period varies from 70 for rural hill to 146 for towns. The reasons for high mortality in towns are not known. The weight age average of IMR for four zones is observed to be around 112 which may be taken for Karnataka for 1975.

The estimate of IMR from 1981 census comes out to be 86 per 1000 live births. This estimate is substantially higher than that observed from SRS (IMR 71 in 1980), which shows that the completeness of death registration under SRS is around 93 per cent. It may not be wrong to say that the registration of infant deaths is poorer and comparatively less than registration of births. It may also be noticed that till 1978, IMR from SRS has been around 82 for Karnataka. Here, it is worthwhile to quote some findings of fertility survey conducted in three districts of Karnataka (W.B. 1963)16. This, survey gives IMR of 70 for 1975-78 but the estimates vary from lowest of 45 for Dakshina Kannada to 90 for Dharwad. The estimate for the third district Mandya, is given as 81. The last two districts may reflect the health condition in Karnataka more closely than Dakshina Kannada which is closer to Kerala. It means that the level of IMR in early 1980s may be above 80 and hence our estimate may not be for from true value.

For studying trends, the estimates of infant and childhood mortality are obtained from different sources covering different areas of Karnataka (Table 1 and Figure 2). Table 2 shows that there has been noticeable decline in mortality till late 1940s. However, the available data show that in some of the areas like Bangalore city, K.G.F. and Mysore city, IMR began to decline in late 1930s.

Figure 1 shows that in Karnataka substantial mortality decline took place after 1950. But after 1972, there has been noticeable decline in infant and childhood mortality (almost 32 units decline in 10 years, 1972-81). It may be seen from Figure 2 that during 1952-75, the decline in infant and childhood mortality is much faster in Bangalore city and rural-hill areas. The decline of 72 per cent in IMR for rural-hill is remarkable and may be attributed to the special health programmes started in this zone during late 1940s by the Government of Karnataka (then called Mysore). The analysis indicates that the decline in infant and childhood mortality has been very fast but not uniform over a period of time.

DIFFERENTIALS IN INFANT AND CHILDHOOD MORTALITY

It is generally observed that differentials in mortality always existed among and between national populations. The reduction or elimination of such differentials wherever possible is the main objective of the national governments. The mortality differentials in rural-urban, male-female and among different religious groups may

TABLE 1

ESTIMATES OF INFANT AND CHILDHOOD MORTALITY ($_xq_o$)
KARNATAKA

SOURCE	AGE OF CHILD IN YEARS					
	1	2	3	5	10	10-15
MYSORE POPULATION STUDY (1951-52)						
Rural - Hill Rural - Plain	0.2528	0.2732	0.2856	0.3021	0.3255	0.3397
Town	0.2116	0.2351	0.2499	0.2696	0.2982	0.3161
Bangalore City	0.2163	0.2371	0.2499	0.2670	0.2916	0.3069
	0.2240	0.2342	0.2403	0.2483	0.2593	0.2661
FERTILITY SURVEY (1972)						
Rural	0.1283	0.1375	0.1431	0.1505	0.1611	0.1676
Urban	0.0829	0.0963	0.1050	0.1171	0.1355	0.1475
Combined	0.1176	0.1271	0.1330	0.1407	0.1520	0.1589
BANGALORE POPULATION STUDY (1975)						
Rural - Hill	0.0699	0.0895	0.1032	0.1234	0.1565	0.1794
Rural - Plain	0.1415	0.1635	0.1777	0.1972	0.2266	0.2455
Town	0.1462	0.1606	0.1696	0.1816	0.1991	0.2099
Bangalore City	0.0719	0.0883	0.0995	0.1155	0.1411	0.1584
1981 CENSUS						
Rural	0.0946	0.1201	0.1347	0.1520	0.1673	0.1837
Urban	0.0589	0.0751	0.0877	0.1048	0.1218	0.1385
Combined	0.0859	0.1076	0.1214	0.1395	0.1552	0.1727

TABLE 2

ESTIMATES OF INFANT MORTALITY RATES, USING REGRESSION LINES*

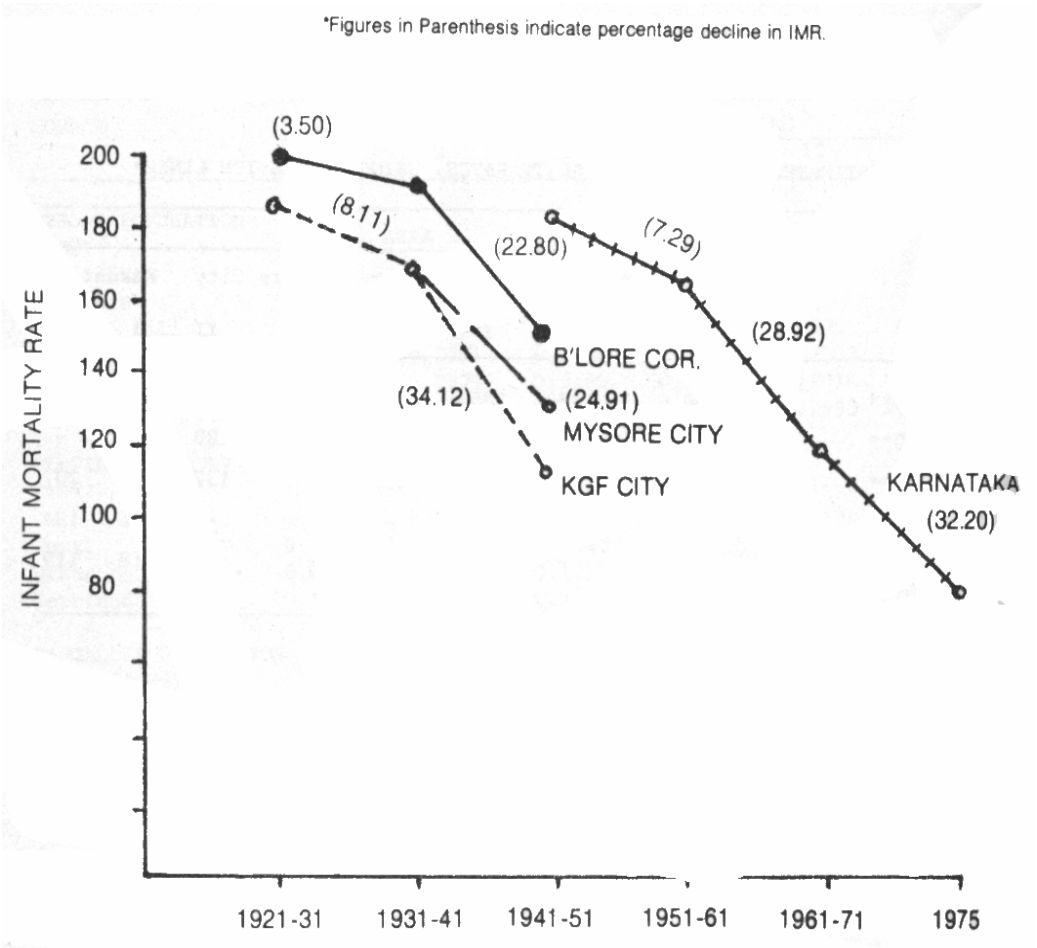
TIME	AREA							
	Bangalore City Corporation		K.G.F. City		Mysore City		Karnataka State	
	I	II	I	II	I	II	I	II
1921 -30**	200	230	185	210	185	210	-	-
1931 -40**	193	220	170	189	170	189	-	-
1941 -50**	149	161	112	115	128	132	183	207
1951 -60**	-	-	-	-	-		166	184
1961 -70**	-	-	-	-	-		118	119

* Regression Lines are:

I. IMR = 30.6620+6.0971 .* CDR

II. IMR = 1.6682+8.350 * CDR

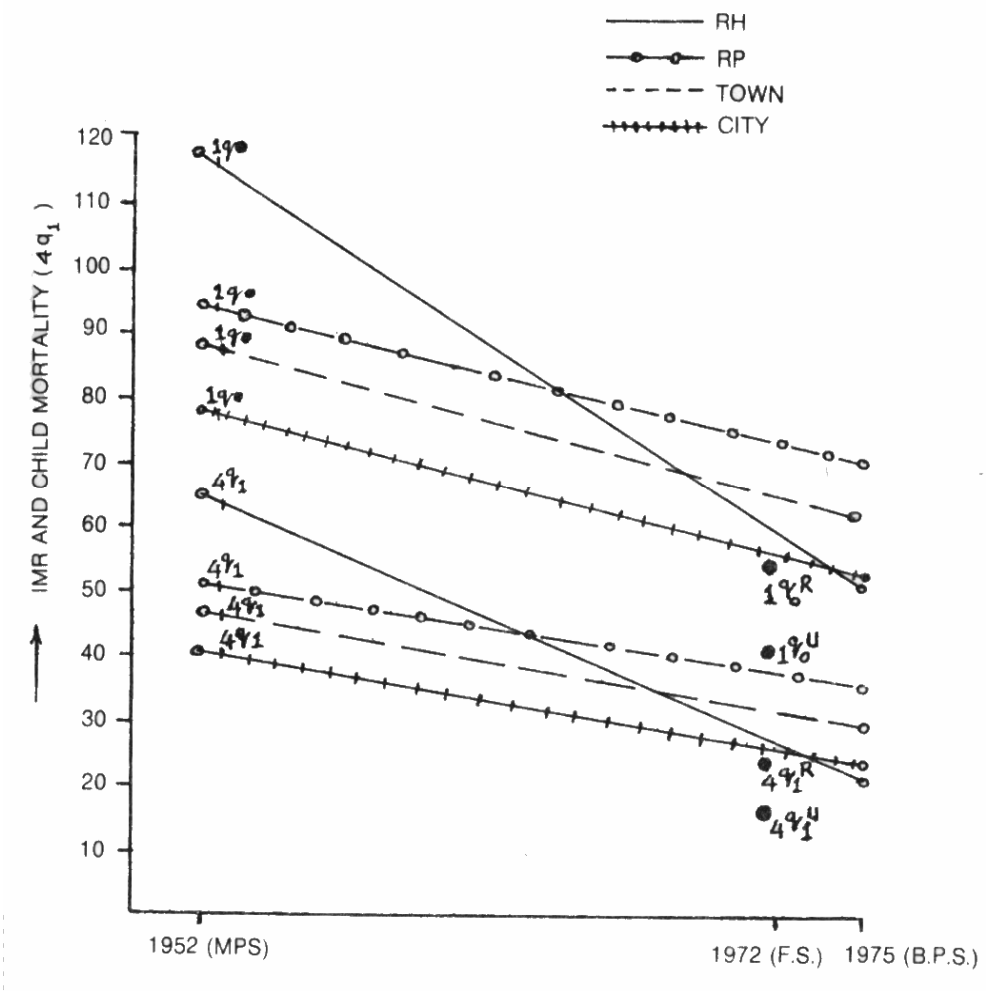
** Crude death rates (CDR) registered are taken from Census of India, Mysore, 1951, Vol. XIV. For Karnataka as a whole CDR is taken as estimated by Registrar General of India, Ministry of Home Affairs, New Delhi.



INTERCENSAL PERIOD

TRENDS IN INFANT MORTALITY RATE (PER 1000 LIVE BIRTHS) FOR DIFFERENT AREA AND KARNATAKA

FIGURE 1



TRENDS IN IMR AND CHILD MORTALITY

FIGURE 2

be mainly due to differences in socio-economic development. Rural-urban differential in mortality is more common than the other two, which may be mainly due to poor availability of public health services and its utilization.

In Karnataka, the regional differentials in infant and childhood mortality may be observed from Table 1 and 2. It may be seen from Table **1** that, in early 1950, there has not been significant differential in mortality but over a period of time, probably with the development, difference seems to have widened; indicating regional imbalances in the development of both economic as well as public health services. For 1972, the IMR for rural area is 128 whereas for urban area, it is around 83; a difference of about 45 units. The differences in childhood mortality is not that alarming. It certainly indicates the poor quality of delivery system in rural area. It may be because of higher female literacy rate in urban area and also aware of the availability of medicines. As a result, they will be less rigid in terms of tradition and also take better care of their children. It is further advocated that the "education of women greatly changes the traditional balance of familial relationships, with profound effects on child care14". It has has also been observed that "those without schooling no longer expect same adherence to traditional roles from the educated that they do from the illiterate."

According to 1981 estimates, the IMR for rural area is 95 whereas corresponding figure for urban area is 59; a difference of about 36 units. The level of IMR from SRS is 79 for rural and 45 for urban in 1980. It may be observed that the level of IMR from SRS is comparatively lower as expected but the difference remains about the same. In view of "Health for All by 2000", it may be anticipated that the level of mortality in these areas will converge.

The mortality differentials by sex and region are given in Table 3. The estimated IMR for female is comparatively lower than that of male; irrespective of the area. But the difference narrows down with the increase in age, though the same is not very

TABLE 3

ESTIMATES OF INFANT AND CHILDHOOD MORTALITY RATE (xqo) BY SEX, KARNATAKA, 1981

Age of Child	Rural		Urban		Combined	
	Male	Female	Male	Female	Male	Female
1	0.1012	0.0877	0.0674	0.0499	0.0929	0.0785
2	0.1258	0.1141	0.0764	0.0738	0.1119	0.1030
3	0.1378	0.1315	0.0883	0.0871	0.1237	0.1189
5	0.1529	0.1511	0.1097	0.0995	0.1414	0.1375
10	0.1649	0.1699	0.1249	0.1185	0.1542	0.1562
15	0.1806	0.1871	0.1379	0.1391	0.1702	0.1753

clear. The survey conducted by the R.G's office indicates that in both rural and urban areas, male mortality is higher by 32 per cent and 20 per cent respectively15. It means in rural area difference is higher compared to urban area. Contrary to the findings of this survey, most recent survey conducted in three districts of Karnataka (W.B. 1983) gives lower IMR for male (68 per 1000 live births) than that of female (73 per 1000 live births) for 1975-78 period'6. Infact, no differential is observed in childhood mortality (5 X)). The findings of 1981 census data, however, are similar to that of SRS survey. According to this, IMR for male seems to be higher by 13 per cent in rural area whereas in urban area, it is higher by almost 34 per cent. It may be noted that some of the observed differentials may be due to differential under reporting of children ever born and children surviving by sex in rural and urban area. Omission of female children may be higher in rural area. Nevertheless having such favorable condition in infancy, differentials by sex either becomes negligible or will be in favor of male at higher ages. It may be due to the fact that every male offspring is ardently desired which may lead to preferential treatment in all respects.

The estimates of infant and childhood mortality by religion and residence are presented in Table 4. It may be observed from this table that children among Hindus experience higher mortality than children among Muslims, irrespective of area; whether it is rural or urban. It may be noted that even the children among Christians experience higher mortality than that of Muslims. Authors do not have any relevant statistics to offer an explanation for such differentials even at all India level. Infant and childhood mortality in 1981 for Muslims is estimated to be lower than that of Hindus17. The estimate of IMR from SRS for Karnataka is higher for Muslims than that

TABLE 4

ESTIMATES OF INFANT AND CHILDHOOD MORTALITY RATE (x^qo) BY RELIGION, KARNATAKA, 1981

Religion	AGE OF CHILD IN YEARS					
	1	2	3	5	10	15
RURAL						
Hindu	0.0964	0.1214	0.1368	0.1535	0.1685	0.1841
Muslim	0.0723	0.1073	0.1155	0.1388	0.1603	0.1866
Christian	0.0742	0.1100	0.1094	0.1322	0.1178	0.1543
URBAN						
Hindu	0.0515	0.0795	0.0931	0.1084	0.1275	0.1406
Muslim	0.0486	0.0652	0.0750	0.0987	0.1094	0.1350
Christian	0.0581	0.0705	0.0797	0.0841	0.1004	0.1346
COMBINED						
Hindu	0.0899	0.1118	0.1266	0.1437	0.1595	0.1754
Muslim	0.0593	0.0836	0.0923	0.1171	0.1329	0.1600
Christian	0.0644	0.0859	0.0923	0.1068	0.1087	0.1451

of Hindus. The reversal differential with census data cannot be explained. The survey quoted earlier (W.B. 1983) provides no differentials by religion in IMR during 1975-78 but during 1970-74, this gives higher (though little) infant and childhood mortality for Hindus as compared to Muslims. However, the most vital point to be noted is that in Karnataka, male children among the Hindus experience much higher mortality than that of female children which is not true in case of Muslims and Christians.

SUMMARY AND CONCLUSIONS

The mortality differentials are studied with reference to residence, sex and religion mainly from 1981 census data. The analysis of 1981 census data gives us the estimate of IMR as 95 for rural area and 59 for urban leading to IMR of 86 for combined area which is slightly higher than that reported in SRS. The indirect estimates obtained through Brass type procedures has to be higher due to two main factors: (a) the mortality experienced by children of young mother aged 15-19; and (b) when mortality is declining, Brass type estimates corresponds to earlier period; not to survey or census period. So these estimates may be the upper limit of the level of IMR.

Infant and childhood mortality is observed to be much higher in rural area compared to urban area. It seems that in early 1950, there was not substantial difference in mortality by region but it widened over a period of time. It may, however, be expected that the level of mortality in two areas (rural and urban) would surely converge in future. The IMR in 1981 for male is higherthan female irrespective of the area. The mortality differential beyond infancy is not very clear.

The analysis of 1981 census data by religion shows that infant and child mortality is higher for Hindus followed by Christians and Muslims. The lower child mortality among Muslims cannot be explained but this pattern is found at all India level also. Sex differential mortality is not observed among Muslims and Christians. Whereas among Hindus, male children experience higher IMR as compared to female.

Lkkjk'k

प्रस्तुत लेख के माध्यम से कर्नाटक राज्य में समय–समय पर शिशु तथा बाल मृत्युदर के सम्बन्ध में किए गये सर्वेक्षणों का विश्लेषण करके मृत्युदर के स्तर, प्रवृति तथा विभेदक पक्षों का अनुमान लगाने का प्रयास किया गया है। यह देखा गया है कि कर्नाटक राज्य में 1940 से पहले शिशु मृत्युदर 200 प्रति हजार था। भारत में 1972 में किए गए जनन दर सर्वेक्षण के अनुमान के अनुसार ग्रामीण क्षेत्रों में शिशु मृत्यु दर 128 तथा शहरी क्षेत्रों में 83 प्रति हजार था। 1981 की जनगणना संबंधी आंकड़ों से ज्ञात होता है कि उस समय ग्रामीण क्षेत्रों में शिशु मृत्युदर 95 तथा शहरी क्षेत्रों में 59 प्रति हजार था।

यह देखा गया कि 1940 तक कर्नाटक राज्य में शिशु मृत्यु दर में कोई विशेष कमी नहीं आई थी, किन्तु 1950 के बाद शिशु मृत्युदर में महत्वपूर्ण कमी होने के लक्षण देखे गये थे। शिशु मृत्यु दर में इसी गति से कमी होती रहे, इसके लिए सरकार को अपने सेवा–ढांचे का विस्तार करना होगा ताकि दूर–दराज के गांवों में रहने वाली जनसंख्या तथा शहरी क्षेत्र की जनसंख्या के वह वर्ग भी इन सेवाओं के अन्तर्गत कवर किया जा सके जो अभी तक इनसे वंचित है।

1981 के जनगणना आंकड़ों के अनुसार, बिना किसी क्षेत्रीय भिन्नता के, पुर्लिंग–शिशु–मृत्यु दर, स्त्रीलिंग–शिशु–मृत्यु–दर की तुलना में अधिक था। जहां तक शैशवकाल के पश्चात होने वाले शिशु मृत्युदर संबंधी विभेदक घटकों का प्रश्न है इस बारे में स्थिति स्पश्ट नहीं है। शिशु तथा बाल मृत्यु दर से यह पता चलता है कि हिन्दुओं में शिशु–मृत्यु–दर सबसे अधिक था, जिसके पश्चात इस क्रम में क्रमशः ईसाई धर्म की जनसंख्या आती थी। मुस्लिम जनसंख्या में शिशु–मृत्यु–दर में कम होने के कारणों को स्पश्ट नहीं किया जा सकता है, किन्तु यह देखा गया था कि अखिल भारतीय स्तर पर भी यही प्रवृत्ति विद्यमान थी।

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COST OF MEDICAL CARE IN THE EMPLOYEES STATE INSURANCE SCHEME - A CASE STUDY OF DELHI

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ABSTRACT

Employees State Insurance Scheme is a premier social security scheme of India. The schome was put into operation with effect from February 24, 1952, following the enactment of the comprehensive ESI Act, 1948. Provision of the comprehensive medical care inter alia is the kingpin of the scheme. The Employees State Insurance Corporation (ESIC) has put a ceiling on expenditure on medical benefits per insured persons family unit per year. This amount of money is inadequate. This paper analyses the various components of comprehensive medical care vis-a-vis their cost and suggests a revised costing frame to the ESI Corporation.

The Employees State Insurance Corporation is popularly known as ESIC which came into being in 1948 under the authority of the Employees State Insurance Act, 1948, as amended from time to time. The Act, first implemented in 1952 covered non-seasonal factories employing 20 or more workers and using power. Only those persons, in such factories, who were drawing wages upto the maximum of Rs.400 per month were covered. This limit was raised to Rs.1000 per month in the early 1970s. It has been further raised to Rs.1,600 per month from January, 1985. The Act has also been amended to cover other sectors of employment, for example, Factories with 20 or more persons, but not using power, Factories with 10 to 19 persons using power, Shops, Hotels, Restaurants, Cinemas, Motor Transport Undertakings, Newspaper offices and other such establishments, employing 20 or more persons.

In the beginning there was no ceiling on the medical care expenditure on the Insured Persons (IPs) and their families. Later a ceiling of Rs.50 per annum per insured family unit was put from April 1,1970. With the expansion of the scheme as well as the rising expectations of the beneficiaries of the scheme, this ceiling has been raised (upwards) from time to time. The ceiling was fixed at Rs.120 during 1980-81 and again it was raised in February 1984 to Rs.130 with retrospective effect from April, 1983. Out of this ceiling amount, a sum of Rs.25 has to be spent on drugs alone by all the States and Union Territories. On the face of it, the expenditure on drugs -Rs.25 per Insured Person's family per year appears to be too meager. However,

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realizing this the ESIC has already taken steps to promote better supply of drugs to the beneficiaries by reimbursing to the States/Union Territories an additional expenditure on drugs alone to the tune of Rs.30 per Insured Person's family per year *(i.e.* raising it from Rs.25 to Rs.55). This step was taken to encourage States to spend more on drugs.

There are some States which make full use of this concession. During the preliminary discussions with the authorities at the ESIC Headquarters, it emerged that the States of Maharashtra, Gujarat and Tamil Nadu are 'well performing' ones. Both, the beneficiary as well as the organization's satisfaction is said to be better in these States. It is also borne on the fact that these States not only utilize the additional amount of Rs.30 for drugs but also spend in excess on drugs and medical care. It would be appropriate to mention here that any excess expenditure on medical care over and above the ceiling of Rs.130 plus Rs.30 (additional for drugs) has to be met by the respective States/Union Territories. Therefore, those States/Union Territories which spend in excess of the ceiling would be entitled to be called the 'well performing' States.

The fact remains that the cost of medical care has been increasing year by year. The increasing demand for better services and the sophistication in improving the facilities has added to the costs. Following objectives guide the progress of this exercise.

OBJECTIVES

1. To understand the scope of the ESI Scheme and the range of medical care provided to the beneficiaries under the scheme.

2. To find out the expenditure on medical care in Delhi per insured family unit in the immediate past.

3. To assess the financial requirements per insured family unit for providing reasonably good medical care.

METHODOLOGY

The study was based on a country-wide investigation of medical care organization under the ESIC and those from public sector undertakings. Following well performing States were selected out of the ESI Scheme:

1. Maharashtra
2. Gujarat

The respondents were the Director of the ESIC of the respective States, Medical Superintendents of selected hospitals, senior medical officers and IMO working under the scheme. Detailed discussions on the terms of reference of the

study were held with them and relevant data was collected. Therefore, it is necessary to understand what constitutes reasonable medical care as the norms of the staff and equipment laid down, and the rapid escalation in costs for providing medical care to the beneficiaries in the light of increasing sophistication and modernization in medical care technology in the country.

With this preamble in mind following strategy was laid down for the study.

Step 1. Study of medical care delivery system under ESIC and collection and compilation of the cost data.

Step 2. Standardization of the proformae for presenting the actual expenditure
on medical care *i.e.* both on out-patient dispensary-lnp care and on hospital care.

Step 3*:* Assessment of actual expenditure on medical care in Delhi, inferences and critical review of the Delhi phase keeping in mind the factors enumerated in the preamble above.

FINDING

Delhi, being the sole exception where the medical care is looked after by the Corporation itself, was chosen as the starting point. A preliminary meeting was fixed with both the Director (Medical) Delhi, and the Medical Superintendent, ESI Hospital, Basai Dara Pur, New Delhi. They were briefed about the purpose of the study. It will be worthwhile to mention here that the Director (Medical) Delhi is mainly responsible for the provision of out-patient dispensary care while the Medical Superintendent for hospital care has some overlapping areas of functions which will be mentioned in due course. Following salient points emerged during the meeting:

1. The Corporation is making efforts to improve the delivery of medical care in Delhi.
2. There is inadequacy of equipment like X-ray machines etc.
3. There is inadequacy of furniture.
4. Over-worked staff due to shortage.
5. Large number of posts, especially those of doctors, pharmacists and auxiliary nurse midwives are lying vacant.
6. There is paucity of hospital beds

The other interesting thing noticed in the discussion is the sickness benefit (or certification) under Directorate (Medical) Delhi was brought down from Rs.84.00

lakhs in 1 982-83 to Rs.62.00 lakhs in 1983-84 as a result of the active supervisory control followed by Director and restraint exercised by the In-charge Medical Officers. One may say that it does not form part of the medical care expenditure but such measures would surely reduce the Corporation's liability on medical care related expenditure.

Subsequently, both, the Director and the Medical Superintendent were requested to provide data on medical care expenditure under different heads of account for the year 1983-84. The functioning of a few service dispensaries and the main hospital was also observed.

DATA COMPILATION AND INTERPRETATION

Data relating to expenditure on medical care thus collected were analysed, tabulated and presented under the major heads of account. It was done separately for the out-patient dispensary care and the in-patient (hospital) care. Two proformae one for out-patient and one for in-patient care were standardised.

The annual expenditure on medical care under ESIC is in fact shown against an exhaustive list of various heads and sub-heads of account. Keeping in mind the objectives of the study the account heads have been rearranged for the out-patient dispensary/lnp care and the in-patient hospital care in proformae I and II separately.

COVERAGE

Delhi has 30 full time service dispensaries hereinafter called dispensaries and 2 on part-time basis. In three full time dispensaries there is arrangement for Ayurvedic treatment also.

Number of Insured Persons attached with each dispensary is as under (as on March 31, 1984).

S.No.	Name of Dispensary	Persons attached No. of Insured
1.	ESI Dispensary, Subzi Mandi	18200
2.	ESI Dispensary, NI Area	25081
3.	ESI Dispensary, Krishanganj II	15344
4.	ESI Dispensary, Shahdara	23415
5.	ESI Dispensary, Factory Road	12512
6.	ESI Dispensary, Phar Ganj	13901
7.	ESI Dispensary, Krishan Ganj I	12928
8.	ESI Dispensary, Ajmeri Gate	16085
9.	ESI Dispensary, Shanti Nagar	17034

10.	ESI Dispensary, Kirti Nagar	18438
11.	ESI Dispensary, J.J Colony	6,848
12.	ESI Dispensary, Okhala	21,039
13.	ESI Dispensary, Vishwakarma Nagar	4,247
14.	ESI Dispensary, Mayapur	16,331
15.	ESI Dispensary, Krishan Nagar	7,910
16.	ESI Dispensary, Tilak Nagar	10,695
17.	ESI Dispensary, Azad Pur	18,339
18.	ESI Dispensary, Jangpura	9,015
19.	ESI Dispensary, Malviya Nagar	4,728
20.	ESI Dispensary, Mehrauli	3,019
21.	ESI Dispensary, KalkaJi	22,267
22.	ESI Dispensary, Karampura	7,287
23.	ESI Dispensary, Bholanath Nagar	3,809
24.	ESI Dispensary, Sant Pura	6,813
25.	ESI Dispensary, Morigate	3,182
26.	ESI Dispensary, Jwalpuri& Mangolpuri	11,300
27.	ESI Dispensary, Mayur Vihar	2,226
28.	ESI Dispensary, Jahangirpuri	7,766
29.	ESI Dispensary, Narela	3,392
	Total	3, 43,159

PART-TIME DISPENSARIES

1. Rural Health Training Centre, Najafgarh.

2. Delhi Cantonment Board General Hospital, Delhi Cantonment.

Step 3: From the foregoing we underline the fact that about 3.5 lakh IPs are entitled to medical care in Delhi. Let us now see the expenditure patterns in the following proforma.

PROFORMA I

EXPENDITURE ON DISPENSARY CARE SERVICES

EXPENDITURE ON OUT-PATIENT DISPENSARY CARE DURING 1983-84

Head/Sub-Head of Account	*1983-84*
Administrative Unit	
ESI Directorate (Medical), Delhi	
a. Pay of Officers	1, 23,211
b. Pay of Establishment	5, 26,269

c. Allowances of all kinds (both officers and other staff)	1270972

Out-patient Dispensary/IMP Care

a. Pay of Medical Officers	1796711
b. Pay of Establishment	3186162
c. Allowances of all kinds (both officers and other staff)	11504726

Drugs and Dressings

Specialist Services including Cost on Referrals

a. Payment of Honorary Part-time Specialists	83,264
b. Charges for Diagnostic Services such as Laboratory, X-ray, ECG & Biochemistry etc.	17,596

Repair and Maintenance (of the dispensaries etc.)

a. Repair and Maintenance	75,223
b. Rent	4,01,284

Telephones

a. Directorate (Medical), Delhi	17,402
b. Dispensaries etc.	73,665

Ambulance Service

Following expenditures are included under this head

a. Repair and Maintenance	33,328
b. Diesel	77,745
c. Conveyance charges reimbursed to IPs	62,430
d. Pay and Allowances of Drivers	1,50,611
e. Capital cost of ambulance purchased, if any	—

Miscellaneous/Other Costs

Following expenditure have been included under this head. Cost of special appliances.

a.	Pacemakers	
b.	Open Heart surgery	153440
c.	Dialysis	
d.	Artifical Limbs	3162
e.	Spects	100662
f.	Dentures	30762
g.	Hearing Aid	6924
h.	Surgical Appliances	22299
i.	Wheel Chair/Tri-cycle	963
	Total	31427171

The cost of medicine per attendance of a patient in service dispensary has also been worked out. It is Rs.2.00 only. Delhi has taken lead in introducing cost accounting systems and economy measures in the issue of drugs, dressings and telephones etc. One comparison of expenditure on drugs and dressings between 1982-83 and 1983-84 we see marked reduction. During 1982-83 this expenditure was Rs.1, 56, 17,037, while during 1983-84 it came down to Rs.1, 15, 09,360.

As regards the repairs and maintenance, this head includes the expenditure incurred on (a) repair and maintenance of dispensary buildings as well as (b) the rent of those dispensary buildings not owned by ESIC. Out of the 30 service dispensaries in Delhi, 9 are owned by ESIC and the remaining 21 are rented.

EXPENDITURE ON HOSPITAL CARE SERVICES

The ESI Hospital, Delhi, has a bed compliment of 400 and is situated in an area popularly known as Basai Dara Pur. A full-time Medical Superintendent is responsible for the management of this Hospital. He is assisted by a Deputy Medical Superintendent and other lay administrators. The hospital runs daily OPD and is equipped to provide the specialist care in:

1. Internal Medicine
2. General Surgery
3. Obstetrics and Gynaecology
4. Paediatrics (Medical only)
5. Orthopaedic
6 Ophthalmology
7. ENT
8. Dental
9 Skin

In addition, the Emergency and Accident Department functions on round the clock basis. There are 15 full-time and part-time specialists. In addition, there are 37 sanctioned posts of general duty medical officers (GDMO).

Item 3 in proforma II deals with the cost of reservation of beds in different hospitals. An expenditure of Rs.8.20 lakhs was incurred here. In fact before the ESI Hospital at Basai Dara Pur came into existence in early 1970s, the patients were referred to different hospitals under arrangement with the ESIC. This arrangement, especially with the TB Hospital is continuing. Though this expenditure is borne on the D(M)D's budget but it was thought to be relevant to bring it under the expenditure on hospital care. Because of some such overlapping expenditure the totals in proformae I and II differ marginally from that of actual as given by the ESI authorities.

PROFORMA

EXPENDITURE ON 'HOSPITAL CARE' IN DELHI DURING 1983-84

Budget Expenditure on ESI Hospital Delhi 1983-84	***Rs.1, 89, 16,413***

S.No.	*Head/Sub-Head of Account*	*(Rs.)*
1.	Administrative Unit	
	a. Pay of Officers	5,68.834
	b. Pay of Establishment	22,85,935
	c. Allowances (Officer at Establishment)	62,04,622
2.	Drugs and Dressings	40.69,100
3.	Cost of Reservation of Beds in different Hospitals	3,20,910
4.	Ambulances Services	—
	Note: ***In case of Delhi, this expenditure is booked under the Directorate (Medical) Delhi, i.e. on out-patient dispensary care.***	
5.	Miscellaneous Expenditure	38,62,121
	This includes the following a. Telephone b. Stationery and forms	

c. Rates and Taxes
d. Purchase of General Articles
e. Repair of General Articles
f. Washing allowance
g. Linen
h. Liveries
i. Blood
j. Furnitures/Steel Equipments and Repairs of Furniture
k. Station Wagon I. Amenities to Staff
m. Other Items

6.	Capital Cost of Instruments/Equipments.	10, 04,891
	Total	1,89.16,413

Expenditure per IP Family Unit

By adding the expenditure of both the proformae the medical care expenditure per Insured Family Unit is calculated as follows:

		(in Rupees)
1.	Expenditure on OP Dispensary Care	3,14,27,171
2.	Expenditure on Hospital Care	1,89,16,413
	Total of 1 and 2	5,03,43,584
3.	Total number of Employees Family Units (as on 31.3.1984)	2,75,000
4.	Cost per Employee Family Unit per annum	183

Other information as highlighted would provide better understanding of the medical care expenditure during the year in question.

Dispensary Care Services

1.	Total number of out-patient (dispensary) Visits	38,60,790
2.	Total number of Beneficiaries	13,46,350
3.	Number of Out-patient Visits per person per annum	2.86

4.	Cost os Dispansary Care/ Employee Unit Per year	11400
5.	Cost per Out-patient Visit	8.14

Hospital Care Services

1.	Total number of admissions in ESI Hospital (Total number of discharges - 19762)	19799
2.	Number of hospitalisations per 1000 population (of ESI) per year	14.70
3.	Cost per hospitalisation	955.40
4.	Cost of hospital care services per employee unit/year	69.00
5.	Average length of stay (ALS)	7.07 days

Dispensary and Hospital Services Cost

Average cost on medical care (both out-patient dispensary as well as hospital care) per IP family unit/year	183.00

This is so far as the analysis of the actual medical care expenditure both on the out-patient dispensary and the hospital care is concerned. As shown above against the existing ceiling rate of Rs.130 per IP family unit/per year, Delhi is spending Rs.183. If additional expenditure of Rs.25 on drugs and dressings, over and above the ceiling rate, as allowed by the Corporation, is also added, then Delhi is spending well over the ceiling.

On a deeper analysis of the medical care delivery system in Delhi, the study reflects a situation which cannot be termed as very satisfactory.

CRITICAL ANALYSIS

Delhi has a network of 30 service dispensaries scattered around the metropolis. These dispensaries are providing out-patient care to over 3.43 lakhs Insured Family Units. As already pointed out the organization and delivery of the outpatient dispensary care is the responsibility of the Directorate (Medical) Delhi. These dispensaries work from 7.30 a.m. to 7.30 p.m. on two shift basis. About one-fourth of these dispensaries also provides medical care over the emergency cases during the night as well and is known as functional dispensaries. The services provided at these centers include the immunization, family planning, ante-natal,

post-natal as well as domiciliary care. The study has revealed the following bottlenecks in these services:

1. Inadequate and over-worked staff.
2. Inadequate furniture and other general facilities.
3. Congested dispensary buildings.
4. Excessive concentration of IP family units in some larger dispensaries namely Subzi Mandi, Kishan Ganj II and the Nl Area.

The problem of inadequate and over-worked staff is due to a large number of posts of various categories lying vacant. Of which 34 posts of medical officers, 60 of ANMs and 36 of pharmacists.

The problem of excessive concentration of patients in some places as well as congestion and overcrowding can be minimized by doing some necessary reorganization. A portion of the IP Family Units may be taken off from some overcrowded dispensaries. A few more dispensaries are required to be established. All the vacant posts need to be filled immediately. These steps would require more funds over and above what is being spent now. It has been worked out though approximately that filling up of all the vacant posts in dispensaries and Directorate (Medical) Delhi would costs an additional expenditure of Rs.34, 75,916 per year.

Those patients who cannot be effectively looked after at dispensary level are referred to the ESI Hospital at Basai Dara Pur for better diagnostic, therapeutic and hospitalization requirements. There are also a few diagnostic centers located at main dispensaries. In addition to the 400 beds in ESI Hospital, 155 are reserved in various other hospitals. These beds accounted for Rs.8.20 lakh only (Proforma II). But if these beds are owned and run by the ESI Corporation it would have costed around Rs.156 lakhs during 1983-84.

1.	LNJP Hospital, New Delhi	50 Beds
2.	LRSTB Hospital, Mehrauli, New Delhi	65 Beds
3.	RBTB Hospital, Delhi	40 Beds
	Total	155 Beds

Putting together 555 hospital beds (including 105 for TB cases exclusively) are available to the ESI beneficiaries in Delhi. The ensuing paragraph deal with the adequacy or otherwise of the hospital services.

NORMS for **VARIOUS PHYSICAL REQUIREMENTS**

1. ***Hospital Beds***

The scale for hospital beds has been laid down by the Corporation at 4 beds per thousand employee family units. Accordingly, for 2.75 lakh employee units in Delhi need 1100 hospital beds to provide reasonable medical care services. It is believed that a 200 beds hospital is already under construction in East Delhi (trans-Yamuna Area). The existing 400 beds ESI Hospital is in West Delhi. The North, South and Central parts of this metropolis do not have any other ESI Hospital.

There is, therefore, immediate need to have 550 more hospitals beds in Delhi. Besides, the capital construction cost the recurring annual expenditure on these additional beds would be around Rs.2, 61, 00,000 (Comparable with the existing expenditure of ESI Hospital, Basai Darapur).

The existing 400 bed ESI Hospital at Basai Darapur is viewed as a referral Hospital and therefore, needs considerable strengthening in terms of professional and other supportive services. Some such essential facilities which need strengthening in terms of staff and equipment in the hospital are:

1. Burns Units and Plastic Surgery.
2. Intensive Care and ICCU.
3. Dialysis Unit.
4. Professionals ***e.g.*** Biochemist and Microbiologists etc.

Further, the expansion of this 400 beds hospital to 600 beds is under way and the construction has already been started. On its completion this hospital will be an apex institution for the Union Territory/State of Delhi. The other three ESI Hospitals which are proposed to start functioning during Seventh Five Year Plan at Jil Mil Colony, Okhla and Rohini will'be of about two hundred beds each with facilities in basic specialities. Once these satellite hospitals start functioning, large number of complicated cases belonging to one or the other specialist/super speciality would be referred to the main 600 beds hospital. Therefore, the Basai Darapur Hospital should be viewed as the Referral Hospital for Union Territory/State of Delhi.

2. ***Specialised Referral Care Facilities***

Here, it would be appropriate to quote from the Corporation's letter No.4-24/11/10/83 (M), dated the 18th March, 1983 on specialists services under the ESI Scheme - Revision of Yardstick for provision of specialist services. The specialist services under the ESI Schemes are to be provided in the various specialities including:

1. Psychiatry
2. Leprosy

3. Dental
4. Cardiology
5. Neurology
6. Urology
7. Plastic Surgery
8. Malignant Diseases
9. Cardiac Surgery
10. Thorasic Surgery

While there is arrangement in the Basai Darapur Hospital for part-time specialist services in the first three branches *viz.* Psychiatry, Leprosy and Dental, there is no arrangement with regard to the rest (except cardiology which is looked after by one of the general physicians).

3. *Provision of Other Facilities*

Further, the Corporation has laid down norms for providing certain other facilities in a 600 bed hospital. These are listed below:

1. Casualty
2. Intensive Care
3. Blood Bank
4. Laboratory
5. X-ray
6. Six operation theatres (Two twin for aseptic, one for septic and one for obstetric and gynaecology etc.)
7. Two labour rooms (near the gynaecology ward) (Septic and Aseptic)
8. ECG
9. Gentral Sterilization
10. Physiotherapy/Occupational Therapy
11. Kitchen
12. Central Stores
13. Recreation Facilities for Patients
14. Nurses Hostel
15. Incinerator
16. Steam Laundry
17. Medical Records Section
18. Library
19. PBX
20. Mortuary

4. *Norms of Specialists, Medical and Other Staff*

1.	Medical Superintendent	1
2.	Dy. Medical Superinten-Dent	1

Medical Superintendent and Deputy Medical Superintendent should be purely administrative preferably with post-graduate qualification in hospital administration.

Specialists

1.	Medicine	3
2.	Surgery	3
3.	Obstetrics and Gynecology	2
4.	Pediatrics	1
5.	Orthopedics	1
6.	ENT	1
7.	Eye	1
8.	Anesthesia	1
9.	Radiology	1
10.	Pathology	1
11.	Skin and S.T. Diseases	1
12.	Chest Diseases	1
13.	Dental	2
14.	Psychiatrist	1

Junior Specialists

		1
1.	Biochemist (non-medical)	
1.	Junior Microbiologist	1
3.	Blood Bank Officer	1
4.	Anaesthetist	1
5.	Radiologist	1

Medical Officers

1.	General Duty Medical Officers	50
3.	Intensive Care Unit	3
3.	General Duty Medical Officer for Casualty Department	7
		60

Administration

		1
1.	Administrative Officer	
2.	Welfare Officer	1
3.	Office Superintendent	1
	(Non-medical, Non-gazetted)	1

4.	PA to Med. Superintendent	1	
5.	Head Clerk	3	
6.	Cashier	1	
7.	Stenogra1pher	1	
8.	UDC	8	
9.	LDC	21	
	i. General Office 16 ii.Radiology iii.Pathology iv. Registration	1	
10.	Telephone Operators	3	
11.	Medical Record Clerk	3	
12.	Messengers	6	(included in the total strength of Class IV)

Paramedical/Nursing Staff

1.	Matron	1	
2.	Assistant Matron	2	
3.	Dietician	1	
4.	Assistant Dietician	1	
5.	Sister Incharge	32	
i.	Wards	24	
ii.	OT	4	
iii.	Labour Room	2	
iv	CSD	1	
v.	OPD	1	

Staff Nurses

i.	Wards	24	
ii.	O.T.	18	
iii.	Labour Room	4	
iv.	OPD ./Blood Bank CSD/Relief	10	
v.	Intensive Care Unit/ Coronary Care Unit	12	
7. Technical Assistants		3	
i.	Biochemistry	1	
ii.	Clinical Pathology	1	
iii.	Microbiology	1	

8.	Laboratory Technicians	7	
9.	Laboratory Assistants	7	
10.	X-ray Technician/ Selection Grade Radiographer	1	
11.	Senior Radiographer	2	
12.	Junior Radiographer	7	
13.	ECG Technician	3	
14.	Blood Bank Technician	2	
15.	Laboratory Assistant for Blood Bank	2	
16.	OT Technician	6	
17.	OT Assistant	7	
18.	CSD Technician	1	
19.	CSD Assistants	6	
20.	Physiotherapist	1	
21.	Occupational Therapist	1	
22.	Chief Pharmacist	1	
23.	Pharmacists	10	
24.	Dressers	6	
25.	Refractionist/ Optometerist	2	
26.	Audiometerist/ Audiometer Technician	2	(Where Audiometer is available in ENT Department)
27.	Dental Hygienist	2	
28.	Dental Technician	2	
29.	Plaster Technician	2	
30.	Plaster Assistants	5	
31.	Steward	1	
32.	Senior Physiotherapist	1	
33.	Physiotherapist	1	
34.	Occupational Therapist	1	
35.	Linen Keeper	1	

Other Staff

1.	Office Mukadam (Supervisor for Attendants)	1
2.	Jamadar (Supervisor for Sweeper)	1
3.	Head Cook	1
4.	Cooks	11
5.	Cook Mates	13

6. Laundry Supervisor 1
7. Laundary Operators 10
8. Boiler Attendant 1
9. Driver, Ambulance / Van cleaner-cum-Stretcher Bearer As per yardstick of ambulance
10. Class IV staff including Chowkidars and messengers 400

Cooks, Attendants and Sweepers for Nurses Hostel are not included in this list.

REVISED EXPENDITURE ESTIMATES

Based on this analysis the medical care expenditure in Delhi needs revision. The new expenditures in addition to the committed actual expenditure are presented here:

Expenditure on OP Dispensary Care	Rs.3,14,27,171
Expenditure on Hospital Services	Rs.1,89,16,413
Expenditure on Vacant Posts under Directorate	Rs.34,75,916
Expenditure on Vacant Posts in the Hospital	Rs.12,69,000
Expenditure on additional 550 bed Hospital	Rs.2,16,00,000
Expenditure on Modernizing the Hospital	Rs.50.00.000
Additional Expenditure on 155 Reserve Beds	Rs.50,00,000
Grand Total	Rs.9,1 7,88,500

SUGGESTED CEILING FOR MEDICAL CARE EXPENDITURE

Therefore the budget estimates for medical care services comes to Rs.9,17,88,500 per annum at current price index. Therefore, the revised ceiling

would be as follows:

Total number of Employee Family Units	2.75 lakh
Total Budgetary estimated expenditure	Rs.9,17,88,500
Expenditure per Employee Family Unit	Rs.333.75

Or

Revised ceiling rate

Taking all this into account, it is recommended that a ceiling for providing medical care per insured person family unit may be raised to Rs.334 per year. There should be regular stepping up of this norm on yearly basis which should be linked to the rising costs of the drug as well as that of manpower and equipment etc. It is important that this increase in terms of percentage of the revised ceiling is decided right now or whenever the revised ceiling is accepted for implementation. This will help the Corporation in minimizing the pressures and complaints to raise the ceiling on medical care expenditure every now and then. Therefore, in order to meet or neutralize the costs on account of inflation, increase in salaries and cleanliness allowance and other establishment expenditures, it is suggested that the revised ceiling of Rs.334 should be increased by 15 per cent every year.

Lkkjk'k

भारत के कर्मचारी राज्य बीमा योजना, एक प्रमुख सामाजिक–सुरक्षा योजना के रूप में है। यह योजना, व्यापक कर्मचारी राज्य बीमा अधिनियम, 1948 लागू हो जाने के फलस्वरूप 24 फरवरी, 1952 को लागू की गई थी। इस अधिनियम में अन्य बातों के साथ–साथ, व्यापक चिकित्सकीय परिचर्या का प्रावधान होना, इस योजना का एक प्रमुख पक्ष है। कर्मचारी राज्य बीमा योजना द्वारा प्रति बीमाकृत व्यक्ति/परिवार युनिट पर खर्च की जाने वाली चिकित्सा–व्यय की सीमा निश्चित कर दी गई है। निश्चित की गई राशि इस उद्देश्य के लिए अपर्याप्त है। प्रस्तुत लेख में व्यापक चिकि–त्सकीय परिचर्या के विभिन्न पहलुओं का उनकी लागत के संदर्भ में विश्लेषण किया गया है तथा लागत ढांचे में संशोधन करने के लिए कर्मचारी राज्य बीमा निगम को सुझाव प्रस्तुत किए गए हैं।

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HOSPITAL ADMINISTRATOR'S GUIDE FOR AN APPROACH TO PLANNING OF A CENTRAL SUPPLY OF GASES AND SUCTION SYSTEM IN HOSPITALS

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ABSTRACT

The medical gas supplies constitute the most important supplies of the hospital. Concept of central supply of gases and central suction facility is well established in the hospitals of advanced countries of the world. All modern hospitals in India are also going in for central supply and their suction for the gases like Oxygen and Nitrous-oxide. However, most of the hospitals including large teaching institutions established till 1970, are still continuing with old practice of portable cylinders and not yet switched over to the central supply system, due to lack of awareness of requirement, physical infrastructure, cost benefit and cost effectiveness. Guidelines for the establishment of such facility and also an example of an efficiently functioning system in a prestigious institution of the country have been given in this study.

The first gas piping system was installed in **1**935 at the University of Wisconsin Hospital, The savings, realized by more conomic handling and dispensing of nitrous -oxide and oxygen, were immediate and substantial. It can easily be established that it is more economical to supply medical gases by pipeline than by portable cylinder in any hospital having more than 150 beds.

The employment of central gas piping system results in ultimate monetary saving in four ways:

1. Less gas is returned unused in empty cylinders.
2. Few cyclinders are needed for the supply - to the given requirements of the hospitals.
3. Regulators are not needed for each individual case of oxygen therapy.
4. Personnel and time required for transportation and handling of cylinders and for maintenance of regulators is markedly reduced.

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It is estimated that the initial installation expenses of an oxygen piping system for anesthesia and therapy can *he* amortized within two years period through saving in personnel, time and oxygen purchases. A pipeline system for nitrous oxide, as well as oxygen is frequently Installed to supply gases for anesthesia apparatus in the operating induction, delivery room, and in ward for therapeutic purposes,

Hospital can manage without few drugs for few days but it will be difficult for hospital to function without an oxygen supply even for few hours. Its resuscitation department, operation theatres or to say the care of serious patients, will be jeopardized in the absence of medical gases. Requirement of medical gases is felt in all the departments of the hospital, whether it is injection room in OPD or psychiatric and other wards of the inpatient area. Gas cylinders are bulky and are difficult to be transported in all the areas of the hospital. It is with this concept*that the centralization of gas supply came into being.

CONTENTS OF CENTRAL SUPPLY SYSTEM

A central gas piping system consists of following main four parts:

1. Supply source.
2. Pipeline to the unit.
3. Emergency cut off valves near the area of use.
4. Quick connect coupling at the point of use.

The source of supply is a room in the hospital called 'Manifold Room'. Manifolds mean many things, which consist of oxygen, nitrous-oxide and suction. The room must be ventilated at the rate of at least two air-changes per hour. Nitrous-oxide and oxygen may be stored and dispensed from the same area. Inflammable anesthetic and other agents must not be stored therein.

The pipeline carrying the gas or gases to the area of use is of sufficient diameter to meet the peak demands and must be copper or high copper content brass. Joint must be silver soldered. Cut off valves are provided outside the areas of use. Valves are also needed for nitrous-oxide outlets, if this gas is also centrally piped.

Oxygen outlets are provided in all hospital areas involved in patient care. These include patient rooms and wards, recovery room, intensive care facilities, nurseries, operating suites, delivery room, emergency wards. A quick disconnect coupling chosen from the several types currently available in the market is highly desirable. It is important to select one make for installation throughout the entire hospital. The coupling is fastened to the wall at the convenient (about four and half feet) height for oxygen therapy and anesthesia uses.

PIPED OXYGEN

The advantages of piped oxygen are its immediate availability, continuity of

supply, the absence of noise and labor in moving the gas cylinders about the hospital cleanliness and the economic advantage of purchasing gas either in large cylinders or in liquid form. The oxygen is provided at strategic places, for example to single room, to each bed in all Intensive Care Unit (ICU), to every two beds in multiple rooms and in treatment room.

Liquid oxygen supply is usually the most economical solution for hospital having more than 150 beds. The installations are provided and maintained by the oxygen suppliers.

PIPED SUCTION

The piped suction (vacuum) are normally provided on the same scale as piped oxygen *i.e.* one per bed or one per two beds. The connectors are placed adjacent to the piped oxygen connectors and the vacuum cylinder and pump situated in plant room. But it is worth having few additional suction points in critical areas *e.g.* Intensive Care Unit, Operation Theatres, Post-operative Ward and Emergency Department, where one patient may need multiple suction tubings for bleeding from different organs of body.

HAZARDS OF BULK OXYGEN DELIVERY SYSTEM

Emergency alarm system should be activated by either low supply in main or reserve tanks or cylinders, by operation of reserve supply, or by high or low pressure in main hospital pipeline. Pressure relief valve is required to vent pressure in excess of 50.0 per cent of normal pipeline pressure outside the hospital.

Few common accidents include:

1. Confusion of oxygen and nitrous-oxide pipelines during construction.
2. Switching of Schrader adaptors on pipelines.
3. Filling of the bulk oxygen supply reservoir with nitrogen.
4. Failure of regulator or depletion of the reservoir resulting in low pressure.
5. Incomplete locking of anesthesia machines to the oxygen supply.
6. Closer of the valve in the oxygen supply system.

Few general safety measures are outlined as under:

1. Proper handling of the cylinders.

2. Correct identification of the cylinders.

3. Use of pipe index system to prevent interchangeability of the flush type valve cylinders.

4. The diameter index system for non-interchangeable connectors of medical gas cylinders, where removable, exposed connection are used The needed necessity for safety measures for all personnel involved in using cylinders should be stressed.

ADMINISTRATION

Medical Superintendent should be the administrative head. The Head of the Department of Anesthesia should be responsible for technical control and operation of manifold room. Round the clock coverage by staff should be provided to this area by shift system. Each shift should have one person on duty. From 9.00 a.m. to 5.00 p.m. on working days, a technical assistant should also be present for smooth functioning and maintenance services.

SUPPLIES AND COST

It will vary from place to place. However, in a place like Delhi, hospitals having this system are having supply on the DGS&D rate contract. Handling charges for the cylinders are Rs.2.25 per cylinder with minimum of Rs.12.00. Periodicity of supply and regular routine procedures should be laid down. Supply is made on four days in a week *i.e.* in the afternoon on Tuesday, Wednesday and Friday and in the forenoon on Saturday in All-India Institute of Medical Sciences Hospital, New Delhi and this system has been found to be quite effective.

BUDGET

Budget has to be earmarked for this facility every year. In All-India Institute of Medical Sciences Hospital every year, budget provision is made in the hospital stores budget.

EMERGENCY PORTABLE GAS CYLINDERS (OXYGEN AND NITROUS-OXIDE)

In case of any breakdown or fire hazard, central supply has to be shut off and adequate portable cylinders should be available in all wards and departments. About 79 oxygen cylinders and 16 nitrous oxide cylinders have been made available in the wards/OT of the hospital at All-India Institute of Medical Sciences Hospital for any such emergency. Intensive Therapy Unit is also holding cylinders which are rushed to the ward requiring one.

PORTABLE SUCTION MACHINE

These should always be available in each ward. It will be required in addition to central suction and also act as an emergency reservoir. Adequate portable suction machines are available to combat for emergency requirements in All-India Institute of Medical Sciences Hospital and because of these reasons, so far there were no breakdown of this service in the hospital threatening the life of patients.

CONCLUSION

The well planned, fully equipped unit of central supply of gases and suction system in teaching hospital in the country will improve the delivery of efficient patient care, reduce the cost incurred in portable gas supply system and eliminate the factor of uncertainty and frequent labour unrest and strikes.

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किसी भी अस्पताल में मेडिकल गैस सप्लाई, उसकी समूची सप्लाई व्यवस्था का एक महत्वपूर्ण अंग होती है। विश्व के सभी विकसित देशों के अस्पतालों में मेडिकल गैसों की केन्द्रीय सप्लाई तथा गैसों के आशोशण की केन्द्रीय व्यवस्था की अवधारणा को पूरी तरह से मान्यता प्राप्त है। भारत के सभी आधुनिक अस्पताल भी आक्सीजन तथा नाइट्रस–आक्साइड जैसी गैसों के मामले में गैसों की केन्द्रीय सप्लाई तथा आशोषण प्रणाली को धारण करने के लिए प्रयत्नशील है। किन्तु 1970 तक जो अस्पताल स्थापित किए जा चुके थे उनमें से अधिकांश अस्पतालों तथा बड़े–बड़े शिक्षण संस्थानों में अभी तक सिलेन्डरों वाली पुरानी पद्धति ही प्रचलित है। गैसों की केन्द्रीय सप्लाई प्रणाली स्थापित करने के लिए इसकी जरूरतों, इसके संरचनात्मक ढांचे, लागत लाभ तथा लागत प्रभावकारिता आदि पहलुओं के बारे में उन्हें पर्याप्त जानकारी न होने के कारण उन्होंने अभी तक नई प्रणाली को धारण नहीं किया है। अस्पताल में इस प्रकार की सुविधाएं स्थापित करने के लिए इस लेख में कुछ मार्गदर्शी सिद्धान्त दिए गये हैं तथा इसके साथ देश के किसी प्रमुख संस्थान में इस प्रणाली के कुशल संचालन के बारे में एक उदाहरण भी प्रस्तुत किया गया है।

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ABORTION IN THE EYE OF SCIENCE AND LAW: A CRITICAL ANALYSIS

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ABSTRACT

This study is a critical analysis of the induced abortion in the light of the defined law of the land and overall purview of its implementation and acceptability in our society with reference to its technical and scientific merits and demerits.

DEFINITION OF ABORTION

The definition of abortion varies from country to country depending on their ethics and laws. The most widely accepted meaning of abortion is one likely to be used by medical expert, that is the, termination of pregnancy before the foetus is capable of an extra uterine life' or termination of pregnancy before the foetus becomes viable. This situation is usually considered as the 28th week of gestation when the foetus weighs approximately 1 kg2. Abortion may be distinguished as spontaneous and induced. Abortion which is not induced is call spontaneous, even if an external cause such as trauma or disease is involved2. The induced abortion means deliberate interference with a pregnancy, with an intention of terminating it, by the pregnant woman herself or by another person'. The induced abortion may be further deemed to be legal or illegal depending upon the law of the given country. This distinction certainly has important medical and legal implications in any society3.

The incidence of abortion either spontaneous or induced may be traced even at the dawn of many civilizations. Since, the natural occurrence of pregnancy is an important physiological even in female's life, the interruption with this process might have evolved probably with the development of ethics along with the improvement of social bindings or with the imposition of social norms. It is evident that whenever the pregnancy becomes unwanted, woman may resort to do anything for its termination. Even knives, knitting needles, caustic soda, permanganate and iodine have been used for this purpose4. At present, abortion is one of the most widely employed methods for fertility control in the world5,6, yet this method is not easily adoptable to a sizeable population because of the lack of legal support. All abortion laws formulated by various countries generally fall under one of four main categories7 - such as (1) illegal when it is prohibited without exceptions, (2) very restrictive when it is permitted only to save the life of a pregnant woman, (3) conditional when it is permitted on several grounds - to preserve the health of woman, in case of rape or suspected congenital abnormality of foetus, and (4) liberal when abortion is performed 'on request' or 'for social reasons'.

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PRESCRIBED LAW

In view of the social and economic burden predicted to be imposed upon the country if the growth of population remains unabated, the Government of India, like other nations, has also liberalized the law of the land for abortion with an intention to limit the family size so as to provide better facilities for education and health care of children, to reduce the incidence of maternal and infant mortality and to extend thereby the freedom and right of woman of our country8. Thus, the medical termination of pregnancy Act, 1971 (34 of 1971), thereafter termed as MTP Act, has come into effect. This is *an Act to provide for the termination of certain pregnancies by registered medical practitioners and for matters connected therewith or incidental thereto (preamble of the Act).* On exercising the freedom and right so extended, a married woman shall exert her choice to limit her family size even taking advantage of this method and where there is a risk of life, or grave injury to the mental health due to pregnancy caused by alleged rape, or where there is a substantial risk that if the child is born, it would suffer from such physical or mental abnormalities as to be seriously handicapped, both married and unmarried women shall get her pregnancies terminated under this Act. Nothing can defeat her substantial right which is conferred on her by this statutory law. Major provisions of this Act are commented as follows:

Section 1 (2) It extends to the whole of India except the State of Jammu and Kashmir.

Section 2(d) "registered medical practitioner" means a medical practitioner who possesses any recognized medical qualification as defined in clause (h) of section 2 of the Indian Medical Council Act 1956, whose name has been entered in a State Medical Register and who has such experience or training in gynecology and obstetrics as may be prescribed by rules made under this Act.

In exercise of the power conferred by section 6 of the MTP Act, the Central Government hereby makes rules (of 10 Oct. 1975) for the purpose of this Act.

> *Rule 3 Experience or training etc.:* For the purpose of clause (d) of section 2, a registered medical practitioner shall have one or more of the following experience or training in gynecology and obstetrics, namely,
>
> (a) In the case of a medical practitioner who was registered in a State Medical Register immediately before the commencement of the Act, experience in the practice of gynecology and obstetrics for a period not less than three years;
>
> (b) In the case of a medical practitioner who was registered in a State Medical Register on or after the date of the commencement of the Act:

(i) if he has completed six months of house surgeons in gynecology and obstetrics; or

(ii) Unless the following facilities are provided therein, if he had experience at any hospital for a period of not less than one year in the practice of obstetrics and gynecology; or

(iii) if he has assisted a registered medical practitioner in the performance of twenty five cases of medical termination of pregnancy in a hospital established or maintained, or a training institute approved for this purpose, by the Government.

(c) In the case of a medical practitioner who has been registered in a State Medical Register and who holds a post-graduate degree or diploma in gynaecology and obstetrics, the experience or training gained during the course of such degree or diploma.

Here 'he' means both he and she. 'Following facilities' means hospital facilities for MTP as provided by rule 4 which will be cited subsequently.

Section 3 (1) Notwithstanding anything contained in the Indian Penal Code, a registered medical practitioner shall not be guilty of any offence under that Code or under any other law for the time being in force, if any pregnancy is terminated by him in accordance with the provisions of this Act.

This section grants immunity to the registered medical practitioner, that is, he will not be guilty of offence of causing of miscarriage, or of injury to unborn children under the Indian Penal Code (IPC)9, while he acts in accordance with the provision of the MTP Act.

(2) Subject to the provisions of sub-section (4), a pregnancy may be terminated by a registered medical practitioner,

(a) where the length of the pregnancy does not exceed twelve weeks, if such medical practitioner is, or

(b) where the length of the pregnancy exceeds twelve weeks but does not exceed twenty weeks, if not less than two registered medical practitioners are, of opinion, formed in good faith, that -

(i) the continuance of the pregnancy would involve risk to the life of the pregnant woman or of grave injury to her physical or mental health; or

(ii) there is a substantial risk that if the child were born, it would suffer from such physical or mental abnormalities as to be seriously handicapped.

Explanation I - Where any pregnancy is alleged by the pregnant woman to have been caused by rape, the anguish caused by such pregnancy shall be presumed to constitute a grave injury to the mental health of the pregnant woman.

Explanation II - Where any pregnancy occurs as a result of failure of any device or method used by any married woman or her husband for the purpose of limiting the number of children, the anguish caused by such unwanted pregnancy may be presumed to constitute a grave injury to the mental health of the pregnant woman.

Good faith in the sense of simple and actual belief is not sufficient; the belief must be reasonable and not an absurd one. A belief in order to be reasonable requires care and attention relating to the matter in question. Thus, it has also been defined as "if an opinion is expressed with due care and attention, honestly believing it to be true and without malicious motive, it is said to have been made in good faith10".

Occurrence of grave injury to the health, or risk to life of the pregnant woman may be related with congenital or any severe heart diseases, or diseases of kidney, or any morphological or anatomical abnormalities of uterus which has more chance of rupture due to the pressure of the growing foetus. In these circumstances, it is the reasonable foresee ability and. prudence of the medical expert who adjudges these possibilities is to be counted. It is not the reasonable foresee ability and prudence of an average person of the society but o* an average person of a specialised class, that is, a person of medical profession, that constitutes the standard of test for determining whether the continuance of pregnancy would involve such risk of life or injury to health, taking into account the pregnant woman's actual or reasonably foreseeable environment. This becomes clear when sub-clause (i) is read with subsection (3) cited there under. Again, sub-clause (i) must be read with explanation I and II which bring two situations under the concept of injury to mental health for this purpose. The anguish of a pregnant woman when pregnancy is resulted from alleged rape or due to failure of contraceptive method (for married woman only) must be presumed to constitute grave injury to the mental health of pregnant woman.

As it is stated in sub-clause (ii), a pregnancy of a woman may be terminated when there is a substantial risk that if the child is born it would suffer from such physical or mental abnormalities as to be seriously handicapped. Within the meaning of this sub-clause, the intention of the legislature was not to allow seriously handicapped children to be ben to increase the burden and responsibilities of the State. The deformity of child in the womb may happen incidentally when pregnant woman, at early stage, suffers from German measles (infection by Rubella virus), or

in subsequent pregnancies where the woman is Rh-negative (blood group) and her husband is Rh-positive, or when pregnant woman, at early stage, takes teratogenic drugs for ailments or is exposed to high radiation. Besides these, there are instances of deformity due to genetic disorders such as in the case of hydrocephalus, hemophilia, cystic fibrosis" and muscular dystrophis'2 etc. Now, the question arises whether, at present, we have sufficient technical facilities to detect these deformities in an unborn child. The answer is certainly negative. Ultrasound and radio diagnosis technique only may be useful to a medical specialist for this matter. Therefore, there may be hardly any case for MTP under the scope of sub-clause (ii).

It has already been accepted that man with supernumerary Y-chromosome has behavioural disability'3 M and this type of chromosomal combination is found only in the criminals14. If it is detected in unborn child, then there is a query whether it would be presumed that if the child is born with the aforesaid defect (XYY genotype), it would suffer from such mental abnormalities as to be seriously handicapped.

> (3) In determining whether the continuance of a pregnancy would involve such risk of injury to the health as is mentioned in sub-section (2), account may be taken of the pregnant woman's actual or reasonably foreseeable environment.
>
> (4) (a) No pregnancy of a woman, who has not attained the age of eighteen years. or who, having attained the age of eighteen years, is a lunatic, shall be terminated except with he consent in writing of her guardian.
>
> (b) Save as otherwise provided in clause (a), no pregnancy shall be terminated except with the consent of the pregnant woman.

Sub-section (3) actually guides the medical officers to ascertain the risk of injury to the health of the pregnant woman who is examined for MTP under subsection (2) and specifies the area where the medical officers have to apply their mind to determine the situation. Though the meaning of 'pregnant woman's.... environment' has been restricted by using adjectives - 'actual or reasonably foreseeable', yet its vagueness persists. The requisite standard of foresee ability of medical officers has also been marked therein up to its reasonability to maintain uniformity avoiding personal variation.

For the purpose of this Act, the age of woman’ at majority has been fixed 18 years. Thus, it becomes unambiguous and free from any contradiction to personal law of certain community. At this age, an average normal woman generally understands what is pregnancy and its subsequent consequence. In the case of woman under 18 years of age or lunatic'5,, her husband, father, grandfather, mother or any other person under whose care and attention she is brought up or maintained shall act as a guardian'6. In case, there is none for her guardianship, court may, if

necessary, appoint any person or itself act as a guardian for the pregnant woman for this purpose. Clause (b) of sub-section (4) makes it clear that no pregnancy shall be terminated without the consent of the pregnant woman irrespective of the stage and cause of pregnancy and the marital status of pregnant woman. Here, 'shall' indicates the mandatory nature of this provision. This is an essential provision which has to be fulfilled first, and only then one can proceed with other provisions of this Act. As for example, even if a husband forcefully brings his pregnant wife to a registered medical practitioner for MTP and if he does so without the consent of the woman, both of them will be guilty of the offence punishable under IPC.

Section 4 No termination of pregnancy shall be made in accordance with this Act at any place other than -

(a) a hospital established or maintained by Government, or

(b) a place of the time being approved for the purpose of this Act by Government.

As already mentioned the Central Government makes rule for this purpose.

Rule 4 Approval of a place

(1) No place shall be approved under clause (b) of section 4:

(i) unless the Government is satisfied that termination of pregnancies may be done therein under safe and hygienic condition; and

(ii) unless the following facilities are provided therein, namely:

(a) an operation table and instruments for performing abdominal or gynecological surgery;

(b) anesthetic equipment, resuscitation equipment and sterilization equipment;

(c) drugs and parenteral fluids for emergency use.

Section 5 (1) The provisions of section 4, and so much of the provisions of sub-section (2) of section 3 as relate to the length of the pregnancy and the opinion of not less than two registered medical practitioners, shall not apply to the termination of a pregnancy by a registered medical practitioner in a case where he is of opinion, formed in good faith, that the termination of such pregnancy is immediately necessary to save the life of the pregnant woman.

In this situation, if the pregnant woman is unconscious or she is in a state of unsound mind due to ailment, her consent may not be necessary for the purpose of this section. Section 3(4)(b) may be ignored in this particular situation in emergency.

> (2) Notwithstanding anything contained in the Indian Penal Code, the termination of a pregnancy by a person who is not a registered medical practitioner shall be an offence punishable under that Code, and that Code shall, to this extent, stand modified.

Explanation: For the purposes of this section, so much of the provisions of clause (d) of section 2 as relate in the possession, by a registered medical practitioner, of experience or training in gynecology and obstetrics shall not apply.

Section 6 empowers Central Government to make rules for the purpose of this Act as mentioned earlier. Section 7(1) also empowers Central Government to make regulations for the purpose of this Act. As for example, use of register, proforma, keeping of record and the procedure regarding this matter etc. Reader may go through the original text of regulation (of 10 Oct. 1975).

Section 7 (2) The intimation given and the information furnished in pursuance of regulations made by virtue of clause (b) of sub-section (1) shall be given or furnished, as the case may be, to the Chief Medical Officer of the State.

> (3) Any person who willfully contravenes or willfully fails to comply with the requirements of any regulation under sub-section (1) shall be liable to be punished with fine which may extend to one thousand rupees.

Section 8 No suit or other legal proceeding shall lie against any registered medical practitioner for any damage caused or likely to be caused by anything which is in good faith done or intended to be done under this Act.

This section grants protection to registered medical practitioner against any suit or proceeding for any damage caused or likely to be caused inspite of his utmost care and attention or any unavoidable situation evolved at the time of termination of pregnancy under the provision of this Act. The nature of the damage, if any, depends on the technique used; but, in any case, if there is damage which is not expected due to particular technique used and which is due to negligence on the part of the medical practitioner, this section then ceases to operate for his or her protection.

What happens sometimes in the case of termination of pregnancy at early stage by 'sution curettage technique may draw our attention in this connection? A registered medical practitioner having experience and training as approved by this Act, terminates a pregnancy using aforesaid technique in good faith, but during this process probably due to inefficiency or due to the precision (fiducially limits of error) of the technique, part of the embryo is left in the uterus. The unfortunate, ignorant, Indian woman continues this once disturbed pregnancy and never turns up to the doctor again probably partly due to loss of faith in doctor and partly due to utter confusion created by the presence of unwanted baby in the womb and finally, she delivers a deformed child. Who will be responsible for this deformed child, - Doctor, Mother or State? Whether this child can claim compensation for the damage (Tort) caused in the womb. This is yet to be decided and this situation, in fact, demands concurrent attention by the medical scientist, social scientist, man of legal profession and the head of the State.

THE FOETUS

From the scientific point of view, the foetus is alive from the very beginning, that is, when a zygote is formed after fertilization (union) of an ovum (female gamete) by a spermatozoon (male gamete). What we call 'awakening of foetus' is the gradual and spontaneous manifestation of activity of life. Actually, this process starts from the zygote with specific momentum and naturally culminates at around 28th week of gestation in the case of human beings. Thereafter, the development continues and normal parturition occurs at around 40th week in woman. Therefore, extirpation of foetus at any time during this period hardly invokes any problem in the eye of science except that the gravity of risk increases with the advancement of the pregnancy.

In our society, extermination of foetus as such is a culpable offence. Concept behind this is argued to be that the same 'ego' *(Atma)* prevails in the individual during the pre-natal and post-natal life. What we observe in the later life (physical and mental expression) is as if it is the blooming of the tree whose seedling always remains in the foetus. Therefore, more or less same status is imposed upon an individual either in or out of the mother's womb. Law has also accepted it in principle and thus, we find in the case of succession of properties, that along with others, the unborn also gets equal share17. On the other hand, it seems apparently contradictory when we go through the explanation in 3 of section 299 of the IPC, that the causing of the death of a child in the mother's womb is not homicide. It appears that this provision has accommodated the MTP Act.

A registered medical practitioner in a case where he is of opinion, formed in good faith, that the termination of such pregnancy is immediately necessary to save the life of the pregnant woman, is permitted to do so under section 5(1) of MTP Act, ignoring the length of pregnancy and without the opinion of other colleague. Except this situation, nowhere in this Act, termination of pregnancy exceeding 20 weeks of gestation has been permitted.

PREGNANT WOMAN

Sometimes, question is raised about the marital status of the pregnant woman undergoing MTP, because it has not been mentioned anywhere in the Act except in the *explanation ii under section 3*. To look into this matter, it is better to start with its preamble which, according to Justice Dyer, is a key to open the minds of makers of the Act16. The preamble as mentioned earlier, says that this Act provides for the termination of certain pregnancies. The criteria to select such pregnancies have been given in the material provisions of this Act. Under clause (b) of Section 3(2), four grounds have been laid down - such as I. risk to the life, II. Grave injury to physical health, III. Grave injury to mental health and IV. Substantial risk for the child to be born seriously handicapped. Therefore, the wise legislatures have, therein, specified the nature of pregnancies to be brought under the purview of this Act. Subsection (3) of Section 3 says that to determine such risk of injury to the health, the pregnant woman's actual or reasonably foreseeable environment may be considered. This provision sets out further caution or guidance for evaluating the seriousness of injury to bring it under the ambit of grave injury to physical or mental health. *explanation I under section 3* adds that the anguish caused by pregnancy due to rape shall be presumed to constitute grave injury to the mental health of the pregnant woman and thus it does specify an area of mental health for this purpose. It seems from the foregoing discussion that legislatures intend that both married and unmarried pregnant woman shall avail of all these grounds mentioned above. As a matter of fact, the ambit of these grounds is very narrow and it actually covers what is called humanitarian grounds.

In *explanation ii under section 3*, it is said that anguish caused by unwanted pregnancy resulted due to' failure of any device or method used by any married woman or her husband with a view to limit the number of children may be presumed to constitute grave injury to the mental health of the pregnant woman. This ground in fact is available to the married woman only. The marriage must be legally valid. That is, it must have been performed under accepted and valid custom. *sagai* or *magni* etc. does not constitute marriage. One of the maxims for the interpretation of the

statute is *Expressio unius est exclusio alterius*, it means express mention of one thing implies the exclusion of another. Therefore, it seems that legislatures have never intended therein to encourage pre-marital sex relation even with the protection of contraceptive device or method and thus impliedly denied this ground for MTP to the unmarried pregnant woman. The MTP Act is a piece of social legislation. The wisdom of makers of the Act deeply felt the urgent need of controlling unwanted growth of population in existing socio-economic condition and then conferred, on woman, certain rights by legislating this statute in conformity with the ethical, moral and humanitarian sentiments of our people.

In our country, the liberalization of abortion law has a limit up to 'for social reasons' and has not been extended to 'on request' stage and for this social reason we have this MTP Act. Science only looks after the technical aspects of this system whereas the law has to take care of its implementation which certainly depends upon the cultural, ethical, religious and economical background of the various sections of our society.

EFFECTS OF MTP

Medical practitioners generally hesitate to interfere with the first pregnancy of a married woman. According to them, she should accept it with great appreciation since it certainly maneuvres some physico-psychic interaction to ensure her realization that the domain of her womanhood is now being enriched with the motherhood, that is, a characteristic natural urge of a female. During this process the function of endocrine system and other general metabolic processes which are inevitably associated with the pregnancy reach, for the first time, to their climax to complete its term. What happens if the first pregnancy is terminated by MTP, the whole of the system stumbles in the middle of its function and sets back to the initial stage again. There is also a risk of infection and thus a woman may per chance become permanently infertile.

CONCLUSION

In conclusion, it may be expedient to state that this MTP Act has been introduced in our country in an era when it really becomes appropriate in considering the global population problem. If this method is applied with proper scientific skill and strictly following the prescribed laws then there is a least chance of any harm either to a woman or to the nation; otherwise, the objective of the MTP Act will not be fulfilled.

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Lkkjk'k

इस अध्ययन में उत्प्रेरित –गर्भपात का देश के कानून की दृष्टि से तथा तकनीकी एवं विज्ञानीय गुणदोषों के आधार पर कार्यक्रम के क्रियान्वयन और समाज में इसकी स्वीकार्यता आदि पक्षों के व्यापक संदर्भ में एक विवेचनात्मक विश्लेषण प्रस्तुत किया गया है।

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