CHAPTER – I

INTRODUCTION

1.1 INTRODUCTION

India’s development has found reflection in the noticeable improvement in the health status of its people over the years, but this improvement is not equally distributed among all sections of the population. India’s health development of the past 60 years includes increase in life expectancy, reduction in infant and child mortality, reduction in life threatening childhood diseases and more availability and accessibility of healthcare services with prime focus on women and children. But, these visible improvements in health of people conceal several complexities (Dyson, 2011). On one hand, children, aged and communities at bottom of India’s caste hierarchy are still at high risk of health hazards, and their unequal health status exposes the poor performance of country’s health care system. The Approach paper to 12th five years plan clearly underlines the need for special attention to the health status of the SC/ST and OBC population for faster, sustainable and more inclusive growth, in view of the unequal health status of these marginalized sections.

Within the country, health differentials have been in existence since the early part of the nineteenth century when distinction between health status of rich and poor were recognised to be pervasive (Rosen, 1958) and it still continues to persist although its dimensions have changed (WHO, 2010).

In the development processes health status of people plays a significant role. Health is a basic element of every citizen in a country. Human resource being
an important resource of all has gained much importance in the modern era particularly in a developing country like India. The well being of the people is an important foundation of the prospective nation. (Aiyanna, K.V., 1992)

Hirosh Nakajima, Former Director General of World Health Organisation while addressing the second regular session of the United Nations Economic and Social Council held in Geneva (July 1990) drew the attention of the council to the powerful linkages between health and development. He pointed out that like the world economic situation the world health situation is improving generally but the disparity remains great between developed and developing countries and even between population groups in some countries. In his view the high rate of avoidable maternal mortality in many developing countries and the difference in life expectancy between the rich and the poor are unacceptable which reveal the importance of health even at the international level. (Ramesh M Chaturvedi, 1990)

It is also the responsibility of the respective governments to provide better health facilities and preventing infant mortality. The Constitution of World Health Organisation states “Government have a responsibility for the health of their people. Therefore infant mortality as one of the components of health status of any nation has drawn the attention of all the nations of the world particularly the developing countries. To achieve good health standard all the developing countries are making effort to provide comprehensive health care. (Park, J.E., 1980)

To support this, the statement by J.E. Park is worth to mention. “The term comprehensive health care implies the provision of curative, preventive and promotional services from womb to tomb to every individual residing in a defined geographical area”.

2
Realising the need for comprehensive health care India has been formulating and implementing many policies to prevent infant mortality. The health scenario of India during pre-independence period was not encouraging. The maternal mortality rate and infant mortality rates were 22.4 per 1000 population and 162 per 1000 live birth respectively. (Devagan, A.K., & Tarakroo, P.C., 1991)

Even today the rate of infant mortality in India is considered to be high among the developing countries. High rate of IMR and MMR continued to be become big threat to development processes.

The development status of a nation is determined by the HDI (Human Development Index) ranking. The HDI has become yard stick to assess the level of development which comprises several indices such as income, education and health. Though each index consists of several parameters: health parameters includes longevity, IMR, MMR, gender, etc. Among several parameters to assess health status, infant mortality rate has been one of the strong factors which has been focused at the international level. The IMR refers to the death of children in the age group of five years for every 1000 live births. “Infant mortality rate (IMR) is defined as the ratio of infant deaths registered in a given year to the total number of live birth registered in the same year; usually expressed as a rate per 1000 live births”. (Park, J.E., 1980) The rate of infant mortality is very high in developing countries particularly in Asia and Africa.

IMR is not only as an important indicator of health status of country but also level of living standard of people.
The millennium development goals (MDGs) also had reduction of IMR as one of the goals. The rate of infant death is an indication of development of nation. Even in the new slogan of sustainable development goals (SDGs) IMR has been considered as one of the goals to be achieved by reducing the IMR in developing country. The rate of infant death is very much in underdeveloped countries compared to developed countries. This is due to socio-economic conditions prevailing in poor countries. Many factors are responsible for infant mortality such as the mother's literacy rate, environmental conditions, lack of medical facilities, sanitation, nonpotable drinking water, extreme poverty, etc.

The forms of infant mortality are:

- Postneonatal mortality is the death of children aged 29 days to one year. The major contributors to postneonatal death are malnutrition, infectious diseases and the home environment.

- Perinatal mortality is late fetal death or death of a newborn up to one week postpartum. (wikipedia.org)

Though various steps are taken to propagate the need for institutional delivery and prenatal checkup mothers in many developing countries have not accepted these facilities. As a result death of children within the year is occurring at very high rate. The high rate of maternal death of the mother is due to anemia and home delivery which is also contributory factor for high IMR.

In any community, mothers and children constitute a priority group. In sheer numbers, they comprise approximately 71.14 per cent of the population of the developing countries. In India, women of the child-bearing age (15 to 44 years) constitute 22.2 per cent, and children under 15 years of age is about
35.3 per cent of the total population. Together they constitute nearly 57.5 per cent of the total population. By virtue of their numbers, mothers and children are the major consumers of health services, of whatever form.

Mothers and children not only constitute a large group, but they are also a “vulnerable” or special-risk group. The risk is connected with child-bearing in the case of women; and growth, development and survival in the case of infants and children. Whereas 50 per cent of all deaths in the developed world are occurring among people over 70, the same proportion of deaths are occurring among children during the first five years of life in the developing world. Global observations show that in developed regions maternal mortality ratio averages at 8 per 100,000 live births; in developing regions the figure is 450 for the same number of live births. From commonly accepted indices, it is evident that infant, child and maternal mortality rates are very high in many developing countries. Further, much of sickness and deaths among mothers and children is largely preventable. By improving the health of mothers and children, we contribute to the health of the general population. These considerations have led to the formulation of special health services for mothers and children all over the world”. (Park, J.E., 1980)

Therefore there is need for considering the infant death and maternal mother death as one unit. In developing countries, the primary concern is reduction of maternal and child mortality and morbidity, spacing of pregnancies, limitation of family size, prevention of communicable diseases, improvement of nutrition and promoting acceptance of health practices. The main causes affecting the health of the mother and the child in India, and other developing countries are
malnutrition, infection and the consequences of unregulated fertility. Apart from these problems, the scarcity of health and other social services in vast areas of the country together with poor socio-economic conditions also responsible.

“The health hazards for the mother and the child resulting from unregulated fertility have been well recognized increased prevalence of low birth weight babies, severe anaemia, abortion, antepartum haemorrhage and a high maternal and perinatal mortality, which have shown a sharp rise after the 4th pregnancy. Statistics have shown that in almost every country in the world, a high birth rate is associated with a high infant mortality rate and under-five death rate”. (Satapathy S.K., & Venkatesh, S., 2006)

Table 1.1: Selected countries for infant mortality rates and under-five mortality rates (2015)

<table>
<thead>
<tr>
<th>Country</th>
<th>Under-five mortality rate per 1000 live births</th>
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<tbody>
<tr>
<td>India</td>
<td>41.81</td>
</tr>
<tr>
<td>Pakistan</td>
<td>55.67</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>44.00</td>
</tr>
<tr>
<td>Thailand</td>
<td>9.63</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>8.80</td>
</tr>
<tr>
<td>China</td>
<td>12.44</td>
</tr>
<tr>
<td>Switzerland</td>
<td>3.67</td>
</tr>
<tr>
<td>UK</td>
<td>4.38</td>
</tr>
<tr>
<td>USA</td>
<td>5.81</td>
</tr>
<tr>
<td>Singapore</td>
<td>2.48</td>
</tr>
<tr>
<td>Japan</td>
<td>2.10</td>
</tr>
</tbody>
</table>

Source: CIA World Fact Book (edit)

Because family planning has a striking impact on the health of the mother and the child, a number of countries have integrated family planning in the MCH care activities. The introduction of new types of IUD; easier and safer techniques of pregnancy termination and female sterilization; oral pills and long-acting injectable medroxy-progesterone acetate (MPA) have contributed a good deal in
the utilization of family planning services. In some countries, MCH programmes are extending their scope to include family-life education in schools. There is also an increasing acceptance of the role of traditional midwives and community health workers, with suitable training for the extension of family planning services to remote rural areas.

To reduce the infant mortality and death of maternal mother the steps need to be strengthened both at antenatal care and postnatal care levels.

1.2 ANTENATAL CARE

Antenatal care is the care of the woman during pregnancy. The primary aim of antenatal care is to achieve at the end of a pregnancy a healthy mother and a healthy baby. Ideally this care should begin soon after conception and continue throughout pregnancy. In some countries, notification of pregnancy is required to bring the mother in the prevention care cycle as early as possible.

Objectives

The objectives of antenatal care are:

(1) To promote, protect and maintain the health of the mother during pregnancy.
(2) To detect “high risk” cases and give them special attention.
(3) To foresee complications and prevent them.
(4) To remove anxiety and dread associated with delivery.
(5) To reduce maternal and infant mortality and morbidity.
(6) To teach the mother elements of child care, nutrition, personal hygiene, and environmental sanitation.
(7) To sensitize the mother to the need for family planning, including advice to cases seeking medical termination of pregnancy; and
(8) To attend to the under-fives accompanying the mother.

To achieve these objectives necessary steps to be taken such as preventing anaemia, providing nutritious food, preventing tetanus, syphilis, measles, HIV infection, pre-natal genetic screening and postnatal examination.

1.3 POSTNATAL CARE

Care of the mother (and the newborn) after delivery is known as postnatal or post-partal care. Broadly this care falls into two areas: care of the mother which is primarily the responsibility of the obstetrician; and care of the newborn, which is the combined responsibility of the obstetrician and paediatrician. This combined area of responsibility is also known as perinatology.

Care of the mother

The objectives of care are:

(1) To prevent complications of the period.
(2) To provide care for the rapid restoration of the mother to optimum health.
(3) To check adequacy of breast feeding.
(4) To provide family planning services.
(5) To provide basic health education to mother/family.

1.4 NEONATAL CARE

Flow chart of optimum care of newborn is as shown in Fig. 1. This aspect of family health services has been termed neonatology. This branch of medicine is, perhaps, more than any other, dependent on teamwork in which disciplines of obstetrics and gynaecology, paediatrics, preventive and social medicine, community health services and nursing have important part to play, if any impact is to be made on vast problems of perinatal and neonatal mortality and morbidity.
The paediatrician has a key role as a coordinator and guide for the whole team.

**Flow chart of optimum newborn care**

Source: Parker, Preventive and Social Medicine.

**Early neonatal care**

The first week of life is the most crucial period in the life of an infant. In India, 61.3 per cent of all infant deaths occur within the first month of life. Of these, more than half may die during the first week of birth. This is because the newborn has to adapt itself rapidly and successfully to an alien external environment. The risk of death is the greatest during the first 24-48 hours after birth. The problem is more acute in rural areas where expert obstetric care is scarce, and the home environmental conditions in which the baby is born, are usually unsatisfactory.

The objective of early neonatal care is to assist the newborn in the process of adoption to an alien environment, which involves:

(i) establishment and maintenance of cardio-respiratory functions

(ii) maintenance of body temperature

(iii) avoidance of infection
(iv) establishment of satisfactory feeding regimen, and
(v) early detection and treatment of congenital and acquired disorders, especially infections.

Congenital infections caused by toxoplasmosis, rubella, human (alpha) herpes-virus 1 or 2, human (beta) herpes virus, and syphilis (TORCHES synonems) is associated with high mortality rate in the neonates.

**LOW BIRTH WEIGHT**

The birth weight of an infant is the single most important determinant of its chances of survival, healthy growth and development.

There are two main groups of low birth weight babies those born prematurely (short gestation) and those with foetal growth retardation. In countries where the population of low birth weight infants is less, short gestation period is the major cause. In countries where the proportion is high (e.g. India), the majority of cases can be attributed to foetal growth retardation.

A target birth weight of at least 2.5 kg for 90 per cent of newborn infants, and an adequate growth of children as measured by weight-for-age, together constituted global indicator number “8” for monitoring and evaluation of the global strategy for Health for 2000 AD.

By international agreement low birth weight has been defined as a birth weight of less than 2.5 kg (up to and including 2499 g), the measurement being taken preferably within the first hour of life, before significant postnatal weight loss has occurred. Apart from birth weight, babies can also be classified into three groups according to gestational age, using the word “pre-term”, “term” and “post-term”, as follows:
a. Pre-term: Babies born before the end of 37 weeks gestation (less than 259 days).

b. Term: Babies born from 37 completed weeks to less than 42 completed weeks (259 to 293 days) of gestation.

c. Post-term: Babies born at 42 completed weeks or any -time thereafter (294 days and over) of gestation.

A low birth weight (LBW) infant then, is any infant with a birth weight of less than 2.5 kg regardless of gestational age.

**Table 1.2: Reported incidence of LBW babies in some developed and developing countries in 2008**

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of live births</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>28</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>18</td>
</tr>
<tr>
<td>Thailand</td>
<td>9</td>
</tr>
<tr>
<td>China</td>
<td>4</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>22</td>
</tr>
<tr>
<td>Pakistan</td>
<td>32</td>
</tr>
<tr>
<td>USA</td>
<td>8</td>
</tr>
<tr>
<td>Singapore</td>
<td>8</td>
</tr>
<tr>
<td>Sweden</td>
<td>4</td>
</tr>
<tr>
<td>UK</td>
<td>8</td>
</tr>
<tr>
<td>Switzerland</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: Parker, Preventive and Social Medicine
The list of CIA World Fact Book shows that most of the developing countries have high IMR ranging from 44 to 115. Unfortunately India still has 41.81 IMR per 1000 live birth. Though India has been doing well in the health sector the scenario of infant death stress the need for further strengthening the schemes to prevent IMR.

“National Rural Health Mission is an ambitious strategy of the government. It was designed to restructure the delivery mechanism for rural health care towards providing universal access to equitable, affordable and quality health care that is accountable and responsive to the people’s needs reducing child and maternal deaths as well as stabilising gender balance. The mission is an articulation of the government’s commitment to raise public spending on health from 0.9% of India’s gross domestic product (GDP) to 2.3% of GDP and aims to undertake architectural correction of health system”.

India being a vast country with huge population had inadequate health infrastructure. “The country has created a vast public health infrastructure of sub-centres, public health centres (PHCs) and community health centres (CHCs). There is also a large cadre of health care providers. Yet this vast infrastructure is able to cater to only 20% of the population, while 80% of health care needs are still being provided by the private sector. Rural India is suffering from a long standing health care problem”. (Umesh Kapil, 2008)

Of the various health problems, infant mortality is one of the major issues in the processes of human development. All the developing countries are having high infant mortality. Reducing Infant mortality and improving the maternal health are two major goals of millennium development. The rate of child mortality and
women dies during child birth is very high in developing countries. In developed countries 13 women die in child birth for every 100,000 live birth, whereas in poor countries this is ten times more. It is estimated that more than 500000 women die every year at the time of child birth over the globe.

The death is due to poverty, malnourishment, weakened by diseases, exposed to multiple pregnancies, lack of access to trained health care worker and modern facilities. Similarly every year more than 10 million children in developing countries die before the age of five. In many poorest countries the IMR is 71 per 1000 live births. In India the IMR is 40 to 50 per 1000 live birth. The child deaths are due to negligence, disease or combination of diseases.

Realizing the importance of reducing IMR and improving the health of mother many programs are launched throughout the country. However, still the rate of child death and maternal death not reduced to the expected level. As per the targeted millennium development goal of 2015 for the reduction the rate of IMR and MMR, the existing schemes are to be strengthened and efficiently implemented in India.

Maternal and Child health policies are the pivotal in reducing infant and child mortality. The Government of India started the programs of MCHR in the first five year plan. (1951-56). Subsequently in 5th five year plan (1974-79) the integration of MCR and nutrition services was introduced as a part of minimum needs program.

Main objectives of these programs were to provide basic public health services to vulnerable groups of pregnant women, lactating mothers and preschool children. Later on comprehensive programs evolved under MCH scheme.
India is still among high mortality rate countries. IMR has declined slowly from 204 during 1911-15 to 129 per live births in 1970 and remained static at around 127 for many years and then declined a bit once again to 114 in 1980 and coming down to 69 in 2000. Despite this significant decline the IMR rates are very high as compared to developed countries which are having the range of 5-8 per 1000 live births. India is a vast country with widely varying population, hence there is a vast regional variation in IMR. Orissa state is having IMR of 98 which is still out very high, side and on the lower side of spectrum is Kerala which has IMR of 16 per 1000 live births.

Karnataka is one of the provinces of India situated in the southern part of India. The total geographical area of the state is 191791 sq km with the population of 52850512 (2001). Of the total population 17961529 are living in urban area and 34889033 are living in rural area (33 percent and 67 percent). There are 30 districts in the state which are delineated for convenient administrative purpose. As far as health services are concerned, at the state level there is a Directorate which controls all District Health Administration headed by District Health and Family welfare Officers who are in charge of implementing all health programs in the District. There are 325 hospitals, 2250 primary health centers and 8183 sub-centres in the state which are rendering maternal and child health services.

**Research gap**

Reduction of infant mortality is one of the main objectives of developing countries. Much importance is given for investing substantial portion of GDP to reduce IMR. Therefore there is a need to identify the corresponding relations between public investment and reduction of IMR.
1.5 OBJECTIVES OF THE STUDY

1. To analyse the existing status of IMR in the selected districts.
2. To trace out the role of public participation in the process of prevention of IMR.
3. To find out the rate of public investment in prevention of IMR in the selected districts.
4. To understand the contrast between Udupi and Koppal districts in terms of IMR and identify the factors like socio economic, demographic etc, responsible for IMR in this region.
5. To propose policy guidelines to reduce IMR through various interventions in these selected districts.

1.6 HYPOTHESES OF THE STUDY

1. Socio-economic factors are responsible for high IMR.
2. Poor access to prenatal and postnatal service contributing for high IMR.
3. Lack of awareness among maternal mothers is a major cause for child death.

1.7 METHODOLOGY OF THE STUDY

The study focused to compare the IMR in Koppal and Udupi districts. Udupi is the developed district in the state with the HDI ranking of one. Whereas Koppal district is a newly formed district considered to be backward district with the HDI ranking of 25.

The study is based on secondary and primary data. The secondary data comprises published books, journals, unpublished reports and related literature in the field of health service. The data pertained to IMR, maternal death, immunization and other health impact like availability of doctors, para-medical
staff, etc. were collected from the respective districts. HDI reports prepared by the State Government also have been made use of.

With regard to primary data 324 respondents were selected and the structured schedules were administered to the pregnant women and mothers. The collected data has been compiled and analysed to draw the inferences and test the hypotheses. The appropriate statistical device is used to find out the objectives of the study.

1.8 STUDY AREA

Both Koppal and Udupi are the newly formed districts. The total geographical area of Koppal is 7,189 sq km with the population of 11,96,089 while the male population is 6,03,312 and female population is 5,92,777. The vulnerable group comprises SC and ST with population of 1,85,209 and 1,38,588 respectively. The literacy rate in Koppal district is less than the national level literacy rate i.e. only 74.1% and 39.6% of female literacy. Female literacy rate is one of the lowest in the state. It is located in the dry tract which is a backward district.

On the other hand Udupi is located in the coastal region with the geographical area of 3,880 sq km. The population of the district is 11,12,243 with 5,22,231 male population and 5,90,012 female population which is a unique phenomenon. The vulnerable section such as SC and ST also limited in number i.e. 67,689 and 41,613 respectively. The literacy rate among female is higher than male i.e. 86.2% and 81.2% respectively.
The selected districts are contrast in nature in terms of economic and social indicators. Therefore the study focused on a comparative study of infant mortality in these two districts.

1.9 SCOPE AND LIMITATIONS OF THE STUDY

The study is very important and need of the present situation. India being a developing country need to reduce the rate of infant mortality by providing various facilities and launching suitable programmes to improve the health of mother and child. Though several studies were conducted with regard to health and health services, and eradication of dreaded diseases like Malaria, Smallpox, Tuberculosis, etc. No study attempted to bring out the scenario of IMR with reference to public investment at a micro level. IMR as one of the parameter to assess the level of health standard of people, it is necessary to conduct the study. The study confined to two districts of the state and the random sample method was adopted to collect the primary survey.

The study is relied upon the data provided by the Department of Health and Family Welfare and Zilla Panchayat at District level, and confined to micro level study. Comparison of backward district with a forward district is the uniqueness of the study.

1.10 CHAPTERIZATION OF THE STUDY

The study is divided into six chapters.

The first chapter is devoted for introduction about health and health scenario and the concept of infant mortality.
The second chapter is related to the literature of the topic. The books and reports related to public health service, various health schemes implemented and strategies adopted for preventing IMR.

In the third chapter the profile of the two districts namely, Udupi and Koppal is given to depict the geographical and economic scenario of the study area.

In the fourth chapter of the thesis, the existing health programmes pertaining to infant mortality and allocation of funds for implementing such programmes in the two districts has been analysed.

The fifth chapter containing the analysis of the primary data collected in the two districts to draw the inferences related to objectives. The methodology of the study has been explained.

The six chapter of the thesis devoted to findings of the study and suggestions to strengthen the policies to prevent infant mortality.