Status of Maternal, Child Health (MCH) and Nutrition in India : A State Level Analysis

Dissertation is submitted with partial fulfillment in the Centre for study of Regional Development, School of Social Sciences for the award of Degree of Master of Philosphy (M. Phil) in Jawhar Lal Nehru University, New Delhi.

Supervisor
Dr. Anuradha Banerjee

Research Scholar
Sudhir
M.Phil
Population Studies
CSRD / SSS
J.N.U, New Delhi

जवाहरलाल नेहरू विश्वविद्यालय
JAWAHARLAL NEHRU UNIVERSITY
NEW DELHI-110067

Centre for the Study of Regional Development
School of Social Sciences
Jawaharlal Nehru University
New Delhi - 10067.

Date: 2001

CERTIFICATE

The dissertation entitled "Status of Maternal, Child Health (MCH) and Nutrition in India : A State Level Analysis" submitted in partial fulfillment for the M.Phil degree of this university has not been previously submitted for any other degree of this or any other university. It is my original work.

Sudhir
(Candidate)

We recommend that the dissertation be placed before the examiners for evaluation.

Dr. Anuradha Banerjee
(Supervisor)

Prof. S.K. Thorat
(Chair Person)
26/7/01

Gram : JAYENU Tel. : 6107676, 6167557 Telex :031-73167 JNU IN Fax : 91-011-6865886

ACKNOWLEDGEMENT

I, Mr. Sudhir express my sincere gratitude and thanks to my supervisor Dr. Anuradha Banerjee for her humble nature and time to time giving me a lot of valuable and authentic suggestions, instructions, books and relevant study material that helped me a lot while writing M. Phil. Dissertation on "Status of Maternal, Child Health (MCH) and Nutrition in India : A State Level Analysis". Under the guidance of my supervisor, I feel very comfortable and found capable of writing my dissertation in a new way.

I am very greatful to my chairpersons Prof.Harjeet Singh and Prof. S.K. Thorat for providing me inspiration for undertaking this work. I also would like to acknowledge all my teachers in CSRD, JNU for providing me constant encouragement in pursuing my research in the field of Population Studies . I am also thankful to all the staff of CSRD who had provided me help from time to time.

From all my heart and soul, I am thankful to my parents who had encouraged me for consistent hard work. I am also thankful to my close friend Kanika Ahlawat for keeping me enthusiastic during all my dissertation work and helping me in collection of data material and giving me some good suggestions that really helped me in writing dissertation.

Sudhir

Sudhir

CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER---1

CHAPTER -- 1

INTRODUCTION

1.1 Statement of the Problem

1.2 Definition of Health and Nutrition

1.3 Basic Requirements which Determines the Health and Nutrition of Mother and Child

1.4 Measures of Health and Nutrition for Mother and Child

1.5 Objectives

1.6 Hypotheses

1.7 Research Methodology

1.8 Data Base

1.9 Literature Review

1.10 Conclusion

1.11 References

Chapter- I

Introduction

1.1 Statement of the problem

My work is regarding maternal and child health and nutrition—A state level analysis. I am more concerned about the regional variations in the states from the maternal and child health and nutritional point of view. Safe motherhood practices and child survival programs are critically important in a country that is experiencing high infant and child mortality and maternal mortality.

Realizing the importance of maternal and child health care services, the Ministry of Health, the Government of India took concrete steps to strengthen maternal and child health services in the first and second five year plans (1951-56 and 1956-61). The integration of family planning services with maternal and child health services and nutritional services was introduced as a part of the Minimum Needs Program during the Fifth Five Year Plan (1974-79). The primary objective was to provide basic public health services to vulnerable groups of pregnant women, lactating mothers and pre-school children (Kanitkar, 1979). Since then the promotion of health of mothers and children has been one of the most important aspects of family welfare programmes in India and has now been further strengthened by introducing the child survival and safe motherhood programmes (Ministry of Health and Family Welfare, 1992).

The Ministry of Health and Family Welfare has also sponsored special schemes, under the maternal and child health programmes including the programme of oral rehydration therapy, development of regional institutes of maternal and child health in states where infant mortality rates are high, the universal immunization

programme and the maternal and child health supplemental programme within the post - partum programme (Ministry of Health and Family Welfare, 1992).

In the rural areas of India, maternal and child health services are mainly delivered by government run primary health centres and sub-centres. Services for pregnant women and children can also be obtained from private and public maternity homes/ hospitals. In the urban areas, maternal and child health (MCH) services are available mainly through governmental or municipal hospitals, urban health posts, hospitals and nursing homes operated by non-governmental voluntary organizations and by various private nursing homes/ maternity homes.

To evaluate the maternal and child health, nutrition status statewise we have taken various indicators like prenatal, antenatal, place of delivery, maternal nutrition, birth order, maternal health, child health, weight of child, initiation of breast feeding, immunization, ORS packet used.

According to NFHS, while taking several important maternal care indicators it is observed that there are substantial inter-state variations. The percentage of births for which mothers received antenatal care is highest in Kerala (97 percent) followed by Goa (95 percent) and Tamilnadu (94 percent). Among the major states (state with more than five million populations in 1991) Punjab, Andhra Pradesh, Karnataka, Maharashtra and Delhi have also achieved antenatal coverage for more than 80 percent of birth. Smaller states as Mizoram and Jammu stand out with coverage rates of 89 and 80 percent respectively. Utilisation of antenatal services is lowest in Rajasthan is 31 percent. The percentage of births for which mother received antenatal care is also low in Bihar (37 percent), Uttar Pradesh (45 percent), Assam (49 percent), Madhya Pradesh (52 percent) and Orissa (62 percent). Receiving of antenatal care from highest Kerala (97 percent) to Rajasthan (31 percent) is only due to awareness about the facilities provided by the government run hospitals and education level achieved by various states mainly in terms of woman's education. There are large

interstate variations in the proportion of Institutional deliveries ranging from 87 - 88 percent in Kerala and Goa to 11-12 percent in Rajasthan, Assam, Bihar and Uttar Pradesh. Maternal care is poor across the board in Rajasthan, Bihar, Uttar Pradesh, Assam, Nagaland.

While taking the immunization of children against six serious but preventable diseases (namely tuberculosis, diptheria, pertusis, tetanus, poliomyelitis and measles), enormous statewise variations exists. There is a considerable interstate variation in the coverage rates for different vaccination and for children receiving all vaccinations. The percentage of children who are fully vaccinated ranges from 4 percent in Nagaland to 75 percent in Goa.

Among the major states, the percentage of children who are fully vaccinated ranges from 11 percent in Bihar to 65 percent for Tamilnadu. Bihar (11 percent), Assam (19 percent), Uttar Pradesh (20 percent),Rajasthan (21 percent) and Madhya Pradesh(20 percent) . So, main reason for the interstate variations in the vaccination coverage are lack of awareness among the masses, education level, lack of infrastructure and much more is the lack of political will for a particular cause comes out.

If we look at the statewise feeding practices, Goa has extraordinary high uses of feeding bottles. Punjab, Jammu and Meghalaya also have an exceptionally low proportion of children under four months of age who are exclusively breastfed. Children in Rajasthan, Bihar, Uttar Pradesh are very unlikely to be given solid or mushy food at the appropriate age.

No state comes even close to achieving the recommendations for exclusively breastfeeding of children under four months of age or supplementation of breast milk with solid or mushy food at age 6-9 months. These poor feeding practices are undoubtedly a factor in the nutritional deficiencies.

There are variations in the nutritional status by state with the best record on nutritional status for children (Kerala). More than one-quarter of young children across the states are underweight and

more than one quarter are stunted. Other states with relatively low levels of nutrition are Manipur, Mizoram, Nagaland and Goa. Nutritional problems are particularly serious in Bihar and Uttar Pradesh. The problem of wasting is most evident in Bihar and Orissa but coincidentally these states are not among the highest infant mortality rates in India.

1.2 Definition of Health and Nutrition

Health can be defined as a state of complete physical, mental and social well being and not merely the absence of diseases or infirmity," according to the World Health Organization (1946).

Nutrition can be understood as how body absorb Proteins, Carbohydrates, Fats, Vitamins, Minerals nutrients, the extremely complex processes that undergo in the body, how they Affect one another, how they are broken down and released as energy and how they are transported and used to rebuild countless specialized tissues and sustain the overall health of individual according to "World Health Organization"(1946).

1.3 Basic requirements which determines the Health and Nutrition of Mother and Child

There are certain prerequisites which determine Health and Nutrition of mother and child. These are Prenatal health services, Timing of conceiving a foetus, Maternal diet during pregnancy, Birth of baby by mid wife or by expert doctors team, Birth of baby in governmental / Private owned hospitals, Weight of child after birth, Breast feeding by mother.

1.4 Measures of Health and Nutrition for Mother and Child

We have taken some measures such as Crude Birth Rate, Crude Death Rate, Infant Mortality Rate, Maternal Mortality Rate, Antenatal care, Place of delivery, Birth order, Maternal Nutrition, Child Nutrition, Child's weight, Initiation of breast-feeding, Knowledge and use of ORS packets, Immunization of children.

1.5 Objectives

1. To see the variations in fertility across the states.
2. To study the infant/child mortality pattern across the states and factors responsible for this.
3. To portray the health aspects in various states and factors responsible for such a variations.
4. To look in to infant/child and maternal nutritional pattern in various states and factor responsible.
5. To portray Health and Nutritional status by states and to investigate the regional variation thereof.

1.6 Hypotheses

- Infant and Child mortality rates are low if immunisation levels in states are high.
- In some states, six plus birth order is very high but in some states it is very low. So, those states which have high birth order also has poor health and nutritional status.
- Utilization of antenatal services determines the maternal health status of the state.
-

1.7 Research Methodology

To analyse the data on status of maternal and child health as well as nutrition at state level, we have used numerous methods. Data analysis has been done by using simple percentsges, ranking, correlations and composite index methods. After the data has been analysed, it has been represented through Pie Diagrams, Bar Diagrams and Choropleth method has been used for mapping.

1.8 Data base

We have taken data based on various reports, surveys, journals for knowing the status of maternal and child health and nutrition. National Family Health survey 1992-93 is a good source of data on maternal and child health and nutrition. National Sample Survey 50th round 1993-94 provides data on nutrition. In addition to these sources certain background information has been collected from yearly reports on Women and Child Health 1997, Infant and Child Mortality in India (NFHS) subject report, Dec. 1998.

1.9 Literature Review

The literature review includes matter taken from the following sources ;

1. Theses regarding the maternal and child health and nutrition.
2. Dissertations regarding the maternal and child health and nutrition.
3. Various books.
4. Journals.

Literature Review

According to thesis by GH.NABI, "Social Development of Women and Children in Jammu and Kashmir," 1996. Infants who are underweight and born with low birth rate, are a direct result of malnutrition and poor health status of mothers who during pregnancy have not balanced their diet with additional intake of irons and vitamins. Prenatal and postnatal care is therefore given much importance even from nutritional point of view.

According to UNICEF report (1990-91), there are 63 percent of children who suffer from various degrees of malnutrition in India. In Jammu and Kashmir, special provision were embodied in the constitution of the state in which emphasis was given on the educational development of women and child.

Sengupta, Sreejata in her dissertation "Child Health in India" (1994) has mentioned that improved health status of children can help to tackle the problems of rapid population growth, as was pointed out during The Earth Summit, 1992. UNICEF advocated a package of programmes for the children, popularly known as "GOBI" which comprises four elements namely, Growth monitoring, Oral rehydration, Breast feeding, Immunization.

According to Book "Women and Development" (1977) by Centre for Economic and Development and Administration, edited by Bharat Shah, Tribhuvan University Kirtipur, Kathmandu, Nepal, if women are made conscious of their social and economic responsibilities for their children and of the need for a well planned family and of the danger that constant childbearing causes damage to their health. So they will be motivated themselves and eager to have small families.

According to Ellen Lewin and Virginia Olesen edited book, "Women , Health and Healing" 1985, level of women's health status and the quality of care they received, linking their problems to the extreme sexual segregation of the health care labour force (male doctor and female nurse). These directions are important for future health care delivery as well as to the analysis of women health issues.

According to Vincent J. Aderso, Raymond Fleming edited book, "Psychological persspective of women's health (1994) U.S.A,

" Bio- medical and behavioural research should be expanded to ensure emphasis on condition and disease unique or more prevalent in women in all age groups".

According to a study in Andhra Pradesh by B.C.Muthayya, "Child Welfare - Existing conditions and Parental Attitudes, published in 1972. In Andhra Pradesh male have more knowledge of family planning than females. But they did not share this knowledge with their spouses.

According to M.R. Bone, a book by WHO on Family Formation Patterns and Health (1990). Malnutrition and infections are held to be responsible for the greater part of both morbidity and

mortality. The hemoglobin level, measured in grams per 100 milliliters of venous blood was used to determine the presence of Anaemia. Anaemia is considered to exist in adult non-pregnant women if the hemoglobin level is below 12g / 100ml, and in pregnant women if it is below 11g / 100ml.

According to the Book, 'Nutrition in Children', edited by H.P.S. Sachdev, Panna Choudhary (1995). Health care programmes worldwide, especially in the developing world, underwent radical change after the International Conference on Primary Health Care (PHC) at Alma - Ata in 1978. ICDS is playing a very important role in Maternal and Child Health. The beneficiaries are children below 6 years, pregnant and lactating women and other women in the age group of 15-44 years. Objectives of ICDS are (1) Improve the Nutritional and Health Status of Children in the age group 0 - 6 years. (2) Enhance the capability of the mother to look after the normal health and nutritional needs through proper nutrition and health education.

According to UNICEF Policy Reveiw (1990 - 1991), " Strategy for improved Nutrition of Children and Women in Developing Countries", Inadequate or improper education, particularly of women is often an underlying cause of malnutrition. Too many children, too closely spaced and born to mothers who are too young or too old are detrimental to the health of both mother and children.

According to the proceeding of the National Seminar on "Nutrition : Trends and Perspectives in 80's, 1 - 3 May 1982 in Vigyan Bhavan, New Delhi .Birth weight is the health indicator which reflects the nutrition situation as a whole and with special reference to maternal nutrition. Surprisingly with the improvement of Nutritional Status and Maternal care, the percentage of low birth weight in the community dramatically come down.

According to India's Annual report 1984-85 by Indian council of Medical Research, Women's participation in economically productive activities outside home is not a new phenomenon but the stress of work in or out side home have been shown to have adverse

effect on the maternal nutritional status, reproductive performance and lactation.

According to integrated child development services (ICDS) - A study of some aspects of the system (1988), project funded by the department of women and child development, Ministry of human resource development, government of India. The programme is designed to facilitate and promote the total development of the child by making available at the door step of tne poor communities, a coordinated package of child services comprising mutually reinforcing component of health, nutrition and educational inputs and emphasis is on the crucial stages of child development, namely the intrautrine phase and early childhood (0 - 6 years).

According to a special publication by nutrition foundation on India on nutrition and health care, problems and policies by C.Gopalan (1980). Malnutrition is largely the byproduct of poverty and may be looked upon as an important attribute of poverty syndrome which affect large segment of population of third world.

According to a project funded by UNICEF, 'Infant Feeding Practices with special reference to the use of commercial infant foods', by P.V.Gopnjkar (1985). The auther states that where the mothers are subject to severe environmental stress, dietary deprivation and under nutrition, there is impairment of lactation.

According to a national seminar held in Srinagar on 28-30th October 1985, for the implementation of a national nutrition policy in India, increased income generation of a women is no guarntee for their improved health and nutritional status and those of their offsprings. There are reports that a shift in the time allocation of women from child care to income generation leads to deterioration of the health and nutritional status of their children.

According to a book 'Health and Development', edited by David R. Philips (1994), under the article 'The Health of Women Beyond Maternal and Child Health' by Nancy Davis. The reason for focussing beyond maternal and child health can be easily understood in

relation to women's central role in bearing and rearing children especially in developing countries because of tremendous vulnerability of women and children to morbidity and morality during pregnancy, child birth and infancy.

According to Food and Nutrition Bulletin, United Nation University, September 1988 under the article, "The role of women in income production and intra-household allocation of resources as a determinant of child nutrition and health", by Lynn Bennet. Numerous studies show that the children of working mothers have lower nutritional status than those of mothers who do not work outside the home.

According to article, "The importance of women's involvement in economic activities in the improvement of child nutrition and health", by Beatrice Lorge (1988). Nutritional problems often have their origins in social and economic system and these problems can be solved only by bringing about changes in these systems, particularly at household level.

According to book 'Size at Birth' 1974 by Jean Pierre, the maternal nutrition both before and during pregnancy can effect birth rate.

According to a multicentric study of nutritional content of community care services delivered through Health and Non-Health Channels by Pralhad Rao, R. Rajalakshmi (1985),there is a programme named Anaemia Prophylaxis Programme that aims at preventing iron and folic acid deficiency in women during pregnancy and lactation.

According to the Nutrition Atlas of India by C. Gopalan, Indian Council of Medical Research Hyderabad, India 1971, surveys indicate a high incidence of malnutrition among pregnant women of the poor economic group. Maternal malnutrition is responsible not only for high maternal mortality but is also an important factor in influencing the nutritional status offsprings.

According to the proceedings of the Symposium on measurement of change in the maternal and child health, 22nd November

1995, sponsored by UNICEF, Madras, maternal and child health care programmes are essentially a preventive programme which aims at reducing morbidity and mortality in women and children by taking necessary precautions and preventive measures at appropriate time. Among the health programmes it is one of the programme where women and children are supposed to be under surveillance for the periodical check up and instituting preventive and corrective measure.

1.10 Conclusion

This chapter is introductory type and explains the strategy adopted to conduct research work on 'Maternal, Child Health (MCH) and Nutrition across the states'.

1.11 References

- Anil Kumar, Health care, delivery System in India- Regional Analysis, Centre for the study of Regional Development, School of Social Sciences, Dissertation, Jawahar Lal Nehru University, New Delhi, 1991.

- Behera (Bijaya Kumar), Health Status of Women in Rural India- A Sociological analysis, Centre of Social Medicine and Community Health, School of Social Sciences, Jawahar Lal Nehru University, New Delhi, Dissertation, 1986.

- Rani.E.Sudha, Women's Welfare in Andhra Pradesh, Dissertation, Jawahar Lal Nehru University, New Delhi , 1991.

- Sengupta, Sreejata, Child Health in India, Centre for economic studies and Planning, Dissertation, 1994, Jawahar Lal Nehru University, New Delhi.

- Anandalakshing, P.N., Determinants of Maternal Mortality- An Epidomiological Approach, Phd. Thesis, Submitted to the All India Institute of Medical Sciences, New Delhi, Dec.1989.

- Too, GH, Babi, Social Development of Women and Children in Jammu & Kashmir, Jawahar Lal Nehru University, New Delhi, Thesis 1996.

- Annual Reports 1994-95, Ministry of Health and Family Welfare, Government of India

- Arvind Pandey, Infant and Child mortality in India. National Family Health Survey Subject report, Number 11, Dec. 1998

- Bajaj, Jatinder , Knowledge and Utilization of Maternal and Child Health Services in Delhi Slums, Journal of family welfare, April 1999.

- Balakrishnan, States sponsored health care in rural Uttar Pradesh, Sociological Bulletin, March 1996.

- Banerjee, Health Policies and Programmes in India in the Eighties, Economic and Political Weekly, 21st March 1992.

- Centre for Regional Development Studies, Health and Family Planning, Jawahar Lal Nehru University, New Delhi,1976.

- Chandra Jai Shree, Women and Child, Rawat Publication , Jaipur, 1993.

- Centre for Economic Development and Administration, "Women and Development", Tribhuvan University, Kirtipur, Kathmandu, Nepal, 1977.

- C. Gopalan, "Nutrition and Health Care- Problems and Policies", special Publication series I.,1971.

- C. Gopalan, "Combating Under Nutrition—Basic issues and Practical Approaches", Nutritional Foundation of India, Special Publication Series 3, 1981.

- DOWSHELL and HEWISON, Mother's employment and child health care, Journal of social policy, July 1992.

- Durga Prashad and Sreenivasan, Rural Health in India : Perspective and Programmes , Himalayan Publication, March 1991.

- Family Welfare Programme in India, Year Book 1993-94, Ministry of Health and Family Welfare , Department of Family Welfare , Govt. of India, New Delhi
- Family Welfare Programmes in India, Year book 1994-95.
- Galler (Janima R.), Nutrition and Behaviour, Cambridge University Press, New York, 1984.
- Gupta (Narender) and others, Health of women and children in Rajasthan, Economic and Political weekly, 17 october 1992.
- H.P.S. Sachdev, Nutrition in the Children of Developing Countries. Dept. of Pediatrics, Maulana Azad Medical College, New Delhi, 1995.
- India Nutrition Profile , Department of Women and Child Development, Ministry of HRD, Government of India, 1998.
- India, Ministry of Health and Family Welfare," Safe Motherhood" Feb.1991.
- Indian council of Medical Research, Recommended Dietary Intake for Indian, New Delhi, 1984.
- Indian Council of Medical Research, "Nutrition of Mother and Child P.P. 91-143.
- K.K. Verma," Health Care and Family Welfare, India, Kalayani Publication , New Delhi, 1992.
- KOPPARTY, Health Status of Schedule Caste, Journal of social changes Volume one, March 1991.

- Kuldip Kaur, "Promotion of Small family Norms through Innovative methods, CRRID, Feb.1997.
- Monika Das Gupta, "Women Health in India Risk and Vulnerability, India, Saga Publication New Delhi, 1995.
- MUHURI, Pradip K. Health Programs, maternal education and differential in child mortality, Bangladesh # Population and Development Review 21(4); Dec. 1995
- M.R. Bone, " Child Growth and Health", Book, Family formation Pattern and Health , WHO 1986
- Nancy Davis. "The Health of women Beyond Maternal and child Health from book Health and Development edited by David R. Philips, New York, 1981.
- National Family Health Survey Report , International Institute For Population Sciences Mumbai, India
- National Seminar held in Srinagar on 28-30 Oct.1985,"Towards the implementation of a National Nutrition Policy in India.
- PEBLEY, ANNE and others, Prenatal and delivery care in Guatemala # Demography # 33 (2), May 1996.
- Priya (Ritu), Health care in eigth plan, economic and political weekly, 18th august 1990.
- Rajna P.N and others, Impact of maternal education and health services on Child mortality in U.P ; Asia-Pacific Population Journal, 13(2) 1998, June 27-28

- Ram and others - Utilization of Health Care Services by the underpriviledged section of population in India : Results from NFHS IASSI QUARTERLY, 16 (314), 1998 (Jan - June).

- Ramchandran (Prema), Need of organisation of antenatal and intrapartum care in India, Demographic India 21 (2), July - December 1992.

- Sood, A.K and Nagla . Factor affecting Maternal and child health # Indian Journal of Social Work, 54(4); Oct.1996

- Strategy for improved Nutrition of children and women in Developing Countries-A UNICEF Policy Review 1990-91, New York, U.S.A.

- Swaminathan (M), Child care services in Tamilnadu. EPW 26(52); 28 Dec. 1991

- Tandon, "Role of ICDS in Promoting Maternal and Child Nutrition, Indian Council of Medical Research, 1984-85, P.P 461-481.

- Y.K. Husain, M.A. Husaini, "Maternal Malnutrition, outcome of Pregnancy and a simple tool to identify women at Risk, Ministery of Health, National Institute of Health Research and Development, Bogor, Indonesia.

CHAPTER---2

CHAPTER -- 2

Fertility and Maternal Health

2.1 Introduction

2.2 Determinants of Fertility
2.2.1 ***Biological***
2.2.2 ***Demographic***
2.2.3 ***Social***
2.2.4 ***Economic***

2.3 Measures of Fertility with trend and pattern across the states
2.3.1 ***Crude Birth Rate***
2.3.2 ***General Fertility Rate***
2.3.3 ***Age-Specific Fertility Rate***
2.3.4 ***Total Fertility Rate***

2.4 Birth Order

2.5 Menopause

2.6 Effect of fertility on Maternal Health

2.7 Conclusion

Fertility and Maternal Health

2.1 Introduction

Fertility is the occurence of birth, however it is slightly different from 'Fecundity' which refers to the reproductive capacity of a women during the entire reproductive period. It is not easy to measure 'Fecundity' but the measurement of 'Fertility' does not pose many problems.

2.2 Determinants of Fertility

The basic detrminants of fertility include Fecundity, Age at marriage, Duration of marriage, Marriage System, Sexual Habits etc. Besides these, there is a long list of other factors which makes there own contribution in influencing the fertility pattern of a population. We may classify these factors in to four broad categories biological,demographic, socio-cultural and economic factors.

2.2.1 Biological Determinants

Biologically speaking, race has been found to be the basic factor generating Fertility differences. Different racial groups have been found to exhibt varying birth rates. However, there has been large scale intermingling of various racial groups living in different environmental conditions that is why it has become very difficult to analyse the role of race.

Fecundity, which refers to the fertility potential of a women, is another important biological factor affecting fertility. Similarly, genetic fertility of man is also an undisputedly most important biological factor. Fertility among women is restricted to their reproductive span which begins with the attainment of puberty and ends with the arrival of menopause. Reproductive span of a women may vary from individual to individual. Broadly speaking, it ranges between fourteen years to forty four years with slight variations at both ends. In case of men, fertility may occur at eight and it rarely ceases.

General health conditions have been mentioned as one of the basic biological control of human fertility. Although it is very difficult to establish a direct correlation between the health of an individual and his fertility potential, yet there is no denying the fact that bad hygienic conditions can lead to partial or complete sterility. Further more, normally one would expect that those who enjoy good physical and mental health would be more prolific. But imperial observation reveals contrary results. Consequently it has a psychological influence and the people go for large families with a view to have atleast two or three survivors.

2.2.2 Demographic Determinants

Age structure

It is a basic determinant of human fertility because the proportion of population in the reproductive age group has a direct relation with the birth rates. Closely associated with this factor of age structure is the duration of marriage. Longer the duration of marriage, greater is the fertility rate. Sex composition is also another basic determinant of fertility. A balanced sex ratio would create normal conditions for an average birth rate. The working or non-working status of females has also been found to have direct impact on human fertility.

2.2.3 Social Determinants

The religious background of a person seems to play a prominent role in governing his mental attitude toward the size of his family. Although all religions deliberately oppose control on human fertility, yet the degrees of control vary from person to person and religion to religion. Among the different religions of the world, Islam has been found to exercise greatest control over deliberate attempt to check population growth. An inverse correlation has often been observed between the level of education and fertility index. There is no denying the fact that education particularly of girls has a far reaching impact upon the fertility patterns. According to the National Sample Survey of

India in its sixteenth round, however discovered that the average number of children born to a women was only 2 if she had atleast twelve years of education, 4.6 children if she had ten years of schooling, 5 children if she had eight years of Schooling and 6.6 children if illiterate or five years of schooling (Indian Statistical Institute, 1964).

Age at Marriage

This is also an another basic social determinant of human fertility. The society that is characterized by low age at marriage exhibits high fertility rate implying an inverse correlation between birth rate and the age at marriage. In case of India, it has been argued that birth rate can be reduced by atleast one-third, if all Indian females married after attaining the age of nineteen years. The factor of age at marriage operates through the factor of duration of marriage. The tradition and customs relating to marital and sexual life also influence fertility patterns.

The societies that are characterized by marriage systems permitting loose marital ties and liberal sexual behaviour often have low fertility level due to greater incidence of venereal diseases. Both polygamy and polyandry have a negative effect upon fertility because plurality diminishes the fecundity of females. Similarly, customs like prolonged breast feeding, restrictions on cohabitation during the suckling period, segregation of spouses after child birth for purification, restriction on sexual activity in one form or the other also reduce the conceiving rate. The primacy of individuals (man, woman, child) in the family is also another social determinant of family size. The status of man, woman and child in the family is an important index of mental attitude of family towards family size. Role of women and children in governing the family size has increased. Broadly speaking there is a negative correlation between birth rate and the status granted to the females.

Attitude of people towards various family planning measures plays an important role in concentrating the family size. A large number of preventive,corrective and parallel means to limit the family size has

been made accessible in different parts of world. In the historical past, preventive measures like celibacy, delayed marriages, polyandry, restrictions on widow remarriage were common. The corrective measures like abortion, infanticides were also common in traditional societies. Among the various deeply rooted social determinants of fertility the desire to have a son in the family has been quite significant. Although all societies in the world consider a family completes at having a son, yet there are certain societies where there is a strong social or psychological pressure in the family during certain social customs and compulsions. The role of government policies also plays a very crucial role in fertility pattern of a country. Sometimes abortions are legalized and sometimes two children or one child policy norms are adopted.

2.2.4 Economic Determinants

Income Level

In it the income level of family is the most important factor that governs the family size. Although a negative correlation between income level and family size has been observed. It implies that the middle income group which normally is the most ambitious section of society applies the strictest control over the family size. In lower income group where the children are considered as the potential sources of augmenting the family income, the restrictions on family size are minimum.

Standard of Living

This factor is also associated with the income level however in general the poorest all over the world shows high birth rates and the richest low birth rates.

Dietary Habits

An inverse correlation between birth rates and protein intake has been observed. High intakes of protein induce sterility.

2.3 Measures of Fertility with trend and pattern across the states

2.3.1 Crude Birth Rate.
2.3.2 General Fertility Rate.
2.3.3 Age-Specific Fertility Rate.
2.3.4. Total Fertility Rate.

2.3.1 Crude Birth Rate

It is not only the simplest but also the most common measures of human fertility. It is expressed in terms of number of births in a year per thousand of the mid-year population. It may be pointed out that only live births during a year are to be taken into account. It is calculated as under

$$CBR = B_I / P \times 1000$$

B_I stands for live births during a year.
P stands for estimated mid year population.

The **crude birth rate** thus calculated, though has the advantage of bringing out exact rate which population increases through births, yet it is not free from major drawbacks. It uses the total population as denominator including large mass of male and female children and older adults not involved in the process of reproduction. More over, it also does not take in to account the age and sex composition and marital status of population. Thus the crude birth gives only a general idea about the fertility and is rightly known as crude. Therefore more refined and analytical measure of fertility is needed to standardize the variable like age and sex composition.

According to the data of NFHS, there are enormous interstate variations in Crude Birth Rate exists. The states like Goa has Crude Birth Rate just only 17.2 that is minimum in comparison to other states of India. On the other side Uttar Pradesh shows very high crude birth rate 35.9. We can easily judge the difference between the crude birth rates of maximum and minimum in the states. This is only due to

Table No. 1

CRUDE BIRTH RATE BY STATE, INDIA , 1992-93

STATE	CRUDE BIRTH RATE(CBR)
DELHI	26.6
HARYANA	32.9
H.P	28.2
J&K	27.9
PANJAB	25
RAJASTHAN	27
M.P	31.6
U.P	35.9
BIHAR	32.1
ORISSA	26.5
WEST BENGAL	25.4
ARUNCHAL PRADESH	34.6
ASSAM	30.4
MANIPUR	24.4
MEGHALAYA	31.9
MIZORAM	20.8
NAGALAND	31.3
TRIPURA	23.1
GOA	17.2
GUJRAT	27.2
MAHARASTRA	26.3
ANDHRA PRADESH	24.2
KARNATKA	25.9
KERALA	19.6
TAMILNAIDU	23.5

Source: NFHS, India 1992-93

Figure No. 1

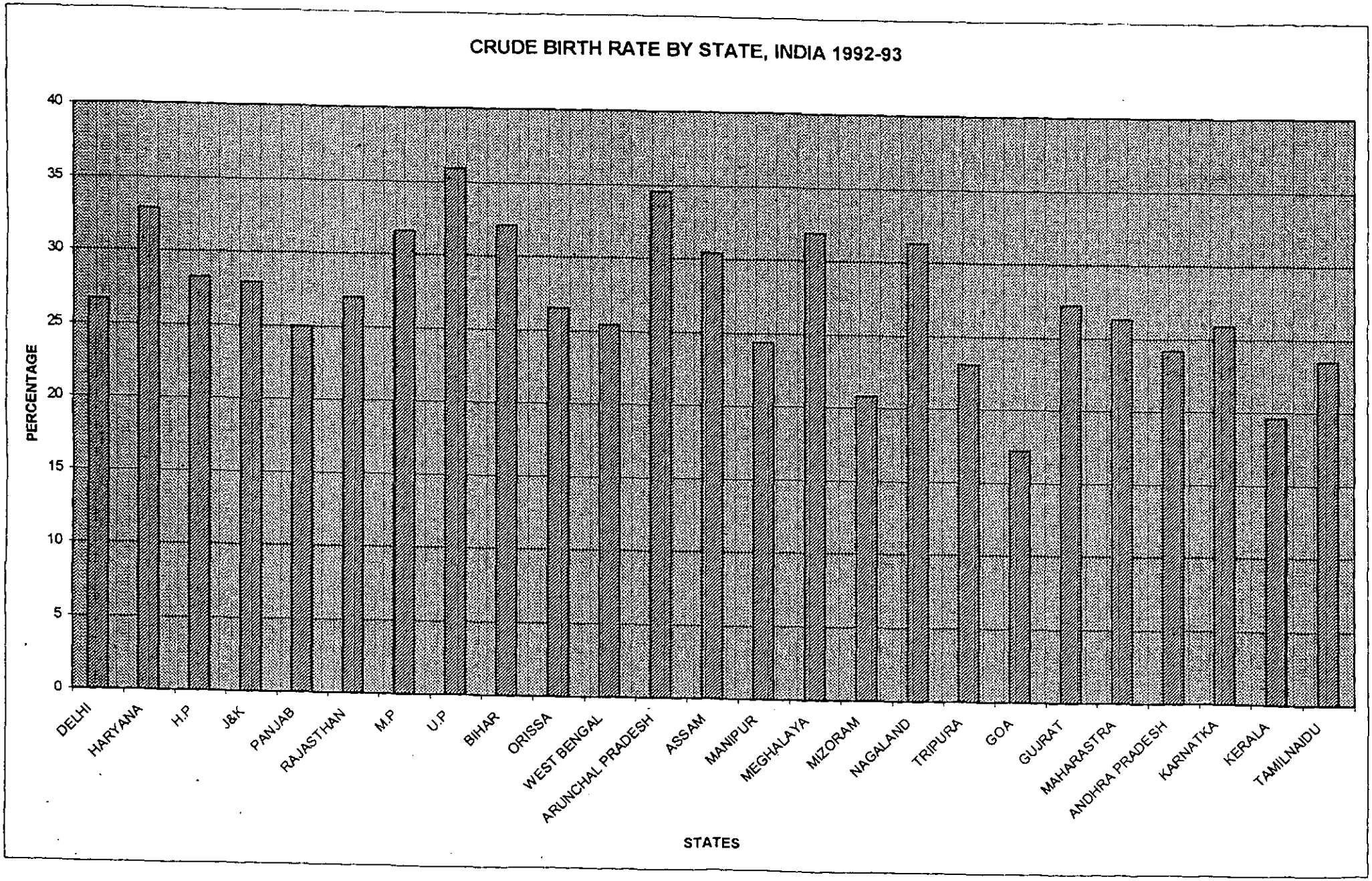

CRUDE BIRTH RATE BY STATE, INDIA 1992-93
PERCENTAGE
0
5
10
15
20
25
30
35
40
DELHI
HARYANA
H.P
J&K
PANJAB
RAJASTHAN
M.P
U.P
BIHAR
ORISSA
WEST BENGAL
ARUNCHAL PRADESH
ASSAM
MANIPUR
MEGHALAYA
MIZORAM
NAGALAND
TRIPURA
GOA
GUJRAT
MAHARASTRA
ANDHRA PRADESH
KARNATKA
KERALA
TAMILNADU
STATES

Table No.2

AGE - SPECIFIC AND COMULATIVE

FERTILITY RATES AND CRUDE BIRTH RATES BY RESIDENCE ,INDIA, 1990-92

AGE	URBAN	RURAL	TOTAL
15-19	0.075	0.131	0.116
20-24	0·203	0·243	0·231
25-29	0·154	0·171	0·17
30-34	0·071	0·108	0·097
35-39	0·027	0·051	0·044
40-44	0·006	0·019	0·015
45-49	0·004	0·006	0·005

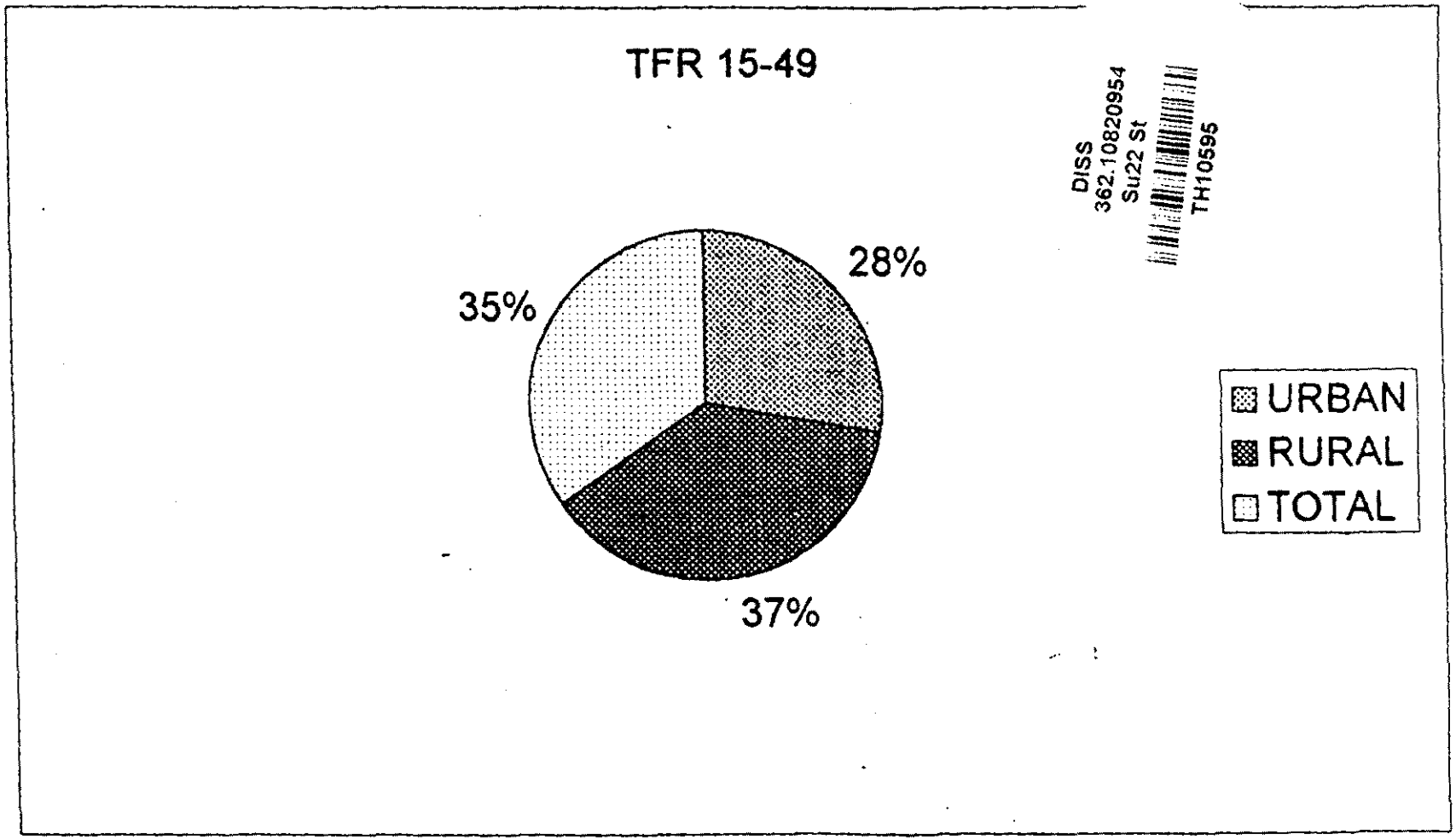
AGE	URBAN	RURAL	TOTAL
TFR 15-44	2·68	3·64	3·36
TFR 15-494	2·7	3,67	3·39
GFR	98	133	123

AGE	URBAN	RURAL	TOTAL
TFR 15-494	2·7	3·67	3·39
GFR	98	133	123

Source:NFHS, India 1992-93

Figure No. 2

TOTAL FERTILITY RATE IN INDIA BY RESIDENCE 1992-93



the difference in educational level, prenatal and antenatal care services, awareness about the various facilities provided by the government and lack of infrastructure in the states.

Those states that show very low crude birth rates like Goa(17.2), Kerala(19.6), Tamilnadu(23.5), has attained good status of health. These states have more survival rates in comparison to other states of India. Madhya Pradesh(31.6), Uttar Pradesh(35.9), Bihar(32.1), Orissa(26.5), Haryana(32.9), Arunchal Pradesh(34.6), Assam(30.4), Meghalya(31.9) has very high crude birth rates. In these states' people are not so much aware about the maternal and child health status. Survival rate of children is very low.

Son preference can also play an important role especially in northern India that includes state like Haryana, Panjab, Uttar Pradesh, Bihar, Himachal Pradesh, Delhi, Jammu and Kashmir and Rajasthan. Economy also plays important role in determining the birth pattern of a state. Crude birth rate exceeds in those states that has agricultural economy like northern states of India. So the type of economy a particular state has may be a strong factor for considering the crude birth rate.

Although poor prenatal care, antenatal care, education, awareness about various governmental provided facility regarding maternal and child health also plays important role in determining the crude birth rate of a state. Some states Like Goa, Kerala and Tamilnadu shows very low crude birth rate lies in south India. It shows their overall standard of life and good maternal and child health status. People are more aware about restricting the number of children. So, they are using various contraceptive methods and the preference for son is no longer a dominant factor in south India. For example, Kerala has more girls than boys. It shows that son preference is not sticking to them. There are just only two states that shows crude birth rate less than twenty. They are Goa (17.2) and Kerala (19.6).

There are states that show crude birth rates less than twenty-five are eight in number and between 20-25 are six in number.

These six states are Punjab, Manipur, Mizoram, Tripura, Andhra Pradesh and Tamilnadu. The state that shows more than 25 crude birth rate thereby means that they do not enjoy good maternal and child health and nutritional status. These are Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar, Orissa, West Bengal, Arunachal Pradesh, Assam, Meghalaya, Nagaland, Gujrat, Maharashtra, Karnatka. But situation is very bad in Haryana, Madhya Pradesh, Uttar Pradesh, Bihar, Arunachal Pradesh, Assam, Meghalaya, Nagaland. This shows that maternal and child health status is very bad in Northern and Eastern states of India. If we rank the states according to crude birth rate performance, then Goa (17.2) would be ranked first and Uttar Pradesh (35.9) would be ranked last. This shows a very big gap between states of maternal and child health status that both these states enjoy. U. P shows more than double crude birth rate in comparison to Goa.

2.3.2 General Fertility Rate :--

It measures the number of live births in a year per thousand women of normal reproducing age.

$$GFR = B_l / P_{f\,15\text{-}44} \times 1000$$

B_l–stands for live births in a year and $P_{f\,15\text{-}44}$ stands for number of women in normal reproductive age.

Even this measure of fertility suffers from certain deficiencies. Firstly, there is only partial standardization for age as the population differs even with in 15-44 age group with respect to child bearing incidences. It may be pointed out that the child bearing rate is appreciably higher in 20-29 age group than in 15-19 and 30-44 age groups. Secondly, such a fertility rate will be of little utility in countries where the incidence of illegitimacy is large. However, in such cases, separate general fertility rates for legitimate children and illegitimate children can be calculated. Such rates can be expressed in terms of number of legitimate, illegitimate births per thousand females of married

or non-married females of reproductive age-group. The estimated general fertility rate for 1990-92 is 123 births per 1000 women. In urban areas general fertility rate is 98 and in rural areas it is 133. Inter state variations are also expected in general fertility rate. It is observed that general fertility rate of urban areas of India is 26 percent lower than rural areas. This shows that due to lack of knowledge about the benefit of small family, the rural people keep on enhancing the fertility and the general fertility rate. Survival Rate in rural areas is very low because of poor hygienic condition prevailing in rural belt.

Situation is worse in bigger states like Uttar Pradesh, Bihar, Madhya Pradesh. Even faiths in religion also play there role. So Muslim dominated states have high general fertility rate in comparison to non-muslim states like Kerala, Tamilnadu, Andhra Pradesh. Type of economy is very important. Northern States has agrarian type of economy and they want more working hands. So **son preference** factor works here and the number of birth per couple increases due to the demand for male child. Case of Haryana and Punjab is also the same.

2.3.3 Age-Specific Fertility Rate

It measures the number of births in a year to women of a given age group per thousand women in that age group. It is calculated as under

$$ABRf_{20\text{-}24} = B_{20\text{-}24} / Pf_{20\text{-}24} \times 1000$$

Where $B_{20\text{-}24}$ stands for number of births to a woman of a given age group and $Pf_{20\text{-}24}$ stands for total female population in that age group.

This type of measure of fertility permits detailed comparisons between population and is very helpful in revealing the differences in the fertility rates of women belonging to different age groups.The age specific fertility rates for 20-24, reflects a pattern of early marriage and child bearing. This is true for both urban and rural areas. Fertility Rates decline steadily after age 25 and reaches a very low level for women in their forties. Fertility is highly concentrated in the 15-29

age group. Eighty percent of urban fertility and seventy-five percent of rural fertility is concentrated in this age group. Current fertility in India is characterized by substantial amount of early child bearing. Out of the total fertility, 17 percent fertility belongs to the women of the age group among 15-29 years. Here education plays a very important role. Although awareness about various preventive birth measures can play a very key role in reduction or checking fertility at 15-19 age group level. Age specific fertility rates are considerably higher in rural than in urban areas in every age group.

2.3.4 Total Fertility Rates

It is another age-sex adjusted measure of fertility that has been regarded as the most sensitive and the most meaningful cross-sectional measure of fertility. It is obtained by summing up the age-specific birth rates and multiplying it by number of years in the age interval. Therefore, it can be expressed as under for quinquennial age groups:

$$TFR = 5 \times \sum_{a=15-19}^{a=45-49} \left[B_{15-19} \div P_{f\,15-19} \times 1000 \right]$$

$\Sigma [B_{15-19} \div P_{f\,15-19} \times 1000]$ represents age- specific birth rates for 15-19 age groups.

Total fertility rate is easy to compute and is effective measure of **age-Sex adjusted fertility**. Separate fertility rates can also be calculated for significant categories of population such as total population, rural population, urban population, racial groups, ethnic groups that may prove to be significant tool for understanding the fertility behaviour of different groups of population.

Total fertility rate is maximum for Uttar Pradesh (4.82) followed by Arunachal Pradesh (4.25), Bihar (4), Madhya Pradesh (3.9) children per women. On the other side Goa (1.9), Kerala (2), Tamilnadu (2.48) children respectively. We have seen here that Uttar Pradesh, Arunachal Pradesh, Bihar has near about double total fertility rate in comparison to Goa, Kerala and Tamilnadu. There are various reasons like education, religion, etc. that determine the total fertility rate of the states.

Education plays a vital role, as in case of Bihar, Arunachal Pradesh and Uttar Pradesh in comparison to Goa, Kerala and Tamilnadu in determining the total fertility rate. Secondly, **religion** has a direct effect on the fertility behaviour of the population. For example, Uttar Pradesh is dominated by Muslim population whereas Goa and Kerala has more Christian population. Muslims are against the check of fertility that is why total fertility rate for Uttar Pradesh is more than double in comparison to Goa and Kerala. Although there are various other factors like awareness about antenatal care, post-natal care facility provided by governmental and private agencies to check fertility.

If we look at the **Northern states** of India that includes Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab and Rajasthan have three or more than three children to each woman except Haryana that has four children per women. This may be due to the factor of son preference. But in **Central states** like Madhya Pradesh and Uttar Pradesh that are very big in terms of geographical base, each woman has five children from the fertility point of view. It is due to lack of education, less medical facilities and need for more working hands from agricultural point of view as the economy of these states is based on agriculture.

Even the situation of **North-eastern states** is not so good. They are showing more than three children per women. Overall we can say that except Goa, Kerala, Mizoram and Tamilnadu all other states are showing very poor performance in reducing there total fertility rates. So, there is a strong need of public awareness to raise the status of women. Women should be educated and small family norms should be adopted. Strong governmental help and political will is desirable to achieve certain

Table No.3

BIRTH ORDER BY STATE INDIA , 1992-93

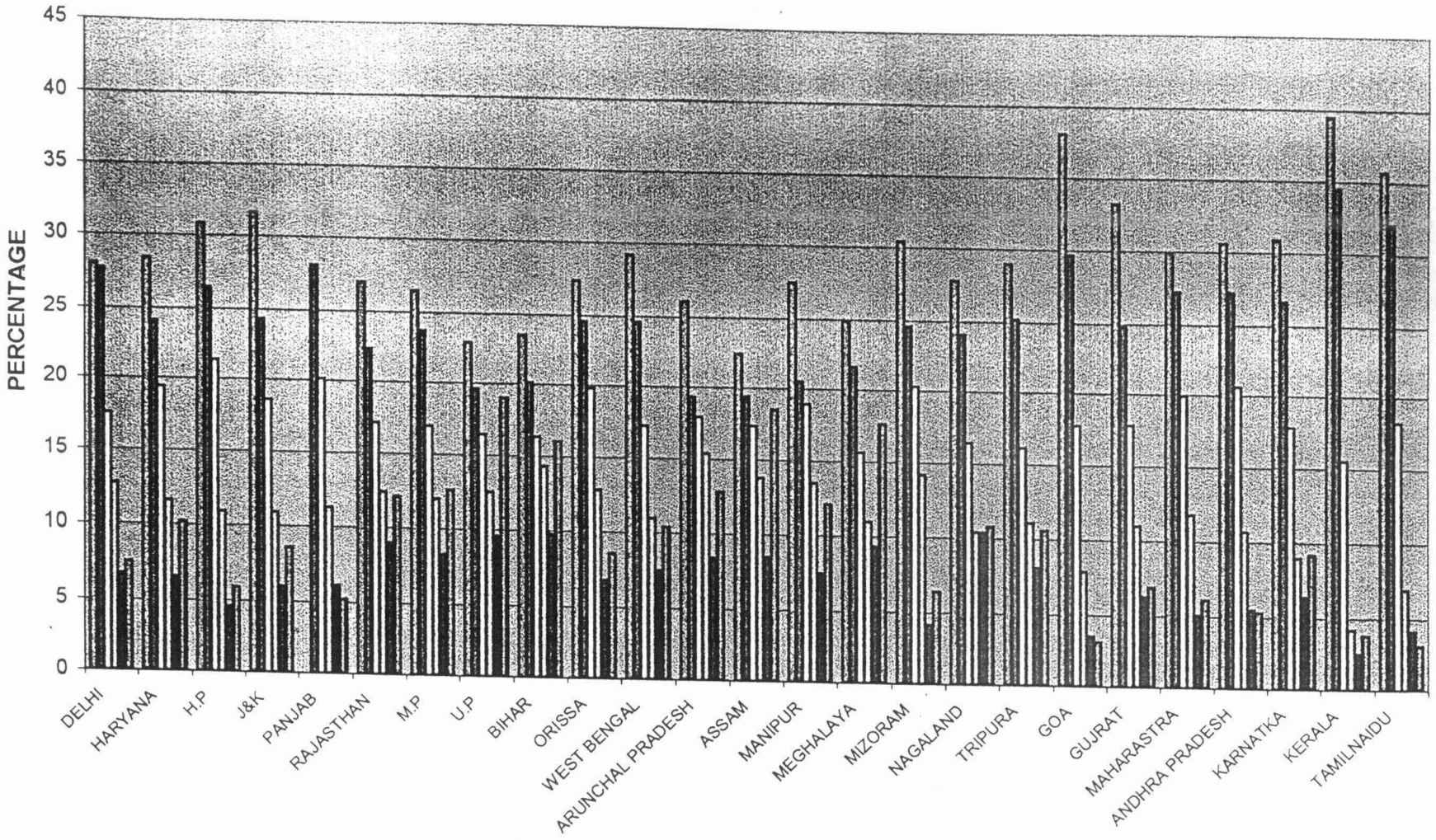
ORDER OF BIRTH

STATE	1	2	3	4	5	6+	TOTAL%
DELHI	28	27.7	17.5	12.7	6.7	7.5	100
HARYANA	28.4	24.1	19.4	11.6	6.5	10.2	100
H.P	30.8	26.5	21.3	10.9	4.6	5.9	100
J&K	31.6	24.3	18.6	10.9	6	8.6	100
PANJAB	0	28.1	20.1	11.3	6.1	5.2	100
RAJASTHAN	27	22.3	17.1	12.4	9	12.1	100
M.P	26.5	23.7	16.9	12	8.3	12.6	100
U.P	22.9	19.6	16.4	12.5	9.6	19	100
BIHAR	23.5	20.1	16.3	14.3	9.8	16	100
ORISSA	27.4	24.6	19.8	12.8	6.8	8.6	100
WEST BENGAL	29.2	24.6	17.2	11	7.5	10.4	100
ARUNCHAL PRADESH	26.1	19.3	17.9	15.4	8.4	12.8	100
ASSAM	22.4	19.4	17.3	13.8	8.5	18.5	100
MANIPUR	27.5	20.5	18.9	13.5	7.5	12.1	100
MEGHALAYA	24.9	21.6	15.6	11	9.3	17.6	100
MIZORAM	30.4	24.6	20.3	14.2	4.1	6.4	100
NAGALAND	27.8	24.1	16.4	10.4	10.4	10.8	100
TRIPURA	29	25.2	16.1	11.1	8.1	10.6	100
GOA	38.1	29.7	17.7	7.9	3.5	3.1	100
GUJRAT	33.2	24.8	17.8	11	6.3	6.9	100
MAHARASTRA	29.9	27.3	19.9	11.8	5.1	6.1	100
ANDHRA PRADESH	30.6	27.3	20.6	10.7	5.5	5.3	100
KARNATKA	30.9	26.7	17.8	9	6.4	9.2	100
KERALA	39.5	34.5	15.5	4.2	2.5	3.8	100
TAMILNAIDU	35.7	32	18.2	6.9	4.1	3.1	100

Source: NFHS, India 1992-93

Figure No.3

BIRTH ORDER BY STATE INDIA , 1992-93



STATES BY BIRTH ORDER 1 - 6+

Figure No.4

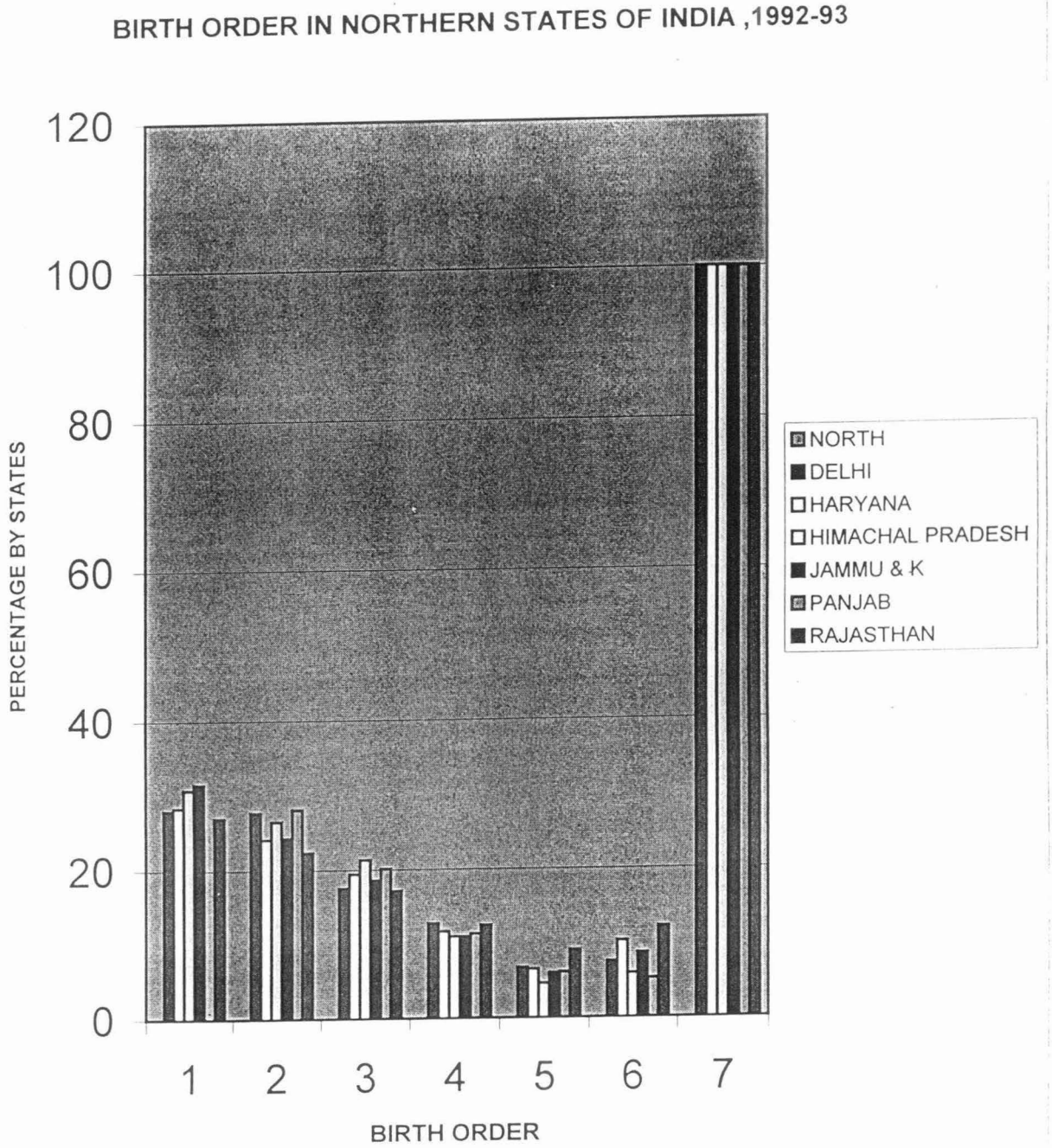

BIRTH ORDER IN NORTHERN STATES OF INDIA ,1992-93
120
100
80
60
40
20
0
PERCENTAGE BY STATES
1
2
3
4
5
6
7
BIRTH ORDER
NORTH
DELHI
HARYANA
HIMACHAL PRADESH
JAMMU & K
PANJAB
RAJASTHAN

Figure No.5

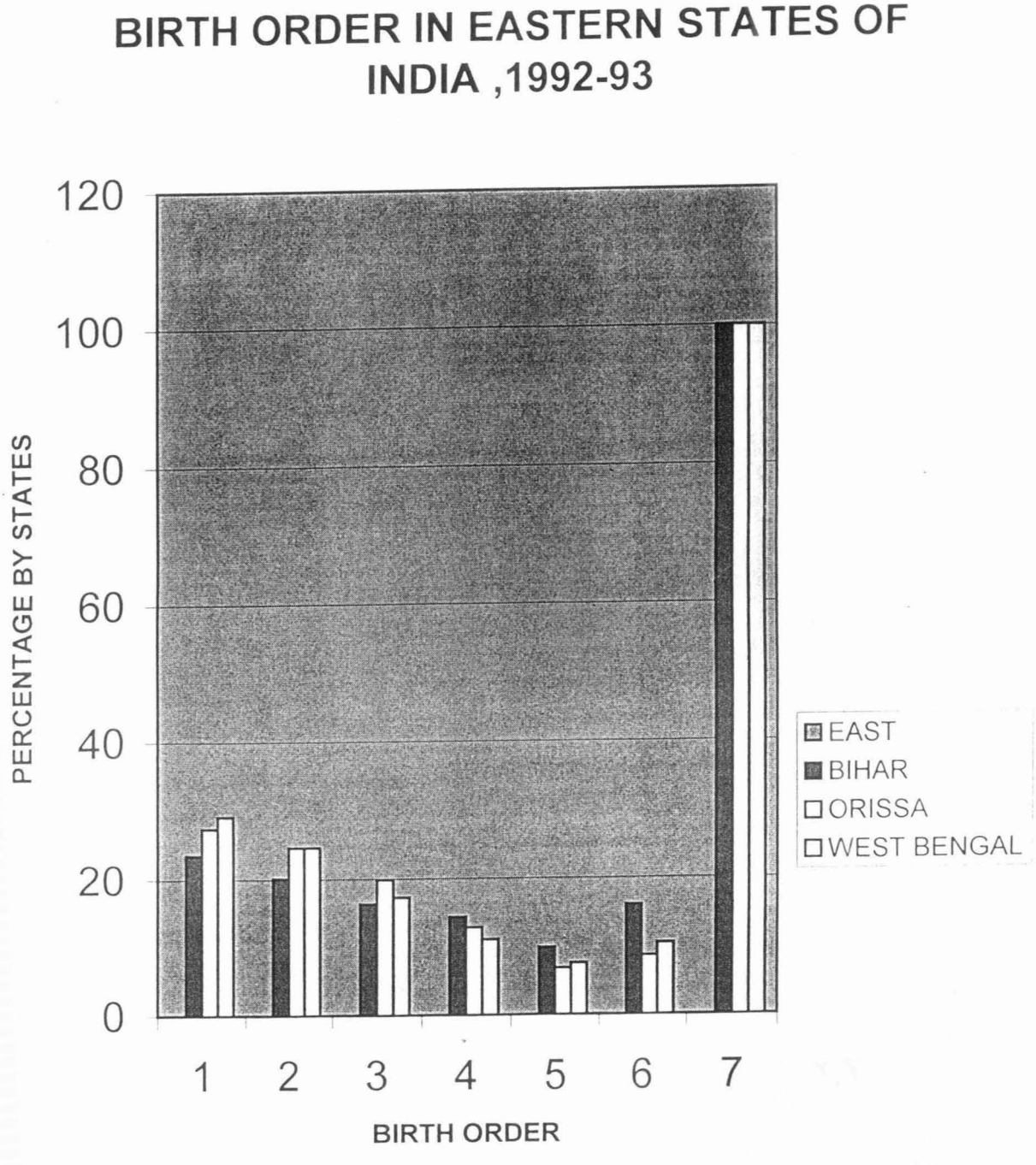

BIRTH ORDER IN EASTERN STATES OF INDIA ,1992-93
120
100
80
60
40
20
0
PERCENTAGE BY STATES
1
2
3
4
5
6
7
BIRTH ORDER
EAST
BIHAR
ORISSA
WEST BENGAL

Figure No.6

BIRTH ORDER IN CENTRAL STATES OF INDIA ,1992-93

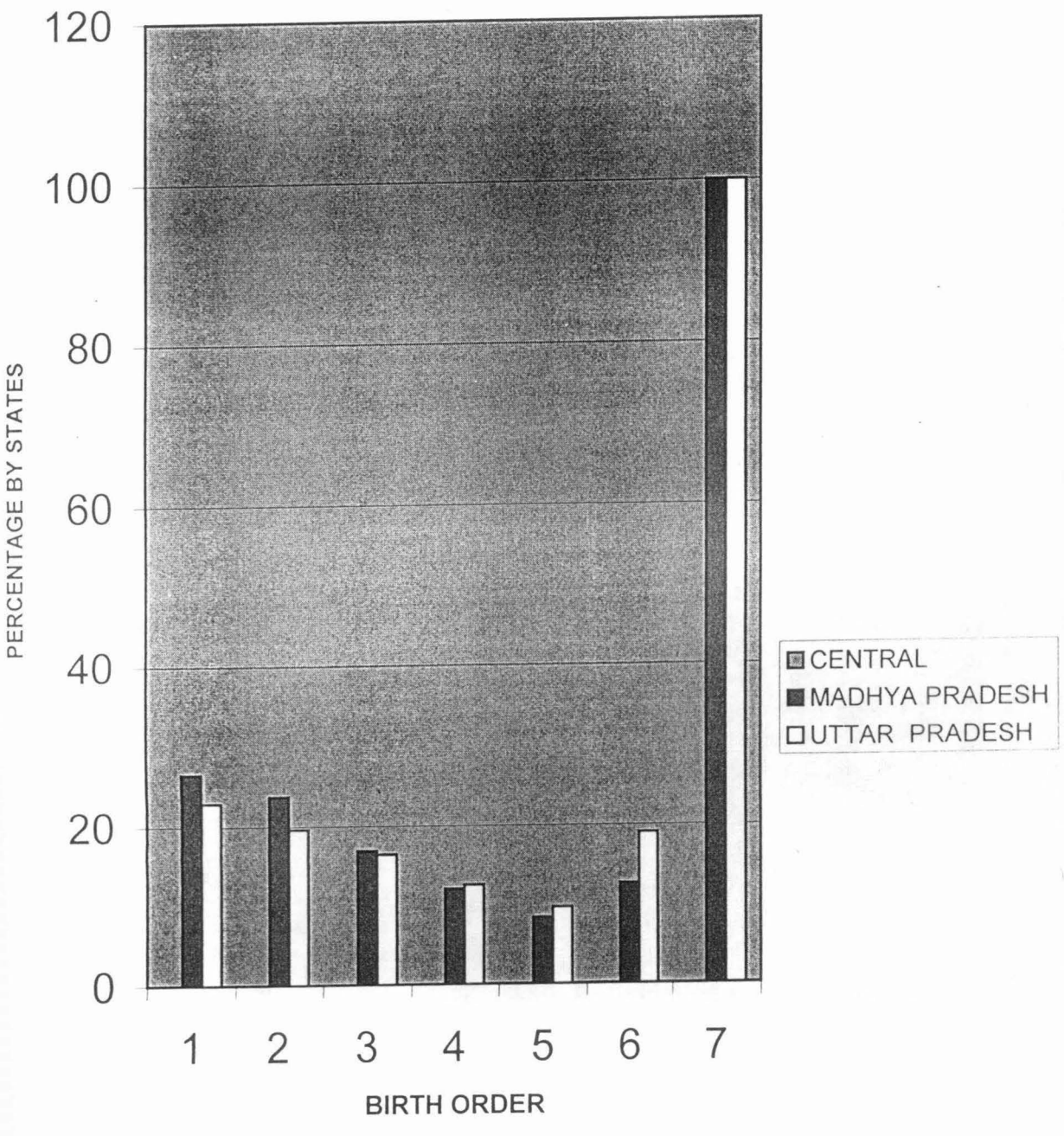


Figure No.7

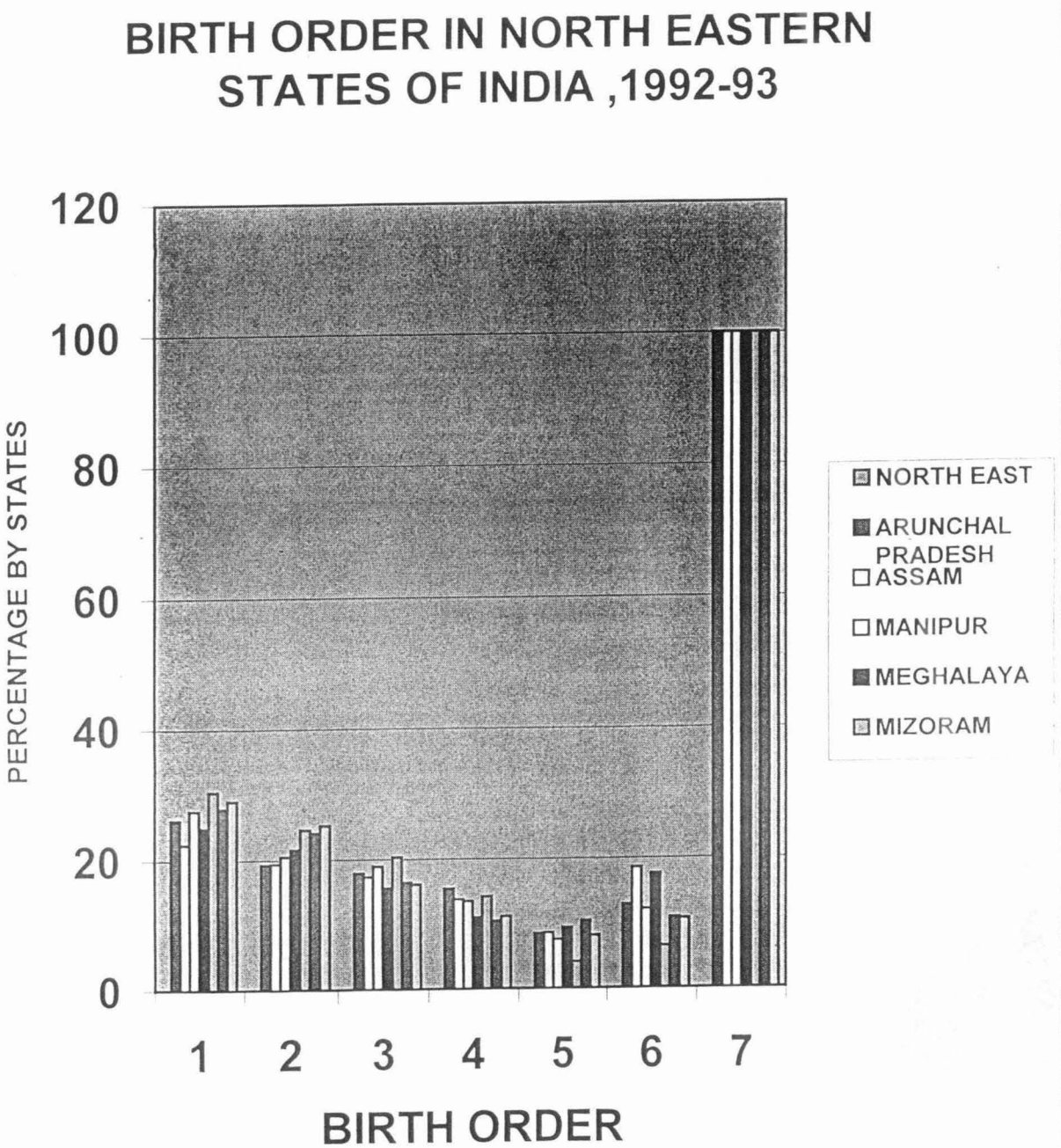

BIRTH ORDER IN NORTH EASTERN STATES OF INDIA ,1992-93
120
100
80
60
40
20
0
PERCENTAGE BY STATES
1
2
3
4
5
6
7
BIRTH ORDER
NORTH EAST
ARUNCHAL PRADESH
ASSAM
MANIPUR
MEGHALAYA
MIZORAM

Figure No.8

BIRTH ORDER IN WESTERN STATES OF INDIA ,1992-93

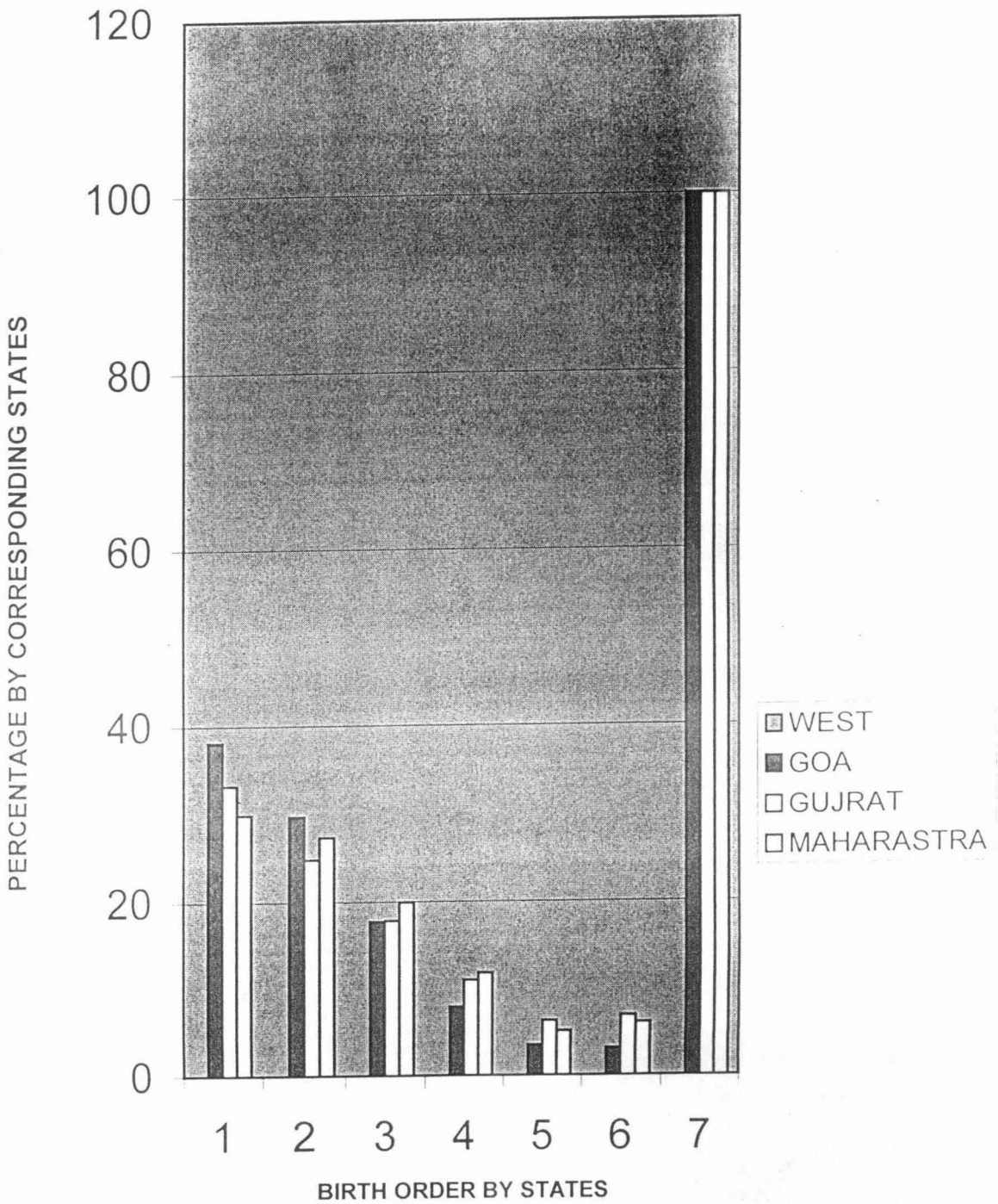
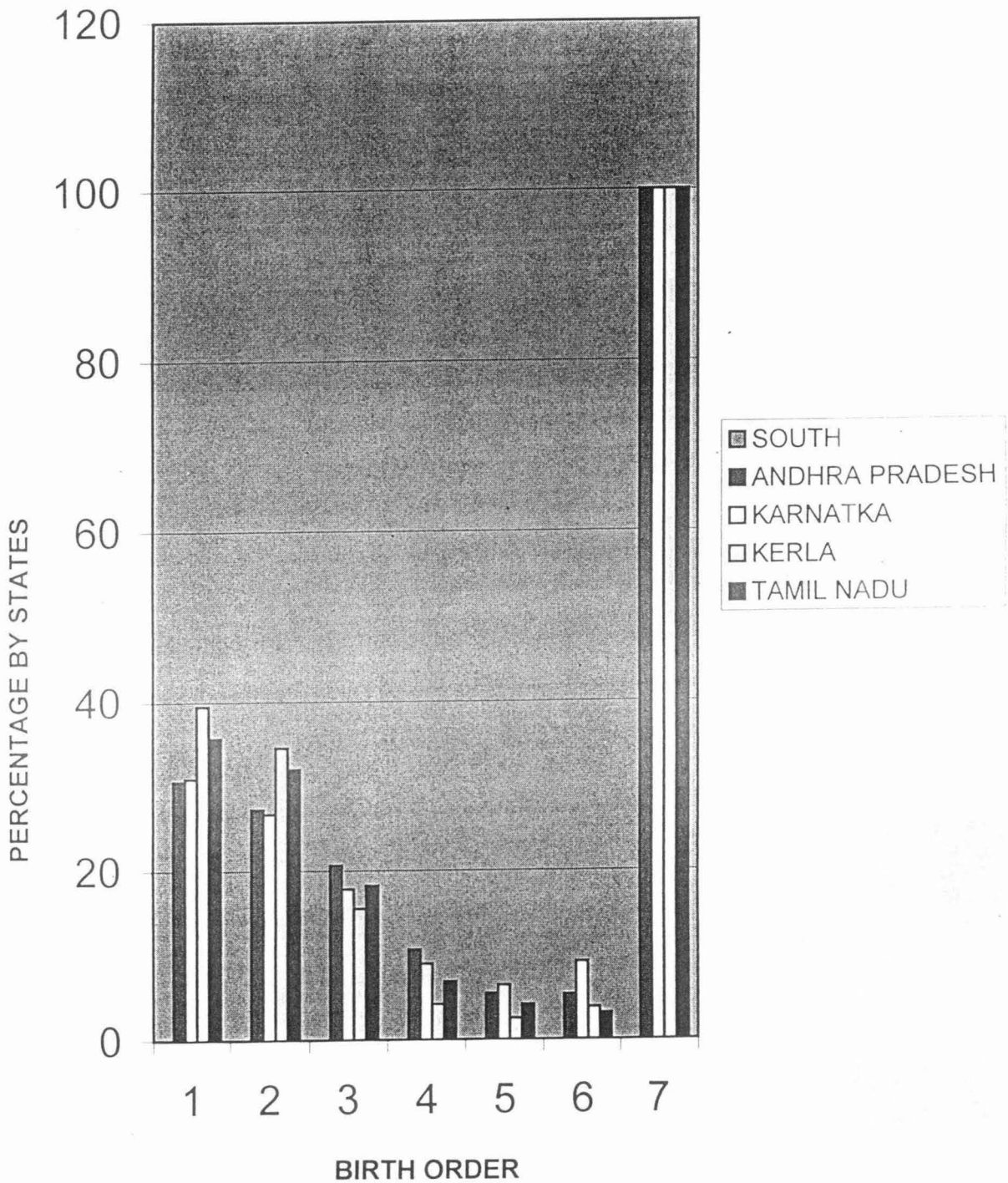


Figure No.9

BIRTH ORDER IN SOUTHERN STATES OF INDIA ,1992-93



specified objectives. Otherwise situation would be appalling and we would not be able to feed even newly born babies. Reducing the number of children per women would definitely enhance the status of maternal and child's health and nutritional diet intake.

2.4 Birth Order

Birth Order of any state is a good indicator to see the status of women and child's health and nutrition. Those states which are considered to be backward definitely shows high birth orders in comparison to advanced states. So, socio-economic status of population of reproductive age-group of a particular state will be different from the other state. Those states which are socio-economically backward and literacy rates are very low shows high birth order and vice-versa.

There are inter-state variations exist , if we look at the states which shows higher percentage of births in first order births to lowest percentage of births in 6+ birth order according to the NFHS reports . Some states show higher percentage of births in the first birth order and still higher percentage in 6+ birth order. Although there are some states that show higher percentages of birth in first order and low percentages of birth in 6+ birth order. Thus, this is the line of demarcation that shows whether the state is advanced or backward.

If we closely analyze the figures of birth order by states, a clear cut picture emerges out that shows which particular state is advanced and which one is backward. Maximum percentages of first order birth's is shown by Kerala (39.5) followed by Goa (38.1) and then Tamilnadu (35.7). But the status of maternal and child's health and nutrition would depend on the percentage acquired by various states in second, third, fourth, fifth and six plus birth order.

The states like Kerala, Goa and Tamilnadu shows continues reduction in there percentage of births in higher birth order. On the other hand there are states like Uttar Pradesh, Bihar, Assam, Meghalaya and Madhya Pradesh continuously showing higher percentages of birth's in first birth order to 6+ birth order. Here education and awareness about

the various facilities regarding the check on fertility plays a significant role. The most interesting thing is that upto third birth order there is not much reduction in percentages of births to be seen in all states. But after third birth order remarkable reduction in births is observed and we can easily check out the inter-state variations. It is usually seen that high birth order is detrimental to the health of the mother.

Religion also plays a key role in reducing the number of children and therefore fertility. Bigger states shows higher percentages of births from first order birth to six plus birth order, **it may be due to less survival rate, poor education, agricultural economy, lack of awareness about various preventive measures of birth control etc.** But overall picture is not so much encouraging for all states except two or three states that lies in southern part of India.

Northern states show a very bad performance and adds a million of children every year to the country's population. Very high 6+ birth .order percentage is shown by Haryana (10.2), Rajasthan (12.1),Madhya Pradesh(12.6), Uttar Pradesh(19), Bihar(16), Arunchal Pradesh(12.8), Assam(18.5), Manipur (12.1), Meghalaya (17.6), Nagaland (10.8) and Tripura (10.6). Situation is worse for Uttar Pradesh, Meghalaya and Madhya Pradesh. Among the northern states only Himachal Pradesh had shown good percentage reduction in terms of births from fifth and sixth plus birth order.

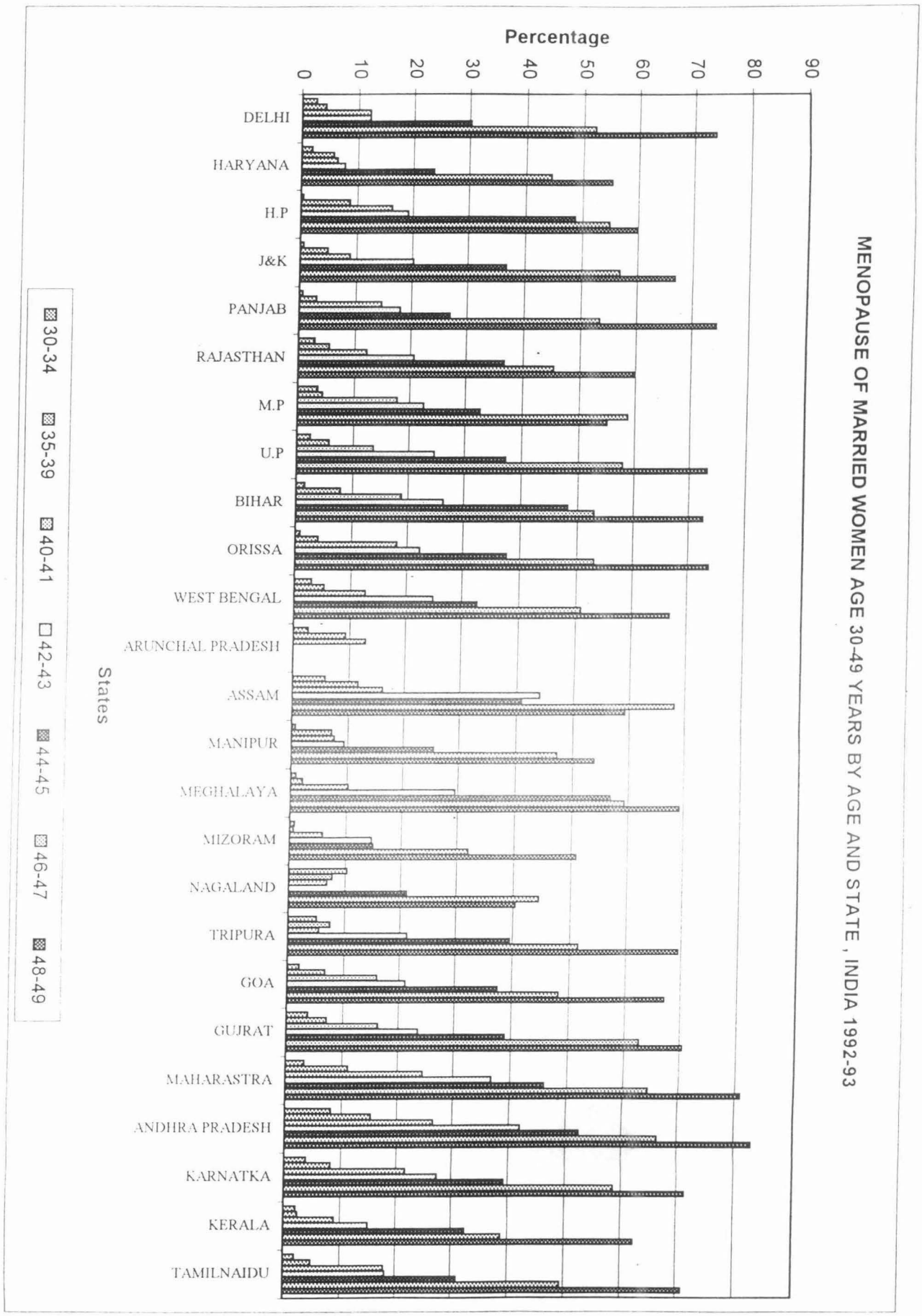
In **eastern states** of India somehow only Orissa is showing good results in reducing there fifth and sixth plus birth order percentage. In **western states** of India which includes Goa, Gujrat and Maharashtra shows very good performance right from fourth, fifth and sixth plus birth order level. In the **southern states** of India which includes Kerala, Tamilnadu and Karnataka are reducing births from fourth birth order. Situation for north eastern states which includes Arunachal Pradesh, Assam, Manipur and Meghalya are not encouraging enough. These states show high birth order which is near about 12 percent in 6+ birth order level. But Mizoram has shown remarkable reduction in fifth and sixth plus birth order. Situation of **central states** which includes Madhya Pradesh and Uttar Pradesh is appalling.

Table No.4

MENOPAUSE OF MARRIED WOMEN AGE 30-49 YEARS BY AGE AND STATE , INDIA 1992-93

STATE	AGE						
	30-34	35-39	40-41	42-43	44-45	46-47	48-49
DELHI	2.5	4.1	12.1	12.1	30.1	52.1	73.7
HARYANA	1.8	5.6	6.3	7.6	23.7	44.4	55.2
H.P	0.4	8.6	16.2	19.1	48.6	54.8	59.8
J&K	0.6	4.8	8.8	20.2	36.7	56.8	66.7
PANJAB	0.6	3	14.6	18	26.9	53.3	74.3
RAJASTHAN	2.8	5.4	12.1	20.6	36.6	45.3	59.7
M.P	3.5	4.3	17.7	22.5	32.5	58.7	55
U.P	2.3	5.6	13.6	24.6	37.2	57.9	73.1
BIHAR	1.5	7.8	18.8	26.3	48.2	52.9	72.5
ORISSA	0.8	4	18.1	22.3	37.6	53	73.8
WEST BENGAL	3	5.2	12.6	24.8	32.6	50.8	66.9
ARUNCHAL PRADESH	2.6	9.2	12.8	*	*	*	*
ASSAM	5.7	11.6	16.1	44	40.8	68.1	59.2
MANIPUR	0.7	7	7.5	9.3	25.5	47.2	53.8
MEGHALAYA	0.9	2.1	10.2	29.4	56.8	59.3	69.2
MIZORAM	0.8	0.7	5.8	14.6	14.9	31.9	50.8
NAGALAND	10.3	7.6	6.7	*	21.1	44.4	40.3
TRIPURA	5	7.4	5.4	21.3	39.4	51.4	69.4
GOA	2.1	6.6	16	21.1	37.4	48.1	67.1
GUJRAT	3.7	7	16.3	23.5	38.8	62.6	70.4
MAHARASTRA	3.2	11	24.5	36.6	45.9	64.4	80.8
ANDHRA PRADESH	8	15.2	26.5	41.9	52.3	66.3	82.8
KARNATKA	3.7	8.1	21.6	27.3	39.2	58.5	71.3
KERALA	2.1	2.4	8.9	15	32.3	38.7	62.3
TAMILNAIDU	1.9	4.8	17.9	18.1	30.9	49.3	70.9

Figure No.10


MENOPAUSE OF MARRIED WOMEN AGE 30-49 YEARS BY AGE AND STATE , INDIA 1992-93
Percentage
0
10
20
30
40
50
60
70
80
90
States
DELHI
HARYANA
H.P
J&K
PANJAB
RAJASTHAN
M.P
U.P
BIHAR
ORISSA
WEST BENGAL
ARUNCHAL PRADESH
ASSAM
MANIPUR
MEGHALAYA
MIZORAM
NAGALAND
TRIPURA
GOA
GUJRAT
MAHARASTRA
ANDHRA PRADESH
KARNATKA
KERALA
TAMILNAIDU
30-34
35-39
40-41
42-43
44-45
46-47
48-49

2.5 Menopause

Menopause of married women aged 30-49 is a major determinant in considering the fertility status across the states and higher the fertility , higher the risk to the health of the mother. Menopause is a natural phenomenon of restricting reproductive capacity of a women and a natural check on fertility.But it varies from women to women and thus from state to state. Various factors plays role in attainment of menopause level. It may be due to dietary habits or environmental condition. In early age of life , women shows high fertility behaviour but as the age increases the fertility capacity of women recedes and after attainment of menopause it disappears permanently.

According to the NFHS reports the lower age group of 30 - 34, Nagaland is the only state that shows more than 10 percent of women attaining menopause whereas this age ranges from 0.4 percent in Himachal Pradesh to 5.7 percent of Assam. It is amazing that not only the North - Eastern states but also the hilly states are showing maximum number of menopause cases. In the age group of 35 - 39, Andhra Pradesh is showing 15.2 percent women menopause followed by Assam 11.6 percent, while Kerala is showing just only 2.4 percent, Punjab is 3 percent and Orissa shows 4 percent.

States that show menopause level more than 7 percent in this category are Gujarat 7 percent, Karnataka 8 percent, Maharashtra 11 percent, Tripura 7.4 percent, Nagaland 7.6 percent, Arunachal Pradesh 9.2 percent, Bihar 7.8 percent, Himachal Pradesh 8.6 percent. Within 30 - 39 age group women, maximum menopause level is attained by Andhra Pradesh and minimum menopause level is attained by Kerala. It is amazing that maximum and minimum menopause level is only in southern states of India while northern state shows very less menopause level.

Actually right from 40 - 41 age women shows tremendous growth in menopause level, this is same for every state. Certain state shows three times increase in menopause level than 35 - 39 age group of

women. Andhra Pradesh that has 15.2 percent menopause level in 35 - 39 age group of women jump to 26.5 percent in 40 - 41 age group, although the difference is only of one year of age.

Hormonal change actually works in 40 age group women who recedes their fertility capacity. There is hardly any difference in the age at menopause in the age groups 40 - 41, 42 - 43 age group of women except Assam that jump from 16 percent to 44 percent, Meghalaya 10 percent to 29 percent. Even Tripura shows four times increase and Kerala shows double increase jump in menopause level.

But when age of women increases even slightly after 43 years, the menopause level increases tremendously. In 44 - 45 age group maximum menopause is shown by Andhra Pradesh that is 52.3 percent and minimum by Mizoram that is 14.9 percent.

It is interesting to note that Nagaland, which kept first place in 30 - 34 age group of menopause women has just double its number and reaches only 21 percent level in 44 - 45 age group. But in 48 - 49 age group of women, all state crosses 55 percent menopause level except Nagaland 40.3 percent, Mizoram 50.8 percent and Manipur 54 percent.

Highest menopause level is shown by Andhra Pradesh 82.8 percent, followed by Maharasntra 80.8 percent. Lowest menopause level is attained by Nagaland 40.3 percent in 48 - 49 age group. Haryana is second in terms of minimum menopause level attainment in 46 - 47 age group of persons after Kerala that is 38 percent.

The state that has agricultural economy shows less percentage on menopause level and those states that are hilly also shows less percentage on menopause level in later age of women. Definately dietary habits and environment has played vital role in the attainment of menopause level and restricting the fertility. Southern states show more percentage of menopause than other states in rest of India.

2.6 Effect of fertility on Maternal Health.

Fertility has a direct impact on the health of women. If a woman has more children then her health will be at risk automatically. A lot of nutrients are required not only for the maintenance of her body but for the foetus also. When a woman keeps on bearing children every year then her own body can not accommodate to the regular physiological or biological changes due to the over burden of pregnancy. That is why she needs extra nutritious diet that may or may not be available all the time due to socio-economic reasons.

Another important thing is that if a woman is illiterate or not educated up to a level then she will find herself in to a very difficult situation while facing the aftermath's of continuing child bearing. Side by side degree of awareness about various antenatal and post-natal care facilities that are provided by governmental run hospitals and various private hospitals plays a very significant role in the determination of maternal as well as child health.

2.7 Conclusion

The chapter Fertility and Maternal Health explains how fertility effects the maternal health and various other factors like demographic, socio-economic, biological plays a very important role in determining the health of mothers across the states. Crude Birth Rates and Age - Specific Birth Rates have also directly linked with the health of the mother. Role of the Birth Order and Menopause can not be ruled out while considering maternal health. More child means high risk to the health of the mother. Those states that show low Birth Order reflect higher maternal health and vice versa. The states like Uttar Pradesh, Bihar, Orissa and Madhya Pradesh shows very high fertility level and high Birth Order and reflects poor maternal health. On the other side there are states like Kerla, Tamilnadu and Goa having low Birth Order and fertility level reflects satisfactory maternal health.

CHAPTER---3

CHAPTER----3

Mortality and Maternal and Child Health

3.1 Introduction

3.2 Determinants of Mortality

3.3 Measures of Mortality

3.3.1 ***Crude Death Rate***

3.3.2 ***Age and Sex Specific Mortality Rate***

3.3.3 ***Infant Mortality Rate***

3.3.4 ***Maternal Mortality Rate***

3.4 Trend and Pattern in Infant and Child Mortality across the States in India

3.5 Conclusion

Mortality and Maternal and Child Health

3.1 Introduction

Mortality has been defined as permanent disappearance of all evidence of life at any time after birth has taken place (United Nation,1953). A death can occur only after a live birth has occurred. Therefore, for the purpose of mortality, all deaths before births are to be excluded. Mortality statistics are collected and compiled by the vital statistic registration system.

3.2 Determinants of Mortality

The causes of mortality vary both in space and time. As different regions are at different stages of socio-economic development and technological advancement, the causes of death are intimately related. Therefore, the causes of mortality vary from one part of the world to another. Similarly, with the passage of time, the causes of mortality also undergo a change due to advancement in medicines, propagation of education, improvement in nutrition and in general conditions of sanitation.

There are a large variety of factors that determine the mortality patterns. A broad distinction has been made between endogenetic (biological) and exogenetic (environmental) factors. The endogenetic factors are essentially biological in nature which causes death due to rapid alterations in the functioning of human body. The diseases of circulatory system, the diseases that may cause infant mortality and cancer are some of the typical examples of this category. The exogenetic factors that are environmental in nature comprise of environmental influences giving rise to infectious pulmonatory and digestive diseases.

The mortality rates, in any area may be governed by its demographic structure, social advancement and economic development.

The determinants of mortality may conveniently be classified into three basic categories of demographic, social and economic factors.

Demographically age structure is most prominent. Other demographic factors like sex composition and degree of urban development are also significant.

Socially, incidence of infanticide, restrictions on widow remarriage, adequacy of medical facilities, general condition of nutrition, housing and sanitation, literacy standards and religion beliefs are important.

Among the economic factors, the standard of living or per capita income and type of economy are considered significant. Besides, the factors like, natural calamities, wars, epidemics, food-shortages also cause mortality on a large scale.

Age structure of a population has been mentioned as the most prominent demographic factor governing the incidence of mortality in a population. It is commonly agreed that mortality risk declines as the child matures but begins to increase in the middle age.

Thus, the countries that have an age- structure in favour of middle ages and old ages display high mortality rates. For instance diseases like cancer, heart stroke are associated with older adulthood and thus have become dominant causes of death in developed countries where the age structures are relatively old. On the other hand, infectious, parasitic and respiratory diseases are common causes of death in countries where the life expectancy is below forty years.

Secondly, it has been universally accepted that mortality rates of males and females are different from each other because of varying resistance power of two sexes. The mortality rates for females are lower for all ages, thereby establishing a well known demographic feature that the life expectancy in case of females is higher than that of males.

The less developed countries emerge as the areas where the female mortality rate exceed the male mortality rates at all

ages due to various reasons like malnutrition, high maternal mortality rate under poor condition of medical care, subordinate status of women, neglect of female children and a pious feeling of sacrifice among the females for their spouse and children. Thus, the extent of female superiority in survival varies by the level of development.

Thirdly, the degree of urban development also has its own contribution to make as far as the patterns of mortality are concerned. The mortality rates in urban areas was much more than the mortality rates of rural areas. The degree of urban development and mortality are so intimately related that at different stage of urban development, the mortality responds differently. For instance, in the first stage, when the towns are recipients of large scale immigrants, who are less adaptable to urban way of living and dietary habits, the towns show high death rate than the countryside.

In the second stage, when the immigrants get adapted, the medical facilities become more adequate , the urban mortality shows decline. In the third stage, the urban mortality again rises because of lack of urban amenities and deteriorating physical environment in urban areas due to over congestion in urban areas. At this stage, all areas becomes homogeneous from the point of view of conditions of general sanitation and hygiene. At this stage, the mortality in urban population is high because of following factors. Firstly, the urban areas are more prone to the spread of infectious diseases due to overcongestion of population.

Secondly, the urban society can not provide maternal care to the extent rural society can because of structure of rural family is more solid in comparison to that of urban family. Thirdly, the general environment of countryside is more conducive to good health due to its open air life and great physical activity . Forthly, the rural folks live a more carefree life due to almost complete freedom from vices.

Socially, the prevalence of infanticide in a society influences the mortality rates. In India, female infanticide had been practiced due to the relatively low status granted to women. Here female child is considered a liability while the male child is considered as asset. This gave rise to female infanticide in the past. All those societies where

the infanticide was practiced in one form or the other suffered a high mortality rate.

Another factor which has been typical of Indian society is the restrictions on widow remarriage. Not only there have been prejudices against widow remarriage but also there had been practices like sati, where the wife used to sacrifice her life by jumping into the pyre of her husband. Such practices made there own contribution in enhancing the mortality rate in India. Third social factor is the adequacy of medical facilities available which determines the mortality. There is said to be a positive correlation between the number of persons per physician and the mortality rates.

Closely associated with this factor is the factor of general condition of nutrition, housing and sanitation. Mortality rates are also found to be inversely correlated with literacy standards which govern people's knowledge of health hazard. That is why, the most illiterate societies suffer a general indifference and apathy to insanitation and hence, are characterized by high rate of sickness.

Lastly, in traditional societies, even religion has been found to be influencing mortality rates by way of inhibiting the people from accepting the modern medicines and medical technology. Different religious groups living within the same country exhibited varying degree of mortality, though their differences may not entirely be due to their religious differences.

Among the economic determinants of mortality, the income of an individual may be considered as the most significant. It is the income of an individual which not only determines the richness of his diet but also his capacity to avail himself of medical facilities. It is not meant that rich people can avoid death but significant here is that, rich people can buy medicines for himself. Generally there exists negative correlation between death rate and standard of living / per capita income.

It may be said that the industrial societies due to overcrowding, environmental pollution, hazards of accidents suffer high death rates in comparison to the agricultural societies which enjoy open air life in sparsely populated wide countryside. Besides these factors

natural calamities, wars, epidemics, food shortages also causes large scale deaths.

3.3 Measures of Mortality

3.3.1 Crude Death Rate (CDR)
3.3.2 Age and Sex Specific Mortality Rate (ASMR)
3.3.3 Infant Mortality Rate (IMR)
3.3.4 Maternal Mortality Rate (MMR)

3.3.1 **Crude Death Rate** :- It is simplest measures of mortality indicating the number of deaths in a particular year per thousand of population.
It is expressed as under

$$\mathbf{CDR = D/P \times 100}$$

D - stands for number of death in a year.
P - stands for estimated mid-year population for the year.

The term ' **crude** ' has rightly been used as it suffers from a number of deficiencies. Firstly, it yields only an average value which may be significantly influenced by the extremes value of mortality. Secondly, it takes into consideration total population including all age groups exposed to different degrees of mortality risks. Thirdly, it may reflect the average mortality condition of a dominant population whereas there may be other population groups having significantly different mortality behaviours.

3.3.2 Age and Sex Specific Mortality Rates :-

It can be expressed in terms of number of deaths during a year of people of a given age and sex per thousand of that age and sex. This can be calculated as under

$$IMR = Do / B_I \times 1000$$

Do - stands for number of deaths of children under one year of age
B_I - stands for number of live births.

It is widely used indicator of total health condition of a community and general living standards became the causes for infant mortality lie in the stage of social and cultural development of the community.The infant mortality rate can further be calculated on the basis of sex i.e. separately for males and females. The male mortality rate would be the number of male infant death in a year per thousand of live male births and the female infant mortality rate would be the number of infant female death per thousand of female live birth.

For societies which are at low level of social and economic development and when the females are involved in the process of frequent childbearing, the maternal mortality rate has great significance.

3.3.3 Infant Mortality Rate :- It is calculated for connoting mortality among children of less than one year of age. It is expressed as under :

$$IMR = D_0/B_I \times 1000$$

Where D_0 stands for number of deaths of children under one year of age.
B_I stands for number of live births.

This measure of mortality reflect the total health conditions of maternal and child health.

3.3.4 Maternal Mortality Rate :-

It refers to the women dying due to causes related with pregnancy, delivery and other maternity problems. It is generally expressed in terms of number of female deaths due to maternity causes per ten thousand of live births. Therefore, the incidence of

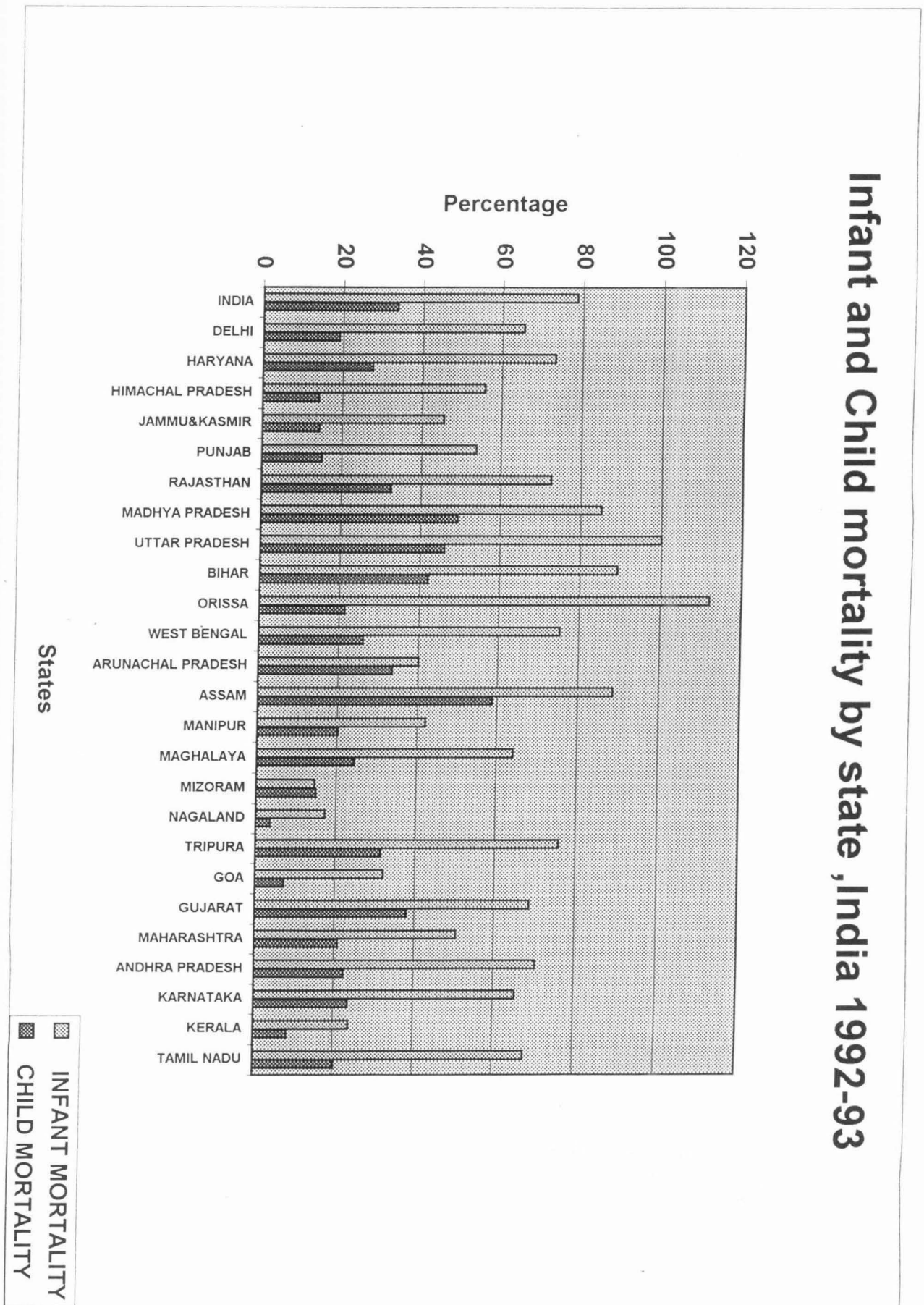
Table No.5

Infant and Child Mortality by State:

STATE	INFANT MORTALITY	CHILD MORTALITY
INDIA	78.5	33.4
NORTH		
DELHI	65.4	19
HARYANA	73.3	27.4
HIMACHAL PRADESH	55.8	14.1
JAMMU&KASMIR	45.4	14.3
PUNJAB	53.7	15
RAJASTHAN	72.6	32.3
CENTRAL		
MADHYA PRADESH	85.2	49.3
UTTAR PRADESH	99.9	46
EAST		
BIHAR	89.2	42
ORISSA	112.0	21.3
WEAT BENGAL	75.3	26
NORTH EAST		
ARUNACHAL PRADESH	40	33.3
ASSAM	88.7	58.7
MANIPUR	42	20.2
MAGHALAYA	64.2	24.3
MIZORAM	14.6	14.9
NAGALAND	17.2	3.6
TRIPURA	75.8	31.2
WEST		
GOA	31.9	7.2
GUJARAT	68.7	37.9
MAHARASHTRA	50.5	20.9
SOUTH		
ANDHRA PRADESH	70.4	22.4
KARNATAKA	65.4	23.5
KERALA	23.8	8.4
TAMIL NADU	67.7	20.1

SOURCE : NFHS India 1992-93

Figure No.11


Infant and Child mortality by state ,India 1992-93
Percentage
0
20
40
60
80
100
120
States
INDIA
DELHI
HARYANA
HIMACHAL PRADESH
JAMMU&KASMIR
PUNJAB
RAJASTHAN
MADHYA PRADESH
UTTAR PRADESH
BIHAR
ORISSA
WEST BENGAL
ARUNACHAL PRADESH
ASSAM
MANIPUR
MAGHALAYA
MIZORAM
NAGALAND
TRIPURA
GOA
GUJARAT
MAHARASHTRA
ANDHRA PRADESH
KARNATAKA
KERALA
TAMIL NADU
INFANT MORTALITY
CHILD MORTALITY

maternity death is a sensitive index of spread of medical facilities in a society.

3.4 Trend and Pattern in Infant and Child Mortality across the states in India

According to NFHS 1992-93, Infant Mortality Rate is maximum shown by Orissa 112 and minimum is shown by Mizoram 14.6. Very high levels of Infant Mortality is usually a reflective of poor medical facilities available to infant and lack of basic required infrastructure like doctors, medicine and hospital as well as poor physical environment . On the contrary Mizoram shows Infant mortality 14.6 show a very redeeming sign of looking after of infant and special care for pregnant mother and anti-natal facility is provided to them.

Kerala shows Infant Mortality Rate 23.8, though it is showing very good performance in literacy coverage and population control measures are adopted therefore the situation is not so good but Child Mortality is 8.4 which shows reduction in the risk of life after first year of the age of infant.

All states of India shows substantial differences in Infant Mortality and Child Mortality Rates. Cases of Infant Mortality is very high in comparison to the Child Mortality because more risk is after the birth of child and persist in first year or in the infantile stage of the baby. So more care is being given to infant because of high risk of infection. Northern States of India those are considered to be the agriculturally rich show Infant Mortality more than 5.0 and Child Mortality more than 15.0. Delhi which is also the capital of India and a state too, shows Infant Mortality more than 65 and child mortality is more than 19.0. It is second after Haryana state which shows Infant Mortality 73.3 and Child Mortality 27.4.

In Northern states, Rajasthan shows very bad performance in controlling Infant Mortality and Child Mortality. Even Child Mortality is maximum in Rajasthan, this may be the result of poor hygienic facilities and poor anti-natal care to pregnant mother, lack of awareness about

various ORS packets that is provided by the government in hospital, doctors especially Women and Child specialists, medicines etc. Poor literacy rate of Rajasthan also plays important role in enhancing Infant and Child Mortality.

Madhya Pradesh and Uttar Pradesh, which are considered to be bigger states of India show very poor result in reducing the death rate of newly born babies. Madhya Pradesh is a state where the population of scheduled caste and tribals are quite high, so poor literacy rate, lack of basic infrastructures like doctors,nurses, hospitals, medicine and outburst of various diseases plays important role in enhancing their mortality figures. In Uttar Pradesh, which is considered to be the biggest state of India but Infant Mortality and Child Mortality is amazingly high being 99.9 and 46 respectively. The states which are on the Eastern side do not show good results. In Bihar, Child Mortality is 42 child per thousand of children. But in Orissa situation is alarming, Infant Mortality which is 112, is very high. Although in North Eastern states except Assam, Tripura and Meghalaya, situation is better than Bihar, Uttar Pradesh and Orissa. Even the state Mizoram shows very less Infant Mortality only 14.6, which is lowest in all states. This shows the awareness of people about various anti-natal facilities which is provided by governmental and non-governmental agencies.

So far as Infant Mortality is concerned Goa, Gujrat, Maharashtra are not performing well. Even Goa has shown Infant Mortality 31.9. but Child Mortality of Goa is 7.2, which is a good sign side by side. Southern states of India are also considered developed states of India includes Andhra Pradesh, Karnataka, Kerala and Tamilnadu. In Kerala, the NFHS data show unsatisfactory performance in term of both Infant Mortality and Child Mortality. Infant Mortality is 23 and Child Mortality is 8.4.

More risk to the life of baby is during the infantile age and as far as India is concerned,there is high need to give attention to develop a system so that Infant Mortality rate could be reduced. Even developed states are showing only economic development but they are still socially backward.

Even the factor age at marriage plays a very crucial role in determining the health conditions in infants. People should be more

aware about the health of their babies. They should adopt small family norms so that more attention could be paid to the each member of the house. Government should provide anti-natal care facilities not only in urban areas but also in rural areas ,specially in the remote areas very effectively and efficiently. Early marriage should be banned totally and people should be educated as early marriage leads to the danger of life of mother and child.

While considering the causes of Infant Mortality and Child Mortality, mother's education, medical maternity care, place of delivery, plays a very important role. Mothers education plays a very important role in determining infant mortality rate as well as availability of medical maternity care received by her and the place of delivery. All these things are important for the life of infant and child's survival point of view.

It is a fact that if a women is illiterate then more risk is perceived to the life of infant and child. Infant Mortality and Child Mortality is 45 in case of lliterate mothers because they even do not know the survival technique of infant from various infectious diseases. But as soon as level of education increases, Infant Mortality as well as Child Mortality decreases.

There is a decrease of about 50% in terms of child mortality in case of women who have studied up to the middle level. But when a mother is more than Middle school educated, fifty percent reduction in Infant Mortality is registered in comparison to the illiterate mother and dramatic reduction in Child Mortality is also registered. Like for illiterate mother Child Mortality is 44.3 per thousand but in case of Middle school educated mother, Child Mortality is just only 9.2. The women with high school education shows much better results in reducing the mortality figures for both infant and child.

So, mother's education plays a very important role in determining the mortality path of a infant and a child. Level of education of a mother is much more important than anything else. If we look at the trend of infant and child mortality from mother's education point of view, the infant and child mortality decreases as soon as the level of education

TABLE No.6

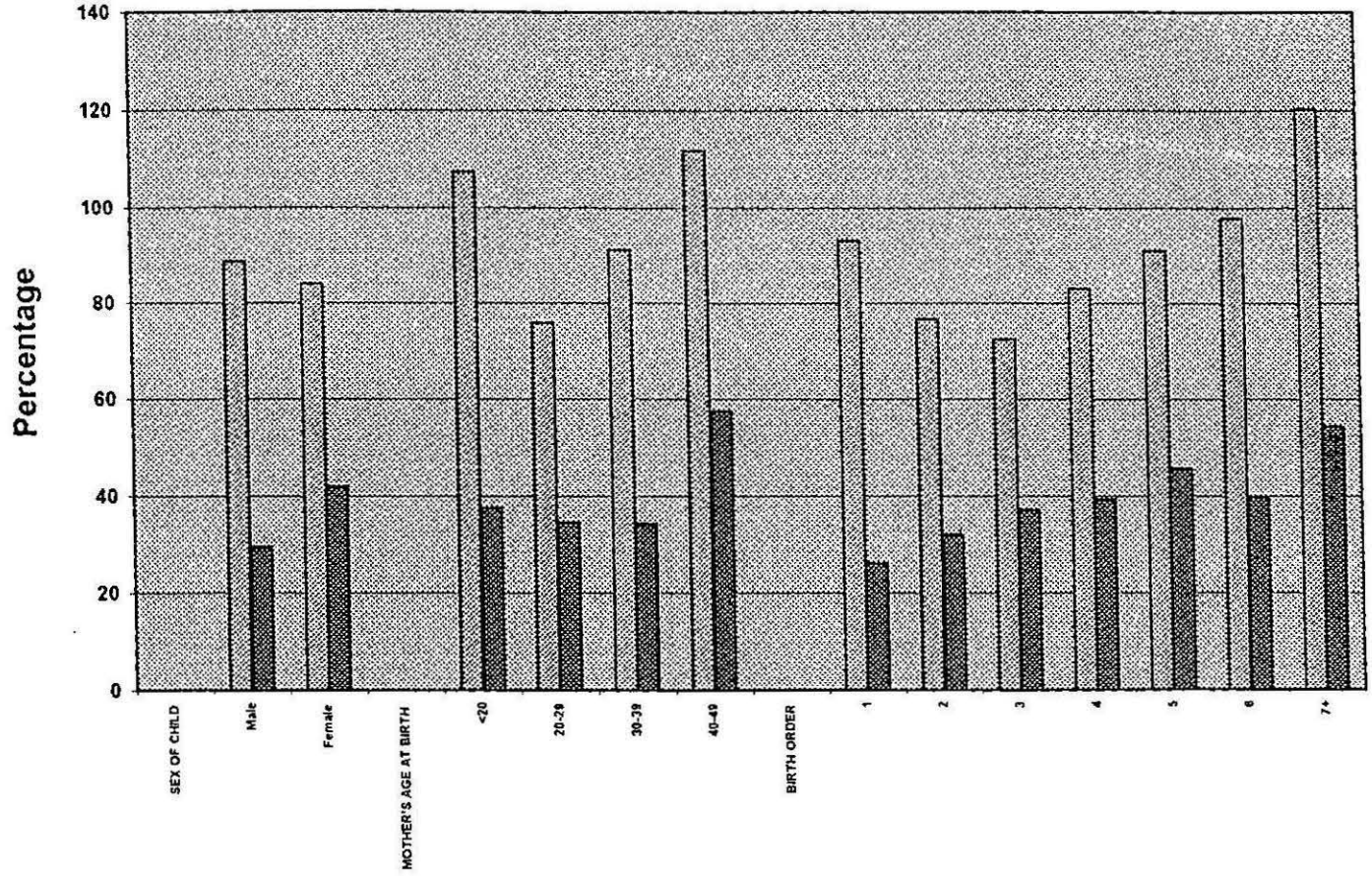
INFANT AND CHILD MORTALITY BY DEMOGRAPHIC CH ARACTERISTICS

DEMOGRAPHIC CHARACTERISTICS	INFANT MORTALITY	CHILD MORTALITY
SEX OF CHILD		
Male	88.6	29.4
Female	83.9	42
MOTHER'S AGE AT BIRTH		
<20	107.3	37.6
20-29	75.8	34.6
30-39	91.1	34.3
40-49.	111.8	57.5
BIRTH ORDER		
1	93	26
2	76.6	32
3	72.4	37.1
4	83	39.4
5	90.9	45.7
6	97.7	39.8
7+	120.3	54.3

Source: NFHS India 1992-93

Figure No. 12

Infant and Child mortality by Demographic characteristics ,India 1992-93



of mother increases. The situation is disappointing for illiterate mothers and very good for high school and above high school educated mothers.

Second important factor in determining the Infant and Child Mortality is the medical maternity care. It means proper maternity care is received by mother . So, in case of those mothers who didn't receive any type of medical care e.g. anti-natal care or delivery case facility, shows a very high risk of Infant and Child Mortality, 96.8 is the Infant Mortality and 54.3 is the Child Mortality.

But those mothers who receive either anti-natal care or delivery care facility shows near about fifty percent reduction in Child Mortality rate in comparison to those who did not receive any kind of delivery care facility. But in case of these mothers who have taken both anti-natal care as well as delivery care facilities the Infant Mortality Rate and Child Mortality Rate falls drastically. Infant Mortality is reduced more than fifty percent in comparison to those who did not take any kind of anti-natal care facility and remarkable reduction is perceived in Child Mortality. It is 13.2 in case of women who had all facilities of delivery care and anti-natal care.

If we look at the trend of Infant Mortality and Child Mortality while considering medical maternity care as a factor for determining Infant and Child Mortality, we find that the number of Infant and Child death are spectacularly high for those women who did not take any anti-natal care facilities and delivery care facilities. In case of women who has taken all precautions before and after delivery had shown very good results in reducing the mortality figures of infant as well as child.

Place of delivery is also an important criteria for determining the survival rate of infant. Because if the place of delivery is a hospital then special and immediate care is being given by doctors to the mothers and thus, it is much more safer for the mother and baby in comparison to the women who has given birth to a baby at home.

So, if a women has delivered a baby at home, then there is a high risk of mortality for both infant and child. It is 77.5 for Infant Mortality and 39.9 for Child Mortality for home delivered babies. The Dhais or the mid-wives often conduct delivery cases at home specially in rural areas without proper medical infrastructure which can

Table No.7

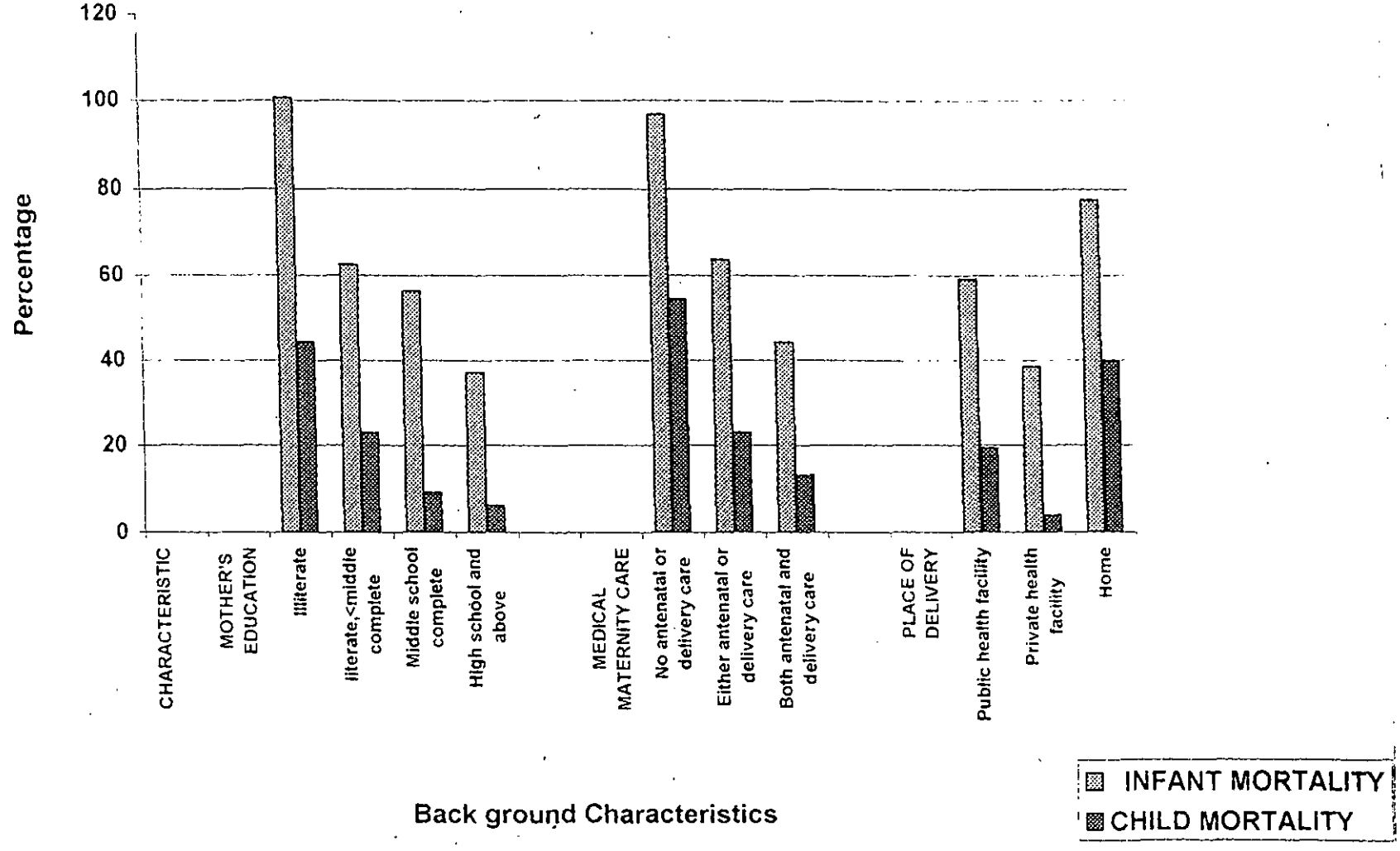
INFANT AND CHILD MORTALITY BY BACKGROUND CHARACTERISTIC

BACKGROUND CHARACTERISTIC	INFANT MORTALITY	CHILD MORTALITY
MOTHER'S EDUCATION		
Illiterate	100.6	44.3
literate,<middle complete	62.5	22.8
Middle school complete	56.1	9.2
High school and above	37.2	6.2
MEDICAL MATERNITY CARE		
No antenatal or delivery care	96.8	54.3
Either antenatal or delivery care	63.7	22.9
Both antenatal and delivery care	44.2	13.2
PLACE OF DELIVERY		
Public health facility	59.1	19.3
Private health facility	38.5	3.9
Home	77.5	39.9

SOURCE: NFHS India 1992-93

Figure No.13

Infant and child Mortality by Mother's education, Medical maternity care and Place of delivery, India 1992-93



make delivery very risky. But if place of delivery has Public Health Facility then this number of infant deaths is slightly reduced to 59 Mortality and that of Child Mortality 19.3. If there is Private Health Facility then Infant Mortality as well as Child Mortality is reduced remarkably. Even Child Mortality has remained just only 3.9 but Infant Mortality is 38.5. This is only because Private Health Facility has all required infrastructure and special care and more attention is being given to the mother and child in comparison to government hospitals.

After considering places of delivery a factor , the trend of Infant Mortality and Child Mortality was found to be vary from the lowest Infant Mortality and Child Mortality in cases having Private Health Facility to the highest at home.

Again there is a considerable difference in Infant and Child Mortality between the male and female baby. It is a general outlook of a family that male baby should be given more attention whereas the female child is deprived of so much care , medical facilities and treatment. But here situation is different while evoking the mortality figures of male and female babies.

Mortality rates are high in case of male infants in comparison to the females but child mortality is more in case of female child. It means that male infants seem to be biologically weak than a female infant. But as the age of female child increases, mortality rate also increases. It means negligence of female baby health care and lack of acess to medical facilities. Biasness in nutrition between the male and female baby also plays an important role.

Mother's age at the birth of her baby is also a very sensitive index for considering Infant and Child mortality. Those mothers who give birth to babies before twenty years of age shows high risk of infant mortality because up to that level of age women's body is not well prepared for conceiving a foetus and give birth to a healthy baby. So this increases the risk of mortality of Infant as well as mother.

Those mothers who are less than twenty years of age had Infant Mortality 107.3 and Child Mortality 37.6. the lowest infant and child mortality figures are seen in case of those mothers who gave birth to the babies during 20-29 years of age.

Again with an increase in the age of women there is a high risk of life for both mother and child. Infant and Child Mortality can also be related to the Birth Order. There is high risk of mortality of infant in the first delivery. But as soon as the birth order increases chances of infant mortality decreases. But after the third birth order chances of Infant and Child Mortality again rises and the higher the birth order higher is the risk.

Therefore , on the whole it has been observed that infant, child and maternal mortality is a reflective of the interplay of a host of factors. Since these factors vary across the states, it is also proved that mortality would also vary likewise.

3.5 conclusion

This chapter deals with the Mortality and Maternal and Child Health. It explains how various determinants of mortality directly or indirectly affect the maternal and child health. This chapter also reflects the trend and pattern of infant and child mortality across the states.

The states mainly Orissa, Madhya Pradesh and Uttar Pradesh show high infant and child mortality, maternal mortality reflects very low level of maternal and child health status. In term of infant and child mortality no state had shown satisfactory results except Goa and Kerala. This chapter also explains the role of mother's education, medical maternity care and place of delivery in determining the infant and child mortality as well as their health status.

CHAPTER---4

CHAPTER --4

Maternal and Child Health

4.1 Definition of Health

4.2 Introduction

4.3 Indicators of Maternal Health

4.4 Indicators of Child Health

4.5 Proximate Determinants of Child Survival

4.6 Factors influencing Infant Mortality

4.7 Socio-Economic Determinants of Maternal and Child Health

4.8 Antenatal Care received by Mothers

4.9 Trend and Pattern of receiving Antenatal Care facilities across the States

4.10 Trend and Pattern of Vaccination among Children Across the States in India

4.11 Treatment of Acute Respiratory Infection

4.12 Treatment of Childhood Diseases across the States

4.13 Knowledge and Ever Use of ORS Packets by States

4.14 Feeding Practices During Diarrhoea

4.15 Treatment of Fever

4.16 Conclusion

MATERNAL AND CHILD HEALTH

4.1 Definition of health

Health can be defined as a state of complete physical, mental and social well being and not merely the absence of diseases or infirmity, according to the World Health Organization (1946).

4.2 Introduction

Realizing the importance of Maternal and Child Health Care Services, the Ministry of Health, Govt. of India, took concrete steps to strengthen maternal and child health services in the First and Second five year plans (1951-56).

The integration of Family Planning Services with Maternal and Child Health Services(MCH) and Nutrition Services was introduced as a part of Minimum Needs Program during the fifth five year plan, 1974.

The primary objective was to provide basic public health services to vulnerable groups of pregnant woman, lactating mothers (Kanitkar, 1979).

Since then, the promotion of health of Mother and Children has been one of the most important aspects of the family welfare programmes in India and has now been further strengthened by introducing the Child Survival and Safe Motherhood Programme(CSSM) (Ministry of Health and Family Welfare 1992). The Ministry of Health and Family Welfare has also sponsored special schemes, under the maternal and child health programmes including the programmes of oral rehydration therapy, Development of Regional Institutes of maternal and child health in states where infant mortality rates are very high, The Universal Immunization Programmes and Maternal and Child Health Supplemental Programmes within the Post-Partum Programme.

In rural areas of India, Maternal and Child Health (MCH) services are delivered by government run primary health centres and

sub-centres. But in urban areas maternal and child health services are available through governmental or municipal hospitals, nursing homes, urban health posts and private nursing homes.

Nursing homes are operated by Non-Governmental Voluntary Organizations. In rural areas the female health worker who is an Auxiliary Nurse Midwife(ANM) renders Maternal and Child health and Welfare Services (Ministry of Health and Family Welfare, 1978).

There are numerous factors that determine the status of Maternal and Child Health in rural as well as in urban areas. Some factors may be biological, others may be social, cultural, economical. But all variables that are responsible for women and child health status determination are interlinked.

But we can easily see the regional differences while following these maternal and child health variables. Some states of India are advanced states, some are economically weak and some are in transitional phase. So, Religion, Caste, Age of the mother at the time of delivery of baby, Education of women, Sex preferential, Dietary habits, Family system whether it is joint or nuclear, number of children a couple has, Living standard of family, Monetary standard of family, Working / Non working status of women, Awareness about child health, Maternal health, Government policies about maternal and child health, Primary health centres, Number of women doctors, all these factors plays important role in determining women and child's health in any state or in any village or on national front.

4.3 Indicators of Maternal Health

1. Antenatal Care
2. Tetanus Toxoid Vaccination
3. Iron and Folic Acid Tablets
4. Place of Delivery and Assistance During Delivery

4.4 Indicators of Child Health

1. Immunization of Children
2. Child Morbidity and Treatment Patterns
3. Treatment of Acute Respiratory Infection(ARI)
4. Treatment of Fever
5. Treatment of Diarrhea

4.5 Proximate Determinants of Child Survival

1. Factors Related to Mother (age, parity, birth interval etc.)
2. Environmental Contamination
3. Nutritional Deficiency
4. Injury
5. Control of Personal Illness

All these determinants were provided by **Mosley and Chen (1984)**, who integrated both social and biological approaches to child survival to identify the proximate determinants of mortality and morbidity.

All these are believed to be influenced by socio-economic determinants which includes those at the :

1. Individual Level (Productivity, Education, Occupation etc.)
2. Household Level (Income and Wealth of the Household)
3. Community Level (Wealth System, Environment)
4. Vaccination, Poverty, Caste, Use of Medical facilities and Adult Female Literacy are some of the important contributory factors in infant mortality. Adult female literacy in particular worked out to be a very significant factor.

Infact in all works done on determinants of health, whether reflected by IMR(Infant Mortality Rate) or USMR(Under Six Mortality Rate), factors related to the mother stand out very specifically;

like her level of education, nutritional status, economic status and often her area of residence.

There are also various other factors external to mother, like level of family income, environment, availability of medical facility etc. that have an influence on child health. The willingness and the ability of the mother to adapt to changing conditions and to do what is best for her child, exerts an influence which is quite independent of other factors **(Basu, 1987).** Maternal factors influences both neo-natal and post neo-natal mortality.

4.6 Factors influencing infant mortality have been classified into two groups

* Endogenous Factors
* Exogenous factors

Endogenous factors

Endogenous factors are those which are more physiological or biological in nature and dominate deaths in the neo-natal period, that is during the first month after ~~month~~ birth. They include deaths due to congenital malformation, absence of proper prenatal care, unsatisfactory birth process (Jain and Visaria).

Exogenous factors

Exogenous factors are those factors that are more environmental in nature and predominate deaths in the post neo-natal period (i.e.after the first month of birth). These mainly include deaths due to infection, parasitic and respiratory diseases etc.

Table No.8

Percent distribution of live births by the source of antinalal natal care , during pregnancy , India 1992-93

Back ground character-istics	ANC at home from health worker	Doctor	Traditional birth attendant	No ANC	Other health professional	Miss-ing	Total Percent
Mother's age at birth							
<20	13.3	40.8	0.4	34.6	9.8	1.1	100
20-34	12.6	40.8	0.3	36	9.4	0.9	100
35+	13.1	22.5	0.3	57.2	5.9	1.1	100
Residence							
Urban	39	69.6	0.4	17.8	7.2	1.1	100
Rural	15.4	31.1	0.3	42.4	10.0	0.9	100
Education							
Illiterate	15.5	25.3	0.3	48.8	9.2	1.0	100
Lit., < middle	10.1	57.6	0.3	19.9	11.3	0.7	100
Middle complete	6.5	72.1	0.3	9.8	10.5	0.7	100
High school and above	3.6	84.2	0.2	4.2	6.5	1.2	100
Total	12.8	39.8	0.3	36.8	9.3	0.9	100

Source :----

NFHS ,India 1992-93

Figure No.14

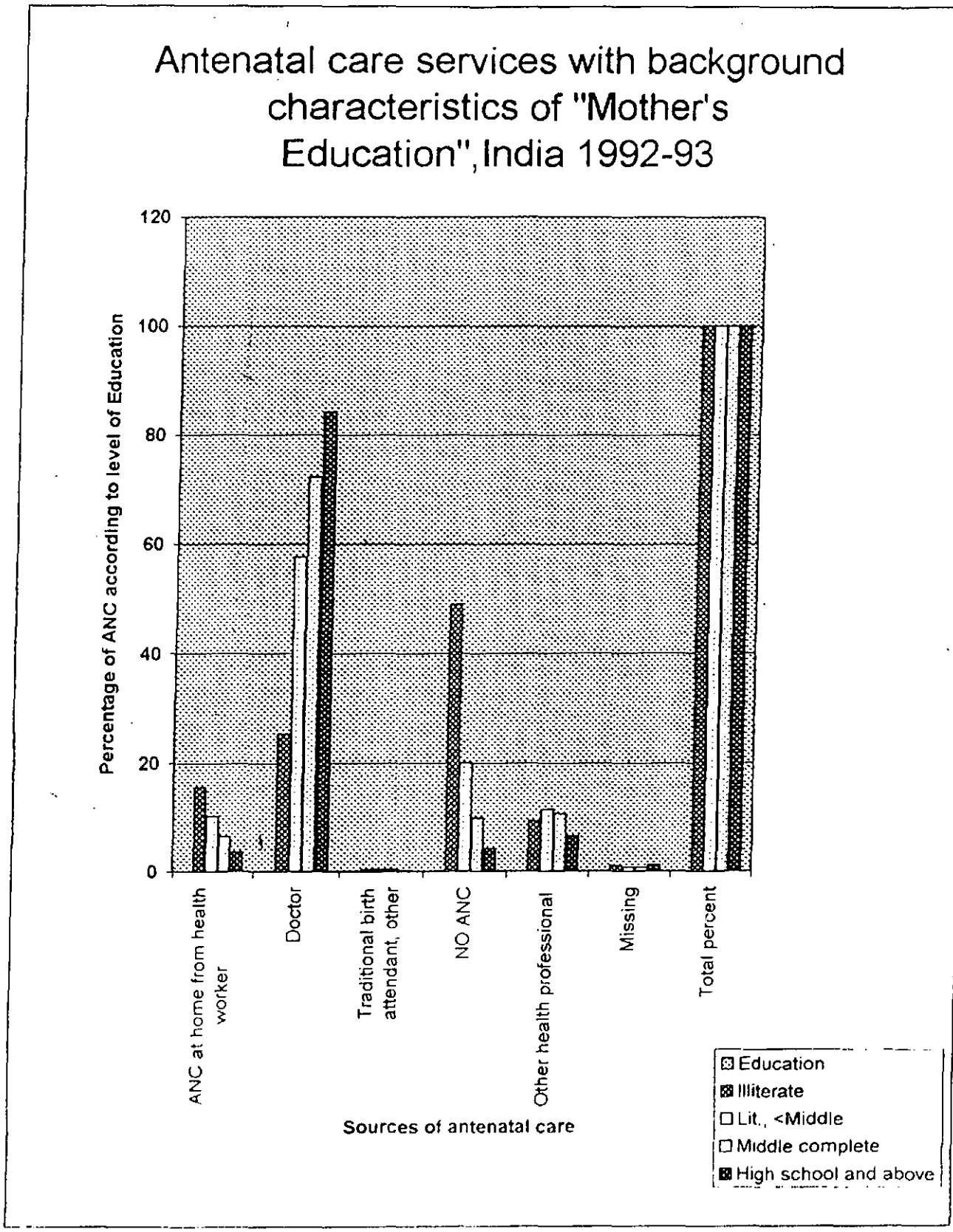

Antenatal care services with background characteristics of "Mother's Education", India 1992-93
Percentage of ANC according to level of Education
120
100
80
60
40
20
0
ANC at home from health worker
Doctor
Traditional birth attendant, other
NO ANC
Other health professional
Missing
Total percent
Sources of antenatal care
Education
Illiterate
Lit., <Middle
Middle complete
High school and above

Figure No. 15

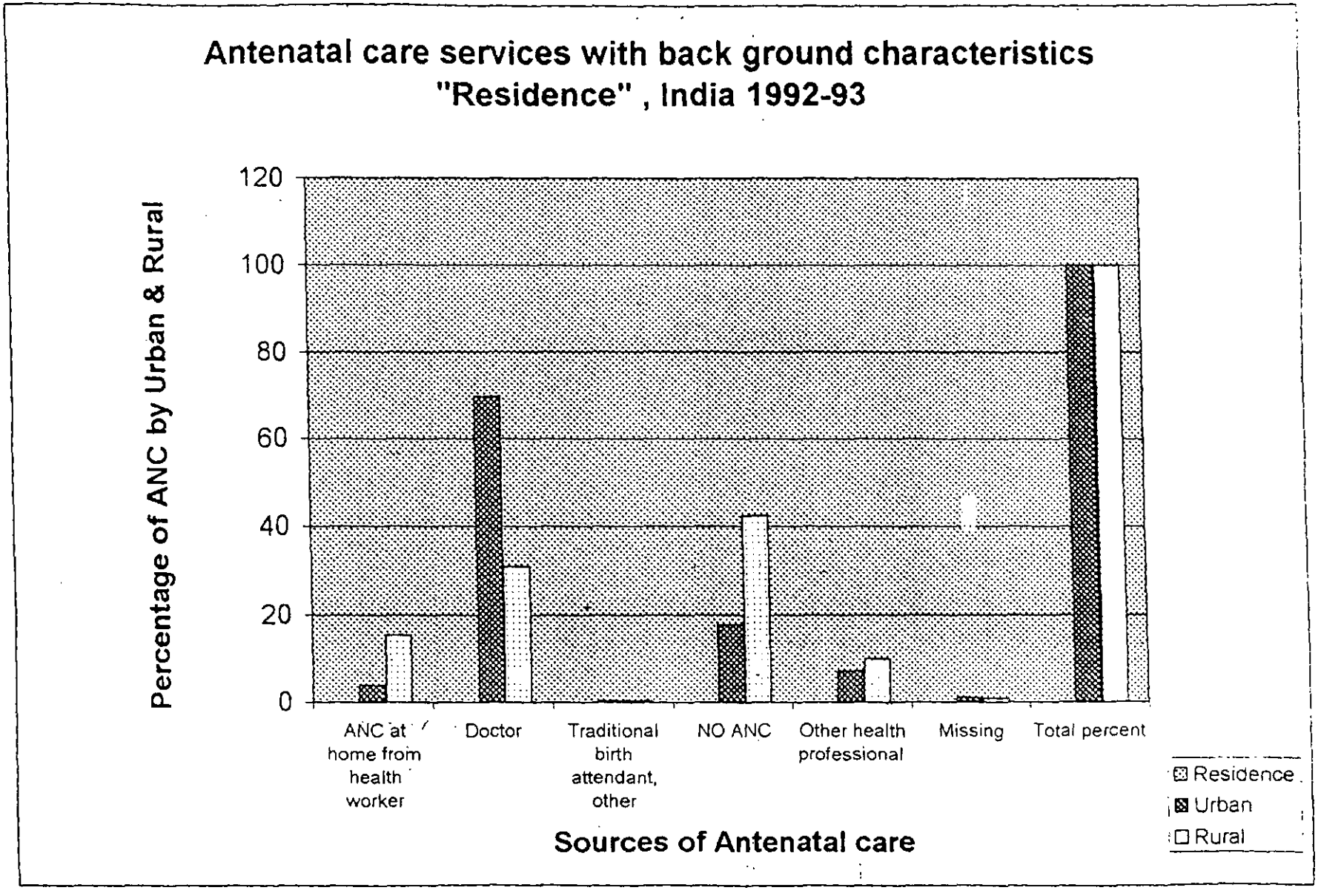
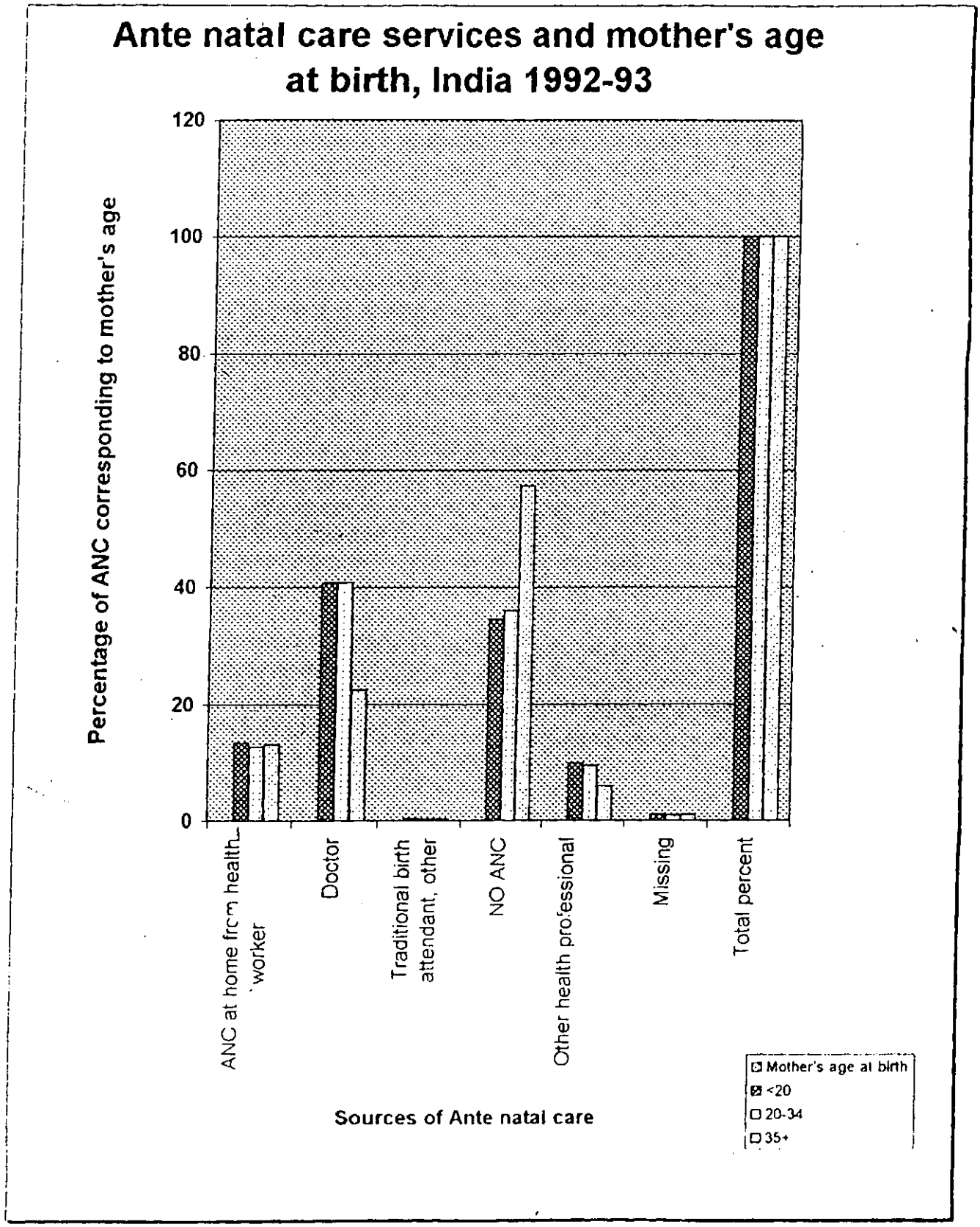

Antenatal care services with back ground characteristics
"Residence" , India 1992-93
Percentage of ANC by Urban & Rural
120
100
80
60
40
20
0
ANC at home from health worker
Doctor
Traditional birth attendant, other
NO ANC
Other health professional
Missing
Total percent
Sources of Antenatal care
Residence
Urban
Rural

Figure No. 16


Ante natal care services and mother's age at birth, India 1992-93
Percentage of ANC corresponding to mother's age
120
100
80
60
40
20
0
ANC at home from health worker
Doctor
Traditional birth attendant, other
NO ANC
Other health professional
Missing
Total percent
Sources of Ante natal care
Mother's age at birth
<20
20-34
35+

4.7 SOCIO-ECONOMIC DETERMINANTS OF MATERNAL AND CHILD HEALTH

According to NFHS, there are numerous factors which helps in determining the trend and pattern of maternal and child health across the states like Religion, Caste, Age of the mother, Education of women, Sex preferential etc. But the role of other associated factors like Dietary habits, Family system (Joint or Nuclear), Number of children a couple has, Living standard of family, Monetary standard of family, Working / Non working status of women, Awareness about child health and maternal health in determining the health of mother and child can not be ruled out.

4.8 Antenatal Care Received by Mothers

Antenatal care received during pregnancy, India 1992-93, shows a very clear picture about women getting antenatal care facilities in rural as well as urban areas and the role of mother's age and education in availing anti-natal care facilities.

If we look at the age of mother who are less than 20, and among the age group 20-34 in utilizing the antenatal care facilities during pregnancy by doctor the figure is the same i.e. 40.8% (outside home). 57.2% of the mother's in the 35+ age group do not avail the antenatal care facilities. The reason for this may be that as the age increases, the chances of becoming pregnant reduces and the other reason could be that the 35+ age group women has already gone through pregnancy many a times and so, they are aware of the related health care services and what they should do and at what time. The 35+ age group women are not interested in taking the antenatal care facilities even by doctors and it is half i.e. 22.5% in comparison to less than 20 and 20-34 age group. 34.6% of mothers of less than 20 age group are not availing antenatal care facilities and there is minimal variation of just 36% for

the mother's of 20-34 age group who does not receive the antenatal care.

If the whole antenatal care facilities utilization are divided. we find that the percentage of anti-natal care facilities utilized through doctors is more than double for urban areas (69.6%) in comparison to rural areas (31.1%), this is because the mothers in urban areas are more educated than the mothers in rural area.

17.8% of the mothers in urban areas and 42.4% of the mother in rural areas are not availing antenatal care facilities because they think that it is not necessary to take such facilities and also due to the lack of knowledge of antenatal care facilities specially in rural areas (13.4%) than in urban areas (7.6%).

Education plays a crucial role in determining the percentage of antenatal care facilities received by mothers. As the level of education increases, the percentage of mother's receiving antenatal care facilities also increases. 25.3% of illiterate mothers are receiving antenatal care facilities and it is 57.6% in case of mothers who studied below the middle level, 72% for the mothers who completed the middle level and 82% for the mother who had passed the . The increase in percentages of mother's availing antenatal care facilities is a positive effect of education.

It is surprising that antenatal care facility by traditional birth attendant is very low at all education level and it reduces to just 0.2% at high school and above education levels. This is an indicator of the fact that the traditional birth attendant concept is loosing its importance. 48.8% of illiterate mothers are not availing antenatal care facilities and this percentage reduces considerably to just 4.2% for high school and above . This variation in percentages of mother's receiving antenatal care at different level is a result of rise in educational level and its positive effect lies therein.

Table No.9

MATERNAL CARE INDICATORS BY STATE,INDIA 1992-93

STATE	PERCENTAGE RECEIVING ANTENATAL CARE	PERCENTAGE RECEIVING TWO DOSES OF TETANUS TOXOID VACCINE	PERCENTAGE RECEIVING IRON/FOLIC TABLETS	PERCENTAGE OF BIRTHS DELIVERED IN MEDICAL INSTITUTIONS	PERCENTAGE OF DELIVERIES ASSISTED BY HEALTH PROFESSIONALS
INDIA	**62.3**	**53.8**	**50.5**	**25.5**	**34.2**
NORTH					
DELHI	82.4	72.5	74.9	44.3	53
HARYANA	72.7	63.3	59.9	16.7	30.3
HIAMACHAL PRADESH	76	47.4	71.7	16	25.6
JAMMU&KASHMIR	79.5	68.9	70.7	21.9	31.2
PUNJAB	87.9	82.7	73.6	24.8	48.3
RAJASTHAN	31.2	28.3	29.2	11.6	21.8
CENTRAL					
MADHYA PRADESH	52.1	42.8	44.3	15.9	30
UTTAR PRADESH	44.7	37.4	29.5	11.2	17.2
EAST					
BIHAR	36.8	30.7	21.4	12.1	19
ORISSA	61.6	53.8	49.9	14.1	20.5
WEST BENGAL	75.3	70.4	56.3	31.5	33
NORTH EAST					
ARUNACHAL PRADESH	48.9	31.9	44.7	19.9	21.3
ASSAM	49.3	34.9	39.4	11.1	17.9
MANIPUR	63.4	48	35.5	23	40.4
MEGHALAYA	51.8	30	49.6	29.6	36.9
MIZORAM	88.9	42.5	63.7	48.9	61.5
NAGALAND	39.3	33	23.9	6	22.2
TRIPURA	64.9	58.7	53.2	30.7	33.5
WEST					
GOA	95.4	83.4	89.3	86.8	88.4
GUJARAT	75.7	62.7	69.3	35.6	42.5
MAHARASHTAR	82.7	71	70.6	43.9	53.2
SOUTH					
ANDHRA PRADESH	86.3	74.8	76.4	32.8	49.3
KARNATKA	83.5	69.8	74.9	37.5	50.9
KERLA	97.3	89.8	91.2	87.8	89.7
TAMILNADU	94.2	90.1	84.1	63.4	71.2

Source:-

NFHS ,1992-93

4.9 Trend and Pattern of Receiving Antenatal Care Facilities by Mothers across the States

If we look at the picture of states receiving antenatal care facilities on the basis of antenatal care percentage, percentage of women receiving two doses of tetanus toxoid vaccine, iron / folic tablets, birth delivered in medical institutions, deliveries assisted by health professionals, a wide interstate variation is acknowledged.

Mother's receiving antenatal care facilities, births delivered in medical institutions, deliveries assisted by health professionals and awareness about various source of antenatal care facilities are closely linked with educational level of mother's of all ages. As educational level and economy of one state are different from the other, so, the percentage of mother's receiving antenatal care and its related services are different for different states.

The percentage of births for which mother receives antenatal care is highest in Kerala (97%), followed by Goa (95%) and Tamilnadu (94%) because in these states the literacy rate is high and the mother's are also aware of various antenatal care facilities and related services. Among the major states (states with more than 5 million population in 1991), that includes Punjab, Andhra Pradesh, Karnataka, Maharashtra and Delhi have also achieved antenatal coverage for more than 80 percent of births.

Among the smaller states, Mizoram and Jammu stand out with the coverage rate of 89% and 80% respectively. Utilization of antenatal services is lowest in Rajasthan (only 31% of births during the last four years were to mother's who received antenatal care). This is because of the fact that the level of education of mothers is very low and awareness about various antenatal facilities regarding pregnancy provided by government is nil. The percentage of mothers who receive antenatal care is also low in Bihar (37%), Uttar Pradesh (45%), Assam (49%), Madhya Pradesh (52%) and Orissa (62%).

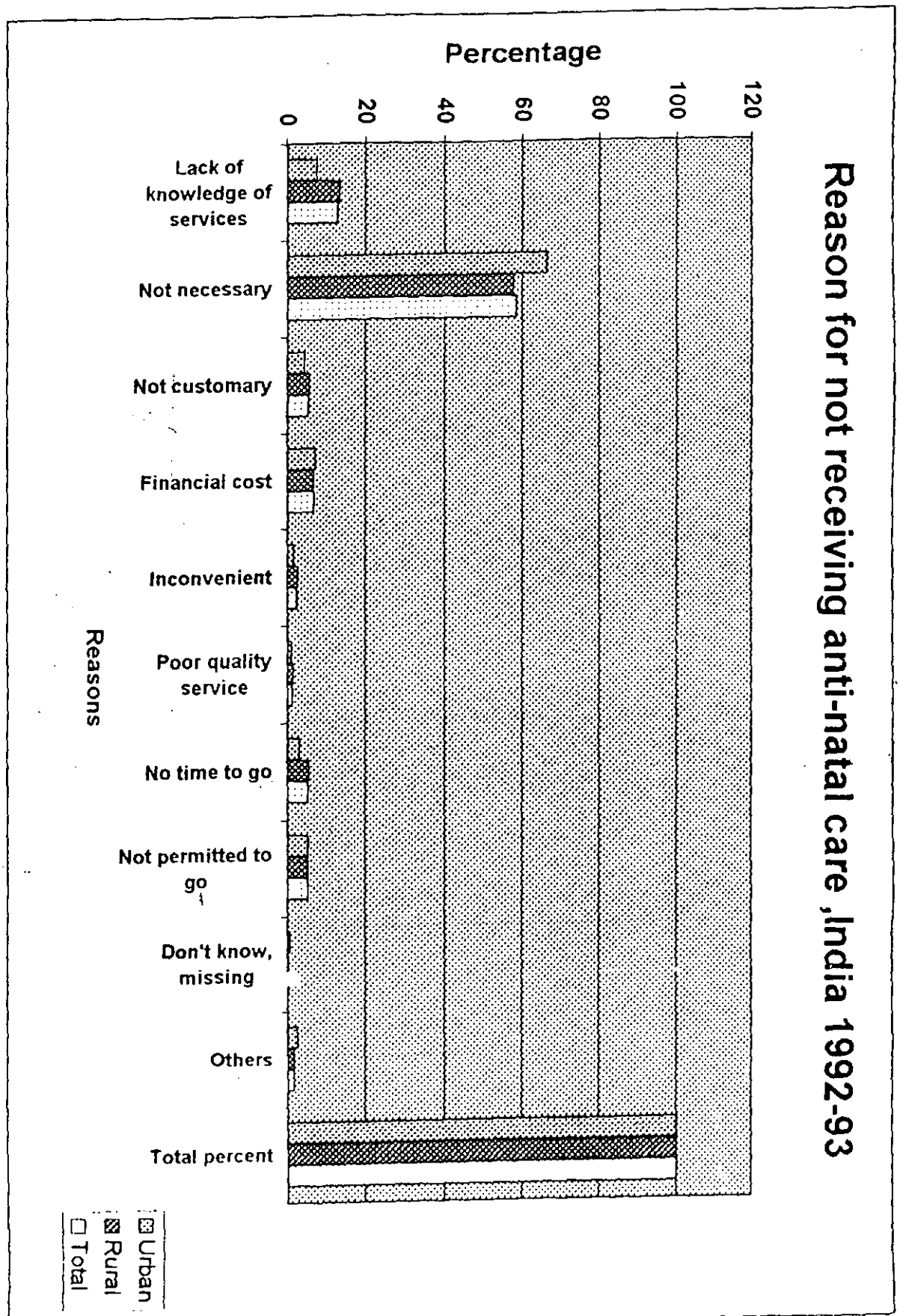
Table No.10

Reasons for not receiving anti-natal care, India 1992-93.

	Urban	Rural	Total
Lack of knowledge of services	7.6	13.4	12.8
Not necessary	66.4	57.6	58.5
Not customary	4.4	5.7	5.5
Financial cost	7.3	6.8	6.9
Inconvenient	1.7	2.6	2.5
Poor quality service	1	1.4	1.3
No time to go	3	5.5	5.3
Not permitted to go	5.3	5.2	5.2
Don't know, missing	0.6	0.1	0.2
Others	2.7	1.6	1.7
Total percent	100	100	100

NFHS ,INDIA 1992-93

Figure No.17


Reason for not receiving anti-natal care ,India 1992-93
Percentage
0
20
40
60
80
100
120
Reasons
Lack of knowledge of services
Not necessary
Not customary
Financial cost
Inconvenient
Poor quality service
No time to go
Not permitted to go
Don't know, missing
Others
Total percent
Urban
Rural
Total

In six smaller states in the north-east, there is substantial variation in the coverage of antenatal care ranging from 39% in Nagaland to more than 60% in Mizoram, Tripura and Manipur.

Tetanus toxoid vaccination(TT) and Iron and folic Acid tablets(IFA) are often given during antenatal check-ups. It is not surprising that the interstate variations in these two maternal care indicators are similar to the variations observed in the utilization of antenatal care services.

The states that have a higher percentage of births covered by antenatal care also have higher percentage of births whose mother's received two doses of ante-tetanus injections and iron and folic acid tablets during pregnancy.

There are also large inter-state variations in the proportions of institutional deliveries ranging from 87% - 88% in Kerala and Goa to 11% - 12% in Rajasthan, Assam, Bihar and Uttar Pradesh. In Nagaland only 6% of births are reported to have occurred in a institution having some health facilities. Apart from Kerala and Goa, the only other state where more than half of all births take place in institutions is Tamilnadu. It is surprising to note that in Panjab that has achieved a good level in proyiding antenatal care facilities.In Orissa the birth occuring under the influence of any health facility is (14%), Madhya Pradesh (16%), and Haryana (16.7%). Even in Delhi that is the national capital and an urban state, 44% of births occur in institutions having health facilities.

In every state more births are assisted by untrained professionals than births taking place in medical institutions. It is surprising to note that why people are abstaining from institutional deliveries under the guidence of medical and paramedical staff although child survival rate is maximum in health facilities. It may be due to various reasons like attitude of people in taking antenatal care facilities, superstitious nature of people, government attitude towards child survival, awareness about the sources of antenatal care facilities and various institutions run by government and non government organisations. The state that has minimum institutional delivery are

backward states and those having maximum institutional delivery are advanced states.

If we look at the northern states that includes Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Panjab and Rajasthan the percentages of women receiving antenatal care facility is more than 70% except Rajasthan (31.2%). Though in case of birth deliveries in medical institutions except Delhi (44.3%), all other northern states are dwindling in between 11% - 16%, which is very low by all standards. Madhya Pradesh is far ahead of Uttar Pradesh in terms of antenatal care facilities, tetanus vaccine, iron / folic acid tablets, delivery in medical institutions and deliveries by health professionals.

In eastern side of India, situation is satisfactory in case of West Bengal and Orissa but poor in case of Bihar. In north - eastern states that include Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura, interstate variations in receiving antenatal care facilities are seen. Mizoram registers 88.9%, Assam 50% and Nagaland 39%. Lowest institutional births are registered in Nagaland (6%).

Western states (Goa, Gujrat and Maharashtra) registers more recepitents of antenatal care facilities. In Goa it is 95%, Gujrat has 75.7% and Maharashtra has 82.7% in comparison to national percentage of 25.5%. Goa has high health professional deliveries of 88.4% in comparison to the national percentage of 34.2%. The southern states that include Andhra Pradesh, Karnataka, Kerala and Tamilnadu shows good percentage of antenatal care facilities, tetanus toxoid vaccination, iron / folic acid tablets. Deliveries in medical institutions and deliveries by health professionals in all these states is high in comparison to the national level.

Conclusively we can say that the provision of antenatal care facilities is good in all southern and western states of India. The northern states (with the major exception of Rajasthan) perform relatively well on the Antenatal care facilities indicator but the situation with respect to the delivery case is satisfactory. Maternal care is very bad in Rajasthan, Bihar, Uttar Pradesh, Assam and Nagaland.

4.10 Trend and Pattern of Vaccination among Children across the States in India.

The vaccination of a child includes vaccination of B.C.G, Polio, D.P.T and Measles that protects the life of a child from various deadly diseases. The vaccination of children among the states reflects the health status of children that is different for each state. It shows not only the success of government policies to uplift the child's health and to raise the survival rate of children. It also reflects at the awareness of people to save their children from various deadly diseases.

According to National Family and Health Survey reports (NFHS), India 1992 - 93, clearly indicates that there are eleven states that shows less vaccinated children of the age group of 12 - 23 months. These states are Nagaland (3.8%), Meghalya (9.7%), Bihar (10.7%), Tripura (19%), Assam (19.4%), Uttar Pradesh (19.8%), Rajasthan (21.1%), Arunachal Pradesh (22.5%), Manipur (29.1%), Madhya Pradesh (29.2%) and West Bengal (34.2%). This indicates at the very poor health conditions of children in the above mentioned states.

The percentage of children who are fully vaccinated ranges from 4% in Nagaland to 74.9% in Goa. The maximum percentage of vaccination cases is in Goa. So, there is a considerable interstate variation for children receiving all vaccination.

Among the major states the percentage of children who are fully vaccinated ranges from 11% for Bihar to 65% for Tamilnadu. Bihar (11%), Assam (19%), Uttar Pradesh (20%), Rajasthan (21%), Madhya Pradesh (29%) stands out as having a much lower percentage of children fully vaccinated than the national average of 35%. As these states account for 40% of the total population of the country, there low coverage for vaccination pulls down the coverage rates of the country as a whole.

Generally northern states of India that includes Jammu and Kashmir, Himachal Pradesh, Panjab, Delhi and Haryana had satisfactory coverage of vaccination; covering 50% of children in these states except Rajasthan that shows just 21.1% children vaccinated. Similarly all of

Table No. 11

Percentage of vaccination received by children age 12-23 months by states, India 1992-93

States	B.C.G	D.P.T	POLIO	MEASLES	ALL
Delhi	90.1	74	82	69.6	57.8
Haryana	77.4	74	74	60.9	53.8
Himachal Pradesh	84.5	84	84	71.5	62.9
J&K	81.3	81	81	69.1	65.7
Punjab	77.4	78	77	64.8	61.9
Rajasthan	45.7	38	41	31.2	21.1
Madhya Pradesh	56.8	52.6	48	40.7	29.2
Uttar Pradesh	48.9	42	44	26.3	19.8
Bihar	33.9	33	38	14.6	10.7
Orissa	63.3	62	64	40.2	36.1
West Bengal	63.1	62	65	42.5	34.2
Arunchal Pradesh	46.3	44	43	27.5	22.5
Assam	48.2	42	43	25.8	19.4
Manipur	63.8	55	51	37	29.1
Meghalya	43.8	30	30	13.2	9.7
Mizoram	77.3	78	75	65.5	56.4
Nagaland	19.4	16	18	10	3.8
Tripura	39.7	44	44	28.9	19
Goa	93.5	90	90	77.8	74.9
Gujrat	77.1	70	70	55.9	49.8
Maharastra	86.9	86	85	70.2	64.1
Andhra Pradesh	73.9	71	74	53.8	45
Karnataka	81.7	75	77	54.9	52.2
Kerala	86.1	80	80	60.5	54.4
Tamilnaidu	91.7	91	90	71.6	64.9

Source :------

NFHS ,India 1992-93

Figure No. 18

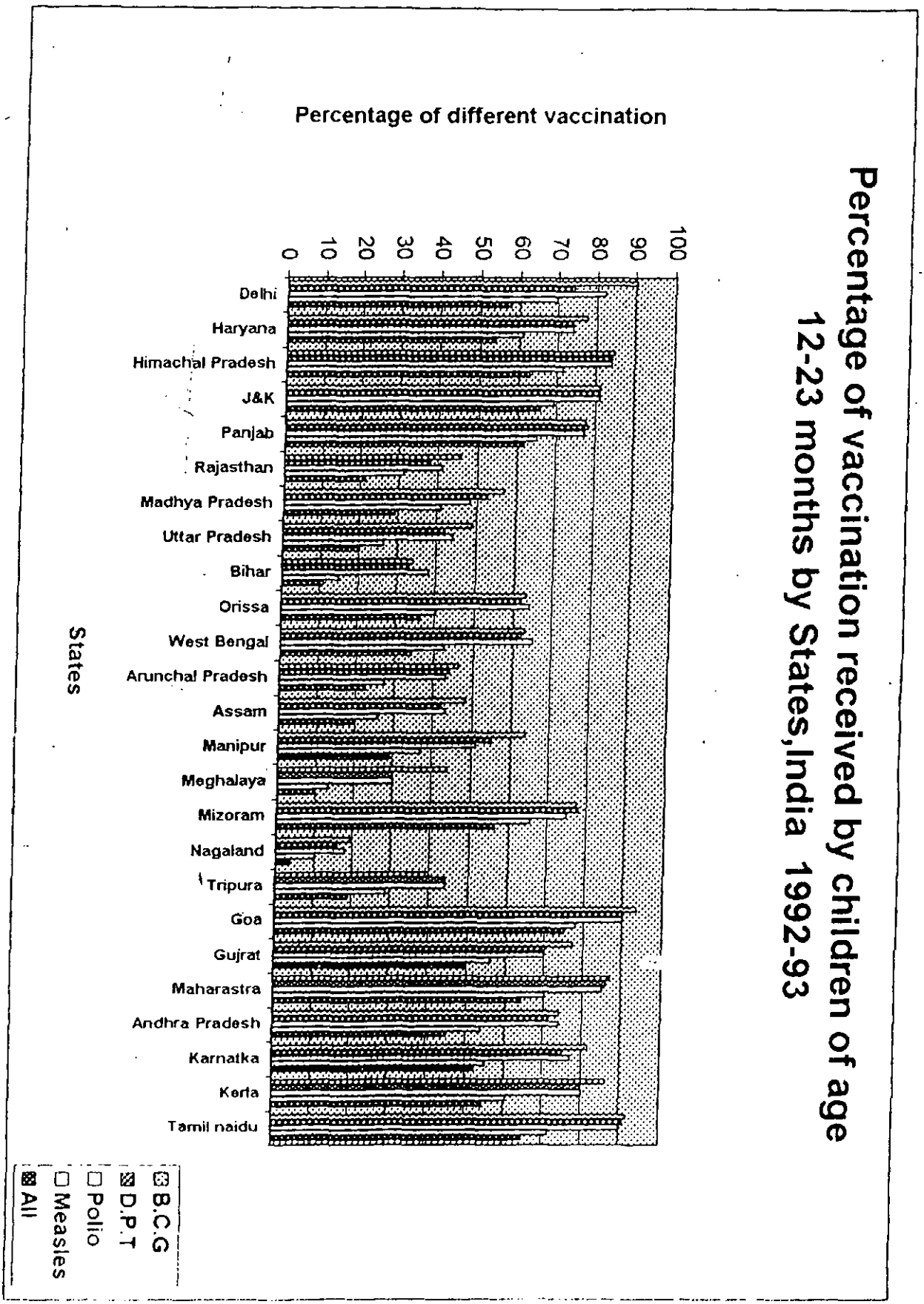

Percentage of vaccination received by children of age 12-23 months by States,India 1992-93
Percentage of different vaccination
0
10
20
30
40
50
60
70
80
90
100
States
Delhi
Haryana
Himachal Pradesh
J&K
Panjab
Rajasthan
Madhya Pradesh
Uttar Pradesh
Bihar
Orissa
West Bengal
Arunchal Pradesh
Assam
Manipur
Meghalaya
Mizoram
Nagaland
Tripura
Goa
Gujrat
Maharastra
Andhra Pradesh
Karnatka
Kerla
Tamil naidu
B.C.G
D.P.T
Polio
Measles
All

Table No.11

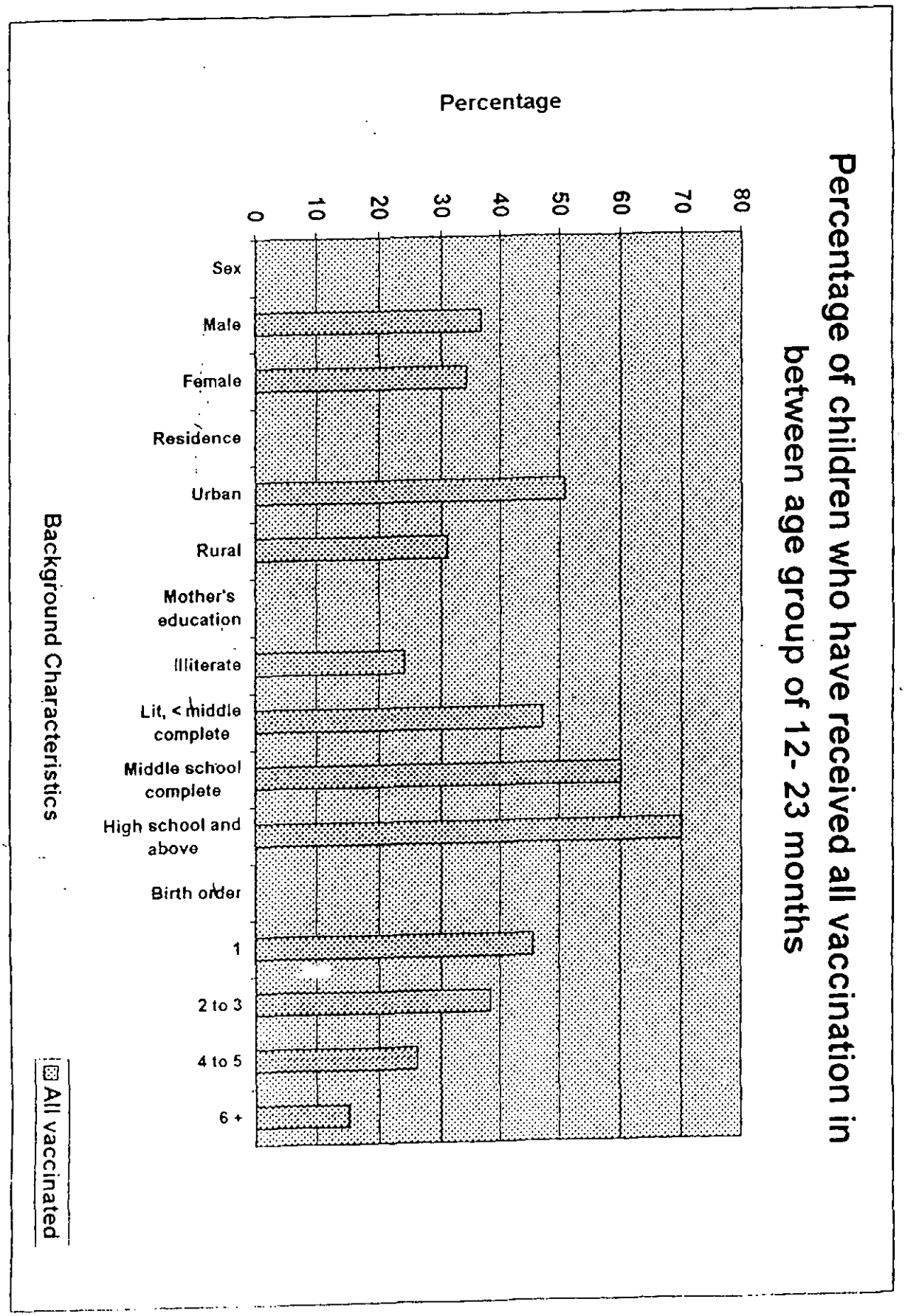
Percentage of children who have received all vaccination in between age group of 12-23 months

Background characteristics	All vaccinated
Sex	
Male	36.7
Female	34.1
Residence	
Urban	50.7
Rural	30.9
Mother's education	
Illiterate	24
Lit, < middle complete	47
Middle school complete	60
High school and above	70
Birth order	
1	45.5
2 to 3	38.3
4 to 5	26.1
6 +	15.2

Source:-----

NFHS, India 1992-93.

Figure No.19


Percentage of children who have received all vaccination in between age group of 12- 23 months
Percentage
0
10
20
30
40
50
60
70
80
Sex
Male
Female
Residence
Urban
Rural
Mother's education
Illiterate
Lit, < middle complete
Middle school complete
High school and above
Birth order
1
2 to 3
4 to 5
6 +
Background Characteristics
All vaccinated

western states and southern states, with the exception of Andhra Pradesh showing 45% of children vaccinated in comparison to the other southern states showing more than 50%, have done relatively well with respect to the full coverage of immunization. All the north-eastern states except Mizoram have shown poor vaccination coverage. Goa and Tamilnadu are the only states that have attained the national goal of atleast 85% immunization in the case of B.C.G and the three doses of D.P.T, Polio vaccination, although no state has attained this goal inspite of all of the recommended vaccination.

In every state, fewer children have received measles vaccination than any of the other vaccination. The relatively low level of coverage for measles is a major factor in the failure to achieve full immunization. However the measles vaccine is required to achieve full immunization in every state. Though Goa and Tamilnadu are showing good performances in the vaccination of children but they are still short of the national immunization goal.

While looking at the sex of the child, more males (36.7%) are vaccinated in comparison to the female child (34%). Rural and urban difference in terms of vaccination is also substantial. Urbanities are more aware about the child's vaccination (50.7%) in comparison to the rural areas (31%). Even education of mothers imparts a very crucial role in vaccination of children. Those mothers who are illiterate shows 24% children vaccinated but those mother's who are high school or above class pass have 70% children vaccinated. In terms of birth order, more percentages of children are vaccinated if the child is the first one and when the birth order increases like 6+ this figure reduces to 15%.

4.11 Treatment of Acute Respiratory Infection (ARI)

The NFHS data 1992-93 had revealed that a sizable majority of children (2/3) suffering from acute respiratory infection during the past two weeks, were taken to the health facility for treatment or were treated by doctors or by other health professional.

Table No . 12

Treatment of acute respiratory infection, India 1992-93.

Background characteristics	% taken to a health facility	Anti-biotic pill	Injection	Cough syrup	Home remedy
Child Age					
< 6 months	60.2	32.1	22.9	19.1	10.4
6-11 months	69.6	34.4	24.8	23.6	7.7
12-23 months	70.4	35.3	23.6	21.1	7
24-35 months	64.1	31.6	23.1	22.1	6
36-47 months	62.9	32	21.2	24	6.1
Sex					
Male	70.8	34.2	24.8	22.6	6.8
Female	60.8	32.3	21.1	21.4	7.5
Residence					
Urban	77.1	37.4	23.1	29.1	3.4
Rural	63.9	32.5	23.1	20.5	7.9
Mother's education					
Illiterate	62.4	32.5	24.5	18.9	7.6
Lit., < middle complete	70.4	31.5	19.8	26.1	7.3
Middle school complete	72	38.2	23.1	23.7	3.1
High school and above	84.9	44.2	20.1	38.5	5.2
Religion					
Hindu	65.8	34	24.8	20	27
Muslim	66.7	32.3	17.5	26.9	7.9
Caste / Tribe					
SC	64	29.7	26.1	15.7	8.1
ST	59.1	27.3	25.1	16	6.4
Birth order					
1	74.6	36.4	26.3	25.1	5.4
2 to 3	64.5	34	21.3	21.7	7.6
4 to 5	65.6	29.8	22.3	22.8	6.4
6+	56	30.4	24	15.8	10.2

Source :------

NFHS , India 1992-93

Figure No.20

Treatment of acute respiratory infection according to a child's age, India 1992-93

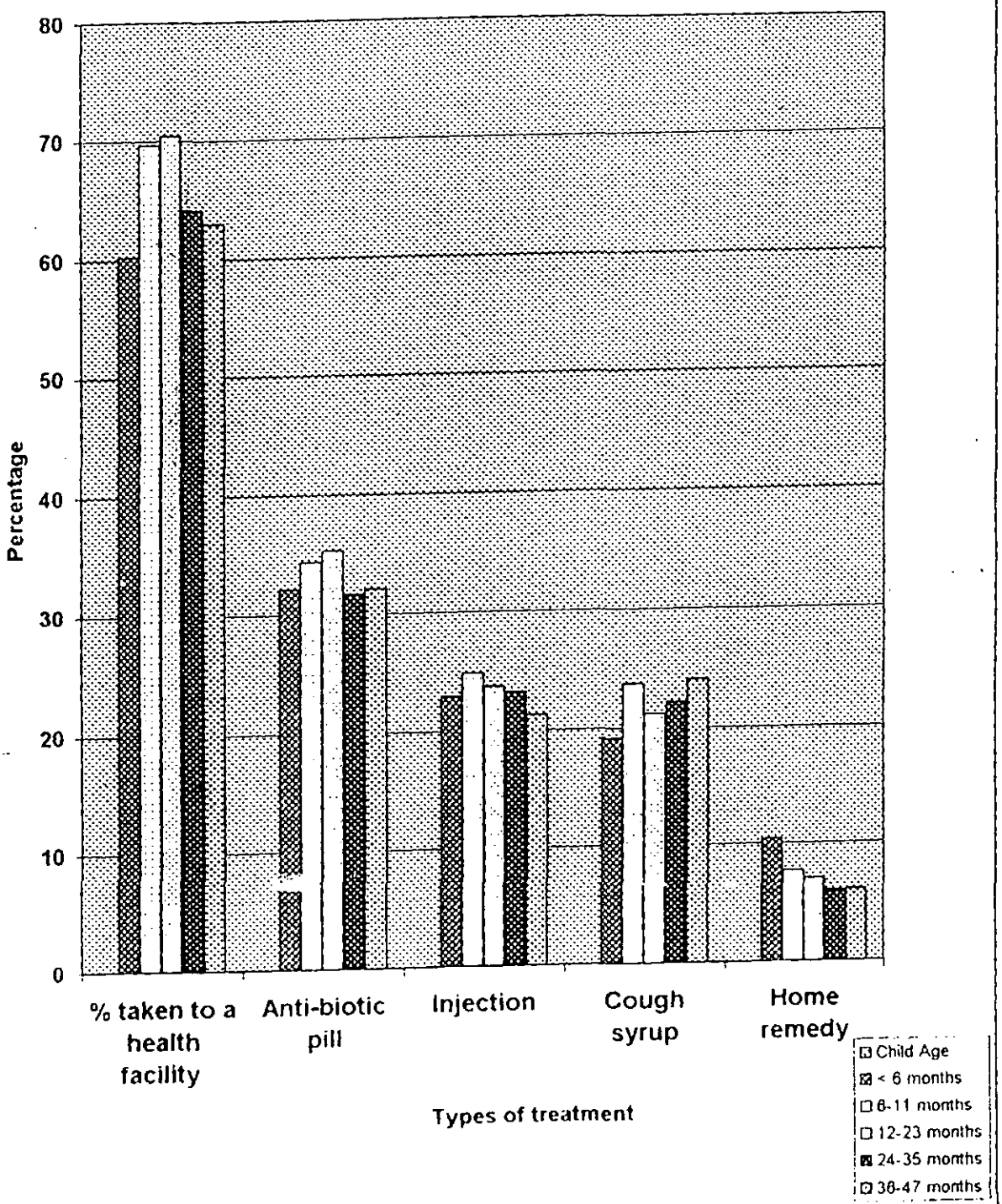


Figure No.21

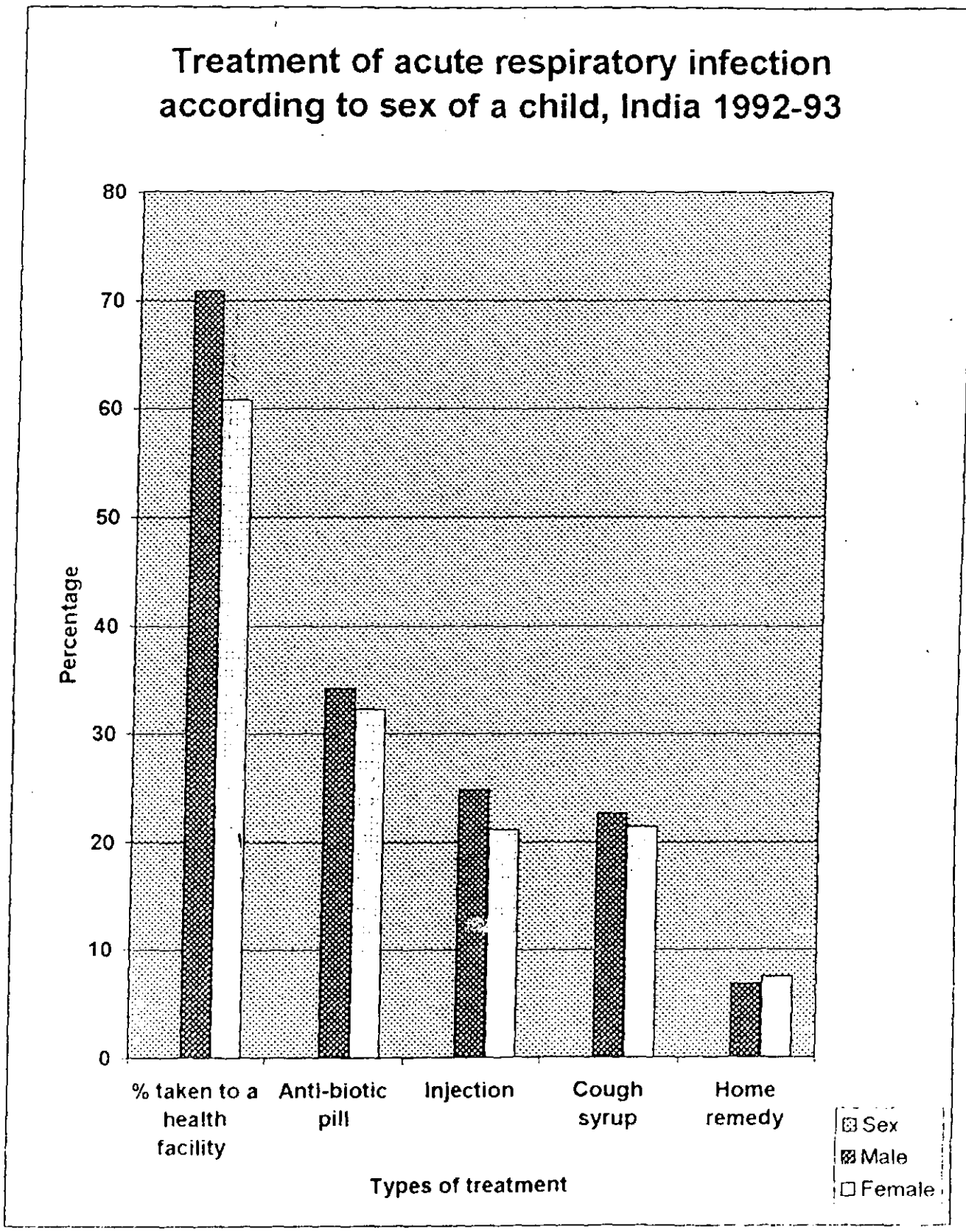

Treatment of acute respiratory infection according to sex of a child, India 1992-93
80
70
60
50
40
30
20
10
0
Percentage
% taken to a health facility
Anti-biotic pill
Injection
Cough syrup
Home remedy
Types of treatment
Sex
Male
Female

Figure No.22

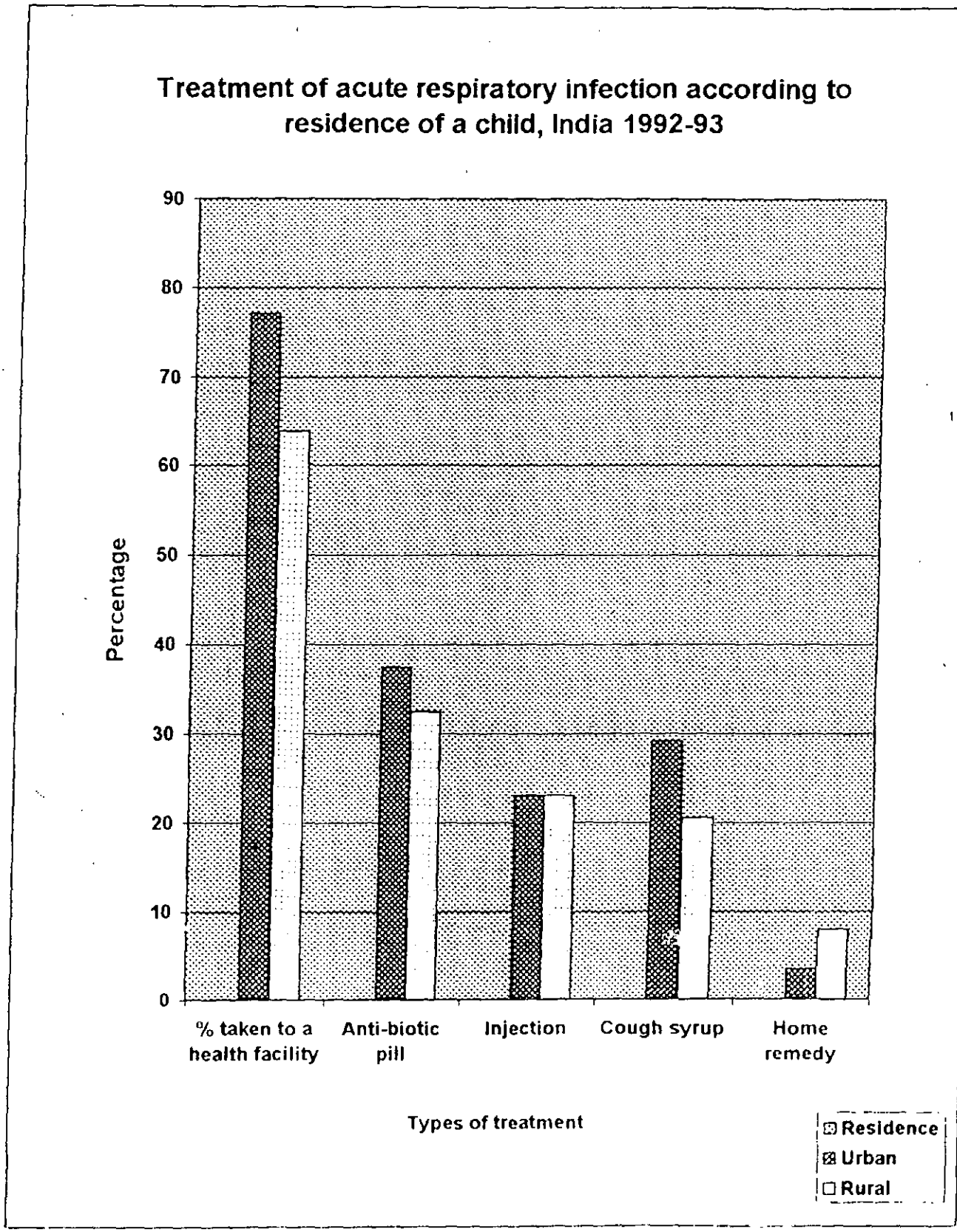

Treatment of acute respiratory infection according to residence of a child, India 1992-93
Percentage
90
80
70
60
50
40
30
20
10
0
% taken to a health facility
Anti-biotic pill
Injection
Cough syrup
Home remedy
Types of treatment
Residence
Urban
Rural

Figure No.23

Treatment of acute respiratory infection according to the child's mother education, India 1992-93

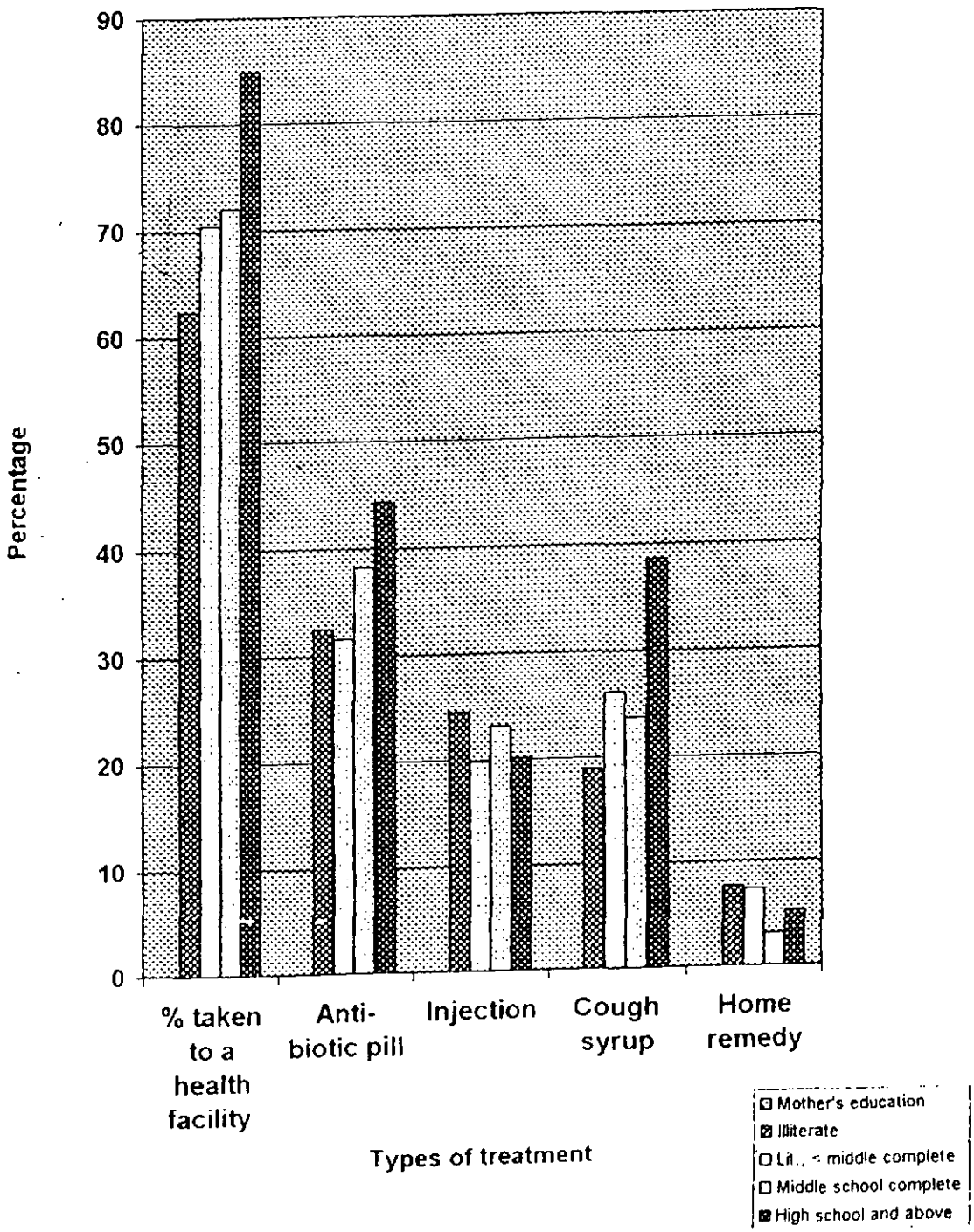


Figure No.24

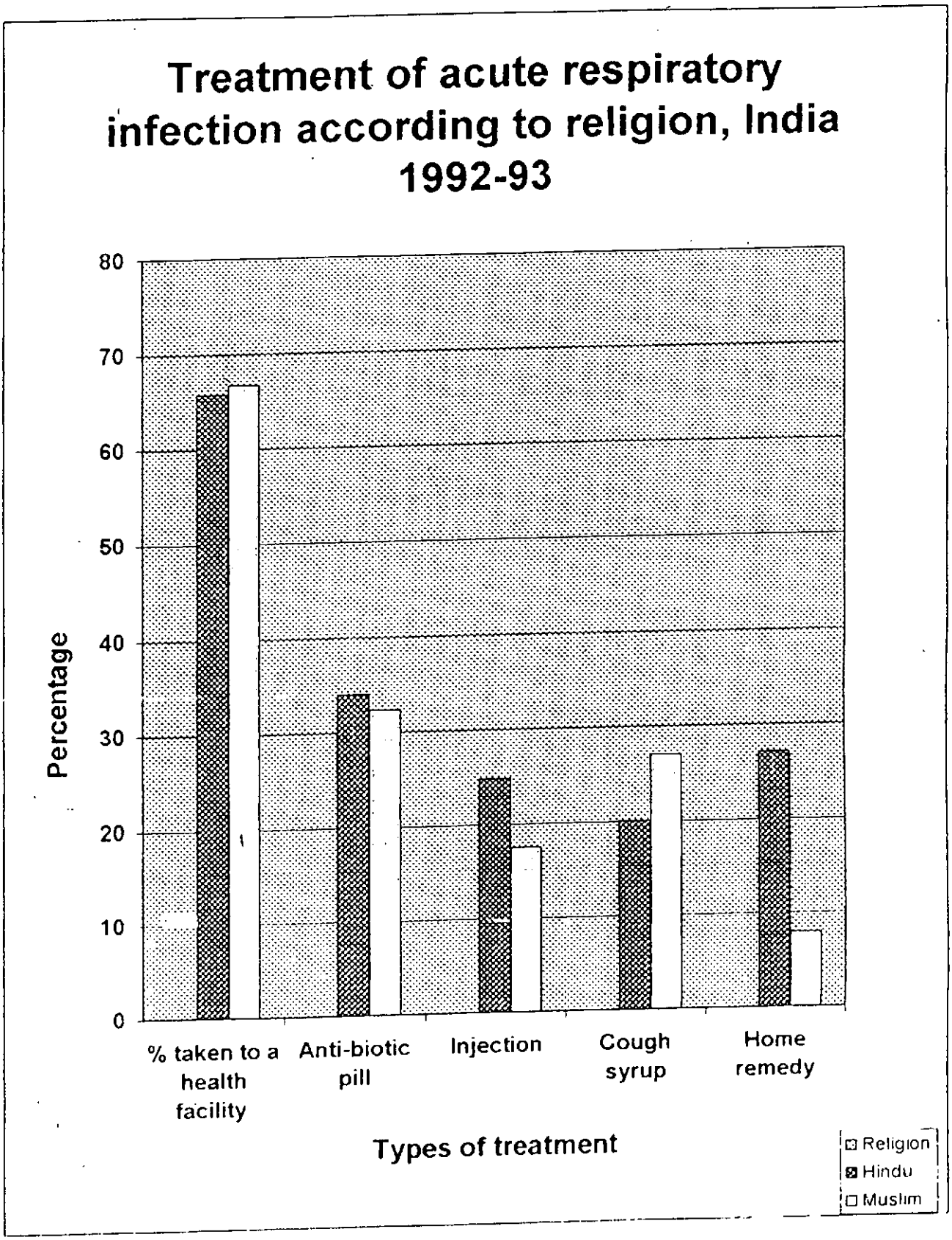

Treatment of acute respiratory infection according to religion, India 1992-93
Percentage
80
70
60
50
40
30
20
10
0
% taken to a health facility
Anti-biotic pill
Injection
Cough syrup
Home remedy
Types of treatment
Religion
Hindu
Muslim

Figure No.25

Treatment of acute respiratory infection according to caste / tribe of a child, India 1992-93

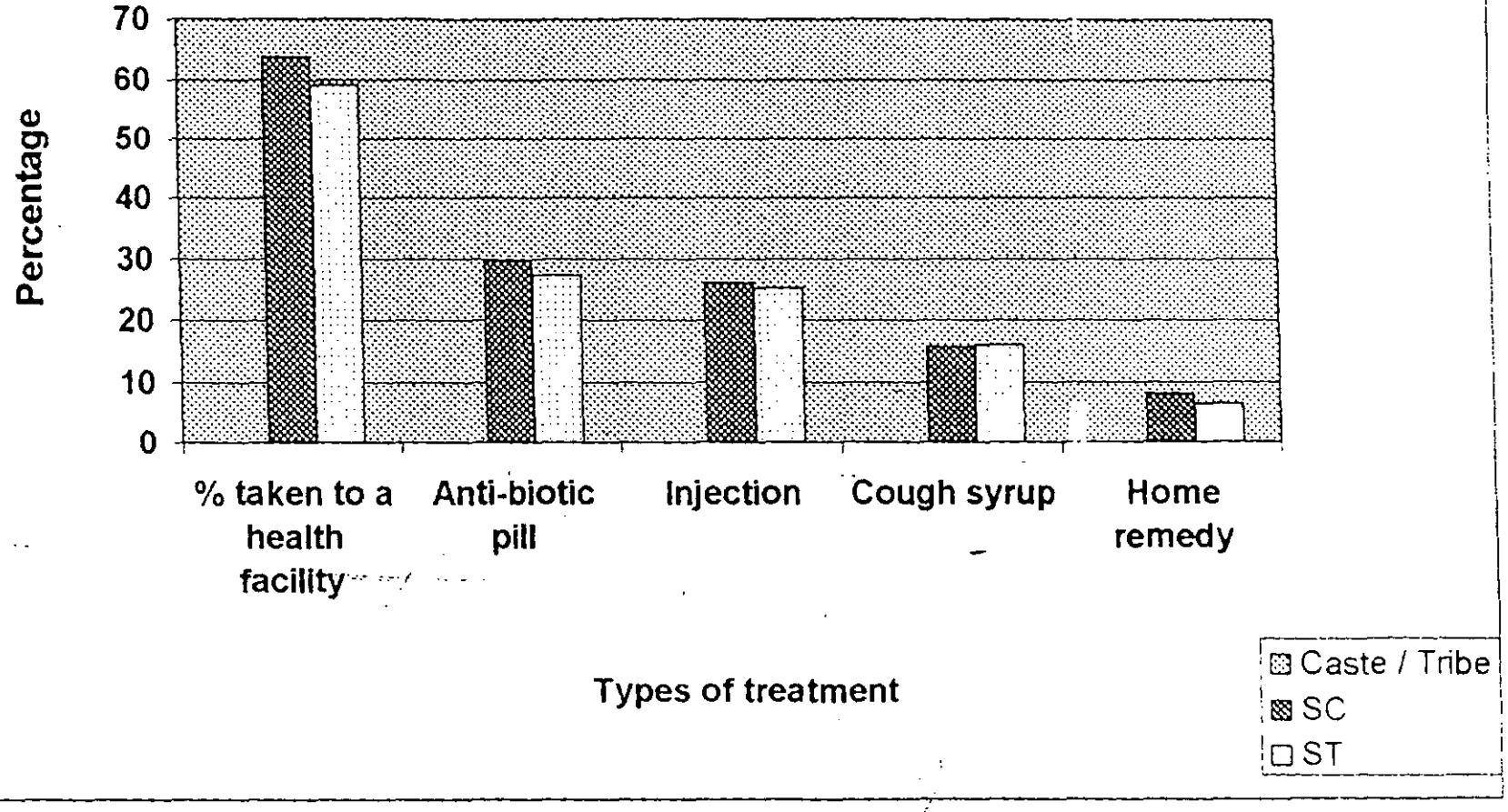


Figure No.26

Treatment of fever according to birth order of the child, India 1992-92

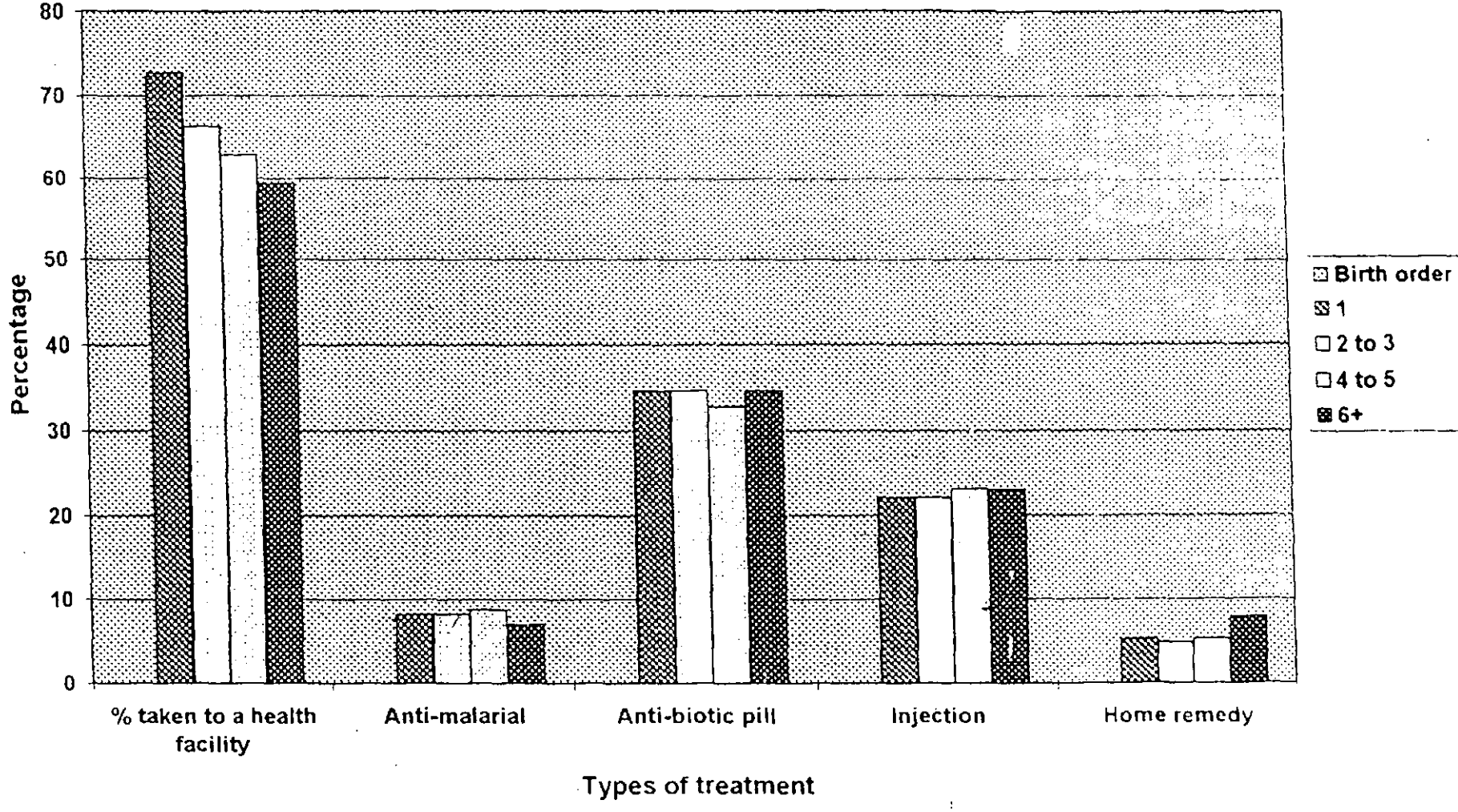


Table No • 13

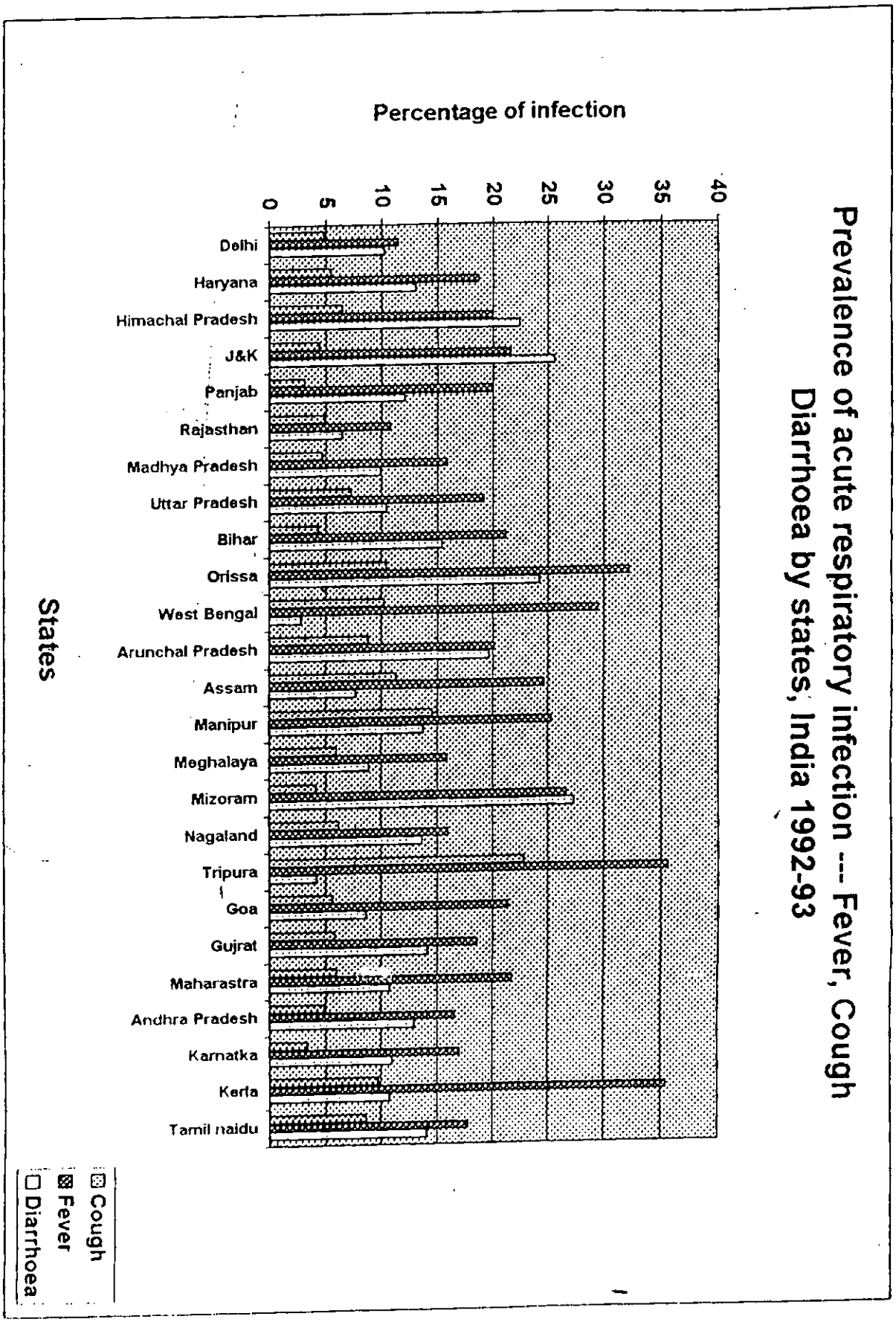
Prevalence of acute respiratory infection ; Cough, Fever, Diarrhoea by states, India 1992-93.

States	Cough	Fever	Diarrhea
Delhi	4.8	11.4	10.2
Haryana	5.4	18.6	13
Himachal Pradesh	6.4	19.9	22.4
J&K	4.4	21.6	25.6
Punjab	3.1	19.9	12
Rajasthan	4.9	10.7	6.4
Madhya Pradesh	4.7	15.8	9.8
Uttar Pradesh	7.2	19.1	10.4
Bihar	4.3	21.1	15.3
Orissa	10.4	32.1	24.2
West Bengal	10.2	29.4	2.8
Arunchal Pradesh	8.7	20.1	19.6
Assam	11.3	24.6	7.6
Manipur	14.5	25.3	13.7
Meghalya	5.9	15.8	8.8
Mizoram	4.1	26.6	27.3
Nagaland	6.1	15.9	13.6
Tripura	22.8	35.5	4.2
Goa	5.6	21.4	8.6
Gujrat	5.8	18.5	14.1
Maharastra	5.9	21.7	10.7
Andhra Pradesh	4.9	16.5	12.9
Karnataka	3.4	16.9	10.9
Kerala	9.7	35.4	10.7
Tamilnaidu	8.6	17.7	14

Source :----

NFHS ,India 1992-93

Figure No.27


Prevalence of acute respiratory infection --- Fever, Cough
Diarrhoea by states, India 1992-93
Percentage of infection
0
5
10
15
20
25
30
35
40
States
Delhi
Haryana
Himachal Pradesh
J&K
Panjab
Rajasthan
Madhya Pradesh
Uttar Pradesh
Bihar
Orissa
West Bengal
Arunchal Pradesh
Assam
Manipur
Meghalaya
Mizoram
Nagaland
Tripura
Goa
Gujrat
Maharastra
Andhra Pradesh
Karnatka
Kerla
Tamil naidu
Cough
Fever
Diarrhoea

Sick children are most often treated with oral antibiotics, injections or cough syrups. Home remedies or herbal medicine taken is used for only 7% of the children. Children of age less than six months or more than 23 months is less likely to receive treatment for acute respiratory infection from the health professionals(60-64%) than children of the age group among 6 to 23 months (70%).

The percentage of children taken for treatment to health professionals is much higher for boys (71%) than for girls (61%). Thus with respect to the provision and use of health care facilities for children suffering from acute respiratory infection, discrimination against girls is clearly observed. There is a negative relationship between the birth order and treatment received from a health professional. Three quarters of first born children suffering from acute respiratory infections were taken to the health facility or treated by a doctor whereas only 56% of sixth and higher birth order children received treatment from a health professional.

The relationship between a mother's educational level and the treatment given by health professionals to children is consistently positive with 62% of children of illiterate mothers receiving treatment from health professional as against 85% of mother's with a high school or above education. Sick children in urban areas were more likely to receive treatment from health professionals than those in rural areas. Not much difference is observed between the children of Hindu mother's (66%) and Muslim mother's (67%).

If we look at the prevalence of acute respiratory infections, fever, cough and diarrhoea, it has been found out that children of 6 - 11 months of age are more prone to these infections in comparison to the children of less than 6 months or more than 11 months. While looking at the sex of the child, more male children are suffering from cough, fever and diarrhoea in comparison to the female child.

Variations are also seen in urban and rural cases. The children of rural areas suffer more from all the above mentioned diseases in comparison to the urban areas, but there is little margin in this. The reason for this is that the environmental condition of urban areas is very

Table No. 13

Prevalence of Acute Respiratory Infection, Fever, Cough , Diarrhoea, India 1992-93.

Background characteristics	% of children who have suffered from		
	Cough	Fever	Diarrhoea
Child Age			
< 6 months	5.6	15.1	11
6-11 months	8.4	25.9	17
12-23 months	7.7	25	13
24-35 months	6	18.7	10
36-47 months	5.1	16.3	6.2
Sex			
Male	7.1	21.1	11.5
Female	5.9	19.4	11
Residence			
Urban	5.1	18.7	10
Rural	6.9	20.7	11.8
Mother's education			
Illiterate	6.5	19.9	11.8
Lit., < middle complete	7.7	23.2	11.6
Middle school complete	5.9	20.5	10.2
High school and above	4.6	17.4	9
Religion			
Hindu	6.4	19.4	11.6
Muslim	7.3	24	10.1
Christian	7.7	23.6	9.7
Sikh	3.8	20.9	11.3
Caste / Tribe			
SC	6.8	19	13.2
ST	6.1	20.2	11.6

Source:----

NFHS , India 1992-93

Figure No.28

Prevalence of acute respiratory infection in children, India 1992-93

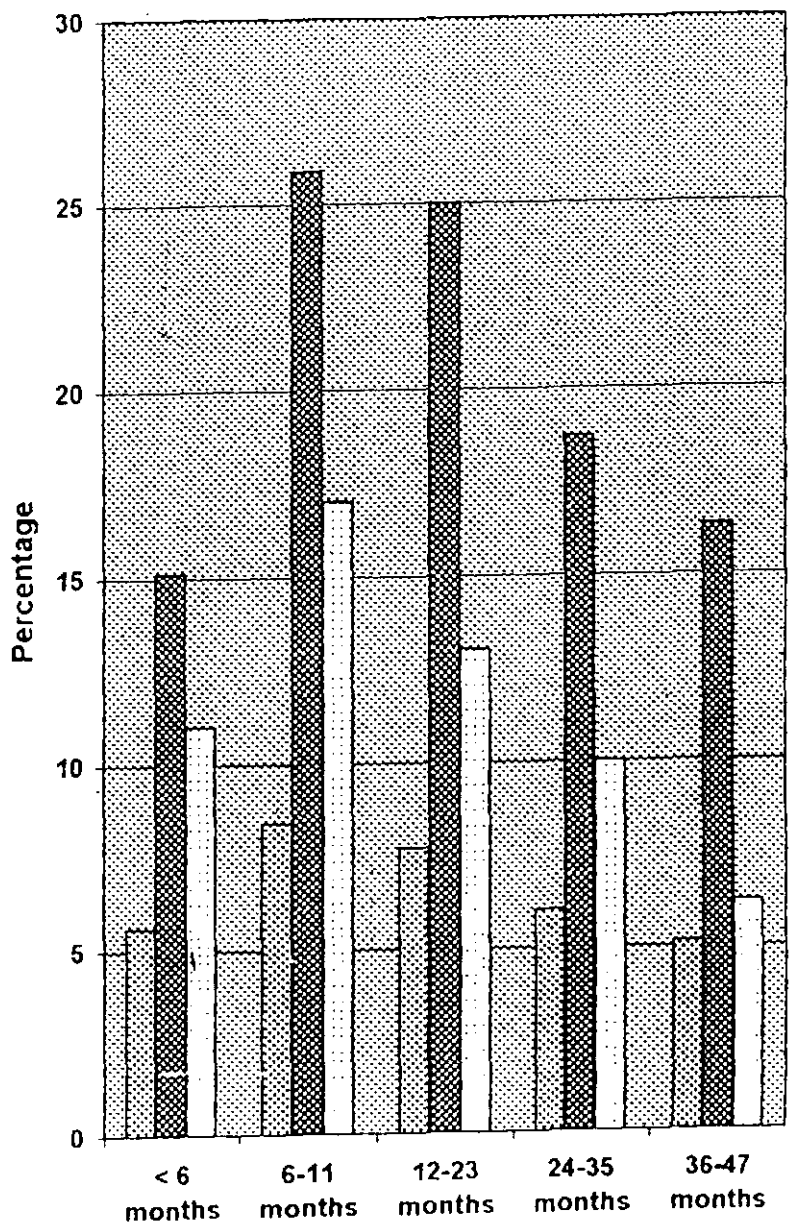


Figure No.29

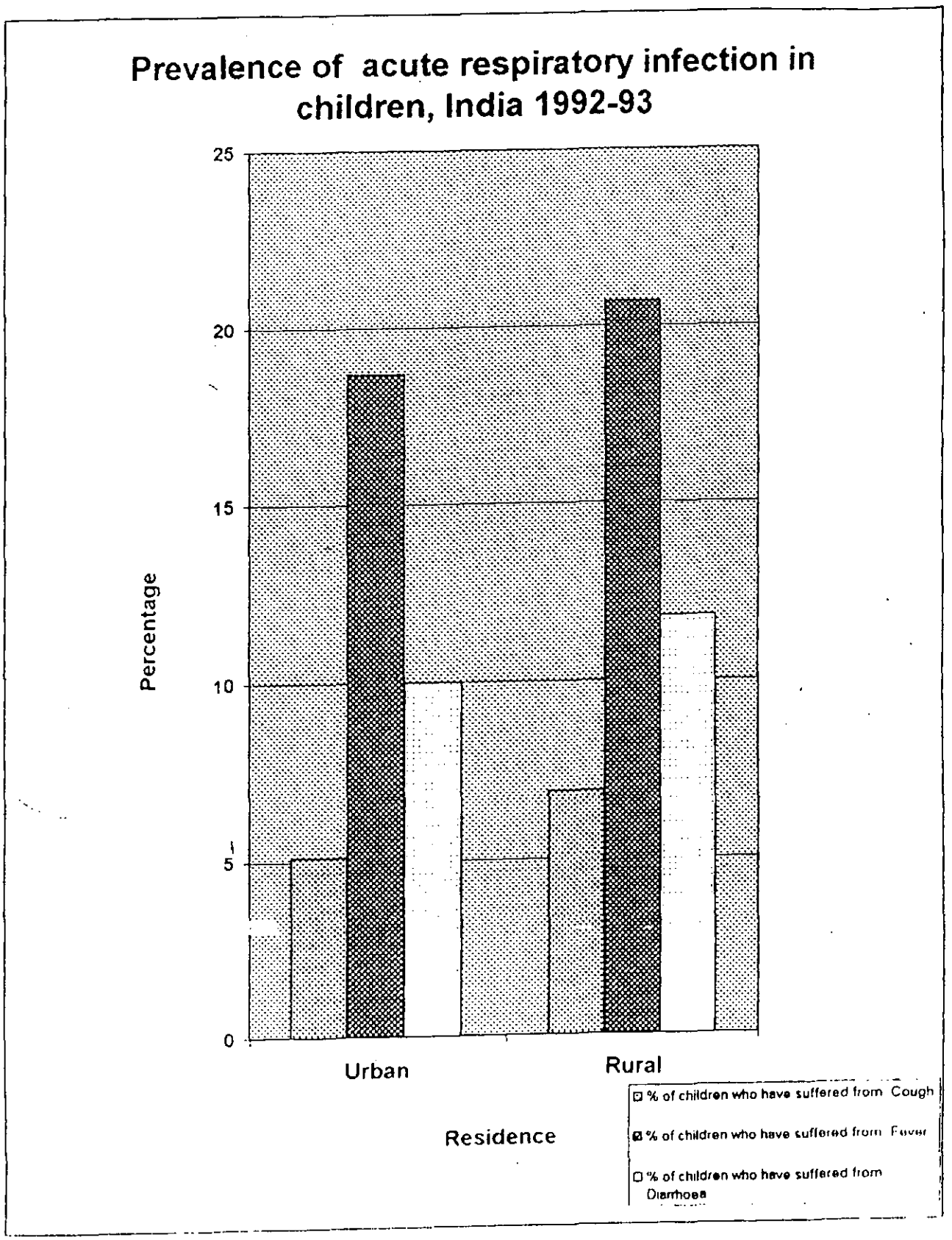

Prevalence of acute respiratory infection in children, India 1992-93
25
20
15
10
5
0
Percentage
Urban
Rural
Residence
% of children who have suffered from Cough
% of children who have suffered from Fever
% of children who have suffered from Diarrhoea

Figure No.30

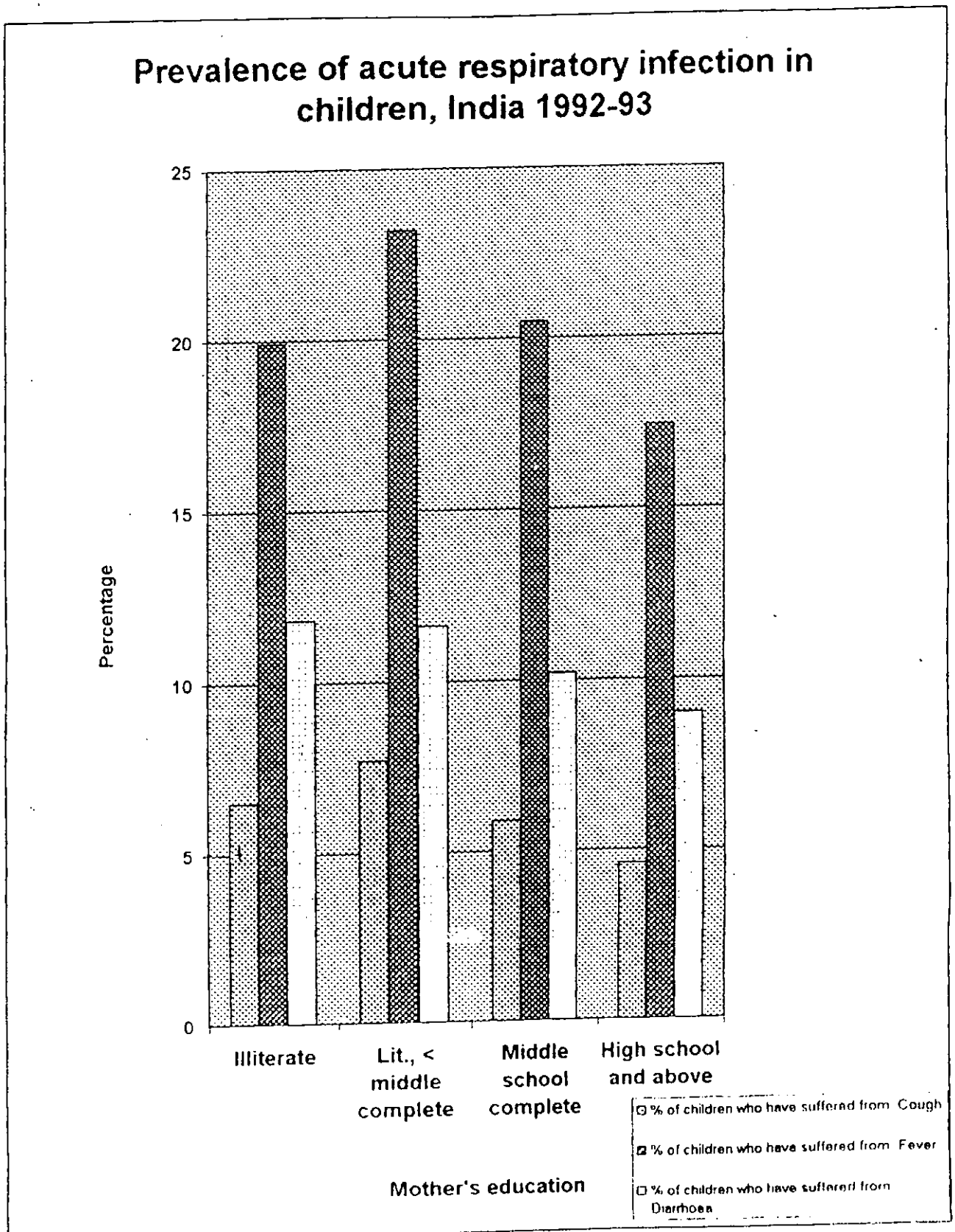

Prevalence of acute respiratory infection in children, India 1992-93
Percentage
25
20
15
10
5
0
Illiterate
Lit., < middle complete
Middle school complete
High school and above
Mother's education
% of children who have suffered from Cough
% of children who have suffered from Fever
% of children who have suffered from Diarrhoea

Figure No.31

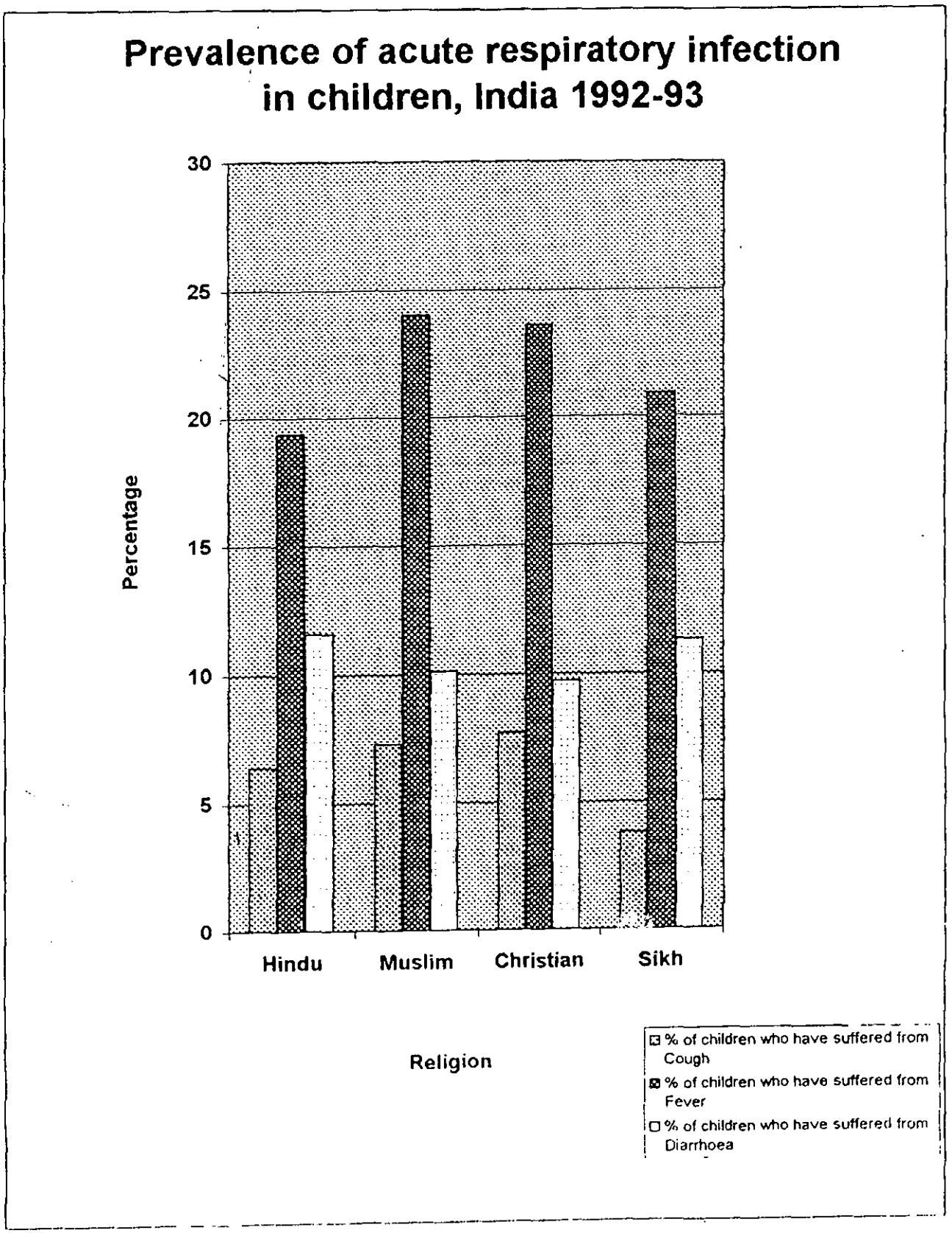
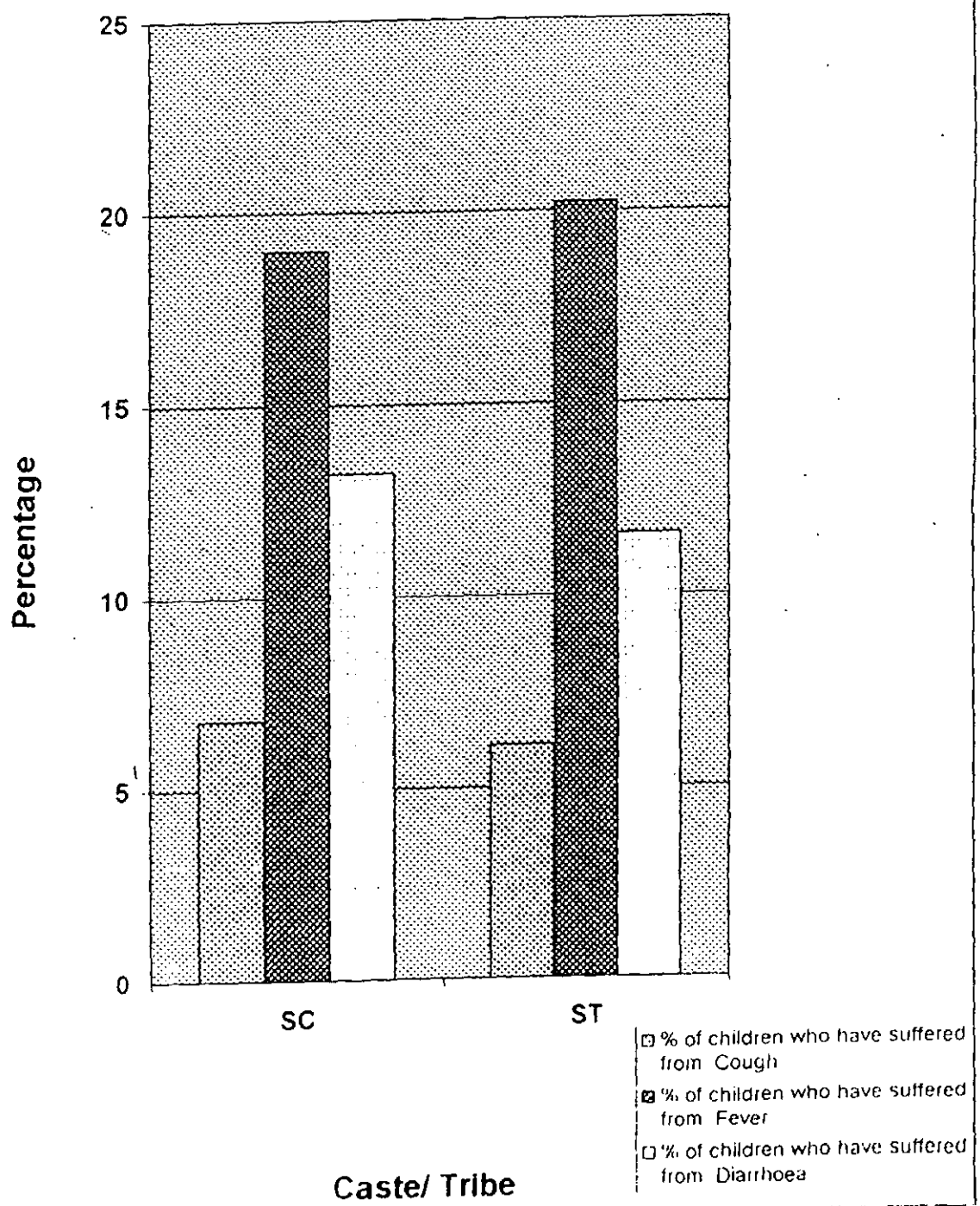

Prevalence of acute respiratory infection in children, India 1992-93
Percentage
30
25
20
15
10
5
0
Hindu
Muslim
Christian
Sikh
Religion
% of children who have suffered from Cough
% of children who have suffered from Fever
% of children who have suffered from Diarrhoea

Figure No.32

Prevalence of acute respiratory infection in children, India 1992-93



much different from rural areas although more facilities are available in urban areas to curb the infection.

Mothers education plays an important role in curbing the infection to their children to some extent by adopting some preventive measures. The children of those mothers who are high school or above educated are less infected by cough, fever and diarrhoea in comparison to the illiterate mothers. Not a big difference is observed among the schedule castes and schedule tribes population in terms of prevalence of acute respiratory infectious diseases.

While looking at the prevalence of infections in terms of cough, fever and diarrhoea, the existence of interstate variation is seen. In Tripura, maximum numbers of percentage of children (22.8%) are infected by cough. In Panjab only 3.1% of children are suffering from cough infection. It's surprising to note that Kerala state has 35.4% children are suffering from fever that is second to the maximum of Tripura of 35.5%. More than 10% of children in Kerala are reported to be suffering from diarrhoea. Rajasthan has the minimum number of children suffering from fever i.e. (10.7%).States like Bihar (21%), Orissa (32%), Assam (24.6%), Manipur (25.3%), Mizoram (26.6%), Tripura (35.5%), Maharashtra (21.7%) and Kerala (35.4%) have reported quite high number of fever cases. This may be due to the prevailing environmental conditions. Tripura is showing minimal of 4.2% of children suffering from diarrhoea and Mizoram has maximum of 27.3%.

So we can say that in all states there is a marginal difference in terms of acute respiratory infectious diseases, fever, cough and diarrhoea but the important thing to note is that it has spread in all states of India.

4.12 Treatment of Childhood Diseases by States

According to the data of NFHS on the treatment of childhood diseases like cough, fever and diarrhoea by states, the interstate variations are enormous. It is very much clear that in northern states that

Table No. 14

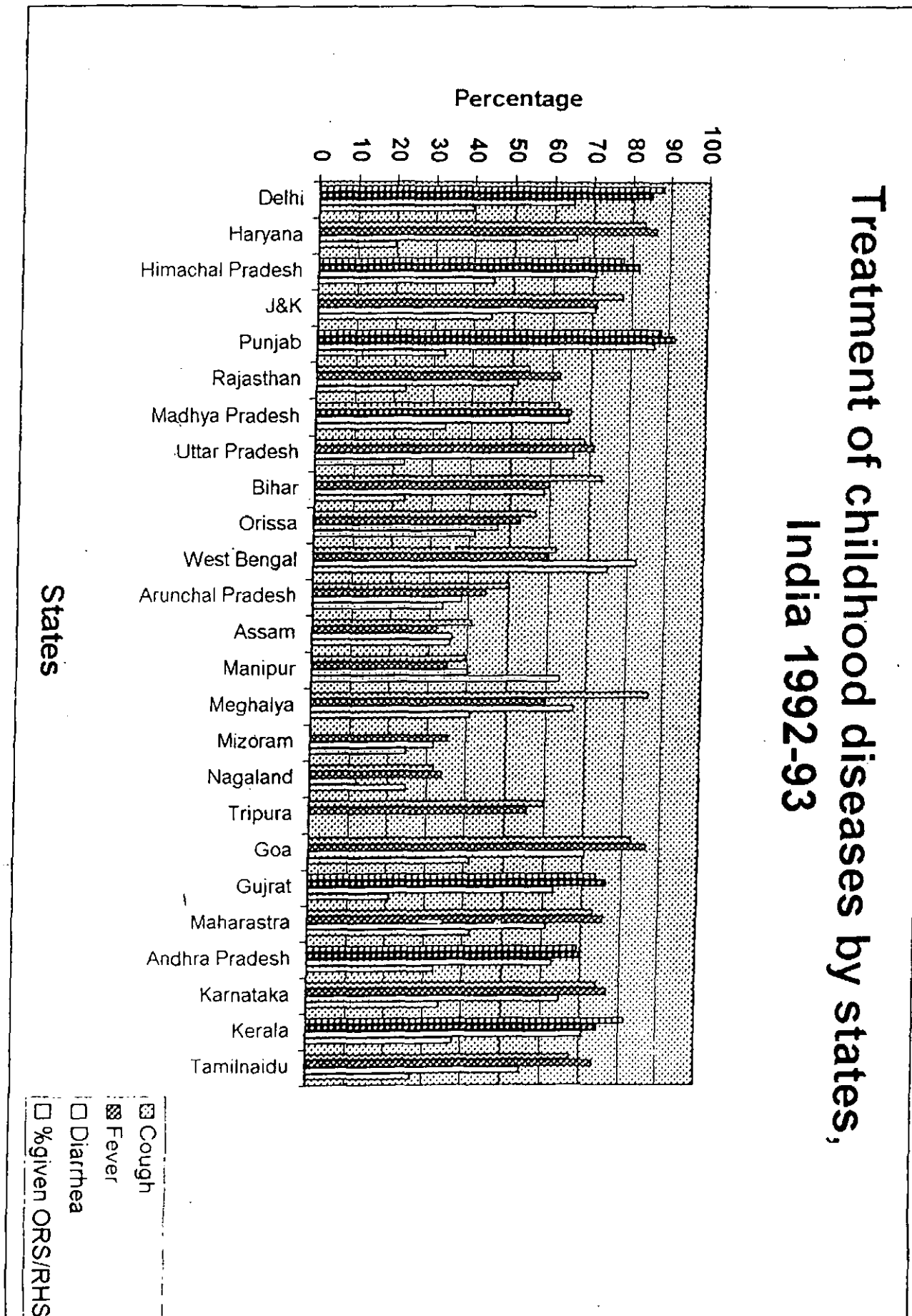
Treatment of childhood diseases by states, India 1992-93

States	Cough	Fever	Diarrhea	%given ORS/RHS
Delhi	88	84.8	64.7	39.4
Haryana	83.2	86.1	65.5	19.5
Himachal Pradesh	77.7	81.7	70.6	44.9
J&K	77.6	71	70.6	44.4
Punjab	88	91.5	86	32.7
Rajasthan	54.3	61.9	51.3	22.7
Madhya Pradesh	61.8	64.9	64.4	33
Uttar Pradesh	68.3	70.7	65.7	22.7
Bihar	72.9	59.7	58.5	23
Orissa	56.4	52.7	47	41.1
West Bengal	61.7	59.4	82.1	74.7
Arunchal Pradesh	50	44.2	38.1	33.3
Assam	40.7	31.8	35.8	35.2
Manipur	39.5	34.6	40	63.1
Meghalya	86	59.8	66.7	40.7
Mizoram	0	35	31.6	24.5
Nagaland	31.6	33.7	11.6	24.6
Tripura	59.6	55.4	0	0
Goa	82.3	86.1	70.1	41.4
Gujrat	73.3	76	62.6	20.7
Maharastra	72.6	75.4	60.9	41.7
Andhra Pradesh	68.7	69.8	62.5	32.5
Karnataka	74	76.6	64.6	34
Kerala	81.3	74.1	70.6	37.8
Tamilnaidu	67.4	73.1	54.8	27.1

Source:-----

NFHS,1992-93

Figure No.33


Treatment of childhood diseases by states, India 1992-93
Percentage
0
10
20
30
40
50
60
70
80
90
100
States
Delhi
Haryana
Himachal Pradesh
J&K
Punjab
Rajasthan
Madhya Pradesh
Uttar Pradesh
Bihar
Orissa
West Bengal
Arunchal Pradesh
Assam
Manipur
Meghalya
Mizoram
Nagaland
Tripura
Goa
Gujrat
Maharastra
Andhra Pradesh
Karnataka
Kerala
Tamilnaidu
Cough
Fever
Diarrhea
%given ORS/RHS

includes Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Panjab and Rajasthan the utilization of health services for all three diseases is good with the exception of Rajasthan where treatment of cough, fever and diarrhoea is being availed by only 50% of children in comparison to other northern states where this figure is more than 75% for each state.

In Madhya Pradesh, Uttar Pradesh and Bihar the treatment of children is somehow satisfactory. But situation is not satisfactory for north-eastern states that includes Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Tripura and Nagaland.

Only a few children receive treatment against cough, fever and diarrhoea that is less than 40%. In southern states treatment pattern of children against these deadly diseases is satisfactory.

In Nagaland, overall treatment of childhood diseases of children is minimal. only 11.6% of children suffering from diarrhoea are being given treatment.

If we look at the percentage of children given Oral Rehydration Therapy, maximum percentages of children of West Bengal (74.7%) are availing this facility and the minimum percentage is by Haryana that is 19.5%. Actually the fact lies behind the oral rehydration therapy given is that how many people are aware about ORS / RHS therapies so that water loss could easily be maintained.

People of Himachal Pradesh, Jammu and Kashmir, Orissa, West Bengal, Manipur, Goa and Maharashtra are aware about the ORS / RHS treatment. But it is amazing that Kerala, that is considered to be very advanced in terms of education only 37.8% children are being given ORS / RHS treatment. Overall we can say that not only education but also awareness about various diseases like cough, fever and diarrhoea have played a significant role in the treatment of childhood diseases.

Table No. 15

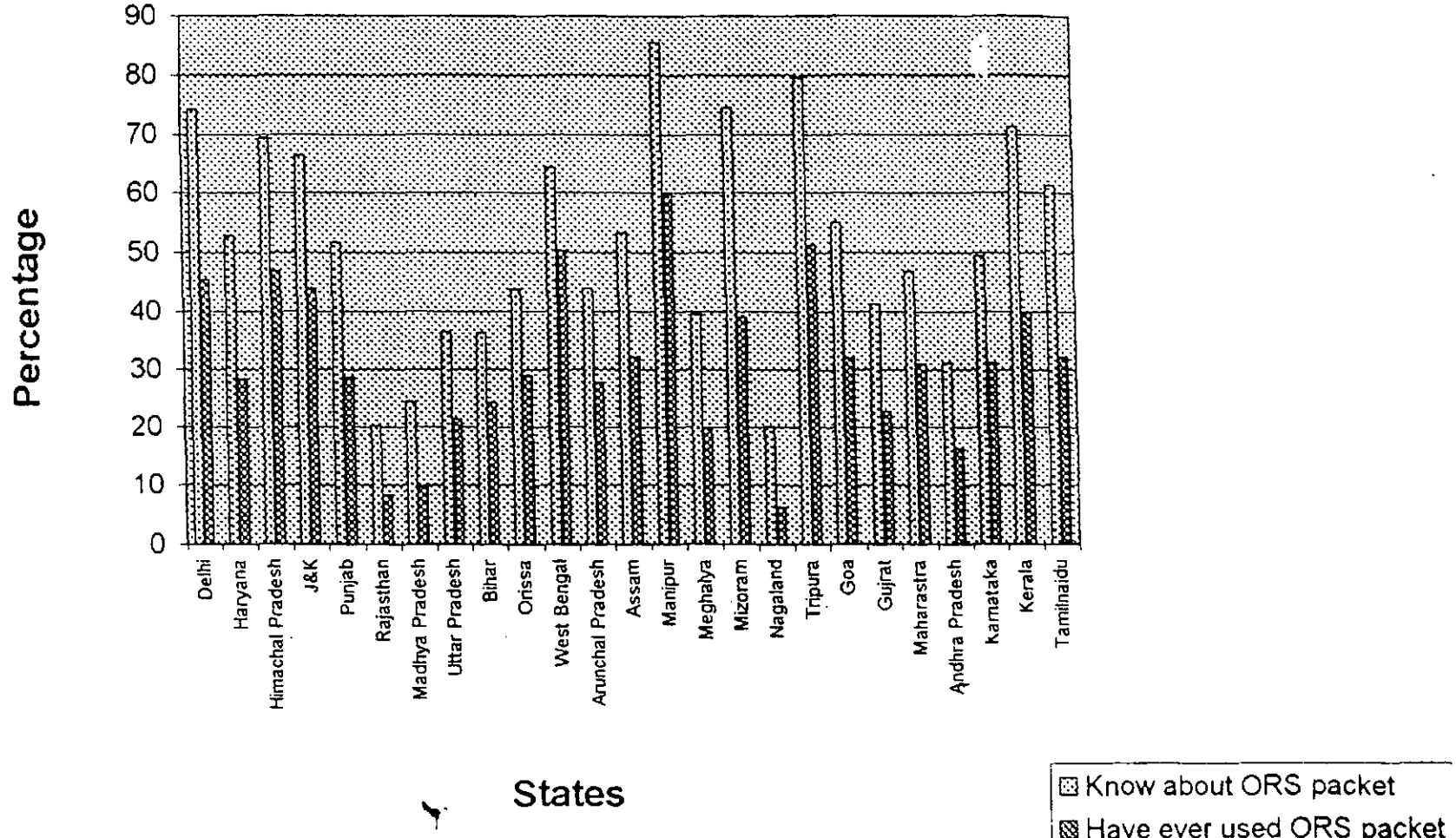
Percentage of mother's who know about and have ever used ORS packets, India 1992-93.

State	Know about ORS packet	Have ever used ORS packet
Delhi	74.2	45.3
Haryana	52.8	28.4
Himachal Pradesh	69.3	46.8
J&K	66.3	43.9
Punjab	51.7	28.5
Rajasthan	20.2	8.3
Madhya Pradesh	24.3	9.6
Uttar Pradesh	36.4	21.4
Bihar	36.3	24.3
Orissa	43.7	28.8
West Bengal	64.3	50.1
Arunchal Pradesh	43.8	27.7
Assam	53.2	32.1
Manipur	85.5	60.1
Meghalya	39.5	19.8
Mizoram	74.5	39
Nagaland	20.1	6.1
Tripura	79.5	51.3
Goa	55.1	31.9
Gujrat	41.2	22.7
Maharastra	46.7	30.9
Andhra Pradesh	31.1	16.3
Karnataka	49.3	31
Kerala	71.3	39.8
Tamilnaidu	61.4	32

Source:------
NFHS, 1992-93.

Figure No. 34

Percentage of mother's who know about and have ever used ORS packets, India 1992-93.



4.13 Knowledge and Ever Use of ORS Packet by States

According to NFHS 1992-93, Manipur has the highest proportion of mothers knowing about (86%) and ever used (60%) ORS packet. Nagaland, a neighbouring state in the northeast region is at the opposite end of the spectrum with lowest proportion of mothers knowing about (20.1%) and ever using ORS packets (6.1%). Among the major states highest knowledge of ORS packets is in Delhi (74%) and the lowest in Rajasthan (20%).

With respect to ever use of ORS packets, the highest level is observed by Tripura (51.3%) and the lowest by Rajasthan (8%). In addition to Rajasthan, knowledge and use of ORS packets are low particularly in Madhya Pradesh (24% and 9.6%) and Andhra Pradesh (31% and 16%) respectively.

In case of India, only 43% of mothers know about the ORS packets and even smaller percentage 26% have used ORS packets at some time in past. Mothers who are in among 20 - 29 age group have good knowledge of ORS packets and have ever used ORS packets. Both knowledge and use of ORS packet are higher among urban mothers than rural mothers.

Level of knowledge and use of ORS packet are also strongly related to the educational attainment of mothers and their exposure to mass media. Those mothers who are high school and above educated express the knowledge of ORS packets and having ever used ORS packets more than double in comparison to the illiterate mothers. Knowledge and ever use of ORS packets seems to be more in the Muslims in comparison to Hindu mothers. Scheduled caste mothers have more knowledge about the ORS packets and have ever used them more in comparison to the schedule tribe mothers. Both knowledge and use of ORS are higher among mothers who are exposed to the electronic mass media than among those who are not having such type of exposure

Table No. 16

Knowledge and ever use of ORS packetsaccording to selected background characteristics ,India 1992-93

Background characteristics	Know about ORS packet	Have ever used ORS packets
Mother's age		
13-19	36.1	20.6
20-24	44.2	25.5
25-29	46.3	29.1
30-34	42.1	26.7
35 +	34.3	22
Residence		
Urban	55.6	32.5
Rural	38.9	23.9
Mother's education		
Illiterate	31.8	19
Lit., < middle complete	56.4	36
Middle school complete	62.7	36.8
High school and above	75.4	45
Religion		
Hindu	41.4	24.7
Muslim	46.5	30.9
Caste / Tribe		
SC	35.3	21
ST	26.8	14.7
Mother's exposure to media		
Exposed to media	55.3	32.8

Source :---------

NFHS ,India 1992-93

Figure No.35

Knowledge and use of ORS packets according to mother's age ,India 1992-93

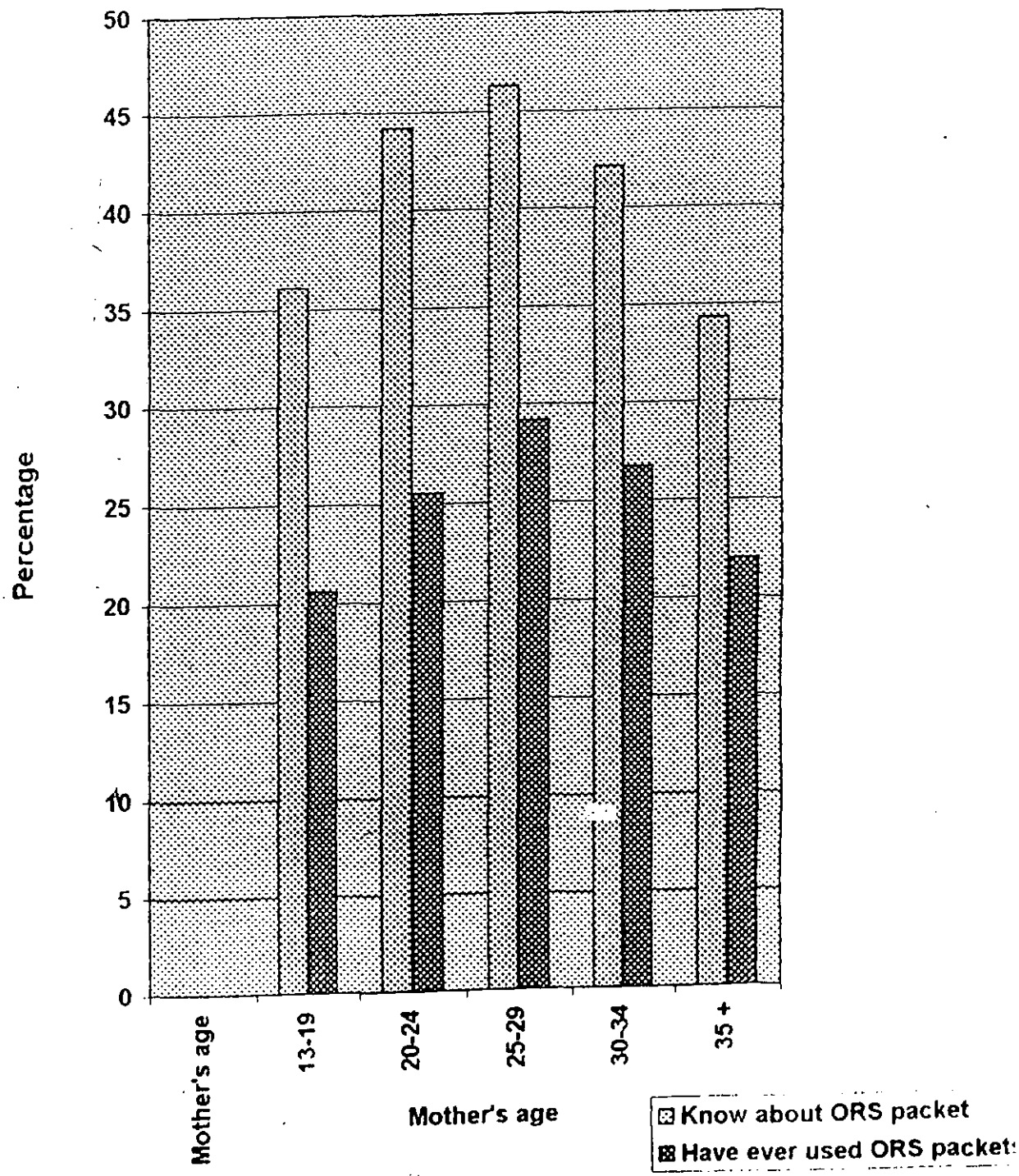


Figure No. 36

Knowledge and use of ORS packets according to mother's education, India 1992-93

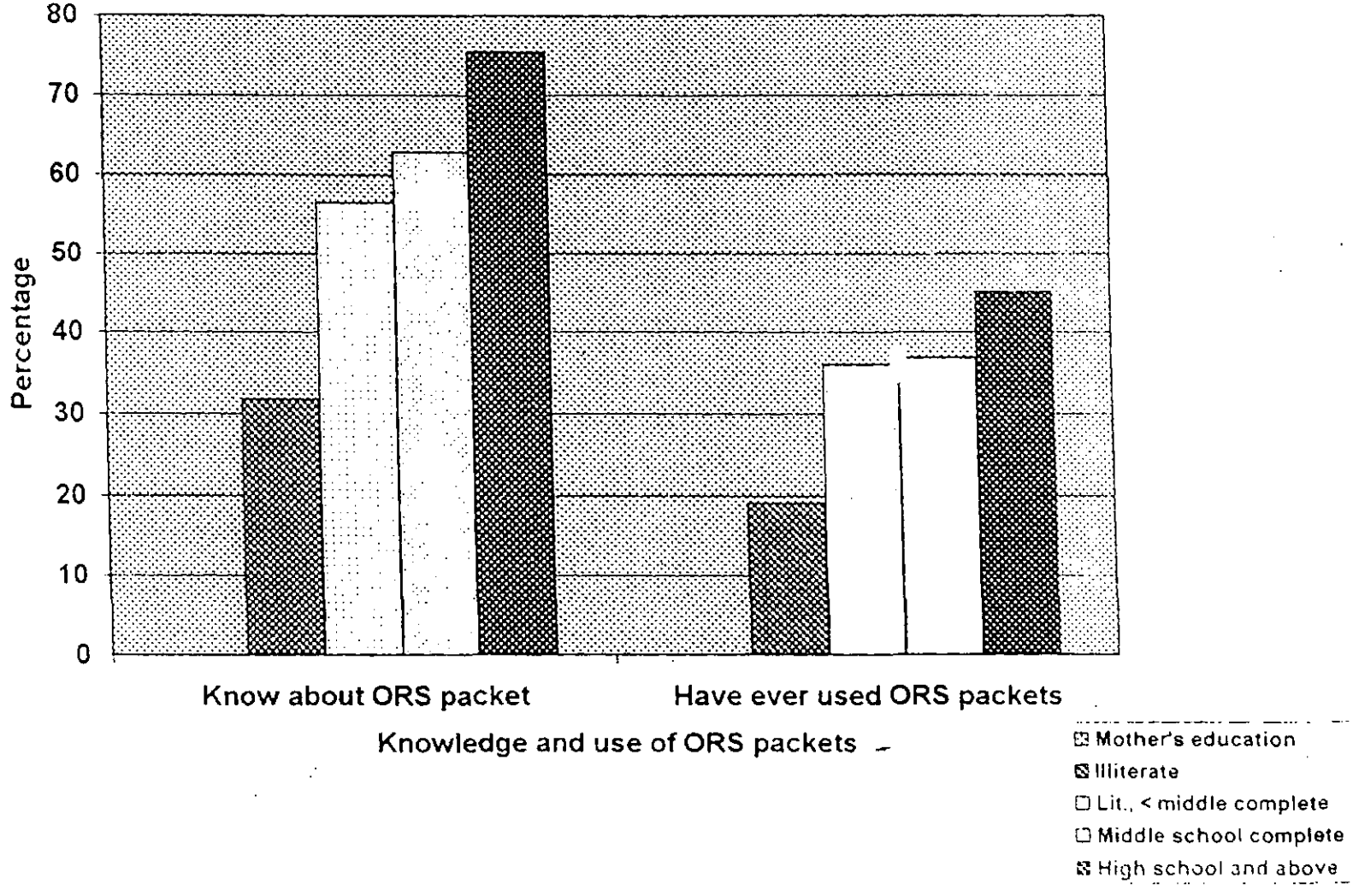


Figure No. 37

Knowledge and use of Ors packets according to religion of the mother, India 1992-93

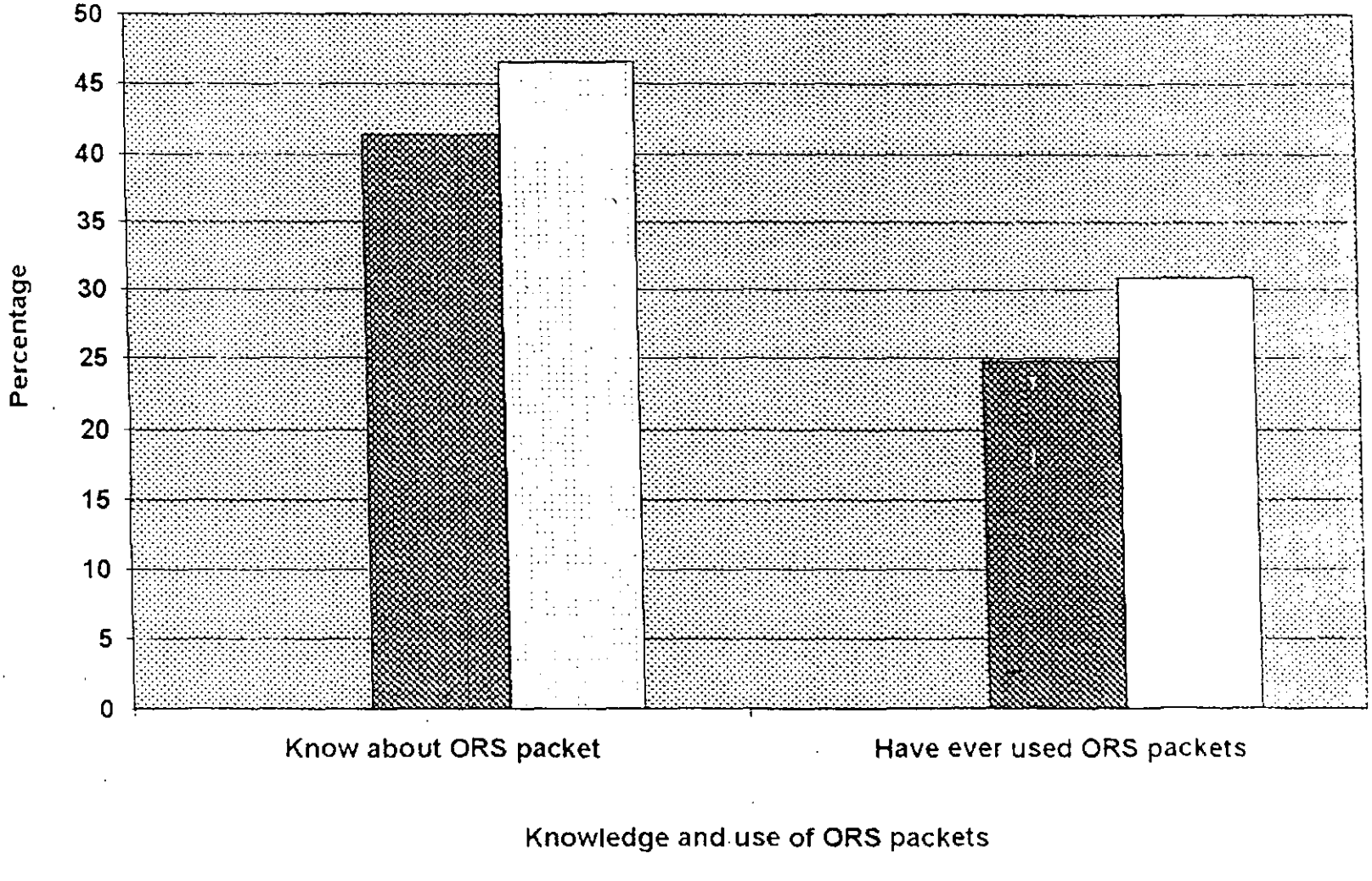
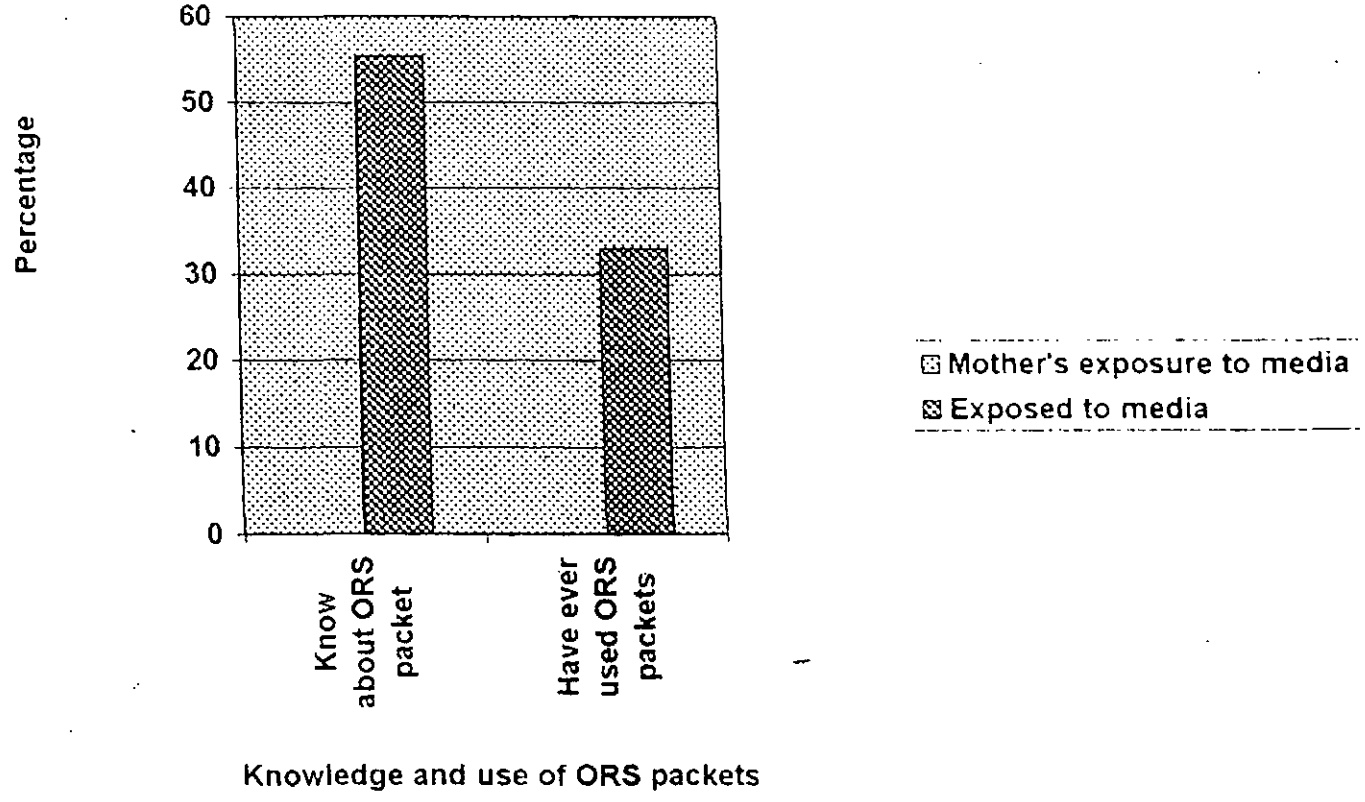


Figure No.38

Knowledge and use of ORS packets according to mother's exposure to media, India 1992-93



4.14 Feeding Practices during Diarrhoea

During diarrhoea, the frequency of breastfeeding remains the same or increases for majority of children that is 85%. Breastfeeding is reduced during diarrhoea in 12% of the cases and it is stopped in 1.7% cases. Intake of fluid during diarrhoea has remained same as usual in case of 71.7% of children who are less than one year of age and for 62.6% of children who are in the age group of one to three years of age. Only 9.7% are the cases where the amount of fluid given to children has increased. On an average 19.6% of children has reported reduction in the fluid intake. Thus contrary to the medical recommendation with regard to the fluid intake during diarrhoea, a substantial number of children in India have shown reduction in fluid intake while suffering from diarrhoea problem.

4.15 Treatment of Fever

While analyzing treatment of fever with background characteristics of child age, 69.4% of the children of 12 - 23 months of age have taken to the health institution for the treatment of fever. Anti-malarial drugs are given to 8.9% of the children those are in between the age group of 24 to 35 months that is maximum in all age groups of the children. Maximum anti-biotics pills are given to 12 - 23 months old children. 7.7% of the children of less than six months old are given injections but maximum injections (24.4%) are given to the child of 24 - 35 months of age.

Treatment of fever varies according to sex. Male children (nearly 70%) are getting more treatment than female child (63%). Anti-malarial drugs, anti-biotic pills and injections are given more to male child in comparison to female child. More urban children (79.4%) are getting health facility and treatment in comparison to rural children (63.4%).

Table No. 17

Feeding practices during diarrhoea, India 1992-93

Feeding practices during Diarrhoea	Age of the child		
	<1 year	1-3 years	Total
Breast feeding frequency			
Same as usual	81.8	75.2	77.9
Increased	6.5	7.8	7.3
Reduced	9.8	14	12.3
Stopped	1.1	2.1	1.7
Don't know/Missing	0.8	0.9	0.9
Total percent	100	100	100
Amount of fluids given			
Same as usual	71.7	62.6	65.8
More	7.5	10.8	9.7
Less	15.1	21.9	19.6
Don't know/Missing	5.6	4.6	5
Total percent	100	100	100

Source:---

NFHS, India 1992-93

Figure No. 39

Feeding practices during diarrhoea,India 1992-93.

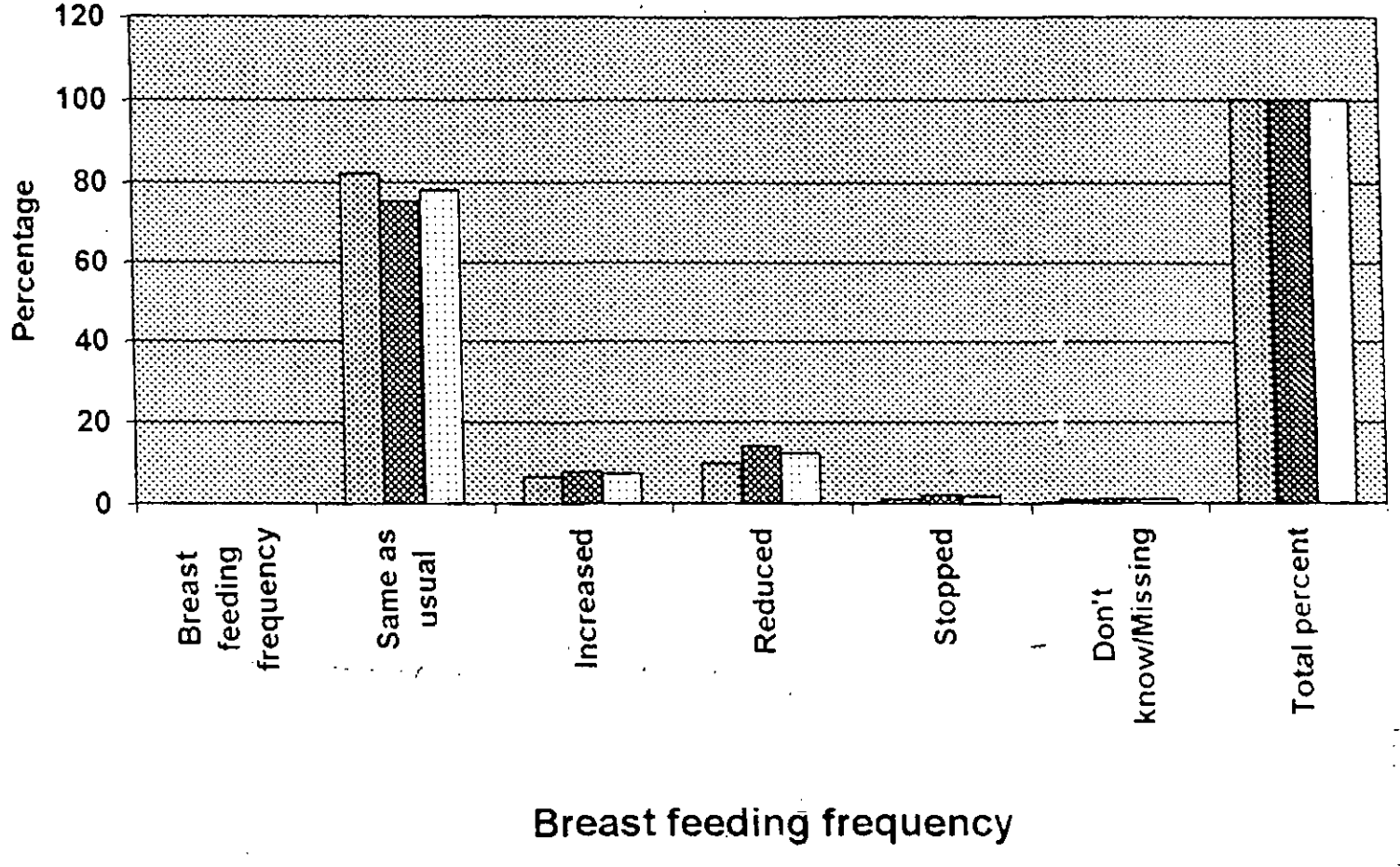


Figure No.40

Feeding practices during diarrhoea, India 1992-93

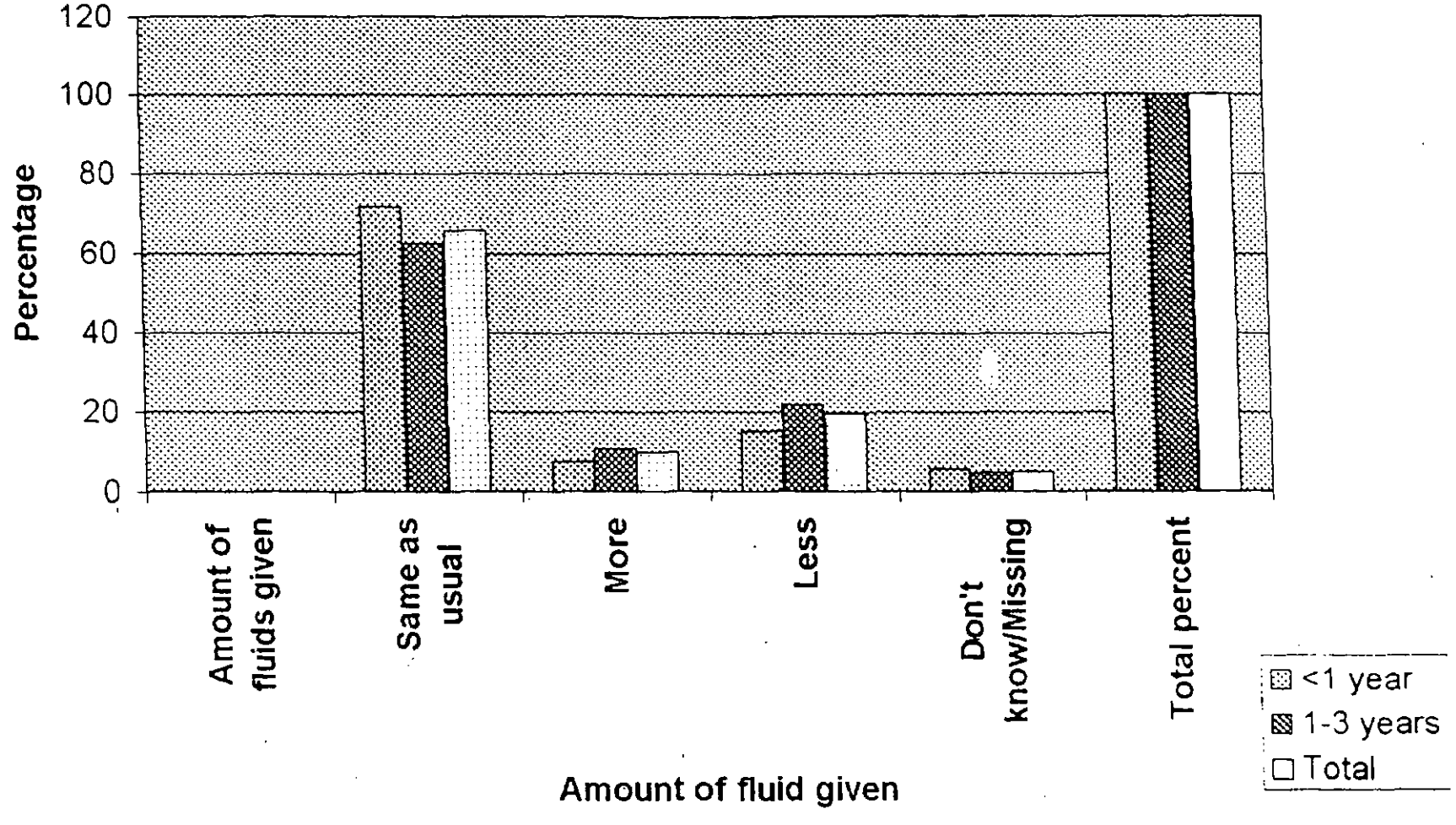


Table No. 18

Treatment of Fever, India 1992-93.

Background characteristics	% taken to a health facility	Anti-malarial	Anti-biotic pill	Injection	Home remedy
Child Age					
< 6 months	60.4	6.6	30.7	17.7	6.7
6-11 months	68.6	7.3	35.2	21.7	7.5
12-23 months	69.4	8.6	36.2	23.1	4.8
24-35 months	66.5	8.9	32.5	24.4	4
36-47 months	64.5	8.1	34.8	21.6	5.4
Sex					
Male	70.1	8.4	36.1	23.5	5
Female	63.1	7.9	32.6	21.1	5.7
Residence					
Urban	79.4	9	35.8	20.3	4
Rural	63.4	7.9	34.1	22.9	5.7
Mother's education					
Illiterate	62.9	7.9	34.6	24.2	5.5
Lit., < middle complete	69.9	8.2	30.1	19.4	6.6
Middle school complete	78.8	9.1	39.3	22.1	2.7
High school and above	78.4	9.5	38.7	15.3	4.1
Religion					
Hindu	66.7	7.9	35.6	24	5.4
Muslim	65.8	9.4	31.7	17	5.9
Caste / Tribe					
SC	67.7	7.8	35	27	5.7
ST	55	6.4	31.2	21.2	5.6
Birth order					
1	72.8	8.2	34.8	22	5.2
2 to 3	66.3	8.2	34.8	22	4.8
4 to 5	62.9	8.7	32.9	23.1	5.3
6+	59.3	7	34.8	23	7.9

Source :------

NFHS ,India 1992-93

Mother's education imparts its role in providing treatment to their babies but not a substantial difference between illiterate and literate mothers have been noticed. The children of illiterate mothers are hardly getting the benefit of any medical facility than those mothers who have attained some level of education.

If we look at the treatment of fever religion wise, then not a big difference is observed between Hindu and Muslim children. But scheduled tribes' children are getting less treatment in comparison to scheduled caste children. While looking at the birth order pattern of the children, the children of first order of birth (73%) are getting maximum treatment , health facilities and anti-malarial drugs in comparison to 6+ birth order(59%).

4.16 Conclusion

The chapter Maternal and Child health is a very sensitive index in considering the status of maternal and child and a good reflective of human development. It explains the role of various determinants and factors that are responsible for the survival of mother as well their baby. Rural and Urban differentials are being clearly observed in the access of medical care facility by mothers.

Bihar, Assam, Uttar Pradesh, Rajasthan and Madhya Pradesh have very low percentage of children vaccinated and immunized in comparison to Goa, Kerala and Tamilnadu. Role of education plays a very important role in determination of maternal and child health. Vaccination coverage and immunization are directly linked with the level of education of mother and her awareness about various sources of Antenatal care, Postnatal care and immunization centers that are run by government as well as by private institutions.

Northern states have unsatisfactory record of availing of Antenatal care facilities in comparison to Goa, Gujrat and Maharashtra that enjoy optimum level of Antenatal care facilities. This chapter also emphasized that level of maternal and child health is not

homogenous across the states. Some states are enjoying satisfactory maternal and child health conditions but some are not. Knowledge and ever using of ORS packets is maximum in Manipur and lowest is in Rajasthan.

CHAPTER---5

CHAPTER---5

Nutrition of Mother and Child

5.1 Definition of Nutrition

5.2 Introduction

5.3 Nutritional Requirements and Recommended Diet during Pregnancy and Lactation

5.4 Nutritional Status of Children

5.5 Trend and Pattern of Maternal and Child Nutrition across the States in India

5.6 Conclusion

Nutrition of Mother and Child

5.1 Definition of Nutrition

According to World Health Organization (1946), nutrition can be understood as how body absorbs protein, carbohydrates, fats, vitamins, mineral nutrients, the extremely complex processes that they undergo in the body, how they affect one another, how they are broken down and release energy and how they are transported and used to build countless specialized tissues and sustain the overall health of individuals

5.2 Introduction

Maternal nutrition is an essential necessity and prime requirement of mother not only to sustain herself but also her offspring. Nature of diet of mother is directly related to the health condition of newly born baby that is why the hall mark of poor nutrition and antenatal care in a community results into the high proportion of babies born with low birth weight of less than 2.5 kg. This proportion was reported to be nearly 38 percent in poor rural community of south India in 1955. However, available evidence suggests that it is still the case that nearly one-third of the babies born in the country are of low birth rate, (NFHS 1992-93).

Low birth weight of offspring is not only the evidence of poor maternal nutrition but is also an indicator of possible poor physical and mental development of baby. Maternal nutritional status, thus, not only determines the state of offspring at birth but also to some extent the future course of its development.

Special care should be taken of a women in connection to her diet because during the reproductive age period, due to blood loss during the menstrual period women's needs for certain nutrient concerned with blood formation (viz. iron, folcate, vitamin 12) is higher than men.

5.3 Nutritional Requirement and Recommended diet during Pregnancy and Lactation

Requirement of nutrients is defined as the amount of absorbed nutrients that are necessary to fulfill the physiological function in the body. So far as the nutritional requirements are concerned, women have the additional burden of bearing and rearing children during their reproductive age period. During pregnancy and lactation, the nutritional requirement of women increases significantly to meet the extra demand of these additional physiological stresses. During pregnancy, additional nutrients are required for the growth of foetus, expansion of maternal tissues like placenta and fat stores. During lactation, nutrients are transferred through the breast milk to the infant for its growth.

There are various elements required bythe body of pregnant women for its smooth growth and for the development of foetus. These are

- Energy
- Protein
- Fat
- Mineral

Energy

A normal pregnant Indian woman weighing 50 kg needs an additional daily energy intake of 300k to meet the additional energy demands during the second and third trimester.

Lactation

The Indian women continue to breast feed their infant beyond six months upto one year or more but with a reduced milk output, an extra allowance of 400 kcl per day has been recommended during six to twelve months of lactation.

Protein

On the basis of reports there is a nitrogen deposition during pregnancy in a well nourished women therefore an additional dietary protein intake of 149grams per day has been recommended for Indian pregnant women.

Lactation

A pregnant women needs 25 gram dietary protein during the first six months of lactation.

Fat

A normal women has an EFA requirement of 3 en %, but a pregnant women requires 4.5 en %.

Minerals

Calories 300-400mg per day is required for foetal bone growth and milk secretion.

Iron

The requirement for iron intake is increased during pregnancy. Net requirement to maintain normal Haemoglobin and iron status for mother and her infant should be 0.63mg during first trimester, 3.3 mg during second trimester and 5.0 during third trimester per day.

Vitamin A

During pregnancy additional requirement of Vitamin A is quite less.

Vitamin B

At the time of pregnancy, additional requirement of Vitamin B is minimal. So that pregnant women needs an extra allowance of 300 kilo calories per day during second and third trimester of pregnancy.

5.4 Nutritional Status of Children

The NFHS data on weight and height had used to calculate three summary indices of nutritional status, which effect children's susceptibility to disease and their chances of survival.

These indices are following :--

1. Weight for age
2. Height for age
3. Weight for height

Three nutritional status indices has been expressed in standard deviation units from the median for the international reference population. Children who fall more than two standards below the reference median are considered to be undernourished, while those who fall more than three standard deviations below the reference median are considered to be severely undernourished. Each of indices provides somewhat different information about the nutritional status of children.

The height for age index measures linear growth retardation among children. Children who are more than two standard deviations below the median of reference population in terms of height for age are considered short for their age or stunted. The percentage in this category indicates the prevalence of chronic undernutrition that often leads to chronic or recurrent diarrhea. Stunting is typically associated with inadequate food intake resulting from poor feeding practices or lack of sufficient food, as well as the existence of adverse environmental condition. Height for age, therefore is a measure of the long term affects of undernutrition.

The weight for height index measures body mass in relation to body length. Children who are more than two standard deviation below the median reference population in terms of their weight for height are considered to be too thin or wasted.

The percentage in this category indicates the prevalence of acute undernutrition. This condition is associated with failure to receive adequate nutrition.

Weight for age is a composite measure that takes in to account both chronic and acute undernutrition. Children who are more than two standard deviation's below the reference median on this index are considered underweight.

5.5 Trend and Pattern of Maternal and Child Nutrition across the States in India.

Breastfeeding is the most essential part in the growth of a newly born baby and mothers throughout India are aware of it. But somehow there is a substantial difference in the percentage of initiation of the breastfeeding in states. In every state, first milk is squeezed from the breast for more than two fifth of breast fed children. This practice is most common in the Sikh state of Panjab (93%), Jammu (88%), Mizoram (79%) and Orissa (79%). This practice is least evident in Arunachal Pradesh (44%), Kerala (49%) and Nagaland (49%).

Initiation of breastfeeding tell many things about the background of women, her awareness about the advantages of breastfeeding etc. Mother milk is full of all nutrients that is required by newly born baby that provides immunity against various infectious diseases. The quality of maternal milk depends on the diet taken by mother, if she is not consuming a proper recommended diet then her body will be unable to make quality milk to be sucked by her infant. There are inter-state variations in the initiation of the breastfeeding practices. Woman belonging to certain states starts breastfeeding in the first hour of birth but women of some states start breastfeeding within the first day of the birth of the baby.

According to certain cases registered,breastfeeding in the first hour of birth of the baby is much more in comparison to the breastfeeding on the first day of the birth. The state, Nagaland that is on

Table No.19

Initiation of breast feeding by state, India 1992-93

state	Percent started breast feeding within 1 hour of birth	Percent started breast feeding within 1 day of birth	Percentage whose mothers squeezed first milk from breast
India	9.5	26.3	63.5
Delhi	6.1	39.5	71.2
Haryana	2.7	43.9	57.0
Himachal Pradesh	12.2	42.3	0
Jammu& Kashmir	7.1	41.0	88.0
Panjab	5.3	23.7	92.9
Rajasthan	7.9	30.3	56.6
Madhya Pradesh	11.0	27.7	0
Uttar Pradesh	4.7	11.6	60.9
Bihar	1.5	11.8	60.1
Orissa	17.7	36.3	78.8
West bengal	10.8	33.8	0
Arunchal Pradesh	40.6	79.8	43.7
Assam	20.0	53.2	70.3
Manipur	12.1	24.9	69.4
Meghalaya	8.3	69.1	64.4
Mizoram	29.9	68.1	78.8
Nagaland	64.3	83.8	49.3
Tripura	7.3	28.0	68.9
Goa	28.8	44.1	61.9
Gujrat	14.0	25.7	57.2
Maharashtra	7.4	18.2	70.5
Andhra Pradesh	20.0	27.5	0
Karnataka	5.4	18.2	61.9
Kerala	14.3	77.5	48.5
Tamil nadu	21.8	54.5	0

Source:NFHS India 1992-93

the north-eastern side of Indian Peninsula, has the highest percentage of women (64.3%) who starts breastfeeding in the first hour of birth.

Even **Kerala** that is considered to be totally literate state and where the sex ratio is also in the favour of females show only 14% of women starting breastfeeding in the first hour of birth. Although if we look at the figures of percentage of women (77.5%) starting breastfeeding within a day of birth is registered maximum in Kerala. It is surprising to note that north-eastern states of India that includes mainly Arunachal Pradesh, Assam, Mizoram, Nagaland, Manipur shows remarkably good results in starting breastfeeding within first hour of birth.

Condition of **northern states** which includes Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Panjab and Rajasthan is not so good with an exception of Himachal Pradesh that has 12% breastfeeding with in first hour of birth while the rest of states are showing less than 8% in the same case , which is an alarming situation. Although various other factors like education of mother, awareness and knowledge about the starting of breastfeeding practices, nature of diet of mother and baby also play a significant role in determining the nutrition of mother as well of child.

In **southern states** that includes mainly Tamilnadu and Andhra Pradesh 21.8% and 20% women starting breastfeeding within first hour of birth respectively. The important thing to note is that the percentage of women who start breastfeeding within a day of the birth in two bigger states of India namely, Uttar Pradesh and Bihar shows very less percentage of 11.6% and 11.8% respectively reflecting at the poor nutritional status of women. With the exception of these two states, no other state of India shows less than 25% of women starting breastfeeding within the first day of the birth of a new born baby.

Nagaland is the only state that shows not only maximum women engaged in the breastfeeding practices within first hour of birth but also within a day having a percentage as high as 84%. Kerala shows 77.5% women starting breastfeeding practices on the first

day of the birth of the baby. Those states which are showing more than 50% of breastfeeding practices within a day after the birth of baby includes Arunachal Pradesh (79.8%), Assam (53.2%), Meghalaya (69.1%), Mizoram (68.1%), Nagaland (84%), Kerala (77.5%) and Tamilnadu (54.5%). The state that shows 40% or in between the range of 40% to 50% of women starting breastfeeding within first day of the birth of the baby are Haryana 43.1%, Himachal Pradesh 42.3%, Jammu and Kashmir 41%.

In Delhi, below 40%, that is 39.5% of women start breastfeeding within the first hour of birth of the baby although Delhi is not just a state but also the national capital of India. So, the condition is very poor in connection to the nutritional status of women. Panjab has 23.7%, this is the state that is considered to be advanced state of India but in terms of breastfeeding practices, it is a backward state. Rajasthan has 30% and Madhya Pradesh has 28% and both these states are economically backward and have a good number of illiterate person. So women are not aware about the advantages of breastfeeding practices. Orissa has 36.3%, West Bengal 34%, Manipur 25%, Tripura has 28%, Gujrat 25.7%, Maharastra 18%, Andhra Pradesh 27.5%, Karnatka 18.2% of breast feeding practices. So, interstate variation in breastfeeding practice lies across India. But overall north eastern states and some southern states are showing good percentage of women who have given first feed to there infant.

Till now we have seen only the variations in the initiations of breastfeeding across the states and the reason behind it. If we observe the Recommended Feeding Indicators like 0-3 months exclusively breastfed, percentage of children 6-9 months receiving breast milk and solid / mushy food, percentage of children 12-15 months breastfed, percentage of children 20-23 months breastfed, percentage of last born <12 months bottle fed, the interstate variations are enormous. The duration of breastfeeding is long and the use of feeding through bottles with nipples is irregular. One half of the children, less than four months old are exclusively breastfed and introduction of solid and mushy food in the diet is typically much later than recommended. Even at one year of

Table No.20

Recommended Feeding Indicator by State , India 1992-93

State	Percentage of children 0-3 months exclusively breastfed	Percentage of children 6-9 months receiving breast milk and solid /mushy food	Percentage of children 12-15 months breastfed	Percentage of children 20-23 months breastfed	Percentage of Last born children <12 months bottle fed
Delhi	20	25.1	74.6	52.8	36.3
Haryana	37.5	38.5	89	58.3	20
Himachal Pradesh	36.4	39.9	80.2	54.7	24.6
Jammu & Kashimar	16.9	44.8	83.4	51.8	38.3
Panjab	3.3	37.3	77.9	40.4	27.1
Rajasthan	65.9	9.4	87.3	74.8	8.9
Madhya Pradesh	31.4	27.7	90.2	65.4	7.3
Uttar Pradesh	60.3	19.4	89.7	72.8	12.1
Bihar	51.6	18.1	92	79.3	10
Orissa	45.7	30.2	91.5	78.9	14.5
West Bengal	40	53.6	91.9	83.6	21.7
Arunchal Pradesh	73.9	35.8	98	73	7.2
Assam	65	39.2	94.8	82.5	12.8
Manipur	70.4	50	89.5	61.5	7.2
Meghalaya	18	65.3	63.6	51.4	24.4
Mizoram	45.5	64.3	81.6	37.9	14.7
Nagaland	61.1	43.5	70.3	46.9	23.7
Tripura	47.9	65	98.1	74.2	29.5
Goa	10.8	33.9	53.1	40	66.7
Gujrat	36.3	22.6	85.2	48	9.2
Maharashtra	37.1	25	85	62.2	11.2
Andhra Pradesh	70.5	47.8	86.9	67.7	12.5
Karnataka	65.6	38.2	84.3	54.5	13.5
Kerla	59.2	69.3	84	61.7	26.2
Tamilnadu	55.8	56.5	65.4	35.5	30.7

Source :-------

NFHS ,India 1992-93

age, almost one third of breastfeeding children is not receiving solid or mushy food in addition to breast milk.

The percentage of children 0-3 months exclusively breastfed are maximum in **Arunachal Pradesh (73.9)** and it is surprising that **Panjab has only 3.3%** children are exclusively breastfed. Although during the age in 0-3 months a baby is totally dependent upon the mother's milk but Panjab has 37%, 6-9 months' children receiving breast milk and solid/ mushy food and again percentages of children 12-15 months breastfed are 78%.

But as the age of the child increases, the breast feeding decreases. But it is amazing that in Northern states of India that includes Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Panjab and Rajasthan but only in Rajasthan 66% of 0-3 months' children are exclusively breast fed. Although Rajasthan is the only state that has lowest literacy rate and the children are only dependent upon the maternal milk even upto 12-15 month's inspite of the fact that they should consume solid and mushy food. The percentage of children of 6-9 months is 9.4% are getting solid / mushy food, but 87% of children of 12-15 months are breast fed.

Rajasthan is the only state that has minimum percentages of children in among 6-9 months who are getting solid / mushy food in comparison to other states of India. This is due to the lack of knowledge of bringing up a child and ignorance of what nutritious diet should be given to a child. **Kerala** has registered maximum percentage of children that are taking solid / mushy food in 6-9 months of age. Overall Kerala is the only state that is showing good performance in exclusive breastfeeding and giving solid / mushy food to their children. The practice of breastfeeding is very low in the younger age of the child and it rises remarkably upto 12-15 months, and after that it again falls down in the later stage of growth of the baby.

South Indian states are showing very good performance, they pay due attention in bringing up the child that is why breastfeeding is their priority and after few months, solid / mushy food is given to the

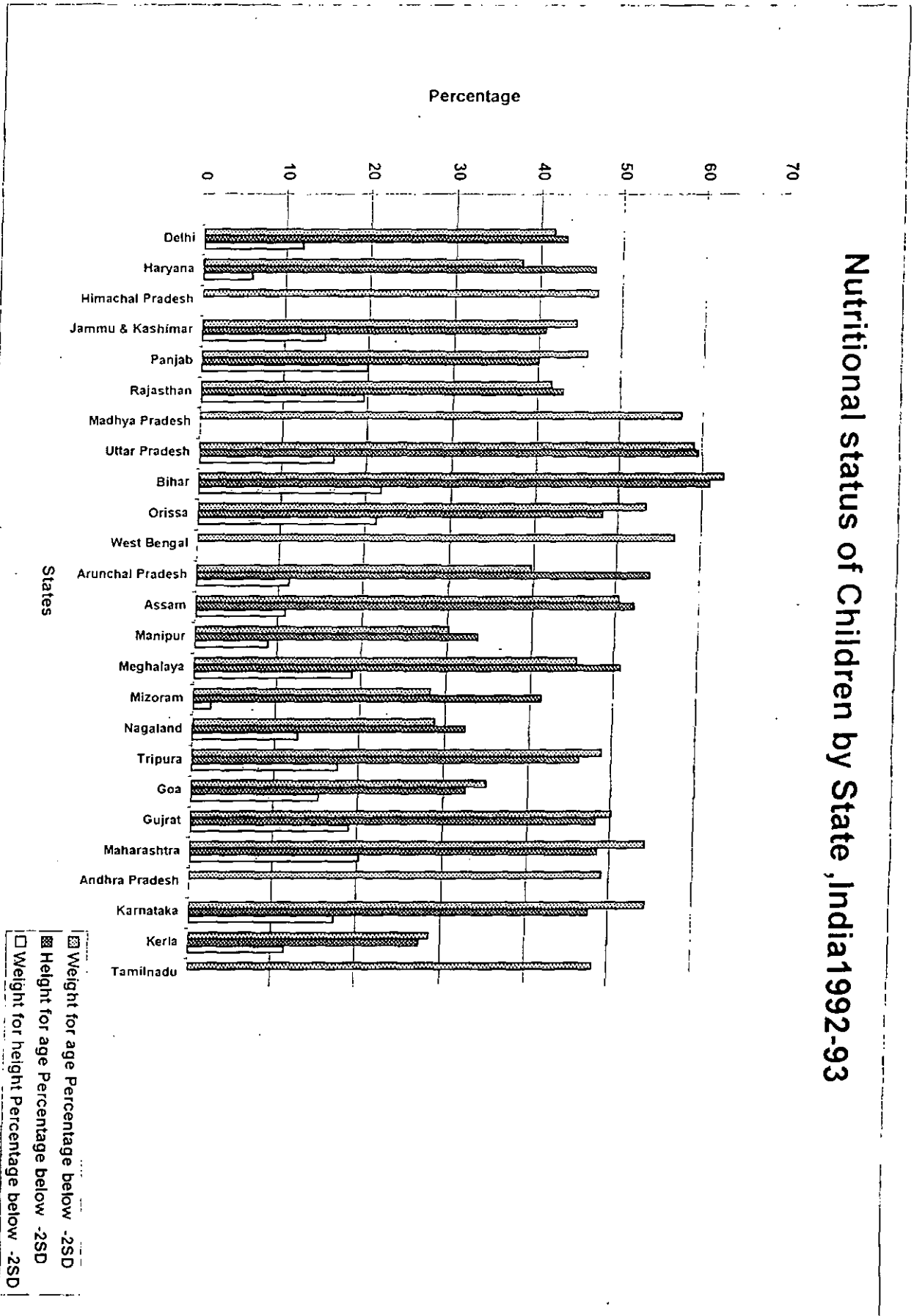
Table No.21

Nutritional status of children by State, India 1992-93

State	Weight for age	Height for age	Weight for height
	Percentage below -2SD	Percentage below -2SD	Percentage below -2SD
Delhi	41.6	43.2	11.9
Haryana	37.9	46.7	5.9
Himachal Pradesh	47	0	0
Jammu & Kashimar	44.5	40.8	14.8
Panjab	45.9	40	19.9
Rajasthan	41.6	43.1	19.5
Madhya Pradesh	57.4	0	0
Uttar Pradesh	59	59.5	16.1
Bihar	62.6	60.9	21.8
Orissa	53.3	48.2	21.3
West Bengal	56.8	0	0
Arunchal Pradesh	39.7	53.9	11.2
Assam	50.4	52.2	10.8
Manipur	30.1	33.6	8.8
Meghalaya	45.5	50.8	18.9
Mizoram	28.1	41.3	2.2
Nagaland	28.7	32.4	12.7
Tripura	48.8	46	17.5
Goa	35	32.5	15.3
Gujrat	50.1	48.2	18.9
Maharashtra	54.2	48.5	20.2
Andhra Pradesh	49.1	0	0
Karnataka	54.3	47.6	17.4
Kerla	28.5	27.4	11.6
Tamilnadu	48.2	0	0

Source :--------
NFHS, India 1992-93

Figure No.41


Nutritional status of Children by State ,India1992-93
Percentage
0
10
20
30
40
50
60
70
States
Delhi
Haryana
Himachal Pradesh
Jammu & Kashimar
Panjab
Rajasthan
Madhya Pradesh
Uttar Pradesh
Bihar
Orissa
West Bengal
Arunchal Pradesh
Assam
Manipur
Meghalaya
Mizoram
Nagaland
Tripura
Goa
Gujrat
Maharashtra
Andhra Pradesh
Karnataka
Kerla
Tamilnadu
Weight for age Percentage below -2SD
Height for age Percentage below -2SD
Weight for height Percentage below -2SD

children. **In all states maximum breastfeeding is in 12-15 months of children**. Ninety percent of breastfeeding in 12-15 months of children are in states like Haryana, Madhya Pradesh, Uttar Pradesh, Bihar, Orissa, West Bengal, Arunachal Pradesh, Assam, Manipur, Tripura.

It is amazing that those states that are having good number of illiterates and not much economically advanced too show 90% breastfeeding practices includs northern states of India. But advanced state of south India seems to be keenly interested in breastfeeding practices. The women of these south Indian states are well aware of the advantages of giving breast milk to the child because it saves the child from various infectious diseases and provides good immunity to the newly born baby.

The percentage of children less than twelve months bottle-fed are maximum in Goa (66.7%) and minimum of (7.2%) in Manipur. Delhi, Tamilnadu, Jammu and Kashmir are the only states that have 30% to 40% of children of less than twelve months who are bottlefed. Practice of bottlefeeding is not universal across India, in Rajasthan it is 8.9%, Madhya Pradesh 7.3%, Uttar Pradesh 12% and in Bihar it is 10%.

Those states that are considered to be economically and socially backward having poor literacy rates and are less aware about child rearing practices show minimum cases of percentages of bottlefeeding. But these states seem to be more inclined toward breastfeeding inspite of bottlefeeding practices.

If we look at the nutritional status of children by states variations are clearly seen. To evaluate the nutritional status of women and children we have taken three variables, they are mainly **weight for age, height for age and weight for height according to the NFHS data 1992-93**. It means that what should be the weight of the child according to the age of child and what should be the weight of the child according to height of the child. In northern states of India, that includes Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Panjab and Rajasthan, all children are underweight with an exception of

Haryana. Certain states having more than 50% children underweight are Madhya Pradesh (57.4%), Uttar Pradesh (59%), Bihar (53%), West Bengal (57%) and Karnatka (54%).

Condition is very poor in Bihar, Uttar Pradesh and Madhya Pradesh as the children of these states are suffering from the problems of undernutrition and malnutrition. So these states reflect the worse nutritional status of children in comparison to the other states of India.

Southern states of India are usually considered to be developed, like Kerala which has the best record of nutritional status of children of having just more than one quarter of children who are underweight and stunted. The problem of wasting is more evident in Bihar and Orissa.

Height is another element that determine the nutritional status of a particular state as it is closely linked with the diet intake. Only Kerala is showing good status of children in terms of height with just 27% children with stunted growth. Although Maharashtra, Karnatka is showing near about 50% children with stunted growth.

All northern states show 40% children having stunted growth. It is amazing that in Haryana 46.7% of children are stunted, but in Uttar Pradesh it is (59.5%) and in Bihar it is (61%). So maximum children of stunted growth are in Bihar followed by Uttar Pradesh. There are in total five states that shows more than 50% stunted growth of children. These states are Uttar Pradesh and Bihar in the northern states of India and the states Arunachal Pradesh, Assam and Meghalaya lying in the north eastern side of India.

If we look at the weight for height indices in considering the nutritional status of children, cases of underweight are registered that are minimum in Mizoram (2.2%) and maximum in Bihar (22%).

Conclusively we can say that Bihar and Uttar Pradesh are the only two states having maximum number of children suffering from malnutrition, undernutrition, underweight and stunted growth. In

Table No.22

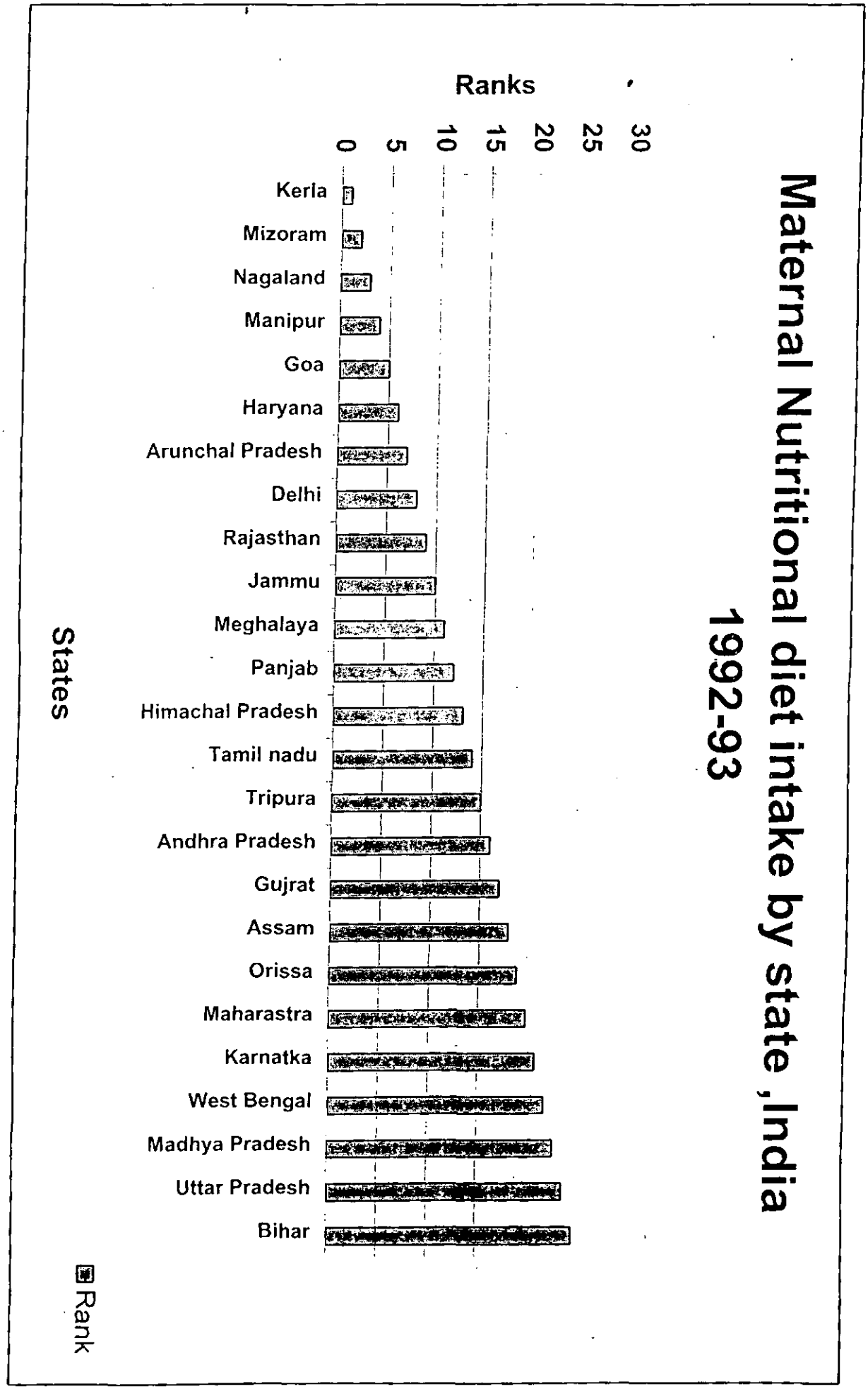
Maternal nutritional diet intake, India 1992-93

State	Rank
Kerala	1
Mizoram	2
Nagaland	3
Manipur	4
Goa	5
Haryana	6
Arunachal Pradesh	7
Delhi	8
Rajasthan	9
Jammu	10
Meghalaya	11
Panjab	12
Himachal Pradesh	13
Tamil Nadu	14
Tripura	15
Andhra Pradesh	16
Gujrat	17
Assam	18
Orissa	19
Maharashtra	20
Karnataka	21
West Bengal	22
Madhya Pradesh	23
Uttar Pradesh	24
Bihar	25

Source :

NFHS, India 1992-93

Figure No.42


Maternal Nutritional diet intake by state ,India
1992-93
Ranks
0
5
10
15
20
25
30
Kerla
Mizoram
Nagaland
Manipur
Goa
Haryana
Arunchal Pradesh
Delhi
Rajasthan
Jammu
Meghalaya
Panjab
Himachal Pradesh
Tamil nadu
Tripura
Andhra Pradesh
Gujrat
Assam
Orissa
Maharastra
Karnatka
West Bengal
Madhya Pradesh
Uttar Pradesh
Bihar
States
Rank

the maternal nutritional diet intake by states, Kerala ranked first, followed by Mizoram and Nagaland.

On the other side, Bihar ranked last at the twenty fifth position, Uttar Pradesh on the twenty fourth and Madhya Pradesh on the twenty third position. The other states lying in between the first and the twenty fifth ranks and are enjoying an average maternal diet intake are Haryana at the sixth, Delhi at eighth, Rajasthan ninth and Panjab holds twelfth rank. It is interesting to note that no northern state was able to enroll itself in the first five positions.

5.6 conclusion

The chapter, Nutrition of Mother and Child reflects the nutritional requirements of mother during pregnancy, lactation and standard of breastfeeding practises that are adopted by mother which is also not a universal phenomenon. This chapter reflects the nutritional status of children. Some states have shown stunted growth, underweight and malnutritional children because of lack of proper diet of the children but other did not show this picture.

Condition is very poor in Bihar, Uttar Pradesh and Madhya Pradesh as the children of these states are suffering from the problems of undernutrition, malnutrition and stunted growth. So these states reflect the worse nutritional status of children in comparison to the other states of India. Only Kerla is the state that show satisfactory nutritional status of mother as well as of child. So trend and Pattern of Maternal and Child Nutrition is varying across the states in India.

CHAPTER---6

CHAPTER---6

Status of Maternal, Child Health and Nutrition in India

Status of Maternal, Child Health and Nutrition in India

6.1 Introduction

After portraying the general conditions of Maternal, Child Health and Nutrition in India a composite rank index has been constructed with the help of certain selected indicators which are used in all preceeding chapters to evaluate the status of maternal and child health and nutrition across the states. The indicators which we have used are Crude Birth Rate (C.B.R), Total Fertility Rate (T.F.R), Crude Mortality Rate (C.M.R), Antenatal Care, Vaccination of the children, Knowledge of ORS packets, Feeding practices and Maternal nutritional diet intake.

We have used rank difference method to analyse the position of the states in terms of maternal and child's health and nutritional status that is why different ranks are assigned to the states according to the various indicators. After this weights corresponding to the indicators are being given respectively and finally we have reached a stage where final ranks to the states are being given that will reflect overall status of women and child's health and nutrition.

Henceforth, we can say that Kerala has ranked first in all perspectives of women and child's health and nutrition, Mizoram has ranked second and Manipur third. On the otherhand, Bihar has ranked last i.e. 25th, Madhya Pradesh has ranked 24th and Uttar Pradesh 23rd.

Now we can say that these above mentioned three states are completely backward and first three states are advanced in consideration of women and child's health and nutritional status.

Table No.23

Composite Rank Index For Women and Child's Health and Nutritional Status, Statewise

States	Indicators according to ranks								
	C.B.R	T.F.R	I.M.R	C.M.R	A.N.C	Vaccination of children	Knowledge of ORS packets	Feeding indicators	Maternal nutritional intake
Delhi	13	13	12	8	9	7	4	21	8
Haryana	23	20	16	17	14	10	12	16	6
Himachal Pradesh	17	11	10	4	11	5	6	18	13
Jammu & Kashmir	16	14	7	5	10	2	7	23	10
Panjab	8	10	9	7	5	6	13	25	12
Rajasthan	14	17	17	19	25	19	24	4	9
Madhya Pradesh	20	19	20	24	18	16	23	20	23
Uttar Pradesh	25	23	23	23	22	20	20	8	24
Bihar	22	21	22	22	24	23	21	11	25
Orissa	12	10	24	12	17	14	17	13	19
West Bengal	9	10	18	16	13	15	8	15	22
Arunachal Pradesh	24	22	5	20	21	18	16	1	7
Assam	18	16	21	25	20	21	11	6	18
Manipur	7	7	6	10	16	17	1	3	4
Meghalaya	21	18	11	15	19	24	19	22	11
Mizoram	3	3	1	6	4	8	3	14	2
Nagaland	19	15	2	1	23	25	25	7	3
Tripura	4	6	19	18	15	22	2	12	15
Goa	1	1	4	2	2	1	10	24	5
Gujrat	15	12	14	21	12	12	18	19	17
Maharashtra	11	9	8	11	8	4	15	17	20
Andhra Pradesh	6	5	15	13	6	13	22	2	16
Karnataka	10	8	12	14	7	11	14	5	21
Kerala	2	2	3	3	1	9	5	9	1
Tamilnadu	5	4	13	9	3	3	9	10	14

Table No.23

Composite Rank Index For Women and Child's Health and Nutritional Status, Statewise

States	Weights corresponding to the Indicators									
	1	2	3	4	5	6	7	8	9	Total
Delhi	13	26	36	32	45	42	28	168	72	18.48
Haryana	23	40	48	68	70	60	84	128	54	23.00
Himachal Pradesh	17	22	30	16	55	30	42	144	117	18.92
Jammu & Kashmir	16	28	21	20	50	12	49	184	90	18.80
Panjab	8	20	27	28	25	36	91	200	108	21.72
Rajasthan	14	34	51	76	125	114	168	32	81	27.80
Madhya Pradesh	20	38	60	96	90	96	161	160	207	37.12
Uttar Pradesh	25	46	69	92	110	120	140	64	216	35.28
Bihar	22	42	66	88	120	138	147	88	225	37.44
Orissa	12	20	72	48	85	84	119	104	171	28.60
West Bengal	9	20	54	64	65	90	56	120	198	25.00
Arunachal Pradesh	24	44	15	80	105	108	112	8	63	22.36
Assam	18	32	63	100	100	126	77	48	162	29.04
Manipur	7	14	18	40	80	102	7	24	36	13.12
Meghalaya	21	36	33	60	95	144	133	176	99	31.88
Mizoram	3	6	3	24	20	48	21	112	18	10.20
Nagaland	19	30	6	4	115	150	175	56	27	23.28
Tripura	4	12	57	72	75	132	14	96	135	23.88
Goa	1	2	12	8	10	6	70	192	45	13.84
Gujrat	15	24	42	84	60	72	126	152	183	30.32
Maharashtra	11	18	24	44	40	24	105	136	180	23.28
Andhra Pradesh	6	10	45	52	30	78	154	16	144	21.16
Karnataka	10	16	36	42	35	66	98	40	189	21.28
Kerala	2	4	9	12	5	54	35	72	9	8.08
Tamilnadu	5	8	39	36	15	18	63	80	126	15.60

Table No.24

Ranking of nutritional and health status of women and child according to states, India 1991-92.

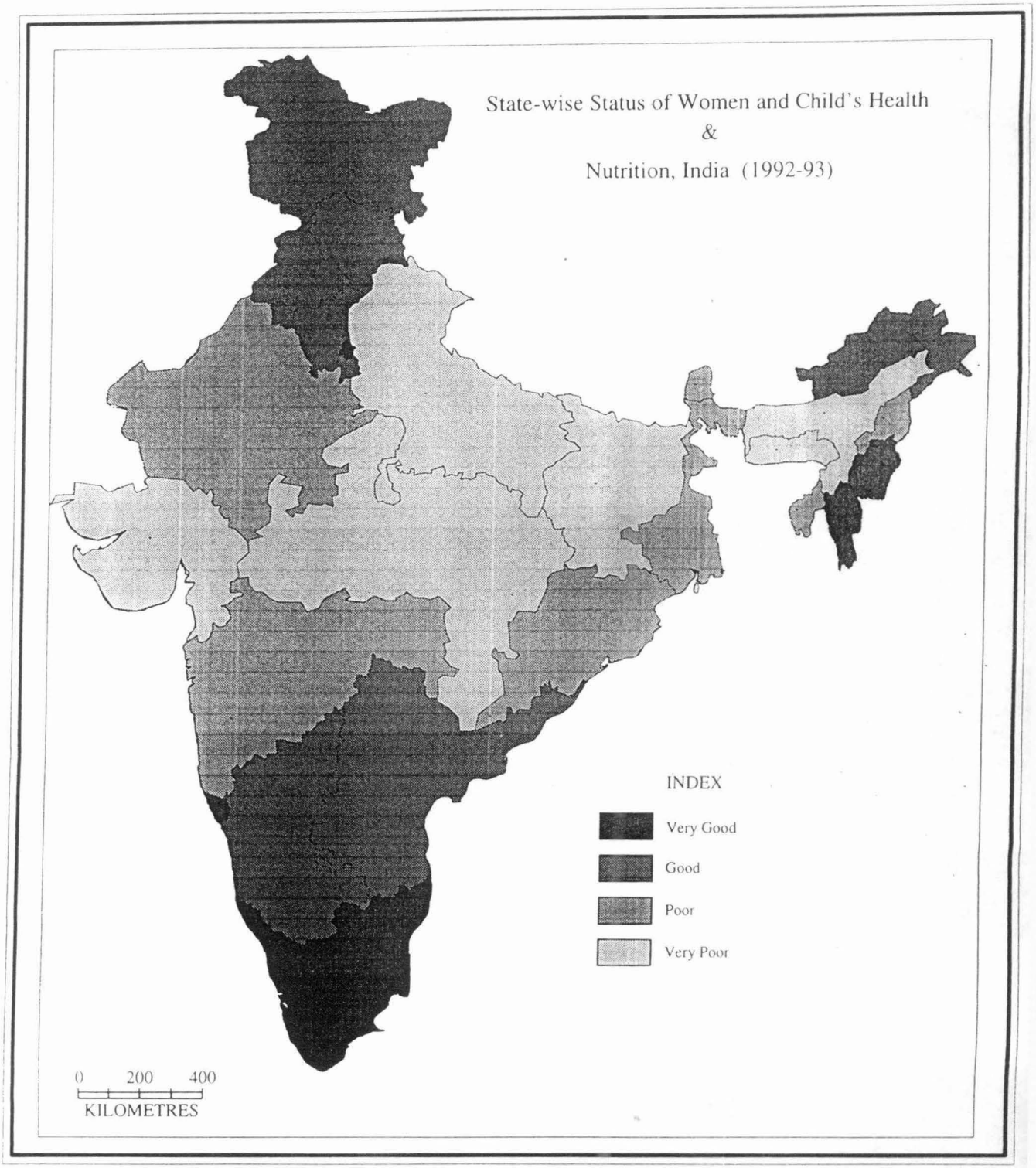
States	Ranks
Kerala	1
Mizoram	2
Manipur	3
Goa	4
Tamilandu	5
Delhi	6
Jammu & Kashmir	7
Himachal Pradesh	8
Andhra Pradesh	9
Karnataka	10
Panjab	11
Arunachal Pradesh	12
Haryana	13
Maharashtra	14
Nagaland	15
Tripura	16
West Bengal	17
Rajasthan	18
Orissa	19
Assam	20
Gujrat	21
Meghalaya	22
Uttar Pradesh	23
Madhya Pradesh	24
Bihar	25

Table No.25

Status of Maternal and Child Health & Nutrition by States, India 1991-92

Status	States
Very poor Maternal & Child's Health and Nutritional Status	Bihar, Madhya Pradesh, Uttar Pradesh, Meghalaya, Gujrat, Assam
Poor Maternal & Child's Health and Nutritional Status	Orissa, Rajasthan, West Bengal, Tripura, Nagaland, Maharashtra
Good Maternal & Child's Health and Nutritional Status	Haryana, Arunchal Pradesh, Panjab, Karnatka, Andhra Pradesh, Himachal Pradesh, Jammu & Kashmir
Very Good Maternal & Child's Health and Nutritional Status	Kerala, Mizoram, Manipur, Goa, Tamilnadu, Delhi

Figure No.43


State-wise Status of Women and Child's Health
&
Nutrition, India (1992-93)
INDEX
Very Good
Good
Poor
Very Poor
0 200 400
KILOMETRES

6.2 Status of Maternal, Child Health and Nutrition in India based on Composite Index

All states have been divided into four categories to evaluate the status of maternal and child's health and nutrition and to know about the position of states across India and to know if the states are considered to be backward or advanced and the reason behind it.

The following categories are :-

1. Very poor status
2. Poor status
3. Good status
4. Very good status

So, the states are put into these four categories to attain a clear image that easily reflects the status of these states in terms of maternal and child's health and nutrition.

1. Very poor status:-- This category includes states like, Bihar, Madhya Pradesh, Uttar Pradesh, Meghalaya, Gujrat and Assam.

2. Poor status:-- This includes states like Orissa, Rajasthan, West Bengal, Tripura, Nagaland and Maharashtra.

3. Good status:-- This category is assigned to states like, Haryana, Arunachal Pradesh, Panjab, Karnataka, Andhra Pradesh, Himachal Pradesh, Jammu and Kashmir.

4. Very good status:-- This has inclusion of states like, Kerala, Mizoram, Manipur, Goa, Tamilnadu and Delhi.

6.3 Conclusion

In concluding remarks we can say that the states which falls into the poor and very poor status categories in the context of maternal and child's health and nutrition are those states which are economically backward, have low literacy rate, lack of health facilities, lack of knowledge and awareness to look after the children in their growing period, low age at marriage, preference of son, devoid of basic infrastructure in hospitals like doctors, medicines etc., poor nutritional diet to mothers and children.

On the otherhand, states that are on the top of the hierachy of the status granted to women and child has reflected there advanced stature in comparison to the backward states such that these states have been termed the advanced states.

CHAPTER---7

CHAPTER-7

Summary of Findings and Conclusions

7.1 Summary of Findings

7.2 Conclusions

Summary of Findings and Conclusions

7.1 Summary of findings

My study, regarding with the Status of Maternal, Child Health and Nutrition is an attempt to portray the state's position in making policies not only to uplift the status of mother and child but to give a direction so that the future will be bright and we will be able to produce more productive and fruitful hands that will definitely help in the Nation building process. That is why we are not only concerned with the trend and pattern of various indicators which are associated with the Maternal, Child Health and Nutrition (MCH) but also those conditions too that are responsible for betterment or degradation in Maternal, Child Health and Nutritional level across the states.

Chapter- 1, which is introductory type and mainly explains the type of strategy adopted while conducting research work on Status of Maternal, Child Health and Nutrition across the states in India. At the end a detailed survey of literature has been attempted on the relevant topics.

Chapter- 2, The chapter Fertility and Maternal Health explains how fertility effects the maternal health and various other factors like demographic, socio-economic, biological plays a very important role in determining the health of mothers across the states. Crude Birth Rates and Age - Specific Birth Rates have also directly linked with the health of the mother. Role of the Birth Order and Menopause can not be ruled out while considering maternal health.

More child means high risk to the health of mother. Those states that show low Birth Order reflect higher maternal health and vice versa. The states like Uttar Pradesh, Bihar, Orissa and Madhya Pradesh shows very high fertility level and high Birth Order and reflects poor maternal health. On the other side there are states like Kerla, Tamilnadu and Goa having low Birth Order and fertility level reflects satisfactory maternal health.

Chapter- 3, deals with the Mortality and Maternal and Child Health. It explains how various determinants of mortality directly or indirectly affect the maternal and child health. This chapter also reflects the trend and pattern of infant and child mortality across the states.

The states mainly Orissa, Madhya Pradesh and Uttar Pradesh show high infant and child mortality, maternal mortality reflects very low level of maternal and child health status. In term of infant and child mortality no state had shown satisfactory results except Goa and Kerala. This chapter also explains the role of mother's education, medical maternity care and place of delivery in determining the infant and child mortality as well as their health status.

Chapter- 4, The chapter Maternal and Child health is a very sensitive index in considering the status of maternal and child and a good reflective of human development. It explains the role of various determinants and factors that are responsible for the survival of mother as well their baby. Rural and Urban differentials are being clearly observed in the access of medical care facility by mothers.

Bihar, Assam, Uttar Pradesh, Rajasthan and Madhya Pradesh have very low percentage of children vaccinated and immunized in comparison to Goa, Kerala and Tamilnadu. Role of education plays a very important role in determination of maternal and child health. Vaccination coverage and immunization are directly linked with the level of education of mother and her awareness about various sources of Antenatal care, Postnatal care and immunization centers that are run by government as well as by private institutions.

Northern states have unsatisfactory record of availing of Antenatal care facilities in comparison to Goa, Gujrat and Maharashtra that enjoy optimum level of Antenatal care facilities. This chapter also emphasized that level of maternal and child health is not homogenous across the states. Some states are enjoying satisfactory maternal and child health conditions but some are not. Knowledge and ever using of ORS packets is maximum in Manipur and lowest is in Rajasthan.

Chapter- 5, Nutrition of Mother and Child reflects the nutritional requirements of mother during pregnancy, lactation and standard of breastfeeding practises that are adopted by mother which is

also not a universal phenomenon. This chapter reflects the nutritional status of children. Some states have shown stunted growth, underweight and malnutritional children because of lack of proper diet of the children but other did not show this picture.

Condition is very poor in Bihar, Uttar Pradesh and Madhya Pradesh as the children of these states are suffering from the problems of undernutrition, malnutrition and stunted growth. So these states reflect the worse nutritional status of children in comparison to the other states of India. Only Kerla is the state that show satisfactory nutritional status of mother as well as of child. So trend and Pattern of Maternal and Child Nutrition is varying across the states in India.

Chapter- 6, Status of Maternal , Child Health and Nutrition in India explains all the indicators taken at various levels to evaluate the states while determining the Maternal and Child Health across the states in India. So for this purpose a Composite Rank Index Table has also been constructed. After this four status categories have been made and corresponding to these categories the different states have been arranged.

The states which falls into the poor and very poor status categories in the context of maternal and child's health and nutrition are those states which are economically backward, have low literacy rate, lack of health facilities, lack of knowledge and awareness to look after the children in their growing period, low age at marriage, preference of son, devoid of basic infrastructure in hospitals like doctors, medicines etc., poor nutritional diet to mothers and children.

On the otherhand, states that are on the top of the hierachy of the status granted to women and child has reflected there advanced stature in comparison to the backward states such that these states have been termed the advanced states.

Very poor status in terms of Maternal and Child's Health and Nutrition is reflected by Meghalaya, Gujrat, Assam, Bihar, Madhya Pradesh and the Uttar Pradesh. The states having poor status includes Orissa, Rajasthan, West Bengal, Tripura, Nagaland and Maharashtra. The states which show good status are Haryana, Arunchal Pradesh, Panjab, Karnatka, Andhra Pradesh, Himachal Pradesh and Jammu & Kashmir

and the states which have shown very high status includes Kerla, Mizoram, Manipur, Goa, Tamilnadu and Delhi.

7.2 Conclusions

Conclusively we can say that those states that are showing very poor and poor status of Maternal, Child Health and Nutrition should be given more consideration because these states are backward and have low level of education and week infrastructure and superstitious nature of masses are responsible for their present condition.

To come out from current conditions and enhance the status of mother and child in these states , some strong steps should be taken. First of all strong Political will power is necessary for this. Secondly , To enhance the level of education especially in rural areas, all type of help whether it is monetary or site location should be given by the government.

Thirdly, Special incentives should be given to the doctors, teachers who want to serve in rural areas. Fourthly, Non-Governmental Organizations help should be taken in providing basic facilities to the people like opening of primary health centres etc. Fifthly, Mid wives or Dhais should be trained for the deliveries. Sixthly Emergency care facilities should be provided specially in the in rural areas. Seventhly, Awareness campaign should be launched from time to time about various infectious diseases and about the cure.

Bibliography

Dissertation and Thesis

- Anil Kumar, Health care, delivery System in India- Regional Analysis, Centre for the study of Regional Development, School of Social Sciences, Dissertation, Jawahar Lal Nehru University, New Delhi, 1991.

- Behera (Bijaya Kumar), Health Status of Women in Rural India- A Sociological analysis, Centre of Social Medicine and Community Health, School of Social Sciences, Jawahar Lal Nehru University, New Delhi, Dissertation, 1986.

- Rani.E.Sudha, Women's Welfare in Andhra Pradesh, Dissertation, Jawahar Lal Nehru University, New Delhi , 1991.

- Sengupta, Sreejata, Child Health in India, Centre for economic studies and Planning, Dissertation, 1994, Jawahar Lal Nehru University, New Delhi.

- Anandalakshing, P.N., Determinants of Maternal Mortality- An Epidomiological Approach, Phd. Thesis, Submitted to the All India Institute of Medical Sciences, New Delhi, Dec.1989.

- Too, GH, Babi, Social Development of Women and Children in Jammu.& Kashmir, Jawahar Lal Nehru University, New Delhi, Thesis 1996.

Books and Articles

- Abusaleh Shariff, Health transition in India ; National Council of Applied Economic Research, New Delhi, Oct. 1995

- Ahmad Alia, Women and Fertility in Bangladesh, Saga Publication, 1991
- Annual Reports 1994-95, Ministry of Health and Family Welfare, Government of India
- APTE, JS - Population and Family Planning in India, 1947 – 97. ,New Quest (July – August 97).
- Arvind Pandey, Infant and Child mortality in India, National Family Health Survey Subject report, Number 11, Dec. 1998
- Bajaj, Jatinder , Knowledge and Utilization of Maternal and Child Health Services in Delhi Slums, Journal of family welfare, April 1999.
- Balakrishnan, States sponsored health care in rural Uttar Pradesh, Sociological Bulletin, March 1996.
- Banerjee, Health Policies and Programmes in India in the Eighties, Economic and Political Weekly, 21st March 1992.
- Beulah Raja, "School Health Programme in selected Middle School of Delhi, National Council of Educational Research and Training, 1970.
- Centre for Regional Development Studies, Health and Family Planning, Jawahar Lal Nehru University, New Delhi,1976.
- Chandra Jai Shree, Women and Child, Rawat Publication , Jaipur, 1993.
- Chapla Pandey, Small family Norms and the role of women, India, Vivek Publication , New Delhi, 1978.

- Centre for Economic Development and Administration,"Women and Development", Tribhuvan University, Kirtipur, Kathmandu, Nepal, 1977.
- C. Gopalan, "Nutrition and Health Care- Problems and Policies", special Publication series I.,1971.
- C. Gopalan, "Combating Under Nutrition—Basic issues and Practical Approaches", Nutritional Foundation of India, Special Publication Series 3, 1981.
- Dhanlakshmi, Childhood Morbidity in Rural areas, Inter State Publication, 1993.
- DOWSHELL and HEWISON, Mother's employment and child health care. Journal of social policy, July 1992.
- Durga Prashad and Sreenivasan, Rural Health in India : Perspective and Programmes , Himalayan Publication, March 1991.
- EGWU (IGBON), Community based primary health care in Nigeria : Constraint of bio-medical and cultural orientation, Journal of rural development, March 1992.
- Family Welfare Programme in India, Year Book 1993-94, Ministry of Health and Family Welfare , Department of Family Welfare , Govt. of India, New Delhi
- Family Welfare Programmes in India, Year book 1994-95.
- Fuller, Bruce and others. How do mother's choose child care : Alternative cultural models in poor neighbourhood, sociology of education, April 1996.

- Galler (Janima R.), Nutrition and Behaviour, Cambridge University Press, New York, 1984.
- Gupta (Narender) and others, Health of women and children in Rajasthan, Economic and Political weekly, 17 october 1992.
- H.P.S. Sachdev, Nutrition in the Children of Developing Countries, Dept. of Pediatrics, Maulana Azad Medical College, New Delhi, 1995.
- India Nutrition Profile , Department of Women and Child Development, Ministry of HRD, Government of India, 1998.
- India, Ministry of Health and Family Welfare," Safe Motherhood" Feb.1991.
- Indian council of Medical Research, Recommended Dietary Intake for Indian, New Delhi, 1984.
- Indian Council of Medical Research, "Nutrition of Mother and Child P.P. 91-143.
- Jejeebhay, Women reproductive health ; priorities for family welfare programmes, EPW# 32, 14th March 1997.
- J.Jarett Clinton, "Health, Population and Nutritional System in LDC's Washington D.C. 1991.
- K.K. Verma," Health Care and Family Welfare, India, Kalayani Publication , New Delhi, 1992.
- Kakar, Women and Family Planning, Sterling Publisher, India, 1984.

- KOPPARTY, Health Status of Schedule Caste, Journal of social changes Volume one, March1991.
- Kuldip Kaur, "Promotion of Small family Norms through Innovative methods, CRRID, Feb.1997.
- Margaret and Pinstrup, "Nutrition and Development, Tokyo, UN University, 1985.
- Monika Das Gupta, "Women Health in India Risk and Vulnerability, India, Saga Publication New Delhi, 1995.
- MUHURI, Pradip K. Health Programs, maternal education and differential in child mortality, Bangladesh # Population and Development Review 21(4); Dec. 1995
- M.R. Bone, " Child Growth and Health", Book, Family formation Pattern and Health , WHO 1986
- Nancy Davis, "The Health of women Beyond Maternal and child Health from book Health and Development edited by David R. Philips, New York, 1981.
- National Family Health Survey Report , International Institute For Population Sciences Mumbai, India
- National Seminar held in Srinagar on 28-30 Oct.1985,"Towards the implementation of a National Nutrition Policy in India.
- PAHAWA and KHANMA, Comparitive study of nutritional status and personality traits of children belonging to working and non-working mother's, Asian Journal of Psychology and Education, 1991.

- PEBLEY, ANNE and others, Prenatal and delivery care in Guatemala # Demography # 33 (2), May 1996.
- Priya (Ritu), Health care in eigth plan, economic and political weekly, 18th august 1990.
- Rajna P.N and others, Impact of maternal education and health services on Child mortality in U.P ; Asia-Pacific Population Journal, 13(2) 1998, June 27-28
- Rajyalakshmi, Santhal Women : Areas of Health Ignorance, Social Change 22 (2) June 1992.
- Ram and others – Utilization of Health Care Services by the underpriviledged section of population in India : Results from NFHS IASSI QUARTERLY, 16 (314), 1998 (Jan – June).
- Ramchandran (Prema), Need of organisation of antenatal and intrapartum care in India, Demographic India 21 (2), July – December 1992.
- SHAH(CH) and others," Nutrition gap", Himalyan Publication, 1983.
- Sood, A.K and Nagla . Factor affecting Maternal and child health # Indian Journal of Social Work, 54(4); Oct.1996
- Strategy for improved Nutrition of children and women in Developing Countries-A UNICEF Policy Review 1990-91, New York, U.S.A.
- Swaminathan (M), Child care services in Tamilnadu, EPW 26(52); 28 Dec. 1991

- Tandon, "Role of ICDS in Promoting Maternal and Child Nutrition, Indian Council of Medical Research, 1984-85, P.P 461-481.

- Vincent J. Aderso, "Psychological Perspective of Women's Health, U.S.A. 1994.

- Y.K. Husain, M.A. Husaini, "Maternal Malnutrition, outcome of Pregnancy and a simple tool to identify women at Risk, Ministery of Health, National Institute of Health Research and Development, Bogor, Indonesia.