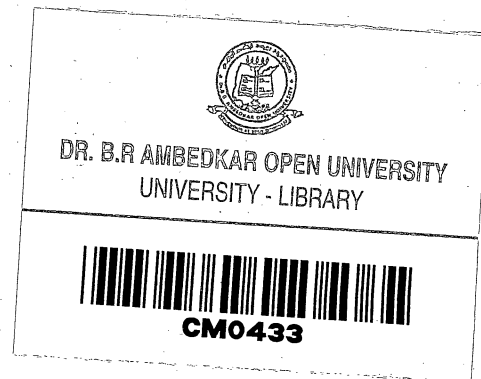
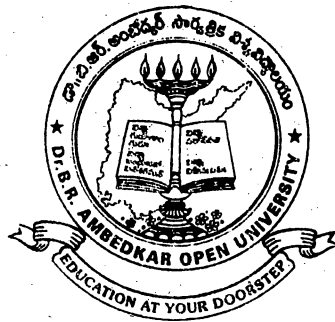


SOCIOLOGY

SOCIAL DEMOGRAPHY



Dr. B.R. AMBEDKAR OPEN UNIVERSITY
Hyderabad
1993

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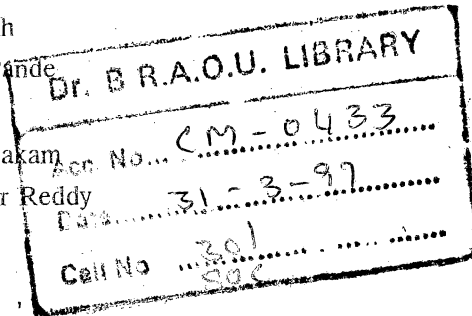
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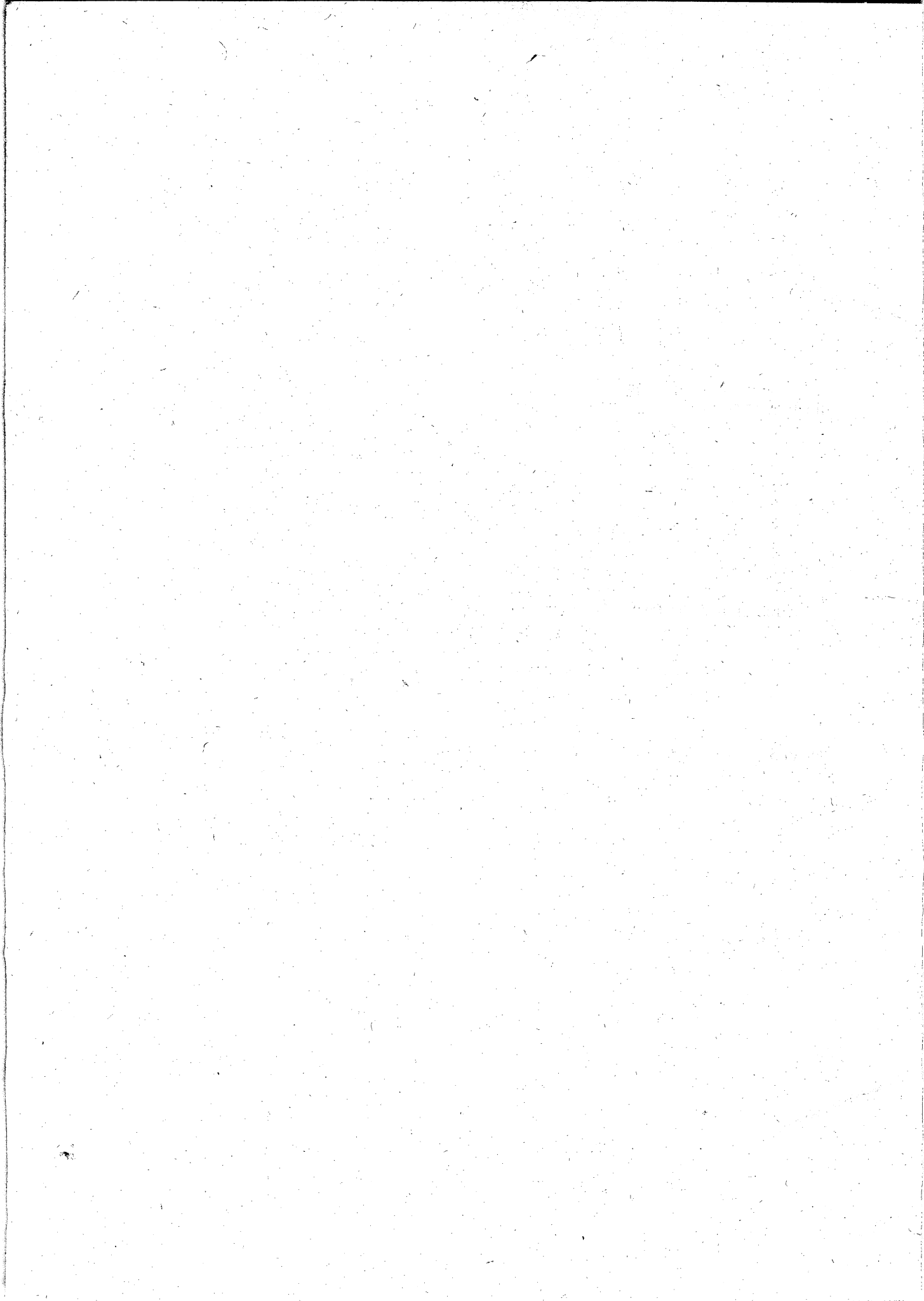
PREFACE

One of the seemingly intractable problems faced by our country is that of "Population Explosion". Despite the impressive performance of our Family Welfare Programmes there has been a phenomenal growth of population which tends to neutralise whatever economic benefits have accrued from our developmental efforts. Indeed India's efforts judged from any standard is praise worthy, international agencies and organizations like the World Bank have highly commended it. The problem of growing Population is not as alarming today as it was a couple of decades ago. Yet we have not succeeded in arresting the growth of population, let alone lessening it. Students of Social Sciences have to be aware of its implications and ramifications. The science that deals with theories and issues relating to population is called "Demography". This course titled Social Demography discusses the major aspects of the problem of population, the measures and strategies to be followed by society and government to contain the population.

This book deals with topics in Social Demography included in the Third Year programme of the undergraduate course in Sociology offered by the Andhra Open University. The syllabus for the sake of convenience is divided into Blocks each of which comprises a number of units. The course is divided into broad areas each of which is dealt with as a separate Block. The Units are prepared by specialists in accordance with a format so designed as to enable the student to read and understand them without much difficulty. Each unit begins with a statement of its Aims & objectives followed by an Introduction, self check exercises in between and has at its end assignments for self-assessment.

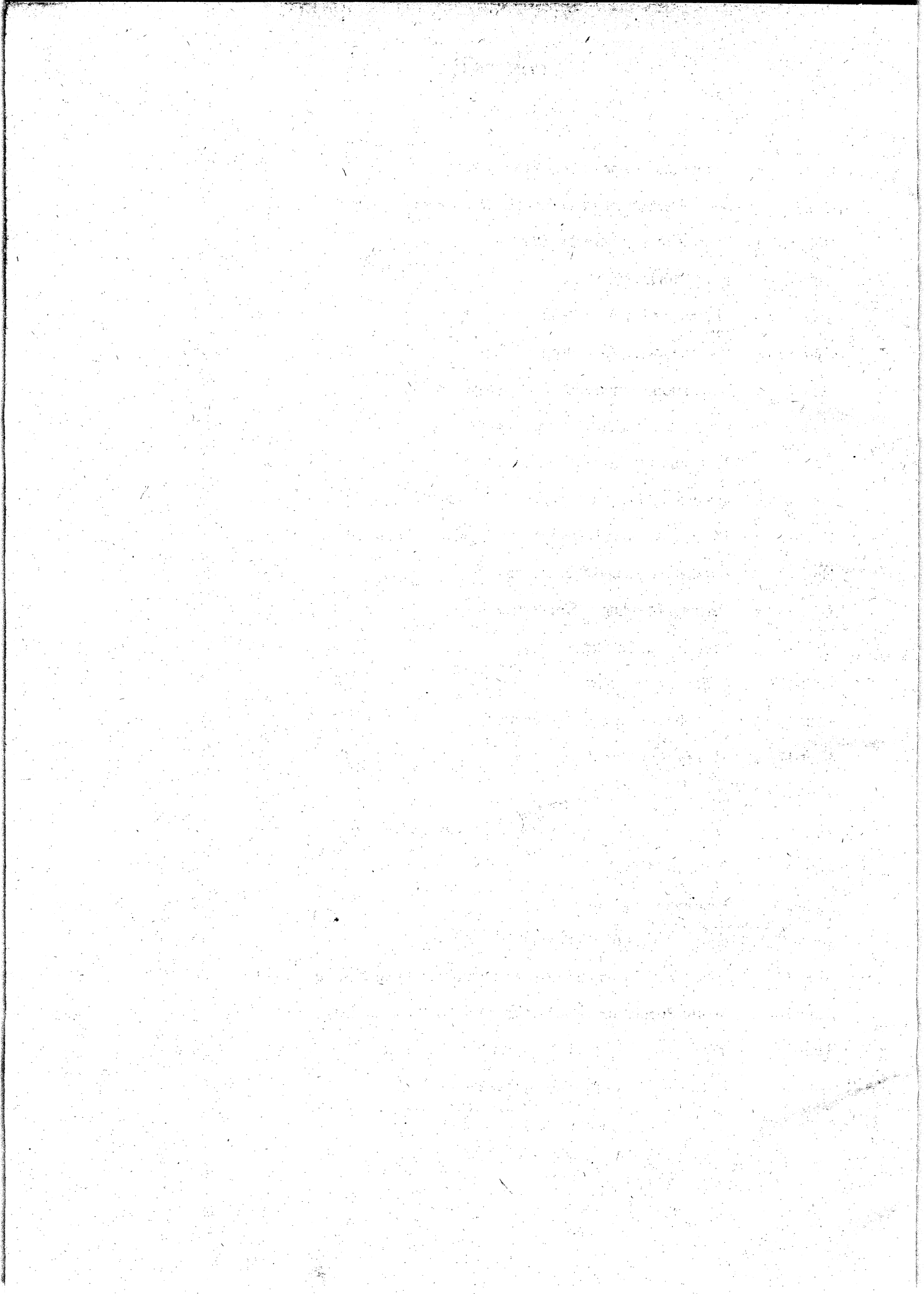
The syllabus is divided into seven Blocks. The first Block presents an overview of the entire field of Demography. The second Block discusses the population theories including the Pre-Malthusian and the Post-Malthusian. The third and fourth blocks deal with the nature of population and the aspects of fertility. The fifth Block examines crucial issues concerning Mortality. The Sixth Block focuses on the types, factors, and the consequences of migration, while the last Block sets forth a discussion of the various questions raised by unchecked growth of population with special reference to India.

The University hopes that this material will help the student to understand the principal issues in Social Demography.



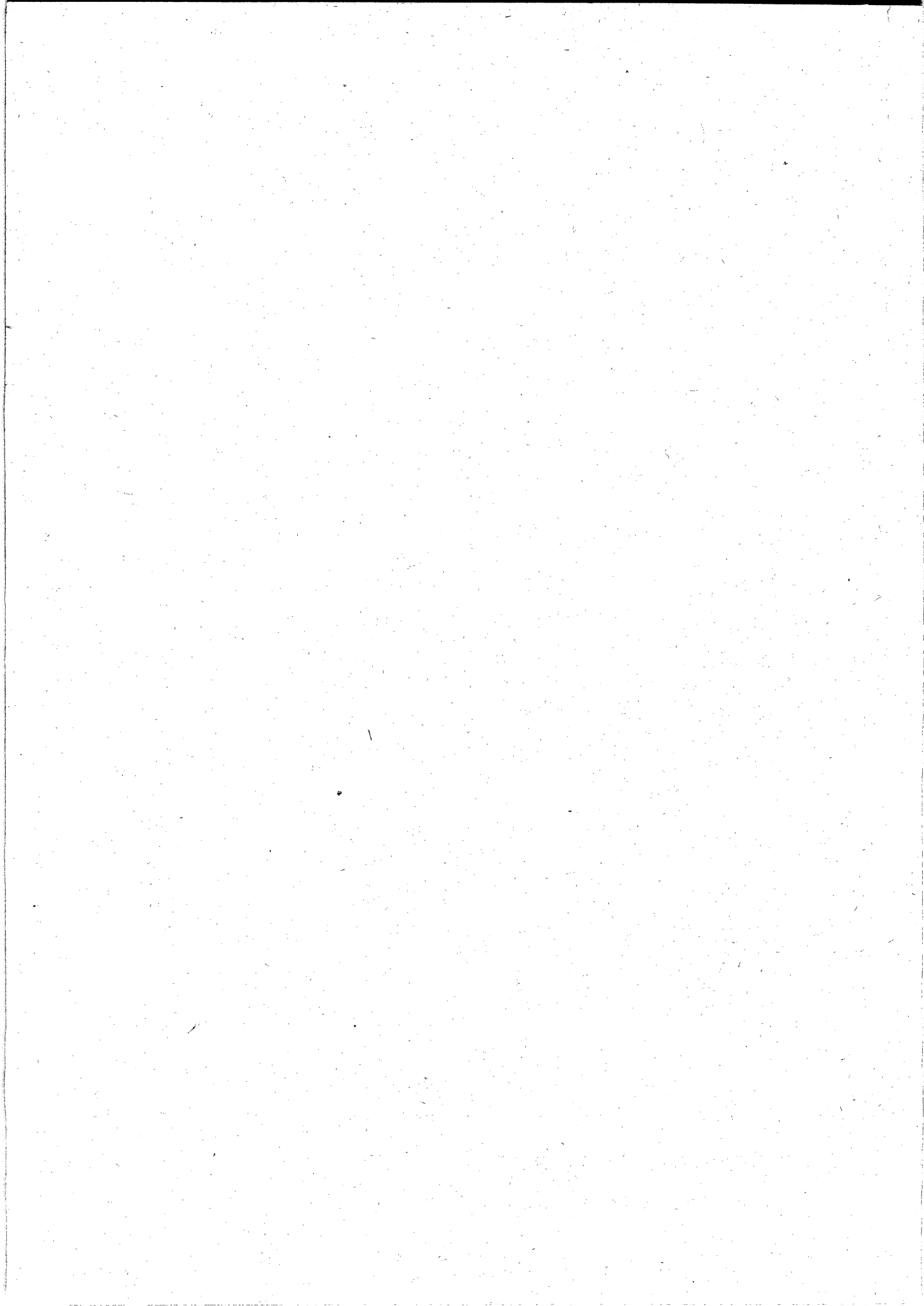
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BLOCKS : I to VII

- BLOCK I FIELD OF DEMOGRAPHY**
- BLOCK II POPULATION THEORIES**
- BLOCK III COMPOSITION OF POPULATION**
- BLOCK IV FERTILITY**
- BLOCK V MORTALITY**
- BLOCK VI MIGRATION**
- BLOCK VII POPULATION PROBLEM**



UNIT-1 : NATURE AND SCOPE OF SOCIAL DEMOGRAPHY

Contents

- 1.0. Aims and Objectives
- 1.1. Introduction
- 1.2. Meaning and Definition of Demography
- 1.3. Scope of Demography as a Science
- 1.4. Distinction between Demography and population studies
- 1.5. Meaning and scope of social Demography
- 1.6. Nature of social Demography
- 1.7. Summary
- 1.8. Suggested Books
- 1.9. Model Examination Questions

1.0 AIMS AND OBJECTIVES

The main aim of this unit is to enable you to understand the impact of population growth on our life and on the future of the world and to present an overview of the basic nature and scope of demography as a science.

By the end of this unit you will be able to :

- define demography,
- explain the scope of demography as a science,
- explain the nature of social demography.

1.1 INTRODUCTION

The phenomenon of population constitutes the domain of a special science known as demography which emerges as one of the earliest of the modern social sciences. It played an important part in the 18th century in stimulating the growth of social sciences and it has remained closely associated with sociology. For many years studies in demography were confined mainly to countries of Western Europe and the United States and demography has become a separate course of instruction in only very few universities in India. However, the study of demography is assuming greater and increasing significance not only in India but all over the world. This is because the ever-growing population in the world in general and in developing countries in particular is straining social, economic and even the political systems of the nations. One of the compelling reasons to study demography, therefore, is that population growth can compound and magnify, if not create, a wide variety of social, economic and political problems.

1.2 MEANING AND DEFINITION OF DEMOGRAPHY

Basically demography is the science of population. The word was coined by a Belgian, Achille Guillard in 1855. The term demography is derived from two Greek words-demos the people and graphy to draw or write. The Multilingual Demography Dictionary published by U.N in 1958 defines demography as "the scientific study of human populations, primarily with respect to their size, their structure and their development". Hauser and Duncan took a more

comprehensive view in defining the discipline of demography covering more clearly its nature and scope. To them, demography is the "study of size, territorial distribution and composition of population, changes therein, and the components of such changes, which may be identified as mortality, territorial movement (migration) and social mobility". In the light of the above definitions it is reasonable to say that demography the scientific study of population, is concerned with the size, structure and characteristics of the population, its distribution and the changes taking place in it over a period of time. Since the components of change in the size, structure, characteristics and distribution of population are fertility, mortality and migration, the subject matter of demography includes explanation and analysis of these components also. In other words a study of any population is made through a study of its births, deaths and movements since the size, growth, composition and distribution of the people are determined by them. Therefore, to put it in a nutshell, demography studies the determinants and consequences of population trends.

CHECK YOUR PROGRESS.

1. Define demography

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1.3 SCOPE OF DEMOGRAPHY AS A SCIENCE

The three main aspects that come under the nature of population study are discussed below:

1. **Size:** Size is simply the number of persons in the population. When we talk of the size of the population we take that aspect of the study which deals with such problems as to how many people are living in a given area, what changes are taking place in the size of the group and how these changes are effected. In other words, the aim is not only to find out how many people live in a given place at a given time but also to have a comparative approach, namely, whether the number is larger than what it was and what will the future number be. Besides that, a demographer is also required to tell the causes of changes that occur in the size of the population. These causes may be due to alterations in the birth, death and migration rates.

2. **Structure :** A study of the structure and characteristics of population is an important aspect of the study of population. The term 'structure' covers all the measurable characteristics of the people who form a given population. Generally the structure or composition of one population differs in a number of ways from that of the other. For example, in one population females may be more than males. In another population educated may be more. In yet another population old people may be more than the young. Therefore the study of population attempts to answer the questions: What kind of people are found in a given population and how do they differ from other population? The scope of the study thus embraces the personal, social and economic characteristics of a given population in terms of their age, sex, race, religion, marital status, literacy, employment and household compositions. In addition, it is also necessary to seek explanations for any changes which may have occurred and visualise the consequences of these changes on the birth, death and migration patterns of the population.

3. **Distribution :** It refers to the arrangement of the population in space at a given time. The study of any population is concerned not only with its size and structure but also with the patterns of distribution into various spatial divisions and the changes that occur in it over the years. A study of population distribution is thus descriptive as well as explanatory.

Thus the size of the population, the manner in which they are distributed over the territory, the rate in which they are decreasing or increasing and the extent to which they are young or old, male or female, married or single, rural or urban, in the labour force or out of it, literate or illiterate and so on are of basic importance in all the undertakings of mankind. Also at the broad national level, information about the number of inhabitants, their characteristics and recent trends with respect to each are basic in connection with the formulation of policies relating to agriculture, industry, education, social security etc. Certainly these matters deserve careful, objective and scientific study.

CHECK YOUR PROGRESS.

2. What are the aspects which are studied under the nature of population?

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1.4 DISTINCTION BETWEEN DEMOGRAPHY AND POPULATION STUDIES

The discipline of the study of human population is known by two terms, demography and population studies. While demography is defined as the science of population, population studies can be understood easily as studies concerned with people. Though these two terms are often used interchangeably, there seems to be a subtle difference between these two, namely “scientific demographic analysis” and “population studies”. It is considered that demography analysis is confined to a study of the components of population variation and change, whereas population studies are concerned not only with population variables but also with the relationships between population changes and other variables, namely, social, economic biological, geographical and the like. In other words, the term demography may be used in a narrow sense as synonymous with demographic analysis of the components of population variation and change, and when conceived in a broad sense the term demography includes the study of interrelationships between population and socio-economic, cultural and other variables, in addition to the quantitative study of population. What we call formal demography is the gathering, collating, statistical analysis and technical presentation of population data. Population analysis and technical presentation of population data. Population analysis is the systematic study of population trends and phenomena in relation to their social setting. However, many scholars do not approve of creating such an artificial distinction between demography and population studies and according to Bogue and Lorimer the concept of pure demography is an illusion. Any meaningful and comprehensive study of population, therefore, has to be interdisciplinary.

Even though demography is mainly a social science, it becomes a multidisciplinary science with a technical side and a substantive side. While the former deals with the statistical treatment of demographic phenomena, the later deals with the relationship between demographic processes on the one hand and social, economic and ecological factors on the other. Therefore, a statistician with a good background in one or more social sciences or a social scientist with a knowledge in the application of statistical techniques becomes a competent demographer.

CHECK YOUR PROGRESS.

3. What are the aspects which are studied by population studies?

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1.5 MEANING AND SCOPE OF SOCIAL DEMOGRAPHY

Social demography is concerned with relationships between social and demographic phenomena. The area of intersection between demographic system and social system defines the field of social demography. Conceived in general terms, the major concern of social demography can be said to be the analysis of the interrelationships of general, and cultural factors with population structure (size, composition and distribution) and population behaviour (fertility, mortality and migration). In the study of such interrelationships, social and cultural factors are viewed as independent variables that account for empirical regularities in population size, structure and processes. Much of the research in social demography has been of this type. Yet, social demographers are not exclusively interested in the social and cultural determinants of population structure. Questions about the way changes in population affect various aspects of society and culture are also important. Therefore, pure demographic variables are treated as causative factors to study the ways in which changes in them affect various aspects of society and culture. In other words, social demography is not exclusively concerned with the explanation of demographic behaviour through reference to social systems, it is also concerned with the effects of demography systems on the operation of social systems. As soon as the demographer goes beyond measurement and calculation to study the causes or consequences of population changes, he enters the domain of sociology. The most interesting demographic problems have always involved social factors of the kind with which sociology is concerned. At the same time, it is evident that for the sociologist the size, distribution and qualities of the population constitute the basic data. Thus, there is a reciprocal relation between population and social structure. Drawing on a tremendous variety of fertility research, social demographers derive a model of social factors that affect fertility and also poses some hypotheses relating specific social variables to fertility. Similarly studies are there on various social and cultural values and practices that contribute to infant mortality in India. Further, social demographers are also interested in migration as a process where by individuals leave one population system and enter another. Their major concern is the extent to which the size and composition of the two systems is altered as a consequence, and they also consider the absorption of immigrants by the society to which the people migrate. The particular concern of social demographer is with what factors determine the degree to which migrants adapt to, or are assimilated by the society to which they migrate. Similarly a social demographer may combine his interest in fertility with the familial organization, or focus on internal migration with a concern with urbanization. In this way a whole network of social demography arises which bridges sociology and demography. In fact, demographic processes are part of social processes and the demographic situation at any period of time is built up from a mass of individual acts in which the active conscious will of each person manifests itself.

CHECK YOUR PROGRESS.

4. Define social demography.

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1.6 NATURE OF SOCIAL DEMOGRAPHY

Demography contains elements of both social and policy oriented science, and which of the two has been dominant in a given period has markedly affected the nature of theory and empirical analysis. A social scientific orientation characterised the work of western demographers from the turn of this century as they sought to explain fertility and mortality declines as a consequence of industrialization. Demographic transition theory, the culmination of this effort, when applied in the 1940s to the prospective experience of the non-industrialized nations appeared to foreshadow a crisis of population growth outpacing economic growth. Therefore, the need for intervention to avert crisis of population growth led to calls for efforts to induce fertility decline, particularly among highfertility peasant societies like ours. This shift from social scientific orientation to policy orientation is visible in the works of demographers all over the world for the past 30 years or so. At the moment, population problems are to be viewed not in isolation, as a demographer's playground, but as a part of the of social, cultural, economic and political systems and through proper analysis of their linkages between population size, growth and distribution. The skilled demographers should be able to prescribe alternative solutions to these problems so that the resources available in the country are properly utilized. Particularly, problems of interrelationships between economic growth, income distribution, literacy, health and population growth are to be studied in detail and alternatives viable under a given cultural-political milieu of the country are to be provided to policy makers as early as possible. The population problem facing today is a colossal one calling for dedicated attention and service by experts working in the field of population issues.

Problems related to population are complex in their nature and multifaceted. They encompass not merely their size and growth of population determined by the difference between birth and death rates but they also include personal and social attitudes and actions in an intensely personal area, such as reproductive behaviour. Moreover, they are concerned with qualities and characteristics of people their health, environment, education, employment and the like. They further impinge upon and are affected by cultural heritages, religious values and social institutions. In fact, today, there are more areas of activities which are concerned with population that have not been studied in this specific context than those that have been.

Apart from all this, we also have to remember that the world consists of not only different geographical regions, but also areas with varying degrees and shades of social and cultural heritage and perceptions, behaviour patterns and ideologies. Each region or country has to fight therefore, with population growth problems according to its own policies and programmes tailored to its needs. Acceptance of contraceptive and birth control practices will have to be interwoven into the changing social fabric of each society where, from person to person, generation to generation this knowledge and behaviour pattern is transmitted in an organized manner to avoid tensions, without losing cultural and social values. All this is the challenging task for social demographers all over the world.

The European country which has placed most emphasis on sociological aspects of demography is France. In Great Britain too, considerable emphasis is being placed on the sociological perspective of demography. In the United States most of the teaching and research in population is done by people trained in sociology. In our country the same trend is picking up in recent years. The profession can more rightly be optimistic about its future because of a growing and very active market in the developing countries like India where the needs for comprehensive knowledge about population growth and structure are most urgent. Students of demography in these countries started paying attention to the social and economic aspects of population

change. The discipline of population studies is no longer confined to statistical data and analysis without reference to the social and cultural setting in which population phenomena takes place.

In the next lesson, you will know more about the multidisciplinary nature of demography and the relationship between demography and other social sciences.

1.7 SUMMARY

Basically demography is the science of population. Demography studies the determinants and consequences of population trends. The main aspects that come under the nature of population study are size, structure, distribution and growth. The discipline of the study of human population is known by two terms- demography and population studies. Population studies can be understood easily as studies concerned with people. The area of intersection between demographic system and social system defines the field of social demography.

1.8 SUGGESTED BOOKS

Asha Bhende and Tara kanitkar	:	Principles of Population Studies.
Hans Raj	:	Fundamentals of Demography
Bogue D.J.	:	Principles of Demography
Bhattacharya	:	Population Studies
Thomlinson	:	Population Dynamics
S.N. Agarwala	:	Population Problem in India.

1.9 MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. Bring out the nature and scope of social demography.
2. Discuss the sociological perspective of demography.

II. Answer the following in about 10 lines each.

1. Distinguish demography from population Studies.
2. Is demography a social science or policy oriented science? Explain.
3. Explain the scope of demography as a science.

UNIT-2 : SOCIAL DEMOGRAPHY AND OTHER SOCIAL SCIENCES

Contents

- 2.0. Aims and Objectives
- 2.1. Introduction
- 2.2. Inter disciplinary Nature of Demography
- 2.3. Relationship with other Social Sciences
 - 2.3.1. Demography and Sociology
 - 2.3.2. Demography and Economics
 - 2.3.3. Demography and Human Ecology
 - 2.3.4. Demography and Geography
 - 2.3.5. Demography and Social Psychology
- 2.4. Summary
- 2.5. Suggested Books
- 2.6. Model Examination Questions

2.0 AIMS AND OBJECTIVES

The main aim of this unit is to discuss the relationship of demography with other social sciences.

By the end of this unit you will be able to :

- explain the inter disciplinary nature of demography,
- explain the relationship of demography with other Social Sciences.

2.1 INTRODUCTION

In the previous unit we have studied about the meaning, definition and scope of demography. In this unit we will study about the inter disciplinary nature of demography and its relationship with other social sciences.

2.2 INTER-DISCIPLINARY NATURE OF DEMOGRAPHY

In spite of the early scientific efforts of demography pioneers such as John Graunt and William Petty and the early interest of economists like Malthus in population matters, progress in the field of demography was not continuous. Like the other social sciences, demography has tended to develop, at least in part, in response to existing conditions or problems and hence progress was uneven. The emphasis given to mathematical and biological aspects of population trends during the 19th century hampered the formation of consistent and integrated theories in relation to which applied research could unfold. The largely statistical orientation of population studies in the beginning of the 20th century was encouraging, though insufficient. Thus, many components of this scientific discipline remained to be established in order to make demography a partner of other sciences on an equal footing.

The concept of 'Pure demography' is an illusion and on the contrary significant demography is necessarily interdisciplinary. However, demography enjoys a very enviable status among the social sciences since it interacts freely with all and finds itself incompatible with none. It never competes directly with nor duplicates the work of any of the other social sciences but makes extensive use of the principles, theories and methods enjoyed by all of them. It contributes directly to theory and research of all other social sciences. Trends in population size, composition and distribution are of interest to all the social sciences. Similarly most of the variables, theories and models that explain demographic events come from other social science disciplines such as Sociology, Economics and the like. Thus, demography is not and cannot be a single theoretical discipline with a coherent frame of reference of its own.

The statistical measurement of fertility, mortality and migration forms the core of formal demographic analysis. Formal demography stands out among the social sciences in its strong emphasis on quantification and its use of precise mathematical models and various statistical techniques. However, the study of population is not, confined to measuring, counting, collecting and analysing statistical data. For, it is evident that fertility, mortality and migration are not independent variables, they are to a large extent socially and biologically determined, The number of births, deaths and migrations are affected by a whole host of physical, biological, social and psychological factors. In turn, population changes have far reaching effects on the social organization and the economic system of the societies in which they occur. Any meaningful interpretation of the causes and effects of population changes must therefore extend beyond formal statistical measurement of the components of change and draw on the theoretical framework of several other disciplines as economics, sociology, geography and psychology. The changes in the birth rate cannot be explained as independent phenomena. Rather, their explanations have to be sought in the changing economic, social, cultural, psychological and political situations in which they occur. Similarly, the levels and trends in mortality are related to socio-economic factors.

Thus, though it is possible to speak broadly of the inter- relationships between demography and other social sciences considered together, it would be useful to treat each of the social sciences separately to understand their inter- relationships.

2.3 RELATIONSHIP WITH OTHER SOCIAL SCIENCES

2.3.1 DEMOGRAPHY AND SOCIOLOGY

Demography is not merely a collection of facts and figures about the size, structure, distribution and processes of population. It is a social science that deals with the basic social institutions of human society like marriage and family. While demographic study is more quantitative in nature, sociology, usually comprises nonquantitative description and generalizations about social patterns, social relations and social structures that are not expressed in quantitative terms. In demography, we study the population more by its distributive aspects in the society (like age and sex distributions), but in Sociology, we study the aggregate phenomena of human society in terms of the culture, social relations and social institutions of the people. Human society is nothing but a collection of individuals and therefore the survival of the society depends upon the demographic traits like births and deaths. However, the survival of population is not a question of demographic phenomena only. Human societies also depend for survival upon such essential functions like socialization, education, maintenance of social order and control and communication etc.

Therefore, social demography is concerned with the relationships between social and demographic phenomena. It is concerned with social causes and consequences of demographic behaviour. The relationship between demographic and sociocultural factors is usually reciprocal in nature. Social demography can be more accurately characterised as an area of interest rather than a separate discipline. The influence of social and psychological factors - attitudes, values, norms and beliefs on demographic processes has become an increasing concern of social demographers. Similarly, sociology which in some countries had paid significant attention to

demography, recently has been influenced by new tendencies in population studies. Most of the social demographic theory is basically dependent upon sociological theories or laws of explanation. Family formation and fertility became a subject area of great interest, as did the interrelations between population change and social change in the broadest sense. Sociology has also contributed substantially to the fields of urbanization, migration and patterns of spatial population distribution. Sociologists are also interested in studying the complex and intricate set of questions related to social and cultural norms affecting fertility and family planning adoption and the nature of communication and decision making process between the couples. Kingsley Davis, Ronald Freedman and D.J.Bogue etc. are all leading contemporary social demographers who explained demographic behaviour in sociological perspective.

The relationship between sociology and demography becomes clear when one treats the problems of population as social problems. For example, over population should be treated as a social problem and the whole outlook of the society will have to be changed. As soon as the demographer goes beyond measurement and calculation to study the causes or consequences of population changes he enters the domain of sociology. The most interesting demographic problems having always involved social factors of the kind with which sociology is concerned.

CHECK YOUR PROGRESS.

1. What do you study in Sociology?

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2.3.2 DEMOGRAPHY AND ECONOMICS

The study of population within economics, neglected for a number of decades, has undergone a change. Population has become a prominent subject area within economics in relation to the problems of economic development of the third World and to development planning. A number of topics such as population and development, manpower studies, the economics of fertility and more comprehensive economic-demographic models, were developed in an attempt to better understand the interrelationships between population trends and economic growth. It has been even claimed that the number and quality of the population that can exist on the earth in the future will depend on, among other factors, economic opportunities and economic organization. Population growth, size and distribution cannot be discussed rationally except in the context of economic growth or change.

Population problems are directly linked and connected with employment, per capita income, production and distribution of commodities etc. As a means of labour force, population becomes a source of production where as changes in population influence labour force and the sources of production. In countries where there is more population, labour intensive techniques bcomes more popular and necessary. On the otherhand, in countries with less population, capital intensive techniques find more popularity. In this way both the disciplines are closely linked with each other.

However, both economics and demography have quite a separate entity and existence. The scope of economics is quite wide and vast. It includes production, distribution, consumption, etc. It is concerned with the planned use of economic resources and suggestes the ways in which these resources may be exploited. On the other hand, the field of demograpy is very limited and narrow concerning with the studies pertaining to human fertility, mortality and migration. Despite all this, it is difficult to think of areas of social and economic planning without recognizing the need for developing the collection and analysis of demographic data.

CHECK YOUR PROGRESS.

2. What do you study in Economics?

The relationship between sociology and demography becomes clear when one treats the problems of population as social problems and the whole outlook of the society will have to be changed. As soon as the

2.3.3 DEMOGRAPHY AND HUMAN ECOLOGY

The main problems of human ecology can be set forth in terms of four referential but related concepts, namely, population, environment, technology and organization. Population lives in an environment, it adjusts to it and at the same time it changes the environment also. In other words, the population of an area is affected by the environment around and in turn the environment remains pure or gets polluted by the density and growth of the population.

Human ecologists now-a-days do not furnish just a biological explanation of population but also take into consideration the socio-cultural aspects of population. Human ecologist concerns himself with a wide variety of demographic problems, uses freely demographic data and relies heavily on demographic techniques. Demographic aspects are both determinants of ecological organization as well as determined by ecology. The mutual understanding and cooperation between demographers and human ecologists would solve a variety of problems faced by mankind. Human ecology has profited much more from demography than demography from human ecology. Biological explanations of human fertility and the effect of density are subjects of human ecology and demography.

2.3.4 DEMOGRAPHY AND GEOGRAPHY

Geography is the science of spatial distribution of resources and population. Population geography is a branch of human geography with its own body of material, methodology and perspective. Population geography is the systematic and scientific study and understanding of regional variations in the distribution of population over the surface of the earth. The subject matter of population geography includes location and characteristics of population, spatial pattern in population distribution and interrelationships between population and other elements of geographic environment.

Geographers study the spatial contents of the space, physical and cultural features of earth and the relations of these features with each other. A real differentiation of population their distributional aspects and the study of settlement patterns and settlement interrelations and interrelationships between population and natural resources form the subject matter of geography as also demography. The behaviour of mankind, their food habits, span of life, birth and death rates, division of labour and the type of natural resources they possess are very much the subject matter of both demography and geography.

Geographers, however, study human fertility, mortality and migration and their implications for certain specific regions. Similarly, occupational distribution of population is a subject which is common to the geographers and demographers. The geographers no longer belong to the "landscape school of Geography", but study the racial, societal and economic features of the population. Demographers too have widened their scope of study by including geographical studies in the study of population. What is called population geography has emphasis on spatial dimension in the distribution, density, structure and composition, mobility and migration, dynamics and growth and other demographic processes. It deals with the demographic facts in the environmental context as well as the socio-cultural and characteristics and possible consequences. In short, population geography studies man in all his aspects, an organic characteristic and a differentiating element. By establishing the interrelationships geographic studies aim at finding solutions to the twin problems of over-population and poverty.

2.3.5 DEMOGRAPHY AND SOCIAL PSYCHOLOGY

Social psychology focuses its attention on the complex and intricate set of questions connected with the reproductive behaviour of the couples and adoption of family planning methods. While dealing with demographic aspects, social psychology tries to give answers to questions like; what are the community norms in relation to fertility? What about the attitudes and values of the people towards the adoption of contraceptives? How are they determined? Is it possible to modify these attitudes, values and norms by stimulating planned change? Even in the field of mortality utilization patterns of health care services can be understood only when individual behaviour is explored and analysed. Similarly, the patterns of migrations can reasonably be understood only when the motivating factors behind such movements are known.

Significant research has been initiated in such an area as Population and law in an attempt to examine the effect of legislation and legal institutions on population in general and on the practice of birth control in particular. What we call population laws could, therefore, relate to public health and sanitation, food preparation, distribution and sale of drugs and pharmaceuticals; clinics, hospitals and medical personnel, marriage and child care and all aspects of education and the role and status of women. More recently, ecology and environmental science has focused on population questions with the aim of elucidating such basic issues as the effect of population growth on environmental factors, or in an attempt to promote policies necessary to prevent pollution. Similarly another dimension has been added to the study of population, namely demographic questions such as those related to fertility regulation are examined with references to humanistic issues such as human rights and the status of women.

2.4 SUMMARY

Thus, the science of population is closely related to almost all social sciences. That is the reason why, demography is known as a multi-disciplinary science. Of all the human sciences, demography is the one that can least afford to do without the other sciences. In fact, the credit of making demography a practical and most useful science goes to all social sciences. However, all this does not mean that demography as a science has no independent stature of its own. Though its origins were in the other sciences and though it acquired gradually an interdisciplinary character, of late, the science of demography achieved maturity and emerged as a separate discipline carving its own boundaries.

2.5 SUGGESTED BOOKS

- Asha Bhende and Tara Kamalkar : Principles of Population Studies
Bogue, D.J. : Principles of Demography
Hans Raj : Fundamentals of Demography
Bhattacharya : Population Studies
Thomlinson : Population Dynamics
S.N. Agarwala : Population Problem in India

2.6 MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines

1. Explain the interdisciplinary nature of demography.

2. Bring out the relationship and difference between demography and sociology.

II. Answer the following in about 10 lines.

1. Briefly explain the relationships between demography and ecology.

2. Is demography an independent science? Explain.

UNIT-3 : SOURCES OF DEMOGRAPHIC DATA

Contents

- 3.0. Aims and Objectives
- 3.1. Introduction
- 3.2. Population Census
- 3.3. Salient features of population census
- 3.4. Vital Registration
- 3.5. Sample Surveys
- 3.6. Population Registers
- 3.7. Summary
- 3.8. Suggested Books
- 3.9. Model Examination Questions

3.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss different sources of population data, its nature, uses and limitations.

By the end of this unit you will be able to :

- explain what is population census,
- discuss the salient features of population census,
- explain what is vital registration.

3.1. INTRODUCTION

In order to analyse the demographic situation of a given country, we need to know how many people live in it, how many are born and how many are dying, how many are moving in and how many are moving out. The kind of information that we need is often broken down into three categories, namely, 1) population size and distribution, (2) population processes (fertility, mortality and migration) and (3) population structure and characteristics. The primary source of data on size and distribution as well as on the structure and characteristics is the Census of population. The major source of information on the three population processes (fertility, mortality, and migration) is the registration of vital events. In addition, these sources are often supplemented with data from periodically conducted sample surveys and regularly maintained population registers. This lesson presents a discussion of the major sources of demographic data of population related information.

3.2. POPULATION CENSUS

Population census is most important source of demographic information in any country. It is a rich reservoir of information about human society and its composition. For centuries governments of various countries have attempted to know how many people were under their rule. But rarely has their curiosity been prompted by scientific concern, but rather their desire to know who the tax payers were or to identify their potential labourers and soldiers. In the process women and children were ignored. The most direct way to find out the number of people in any place is to take a headcount of them and when you do so, you are conducting population census.

Population census is "the total process of collecting, compiling, evaluating, analysing and publishing demographic, economic and social data pertaining, at a specified time, to all persons in a country". This was probably what the concept of census meant in the early stages or times. The modern concept of a population census is, however, very different. The census not only provides demographic data on the age, sex, marital status and rural urban composition of a population but also provides very useful socio-economic information. All this has become possible by expanding the scope of population census in modern times.

The compiling of census dates back to ancient times when it was attempted in many countries such as Rome, Egypt, Babylonia, India and China. In India, during the reign of Ashoka census operations were often undertaken. The Arthashastra of Kautilya speaks about the collection of population statistics as a measure of state policy for the purpose of taxation. During the rule of Akbar also some population data were collected. Thus, the historical records show that in the earlier periods some sort of counting of population was undertaken occasionally though it was for the limited purposes of taxation and recruitment to military services, etc. Such counting was also sporadic in nature as the operation was undertaken only when the need arose and that too limited to specific segments of population. The modern concept of population census took shape only during 17th and 18th centuries involving a complete enumeration of the entire population and the collection of information about some important characteristics of each person at regular intervals. The purpose was to make out the trends in population growth, its structure and characteristics. The first population census in accordance with this modern concept was carried out in India in 1872. The next census which was conducted in all parts of India simultaneously and with improved coverage was in 1881, and since then the census has been conducted in our country regularly every 10 years. Hence our census is called decennial census. The 1981 census is the 12th census and the recent 1991 is the 13th census undertaken in India.

CHECK YOUR PROGRESS.

1. Define population census.

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3.3. SAILENT FEATURES OF POPULATION CENSUS

A census is conducted by the Government. No other institution can have the legitimate authority and the elaborate and expensive organization required to make a full and accurate enumeration of population. A census is of the population of a strictly defined territory. The census enumeration is in principle universal, including every person in the designated area without omission or duplication. Ideally speaking, a census consists of personal enumeration of each individual in the area covered by it. However, in most countries it means that one adult in a household, usually the head of the household, furnishes information about all the people living in that household. The enumeration of the entire population should be simultaneously made either on a single day or over a period of time.

In India census-taking has been the responsibility of the Union Government from the very beginning. Even today population census is a subject dealt with by the Ministry of Home or Internal Affairs. A senior officer of the Indian Administrative Service with experience in the conduct of census operations is generally appointed as the Census Commissioner. For each State and Union Territory, an Officer designated as the Director of Census Operations is appointed. The enumerator is the basic and the most important link in census operations. He has to visit every household within the area assigned to him and collect the required information.

According to Indian Census Act of 1948, the Central Government is empowered to notify the conditions of census in the whole country or any part of India and authorises Census enumerators to ask the prescribed questions and legally compel all persons to answer those questions truthfully. The Act also guarantees that the information collected from individuals shall be kept confidential, shall be used only for statistical purposes and shall not be used as evidence even in a Court of law.

In some countries, each person is enumerated at the place where he or she is found on the day of the census. In others each person is enumerated at his or her usual place of residence. The former method of data collection is known as the de facto or present in the area method, while the latter is known as the de jure or usual residence method. In India till 1931 census was a de facto census. This practice of simultaneous enumeration of the whole population on a fixed date was given up after the 1931 census on account of some inherent difficulties. The de jure method of enumeration was adopted spread over a period of about three weeks. The modern concept of population census took shape limited to specific segments of population. The census provides us with information about the size of the population in the country and its States and Union Territories, district and taluk wise and town and village wise. From the census tabulations we also get information on such characteristics as sex, age, marital status, literacy, religion and occupation. Census provides instantaneous, detailed picture of the population, the data of which are utilized by researchers, administrators, planners and policy makers. It further contributes to our knowledge of the changes in the nation's occupational and industrial composition, in its levels of literacy and educational attainments, in its levels of living and other cultural characteristics such as religion and language. Census data are also helpful to our estimation of future trends in population, size, growth and composition. Such estimations and projections help us in planning future economic and social needs of children and related requirements of food, water, housing and health services. The Census data are also used for demarcation of constituencies and the allocation of representatives in a democratic set-up. Census data are also useful in providing a base for drawing up samples for various kinds of surveys.

..... In a populous and vast country like India census taking is by no means easy. It is rendered somewhat difficult because of the fact that the population is essentially illiterate and is spread out in rural areas. In spite of the difficulties the India Census authorities may be said to have always done a commendable job and the population statistics obtained through our censuses are considered to be of better than average value.

3.3. SALIENT FEATURES OF POPULATION CENSUS

2. What is de jure method of enumeration? A census is conducted by the Government. No other institution can have the legitimate authority and the elaborate and expensive organization required to make a full and accurate enumeration of population. A census is of the population of a strictly defined territory. The census enumeration is in principle universal, including every person in the designated area without omission or duplication. Ideally speaking, a census consists of personal enumeration of each individual in the area covered by it. However, in most countries it means that one adult in a household, usually the head of the household, furnishes information about all the people living in that household. The enumeration of the entire population should be simultaneously made either on a single day or over a period of time.

3. What is the use of census enumeration? In India census-taking has been the responsibility of the Union Government from the very beginning. Even today population census is a subject dealt with by the Ministry of Home or Internal Affairs. A senior officer of the Indian Administrative Service with experience in the conduct of census operations is generally appointed as the Census Commissioner. For each State and Union Territory, an Officer designated as the Director of Census Operations is appointed. The enumerator is the basic and the most important link in census operations. He has to visit every household within the area assigned to him and collect the required information.

3.4 VITAL REGISTRATION

Vital events are those related to an individual's birth and death together with change in his civil status which may happen to him during his life-time. Thus births, deaths, marriages, etc., are called 'vital events'. It follows that vital statistics are those statistics which for a designated population group provide the description of the number and characteristics of the vital events which have taken place there in. A vital statistics system can be defined as a total process which includes the registration, recording of the occurrence of and the collection, compilation, analysis, presentation and distribution of statistics pertaining to vital events. These statistics are a major source of data on births, deaths, marriages and divorces and they are very useful when combined with census data. Since these vital events occur, continuously, they need to be continuously recorded.

The recording of vital events was originally the concern of the individual Church authorities. But then their interest was in Baptism, burials and weddings rather than birth, death and marriages. Further, these records recorded the payment made for the ceremonies rather than the other particulars concerning these events. The use of Church records for demographic analysis has not therefore been helpful because of the fact that there had seldom been a one-to-one ratio between event and ceremony. Further, the coverage of the Church records was limited to a particular religious group and hence was not complete with respect to the entire population. Secularization, therefore, has brought about an important development in the recording of vital events, shifting the responsibility for the registration from the Clergy to Civil authorities.

The credit for introducing the system of registration of births, deaths and marriages under Civil authorities independent of the Church goes to the Incas of Peru. The impetus to this trend of secularization of vital events was given when the Napoleonic Code was adopted in France in 1804. Later, in the 19th Century several countries in Europe and South America adopted the system of Civil registration in which the responsibility for the registration of vital events rested with the national governments. Today, the registration of vital events has become a system adopted in almost all countries and is regarded as a continuous, compulsory and permanent system of recording with its own characteristics associated with them. Most of the developed countries like Japan, United Kingdom, U.S.A. etc. have now very reliable and dependable registration systems. In these countries, birth and death registration certificates are necessary for various purposes including school admissions for children, entry into jobs and legal matters connected with the death of an individual. The system of registration of vital events was introduced in India by the British more than a hundred years ago. An Act was also passed by the Lok Sabha in 1969 known as the Birth and Death Registration Act and any failure to register births and deaths is punishable under this law. Despite all this, the coverage of registration is far from satisfactory. Our data are still incomplete and unreliable. Because of this, the birth and death rates derived from registered vital events present a very distorted picture. The main reason for this stage of affairs is mass illiteracy and the rural character of the population. The importance of the registration of vital events has not been realised by the masses or by the local registering authorities. For most Indian people few occasions arise when birth and death certificates are required. It is, therefore, not surprising that they do not appreciate the necessity of registering vital events. There are mainly three motives for the development of a good Civil Registration System. They are: (1) the evidentiary value of a registration record to the individual, (2) the purpose served in public health programmes, and (3) the value in socio-economic and demographic research and planning. Indeed the fairly common contrast between relatively advanced and backward nations of the world is typically reflected in the quality and extent of the vital statistics collected.

Very few and small countries in the world such as Sweden, Finland, Belgium, Taiwan and Korea, where the Civil registration records of birth provide legal proof for his or her identity, citizenship, nationality, etc. on which depend a wide variety of rights, particularly,

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in regard to exercise of civil functions, education, insurance, family allowances and other benefits, property ownership and inheritance. The death records provide legal evidence needed for claims to inheritance of property, insurance on deceased persons, rights of the surviving spouse to remarry, etc. The vital records also play an important role in the administrative, public health, social and economic development for meeting the goals of a Welfare State. For administrative purposes, birth records are basic for public health programmes for post-natal care of mother and child including immunization, etc. The individual death records are used as initial indicators of the existence of infectious and epidemic diseases and the need for immediate control measures. They are also used in public safety, accident prevention, social security, etc. Apart from all these vital statistics has an important role in demographic research and analysis. While registering the vital events, the officials concerned are required to note several particulars according to the system prescribed. Such data so collected are of immense use from the demographic and sociological view point as they help in carrying out detailed analyses and interpretation.

CHECK YOUR PROGRESS.

3. What are vital events.

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3.5. SAMPLE SURVEYS

The demographic sample survey is yet another method of data collection for population studies. In a sample survey information is collected only from a selected sample of the population, which is representative of the whole and from which conclusions are drawn by the use of scientific methods. Even in countries where regular Census operations are conducted, the need for collection of population data through sample surveys is felt, because a census is taken in most countries only once in 10 years. Since these surveys are conducted periodically for an adhoc purpose in between two censuses, they are called inter-census surveys. As the conducting of a population census is too costly an affair and too enormous a task it cannot be repeated very frequently and hence sampling techniques are resorted to. Further, since vital registration system has failed to provide reliable data on items such as births and deaths, efforts are made to collect information through sample survey.

The collection of data through sample surveys has several advantages. With the help of specially trained interviewers and carefully planned and prepared questionnaires, some special aspects of the population can be studied in depth. However, sample surveys can never take the place of either a census or of vital registration system.

By using the technique of sample survey, several demographic surveys have been conducted in India. The National Sample Surveys (N.S.S.) conducted by the Gokhale Institute of Politics and Economics, Poona, the U.N. Mysore Population Study; the Patna Demographic Survey and the Family Planning Survey conducted by the Operations Research Group, Baroda, are some of the well known ones.

3.6. POPULATION REGISTERS

Very few and small countries in the world such as Sweden, Finland, Belgium, Taiwan and Korea have a system of maintaining population registers. A population register is a record of the members of a community that provides information on changes in population through

different processes, particularly through migration. The name of each person in the country is entered in the population Register and the data so generated through births, deaths, marriages, movements, both internal and international, etc., will be recorded and maintained continuously. Such data will be used for estimating the birth, death and migration rates periodically and also for knowing the current population size. Though this is good method population registers is not feasible in India because of large population.

3.7. SUMMARY

Population census is most important source of demographic information in any country. A census is conducted by the Government. Births, deaths, marriages are called vital events. The demographic sample survey is yet another method of data collection for population studies.

3.8. SUGGESTED BOOKS

- Asha Bhende and Tarakanitkar : Principles of population studies.
V.C. Sinha and E.Zacharia : Elements of Demography

3.9. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines.

1. Explain the main sources of population data.
2. Discuss the role of sample surveys in generating population data.

II. Answer the following in about 10 lines.

1. Bring out the importance of population census.
2. Explain the nature of population register.

III. Answer the following in about 5 lines.

1. What do you mean by 'vital events'?
2. Define population census.

UNIT-4 : PRE-MALTHUSIAN THEORIES

Contents

- 4.0. Aims and Objectives
- 4.1. Introduction
- 4.2. Chinese Thought
- 4.3. Greek thought
- 4.4. Roman Thought
- 4.5. Indian Thought
- 4.6. Mercantilist Thought
- 4.7. The Views of Physiocrats
- 4.8. The Scientific Ideas of Godwin and Condorcet
- 4.9. Summary
- 4.10. Suggested Books
- 4.11. Model Examination Questions

4.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the ideas on theories of population put forward in the ancient and unmedieval periods which led to the development of population science.

By the end of this unit you will be able to :

- explain the pre-malthusian theories.

4.1. INTRODUCTION

Man has been concerned with population problems since ancient times. Since antiquity statesmen, philosophers and thinkers have held opinions based on political, military, social and economic considerations about such issues as the most desirable number of people or the need to stimulate or retard population growth. At one time, a large population has been considered a source of Nation's strength and Wealth, while at another time, it has been viewed as a factor contributing to poverty. Thus the size and growth of population has been viewed as an important factor in the development of any country. These views came to be expressed in relation to public policy and only in exceptional cases went beyond mere speculation or incidental observations. But they are reflected in many of the issues which figure in modern population theory. Indeed, no consistent population theory has emerged until the modern period.

In the true sense of the term, a population theory could be considered to have emerged only in the 18th Century when the famous work of Thomas Malthus was published, though some thought was given to population issues in the earlier periods. It is, therefore, proposed to consider in this lesson the various ideas and theories put forward prior to Malthus.

4.2. CHINESE THOUGHT

Chinese writers since the time of Confucius have theorised that if population is too small in comparison to land, it would remain uncultivated and lead to default in the payment of Tax.

On the other hand, too large a population may lead to economic hardship. Thus their thought implies a primitive notion of optimum population. Advocating an ideal proportion between land and population, the Chinese held the Government primarily responsible for maintaining such a proportion by moving people from overpopulated to underpopulated areas. The ancient Chinese writers also paid attention to another aspect of population namely, the checks to population growth.

They observed that mortality would increase when food supply was insufficient and that war checked population growth. Despite the expression of these views on population and resources, the doctrines of favourable to population increase. The Confucian literature is a witness of the knowledge Confucius regarding family, marriage and procreation were essentially people related to the relationship of population, production and standard of living. The people of China were very particular about the ideal ratio between population and agriculture. They have the belief that deficiency in food causes high death rate.

4.3. GREEK THOUGHT

The writers of early Greece were more concerned with the formulation of policies and rules for population than with theories about it. Plato and Aristotle discussed the question of the optimum population with respect to the Greek city state in their writings on the ideal conditions for the full development of man's potential. They considered the problem of population size not so much in economic terms, as in those of defence, security and Government. In their view population should be self-sufficient and should possess enough territory to meet its needs but should not be so large as to make constitutional Government impossible. These conditions were specially emphasised by Plato, particularly in his "Laws". Plato stated that if the "highest good" was to be achieved the city state should have 5,040 citizens and land, houses and property should be equally divided among them.

Plato recommended certain measures to maintain the desired size of the population. In the case of population he recommended rewards, incentives and advised the young to achieve a certain family size and as a last resort immigration was suggested. According to Plato the purpose of marriage was to bring forth children. To tackle the problem of overpopulation, he recommended infanticide, exposure, and abandonment of deformed infants on grounds of eugenics and birth control for large families.

Aristotle discussed about population problems in his book 'Politica'. Aristotle was less specific on the matter of optimum population. He was of the opinion that excessive number of people would give rise to poverty and other social ills as it was not possible to increase land and property as rapidly as the size of the population. In order to control the size of the population he recommended abortion and exposure of the babies. In order to control the size of the city state he proposed a limit on the number of children each couple should have. This shows that both Plato and Aristotle were aware of the direct relationship between population and poverty and were interested in maintaining and improving the quality of the life of the population. The Greeks were interested in maintaining the size of the population which was appropriate for a city state.

4.4. ROMAN THOUGHT

Roman philosophers like Cicero, Seneca, Marcus, Amelius, Epictetus, Varro, Cato, were in favour of large population. The early Romans were characterised by a fertility cult. With their tightly administered land empire and ceaseless wars on their borders the Romans needed more men. Population increase was a boon for them as they needed soldiers for military purpose. From Cato to Varro all the writers of this period claimed that the primary function of marriage was to produce as many citizens as possible. From their writings we find that they encouraged population growth by providing positive incentives to couples having children and taxing those who were unmarried and had no children. Cicero was against the concept of family communism in which population is automatically controlled and he advocated monogamy.

4.5. INDIAN THOUGHT

In order to understand demographic literature in ancient India we have to refer to Indian religious books and writings of ancient philosophers. The different sources of ancient thought can be divided into two parts: In the first part classic literatures like Four Vedas-Rigveda, Samveda, Yajurveda and Aatherwaveda and works depending on them like upanisheds, Puranas, Ramayana and Mahabharat etc are studied.

The smritis of Yajanovalkya, Gautam, Narada, Vidur and Artha-shastra of Kautilya are the major source of economic thoughts of ancient and medieval periods. Kautilya in his book Arthashastra has studied problems of migration, qualitative and quantitative aspect of population, public health and public administration. He emphasized the desirability of a large population for military and economic power. Kautilya prescribed asceticism only to the aged and favoured the remarriage of widows.

The period from the fall of Roman empire in the fifth century to about the middle of the 15th century can be considered as the Medieval period (400 A.D. to 1500 A.D.) During this period, the impact of Christianity was great on the society. The Christian thinkers viewed population from an ethical and moral view and they opposed abortion, foetal deaths, divorce and polygamy. They preached celibacy, sex-repression and unmarried living. The thinkers of this period never believed that population is a source of power for the State. They were God fearing people. They believed that floods, draughts, epidemics are natural checks which cause high death rate resulting in the destruction of human race. They advocated high birth rate for survival. Italian writer Bowera Believed that fecundity in human beings does not depend on the size of population. As the means of livelihood are limited the limit of population is achieved due to wars and destructions. He stated, that when equilibrium stage between population and means of livelihood is reached increase in population does not increase the means of livelihood.

The relatively short span between the late 15th and the late 18th centuries was a period of great change set in motion by the changes in man's attitudes. These changes were brought about by the Renaissance movement (the revival of art and letters under the influence of classical models). This period witnessed the emergence of the nation state, new scientific discoveries, the exploration of new territories and the rapid growth of trade, the gradual dissolution of the medieval feudal system and the development of early capitalism which laid the basis for the Industrial revolution. The combined influence of these events was reflected also in the evolution of economic ideas and the thinking on population.

4.6 MERCANTALIST THOUGHT

The above mentioned factors played a significant role in the rise of mercantilism and the emergence of new ideas in political economy which were greatly influenced by Machiavelli's and Bodin's theories of the Absolutist State. In the history of political and economic thought, Mercantilism is considered to be a link between the medieval period and the modern period. Almost all trading nations adopted this economic policy of mercantilism with a view to increasing national wealth and power through the encouraging of exports of goods in return for gold. Such policies often resulted in rivalry between nations, though they gave rise to rapid economic growth and full utilization of national resources. Such a mercantile policy also required their being always in a state of war preparedness and their keeping down the production cost of goods through the exploitation of labour. For an effective implementation of this mercantile policy, the size of the population was an important asset. The general opinion at that time was that birth rates should be increased for purposes of economic and political gains by the adoption of such measures as encouraging marriages directly, encouraging fertility, encouraging immigration and preventing emigration. Machiavelli was, perhaps the first to view population from the modern angle by observing that excessive population would diminish through want and disease. He may be regarded as one of the precursors of Malthusian Theory, since he was able to perceive the

relationship between population growth and resources. Giovanni Botero, an Italian, was also one of the first to study the population phenomena in a broadly scientific manner. To him, the strength of the state is to be found in its population and the predominance of industry over agriculture. He expounded the view that a population, after increasing for sometime would not be able to sustain for long the same rate of increase but might grow slowly or even start declining. In his opinion, the limitation of the means of subsistence was the reason why population growth has to be limited. He regarded limited means of subsistence as the primary check to population growth, while the secondary checks were sterility of the soil, bad climate, disease and epidemics. Though Botero was convinced that food for subsistence was necessary for any population, he still regarded a large population as a source of strength for a country.

4.7. THE VIEWS OF THE PHYSIOCRATS

The physiocratic school of economic thought evolved in France about the middle of the 18th century, may be regarded as the expressions of a reaction against the mercantilist ideas and policies. While the mercantilists had neglected agriculture in their enthusiasm for the acquisition of gold and silver through trade in manufactured goods, the basic assumption of the physiocratic school was that land was the source of all wealth and hence it was necessary to emphasize the importance of agriculture and internal tax reforms. As a reaction against the populationist views of the mercantilists, the physiocrats did not favour population increase at the cost of standards of living. They approved of such increase only if it was possible to expand agricultural production. The physiocrats according to Gide and Rist, emphasised the role of land in production needed for the maintenance of the natural order. They took generally favourable view of population growth on the assumption that it was possible to expand agricultural production to support the increasing population. The best known among the physiocrats, Quesney (1694-1774), thought that a large population was desirable provided that people could live comfortably. He stressed the need to pay more attention to the increase of wealth than to that of population. In his opinion population tends to overtake the means of subsistence. As evidence he cited that there were always people living in want. Therefore, he stressed the increase of agricultural production and the net product and not the increase in numbers as the proper objective. The physiocrats thus believed in the dependence of population on the subsistence but thought that when governments promoted the best possible ways of cultivation, the increase in production would outpace that in population.

4.8. THE SCIENTIFIC IDEAS OF GROWTH & CONDORCET

The optimism of the 18th century writers concerning the possibility of feeding a growing population reached its peak at the time of French revolution. The writers-Godwin, a philosopher and social reformer, and Condorcet, a mathematician and philosopher are worth considering. Godwin had boundless faith in science, and declared that scientific progress would multiply the food supply to the point where a man would have to work only a part of his time to satisfy all his needs. He did not think that the abundance thus created would lead to over-population, since man's reason was strong enough to curb sexual desire and procreation. He ascribed the poverty of the people and the vices of the society of his time mainly to the inequalities imposed by the social institutions. Condorcet professed the same faith in the power of science and in the future of human society. To him, science would be able to prolong the life span without worsening the human condition through the production of abundant food. He also believed that man's reason would prevent irrational population growth.

The period between the late 15th and the late 18th century saw not only a significant development of views on population, but also beginnings of a systematic measurement and analysis of population trends. John Graunt in his *Natural and Political Observations on the Bills of Mortality*, published in 1662, was the first to discern and underlying order in vital statistics. Using mainly the bills of mortality of the city of London, which was reports on burials, he observed the numerical regularity of a variety of demographic phenomena. He studied such

matters as the sex-ratio at birth, rural-urban differentials in mortality, the frequency of births and deaths in relation to population, streams of migration to the city of London, the excessive size of the city and its future growth and a model life table.

William Petty, with whom Graunt Collaborated, not only analysed some of the demographic aspects but maintained that arithmetic could be applied to population, economic and political affairs. He developed a 'political arithmetic' which involved a more searching study of the role of population in human affairs. Petty stressed the importance of population as 'human capital'. He was the first to attempt an estimate of human capital as well as of income, and perhaps, the first to have introduced the division of population and economy into primary, secondary and tertiary activities.

4.9. SUMMARY

Thus, though most of the in writers in this tradition held the prevailing populationist view, they recognized that the means of subsistence determined the size of population. Their major contribution is that even with limited statistical date at their disposal and a lack of basic theoretical concepts and methods of analysis, they extended the bounds of population their by breaking down the limitations imposed on it in earlier times.

Thus, just before the Malthusian theory of population gained attention and prominence almost all writings on population from the middle of the 18th century contained some reference to the point that population increased more rapidly than food supply, a point which was later elaborated by Malthus. This shift in the attitude to population size is noteworthy. The earlier view regarding large and growing population being a source of strength and wealth was gradually replaced by the view that it was undesirable to have too large a population to the means of subsistence.

4.10. SUGGESTED BOOKS

- | | | |
|-------------------------------|---|----------------------------------|
| Asha Bhende and Tara Kanitkar | : | Principles of Population Studies |
| Bogue, D.J. | : | Principles of Demography |
| Hans Raj | : | Fundamentals of Demography |

4.11. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. Write an essay on the pre-malthusian theory.
2. Review briefly some of the views expressed by thinkers prior to Malthus on population matters.

II. Answer the following in about 10 lines each.

1. Chinese thought on population.
2. Greek thought on population.
3. Physiocratic school of thought in relation to population.

UNIT-5 : MALTHUSIAN THEORY OF POPULATION

Contents

- 5.0. Aims and Objectives
- 5.1. Introduction
- 5.2. Meaning and Scope of Malthusian Theory
- 5.3. Basic Propositions of Malthusian Theory
- 5.4. Summary
- 5.5. Suggested Books
- 5.6. Model Examination Questions

5.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the Malthusian Theory of Population.

By the end of this unit you will be able to :

- explain the Malthusian Theory of Population.
- explain the Basic Propositions of Malthusian Theory.

5.1. INTRODUCTION

Nations all over the world have been deeply concerned about the size and growth of population with a view to ensuring their rapid socio-economic development. Historical evidence shows that a nation's prosperity, and the rate of production and productivity are inextricably up with the population problem.

Several theories have been put forward to explain the multidimensional problems of population size and growth. Early writers on the problems include the Chinese, the Greeks and the Romans. Hindu writers, Christian writers and Islamic writers have also paid attention to this problem.

Large-scale manufacturing and industrial development had brought about radical changes which in turn affected the thinking on the questions of socio-economic development and population. Several European writers including those of Spain and Portugal formulated theories of population, which could be broadly described as pre-malthusian contribution. All these writings invariably concluded that population increased more rapidly than food supply. Malthusian theory of population devoted attention to this point. The focal point of Malthusian theory is that it is not a desirable proposition to have too large a population vis-a-vis the means of subsistence.

5.2. MEANING AND SCOPE OF MALTHUSIAN THEORY

An important feature that marked the closing decades of the eighteenth century was the global concern expressed with regard to rapid population increase and its impact on the socio-economic development of nations. Leaders began to realise the serious consequences of population increase if there was no corresponding increase in the food production. Experience of several countries revealed that the population increase can be sustained only if definite plans are evolved to achieve a rapid increase in the food production also.

Thomas Robert Malthus (1766-1834) can be regarded as a pioneer in the field of population studies. He saw clearly that an increase in population could be sustained only when there was an increase in food production. He observed that any improvement in the standard of living of the people was extremely difficult unless there was an increase in food production to match the increase in population. Malthus formulated his famous population principle in 1798, according to which man's ability to reproduce was held to be greater than his ability to produce the necessities of life.

He should be given due credit for having brought the question of population for the first time within the purview of the field of social science and differentiated it from the early philosophical tenets on population. Basically, he was a humanitarian in his outlook and made an attempt to understand how population growth was likely to affect the human welfare. He made an attempt to highlight the fact that unless constructive efforts were made to achieve a rapid increase in food production, the countries could not be able to afford a rapid growth in their populations. Any imbalance between increase in food production and population increase would adversely affect the welfare of human beings.

Malthus's **Essay on Population** constitutes an important land-mark in the development of population studies. Being humanitarian in his outlook he focussed his attention on the quality of human life and made an attempt to impress the economists and developmentalist leaders all over the world that population should not be allowed to grow without making matching efforts to achieve growth in the food production. He formulated his famous thesis that if population is unchecked, it increases in a geometrical ratio while subsistence increases only in an arithmetical ratio. According to this calculation, when unchecked, population would double itself in about 25 years.

CHECK YOUR PROGRESS.

1. Why is Malthus considered pioneer in the field of population studies.

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5.3. THE BASIC PROPOSITIONS OF MALTHUSIAN THEORY

Two basic postulates of Malthus's Theory of population are:

- i) That food is necessary for the existence of man,
- ii) That sexual attraction between the sexes is necessary and that will not change.

Based on these two basic postulates Malthus argued that man's power to procreate would be greater than the power in the earth to produce subsistence for man. It is true that writers in the sixteenth and seventeenth centuries also argued that man's capacity to reproduce was unlimited whereas that of producing his means of subsistence were limited. But it was Malthus who had wide publicity to the concept and elaborately publicised the consequences of disparities between the population growth and the increase in the production of means of subsistence.

In his revised and enlarged editions Malthus developed his theory further and examined at greater length the role of population as the principal cause of poverty. In his subsequent works he made an attempt to prove the following basic propositions:

- a) Population is necessarily limited by the means of subsistence,

- b) Population invariably increases, unless prevented by some very powerful and obvious checks:
- c) These checks, and those that keep its effects on level with the means of subsistence are all resolvable into moral restraint, voice and misery.

He described the operation of the positive and the preventive checks which would control the population from growing in a geometrical ratio. Malthus considered the question of what would be the natural increase of population, if left unchecked and what would be the rate at which the means of subsistence could be increased. On this basis he derives his two basic propositions that population tends to double itself in every twenty-five years, thus increasing in a geometrical ratio while during the same period under the most favourable conditions the agricultural production increases only in an arithmetical ratio. He concludes taking the whole earth into consideration that the human species would increase as the numbers 1, 2, 4, 8, 16, 32, 64, 128, and 256 and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, and 9. In two centuries, the ratio of population to that of the means of subsistence would be 256 to 9.

According to him, positive checks are those resulting from the different rates at which population and food increase causing famine. He classified the checks under two headings: **the preventive and the positive**. The former ones, being voluntary, arise from man's reasoning faculty which enables him to foresee the distant consequences and they include moral restraint, which could take the form of the preventing the birth of children, extra-marital sexual relations and prostitution.

According to Malthus, the positive checks refer in general to all such factors which tend to shorten the span of human life. These were broadly described by him as unwholesome occupations, severe physical strain and exposure to severe climatic conditions and insufficient clothing arising from poverty, and nursing of children, excesses of all kinds, epidemics, wars, infanticide, plague, famine, etc. Under preventive checks, he suggested late marriages and continuation of the existing psychological and institutional barriers to marriage and population growth. Such moral restraints would help in controlling the population growth.

These two checks - 'preventive' and 'positive' - are the true causes of slow increase in population. Wherever these checks are relaxed there is bound to be a rapid increase in population. Malthus somehow believed that man's sexual passions and his material needs were essentially in conflict. According to him, all schemes of human welfare should aim at controlling the growth of population with a view to making life happy and comfortable and mitigating the hardships faced by people. Human suffering is the result of the inability of mankind to maintain an equilibrium between population growth and the available means of subsistence.

In his later editions Malthus devoted much attention to problems of poverty. He examined at great length what he regarded as the principal cause of mass poverty, namely, population pressure and the diversion of large amounts of productive resources to population growth.

Malthus also considered other related problems like emigration an important factor in population growth, and discussed its effects upon the mother country as well as upon the country to which people migrated.

Through the process of emigration poverty could be lessened in mother country only for a very short period. He visualised the possibility of stepping up food production through a high degree of specialization in agriculture made possible through scientific and technological advances.

He pleaded for the adoption of several positive steps such as evolving the idea of extension of national education as the most desirable way to make the mass of people realize the necessity of keeping the size of their families within such limits as they could hope to support.

CHECK YOUR PROGRESS.

2. What are the propositions which Malthus attempted to prove in his works.

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5.4. SUMMARY

However, Malthus was totally opposed to artificial birth control systems for checking the population growth on account of both their immorality and their tendency to remove a necessary stimulus to industry. He saw education as the best means of making people aware of the consequences of a rapid increase in population. The best way to remove poverty was to achieve a clear fall in birth rate, while effecting improvements in the field of agriculture with the application of modern science and technology.

Though Malthus theory was criticised in some quarters, a vast majority of people in Europe, America, Asia, Africa and other countries appreciated his contribution. He made pioneering attempts to highlight the consequences of population increase without achieving substantial improvements in the field of agriculture. He firmly believed in the interest of the welfare of humanity all possible attempts should be made to educate the masses as well as leaders in regards to population problems and the need to limit the size of the family.

5.5. SUGGESTED BOOKS

Asha Bhenda and Tara Kanitkar	:	Principles of population Studies
Bongue, D.T.	:	Principles of Demography
Hans Raj	:	Fundamentals of Demography
Kingsley Davis	:	The Sociology of Demographic Behaviour

5.6. MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines.

1. Briefly discuss the Malthusian Theory of Population.
2. Suggest plan for population control for the next century keeping in view the Malthusian Theory of Population.
3. Analyse Malthus's view on poverty in relation to his population theory.

II. Answer the following in about the 10 lines each.

1. Population theories.
2. Social Demography.
3. Population Explosion.

UNIT-6 : THE DEMOGRAPHIC TRANSITION THEORY

Contents

- 6.0. Aims and Objectives
- 6.1. Introduction
- 6.2. Division of Countries According to their Pattern of Population Growth
- 6.3. Stages of Demographic Transition
- 6.4. Criticism
- 6.5. Summary
- 6.6. Suggested Books
- 6.7. Model Examination Questions

6.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss the nature of demographic transition theory, One of the classical theories showing how population processes are intertwined with general social processes.

By the end of this unit you will be able to :

- discuss the way the countries are divided according to their pattern of population growth,
- explain the stages of demographic transition.

6.1. INTRODUCTION

Although the theory of demographic transition has dominated recent demographic thinking, it actually began as only a description of the demographic changes that had taken place over a period of time in the advanced countries. In particular, it described the transition from high birth and death rates to low birth and death rates. The idea was first developed by Warren Thompson in 1929 who studied the world phenomena and showed that the countries fell into 3 main groups, according to their patterns of population growth.

6.2. DIVISION OF COUNTRIES ACCORDING TO THEIR PATTERN OF POPULATION GROWTH

Group 'A' Countries (Northern and Western Europe and the United States): From the later part of the 19th Century to 1927, these countries had moved from having very high rates of natural increase (excess of births over deaths) to having very low rates of increase and it was assumed that they would become stationary and start to decline in number.

Group 'B' Countries (Italy, Spain and Central Europe): Thompson saw evidence of a decline in both birth rates and death rates but suggested that the death rate would probably decline as rapidly even more rapidly than the birth rate for some time yet. The condition of these group 'B' countries is much the same as existed in the Group 'A' countries thirty to fifty years ago.

Group 'C' Countries (the rest of the world): In the rest of the world Thompson saw little evidence of control over either births or deaths.

As a consequence of this relative lack of voluntary control over births and deaths, Thompson felt that these Group 'C' countries (which included about 70 to 75 per cent of the world population at that time) would continue to have their growth determined largely by the opportunities of increasing their means of subsistence. Malthus described their process of growth accurately when he said that population would invariably increase Where there were means of subsistence.

Thompson's work, however, came at a time when there was relatively little concern about over-population. Sixteen years later, in 1945, Frank Notestein picked up the threads of Thompson's thesis and provided labels for the three types of growth patterns which Thompson had simply called A B and C. Notestein called the Group 'A' pattern incipient decline, the Group 'B' pattern transitional growth and the Group 'C' pattern high growth potential. Thus arose the term, "demographic transition". It signifies a period of rapid growth during which a country moves from high birth and death rates to low birth and death rates-from high growth potential to incipient decline (see figure).

The population development varies from country to country passing through different stages in accordance with the changing rates of fertility and mortality. These stages are sometimes called population cyclesol demographic transition. There are a number of distinct stages in demographic growth through which the population of a given country passes. These stages are divided on the basis of the distinctive forms of interaction between the birth and death rates of the country as a result of which the population of the country increases, decreases or remains constant.

CHECK YOUR PROGRESS.

1. On what criteria countries are classified into different groups?

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6.3. STAGES OF DEMOGRAPHIC TRANSITION

According to the demographer, C.P. Blaker, the population development countries may be studied in five different stages. The first stage is the High stationary stage. In this stage of population development both death and birth rates are high and the population is stationary. This stage is common to all countries which depend on Agriculture. 22% of the world population including the population of china and india had been at this stage upto 1930. Nigeria, Ethopia, Tanzania, Congo and several other countries of middle America are now passing this stage. The second stage is the early expanding stage. In this stage the birth rate remains stationary either at high or low level whereas the death rate begins to decline slowly. As a result the population starts rising slowly. The decline in mortality is largely due to the improvement in public health services.

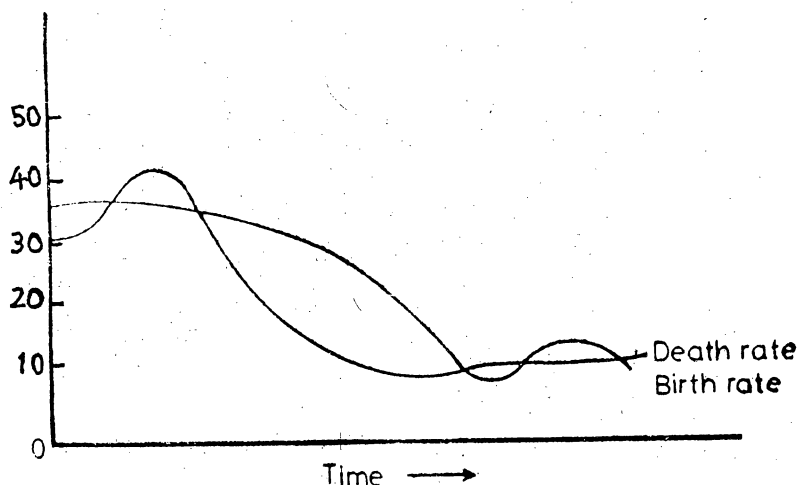
The third stage is the late expanding stage. In this stage of population growth, the rate of increase is slower than usual because of the slow decline of birth and death rates. The birth rate starts declining along with the death rate but it is higher than the mortality rate. The low stationary stage is the fourth stage of population development. In this stage the birth and death rate are both at a low level and under control. The growth rate in respect of population is stationary (low fertility and mortality rates). In this stage the economy reaches the desired stage

of economic development marked by an increase in incomes of the people, an improvement of the literacy and educational standards of the people and full employment, 14 per cent of the world population had been found to be in this stationary stage upto 1930.

The last stage is the diminishing stage. Here the population growth starts declining because the death rate is higher than the birth rate, it is in this stage that the underdeveloped countries are generally found where the death rate has suddenly gone down due to unexpected calamities like famines, draughts, floods etc.

The demographic transition is divided roughly into 3 stages. In the first stage there is high growth potential because both birth and death rates are high. The second stage is the transition from high to low birth and death rates. During this stage the growth potential is realized as the death rate drops before the birth rate drops, resulting in rapid population growth. Finally, the last stage is reached when death rates are as low as they are likely to be, while fertility may continue to decline to the point when the population would eventually decline in numbers. In the developed countries, the full transition took place roughly as shown in the figure. However, the less developed nations have not yet experienced the full pattern of change.

Fig I. Showing Demographic Transition



Thus demographic transition is thought of as taking place in three broad stages: (1) Pre-industrial societies (Pre-transitional stage) with high fertility and mortality and a consequent low natural increase, (2) Societies in transition (transitional stage) with continuing high fertility but declining mortality and a consequent rapid natural increase and (3) Modern societies (Post-transitional stage) with both fertility and mortality stabilized at a low level and a more or less static population.

At this point in the 1940's the demographic transition presented merely a picture of demographic change not a theory. But each new country studied seemed to fit into the picture and it seemed as though some new, universal law of population growth-an evolutionary scheme was being developed. Between the Mid-1940's and the late 1960's rapid population growth became a world-wide concern and demographers devoted their attention to the demographic transition perspective. By 1964 George Stonitz was able to report that demographic transitions ranked among the most sweeping and best documented trends of modern times based upon hundreds of investigations covering a host of specific places, periods and events. The apparent historical uniqueness of the demographic transition has given rise to a host of alternate names, "the vital revolution" and "the demographic revolution", to name the more important ones. The term, "population explosion", for example, refers to what Notestein called "transitional growth".

As the pattern of change took shape, attempts were made to explain it. Thus the demographic transition moved from a mere description of events to a demographic perspective. This perspective is, perhaps, best explained by such expressions as "take care of the people and population will take care of itself" or development is the best contraceptive" (Teitelbaum : 1975)

The demographic transition is the shift from high mortality and fertility rates, which formerly prevailed generally among human populations, to the decidedly lower levels of both mortality and fertility which are characteristic of modern industrial societies. It consists of a mortality transition in which the whole world has become involved in varying degrees during modern times and a fertility transition which only a minority of the world's peoples have yet experienced. The countries in the forefront of the demographic transition where both mortality and fertility have been fallen far below their former levels are generally those which are advanced in industrialization and which have achieved the highest levels of income per head. To this group belong Australia, New Zealand, Japan together with most countries in Europe, the Soviet Union, the United States and Canada. In the less developed countries of Asia, Africa and Latin America, the mortality transition is progressing rapidly while the transition of fertility has began only recently in a few areas. It is argued that the decline in the birth rate usually lags behind the decline in the death rate because it takes time for a population to adjust itself to really lower levels of mortality, and because the social and economic institutions which favoured high fertility require time to adjust themselves of such new norms of lower fertility as are most consistent with the lower levels of mortality. Since most people want to live as long as possible it is not difficult to lower mortality, but the reduction of fertility is contrary to the established norms with high death rates. Such norms are not easily changed even in the face of poverty.

Birth rates eventually decline as the importance of family life is weakened by industrial and urban life, resulting in the weakening of the pressure for large families. Large families are presumed to have been desired because they provide parents with a built in labour pool, and because children provide old age security for parents. The same economic development that has lowered mortality may transform a society into an urban, industrial state. In the urban, industrial state compulsory education lowers the value of children by removing them from the labour force, and people come to realize that lower infant mortality means that fewer children need to be born to achieve a certain number of live children. Finally, as a consequence of the many alterations in social institutions, the pressure from high fertility weakens and the idea of conscious control of fertility gradually gains strength (Teitelbaum: 1975).

6.4. CRITICISM.

For Marxists, the attraction of the demographic transition is two fold: (1) the idea of different growth rates during different stages of development supports the notion of a transition from a nonsocialist to a socialist society: and (2) the theory emphasizes development as a precursor of lower fertility (consistent with Marxism) in opposition to the Neo-malthusian point of view that development can occur only when population growth has been curbed.

While the idea of demographic transition has been widely adopted and frequently used as a generalized description of the evolutionary process, a number of writers have emphasized its limitations as a theory. It is argued that this theory does not provide any time dimension for a country to move from one stage to the next. Secondly, it does not provide more than vague suggestions about factors which may determine growth. It is also argued that this theory is not a theory at all, but a mere description of historical events that have occurred in the developed countries with some regularity. The theory has only suggested certain major complexes of factors which presumably influence the components of population growth. Thus its explanatory or predictive value is questioned. The theory appears, in general terms, to be a reasonable representation of the course of population events in most of the present day industrialized countries. There are some important exceptions, however, such as France, in which fertility declined before a decline in mortality. Hence, the theory is not capable of predicting levels of mortality or fertility or the point of time at which fertility declines. It assumes that what has

happened to the developed countries, should also happen to other countries that are not as advanced. The preconditions for the demographic transition are considerably different from what they were when the industrialized countries began their transition. For example, prior to undergoing the demographic transition, few of the currently industrialized countries had birth rates as high as those of most currently less developed countries, nor indeed were their levels of mortality so high. Yet, when mortality has declined it has done so as a consequence of internal economic development, not as a result of an international aid in disease prevention, as is the case today. Since there is no consistent pattern in the timing of a fertility decline in each country, it is reasonable to attribute it to the different socio-cultural factors operating in each country. In general, it is true that conscious limitation of fertility has to occur, but it is not certain how much change must occur before that will happen. It is ethnocentric to believe that people everywhere think and respond to the social world in the same way that we do. Yet, that is implied by most advocates of the demographic transition theory.

It is well known that developing countries have recently experienced a phenomenal reduction in death rates as a result of which there has been a tremendous increase in the rates of population growth. This rapidly increasing population is an obstacle to development in the developing countries, which are today making concerted efforts to eliminate poverty and raise standards of living for the masses by launching large scale plans for economic development, industrialization and modernization. In such a situation, it may be asked: will these countries have to wait for economic and social development till they bring down the birth rates? According to the theory of demographic transition, the reduction in the birth rate is a by product of industrialization and modernization. In the face of a very rapidly increasing population, however, it is not possible to wait for industrialization and modernization to bring about the required reduction in fertility. Many developing countries have, therefore, adopted family planning programmes so as to influence fertility negatively. In such a situation, it is difficult to assert that the theory of demographic transition is also applicable to developing countries and that what happened in the West in respect of population growth, would happen in developing countries also.

CHECK YOUR PROGRESS.

2. What are the different stages of population growth?

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6.5. SUMMARY

Thus, the study of demographic transition is a challenging field of research, full of unresolved questions of practical as well as theoretical importance. What have been the key factors in the mortality and fertility declines experienced in the past, and what are the factors in those now in progress in various parts of the world? To what extent can they be attributed to economic advances and other material conditions of life to social changes such as urbanization, rising levels of popular education, and emancipation of women, to scientific and technological advances in the control of disease and control of reproduction, and to the development of health and family planning services? Has the decline of mortality played an important part in promoting the decline of fertility? How have the influences of various factors been conditioned by cultural settings and currents of inter-cultural influence? What will be the outcome of efforts to modify mortality and fertility trends directly through public health and population policy measures and indirectly through economic and social development? Demography has not yet succeeded in proving

satisfactory answers to these questions, nor does it have the requisite adequate framework of theory and research methods.

6.6. SUGGESTED BOOKS

Asha Bhende and Tara Kanitkar	:	Principles of Population Studies
Bogue, D.J.	:	Principles of Demography
Davis.K.	:	The Sociology of Demographic Behaviour
Hans Raj	:	Fundamentals of Demography

6.7. MODEL EXAMINATION QUESTIONS.

I. Answer the following in about 30 lines each.

1. Critically explain the demographic transition theory.
2. Explain as to what extent demographic transition theory is relevant and applicable to the current Indian context.

II. Answer the following in about 10 lines each.

1. Marxist demographic transition.
2. Explain limitations of demographic transition theory.
3. Explain the division of countries according to their pattern of population growth.
4. Three stages of demographic transition.
5. Effect of demographic transition theory on economic and social development.

UNIT-7 : POPULATION COMPOSITION AND CHANGE

Contents

- 7.0. Aims and Objectives
- 7.1. Introduction
- 7.2. Sources of Data on Population
 - 7.2.1. Population Census
 - 7.2.2. Sample Surveys
 - 7.2.3. Registration of Vital Events
 - 7.2.4. United Nations Demographic Year Book
- 7.3. Population Characteristics
 - 7.3.1. Sex Composition
 - 7.3.2. Age Composition
 - 7.3.3. Age, Sex Composition
 - 7.3.4. Martial Status
 - 7.3.5. Ethnic Composition
 - 7.3.6. Religious Composition
- 7.4. Population Change
 - 7.4.1. Components of Population Change
 - 7.4.2. Causes affecting the Components of Population
- 7.5. Summary
- 7.6. Suggested Books
- 7.7. Model Examination Questions

7.0. AIMS AND OBJECTIVES

The main aim of this unit is to explain the concept of structure and phenomena of population.

By the end of this unit you will be able to:

- discuss the various sources of data of population,
- explain the population characteristics,
- explain the components of population change,
- explain the causes affecting the components of population change.

7.1. INTRODUCTION

We use the term, "Population", in a variety of contexts. For instance, we talk of tiger population, animal population, rabbit population, etc. So to avoid confusion we have to clarify the meaning of the term, "Population", for using it scientifically or technically. Generally the term, "population", refers to the total number of persons residing in a given area at a point of time. Most of the populations named, described and analysed, are influenced by demographic

characteristics such as fertility, mortality and migration. To make it clear, a number of people viewing a film in a theatre is not called a population because they are not subject to demographic influences, but only the immediate result of economic, cultural and political influences. But sometimes a section of the people residing in a city, state or country is treated as a population: e.g.,

- (1) Negro Population of U.S.A. - in 1970
- (2) Tribal Population of Andhra Pradesh
- (3) The Suburban Population of Hyderabad city, etc

Each of these categories is treated as a population because those constituting it are subject to the influences of the processes of fertility, mortality and migration.

7.2. SOURCES OF DATA ON POPULATION

We can get the required data on population from the following four major sources:

- (1) Population Census
- (2) Sample Surveys
- (3) Registration of vital events
- (4) United Nations Demographic Year Book

7.2.1. POPULATION CENSUS

Population Census is the most fundamental source of data for the study of population. In modern times the census furnishes statistical data on various aspects of population. In most of the countries census counting is done at regular intervals. For instance, in India it is being done regularly at intervals of 10 years. It is a mass operation. Every nook and corner of the country is covered. The first comprehensive census count was taken in 1871 and the latest in 1981. According to the 1981 Census, the total population of India is 685 millions of which 354.4 million are males and 330.7 millions females and in 1991 the total population of India is 844 million. In our country the information on the following is collected through the census:

- | | | |
|--|--------------------|-------------------|
| (1) Age | (2) Sex | (3) Education |
| (4) Occupation | (5) Marital Status | (6) Mother tongue |
| (7) Number of children ever born, etc. | | |

Most of the information is published for each village, town, district and state and also for the nation as a whole. By comparing the information obtained from 2 or more censuses, we can find out the population change.

7.2.2. SAMPLE SURVEYS

Demographic sample survey is another source for data on population. In this, the information is collected only from a sample of the Population which is representative of the whole population and conclusions are drawn through the application of the scientific method of sampling. This type of data collection is useful where no population census is available. Even in the countries where census is being regularly taken, there is a need for collection of population data by the sample survey method since normally census counting is done once in 10 years.

Collection of data through sample surveys has several advantages:

- (1) Some of the items of information of Population can be studied in depth.
- (2) The quality of data obtained through sample surveys is higher than that obtained through Population census.

The disadvantage of this method is that it does not cover the entire population of the country but is limited to a small segment of it.

7.2.3. REGISTRATION OF VITAL EVENTS

It is another source of information on population. Births, deaths, marriages and divorces are called vital events. Registration of these events is also known as **civil registration scheme**.

The data obtained by this method can be utilised for population estimation and population projection.

7.2.4. UNITED NATIONS DEMOGRAPHIC YEAR BOOK

Demographic year books are published by the United Nations for each year. It covers the total population and distribution of population by age, sex, occupation, etc. So these books are used as sources on data on population.

CHECK YOUR PROGRESS.

1. What are the different sources of data on population?

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2. What is the use of sample surveys?

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7.3. POPULATION CHARACTERISTICS

There are a number of attributes or characteristics which can be used as bases for describing or classifying the population. The development of modern industry and commerce has led to the emergence of a number of subsocieties and communities within the large societies on account of the increasing complexity in the division of labour. This complexity gives rise to a number of attributes or characteristics which are used to describe the population of a complex urban industrial society. In a relatively small, isolated and slowly changing community which is not much complex the individuals have a relatively few demographic characteristics. So this relatively developing socio-economic complexity has created the differences between the communities in industrialised countries as well as those between the populations at various stages of economic and industrial development. These characteristics, though studied in terms of total populations, are possessed by every individual.

Most of the data on population available to us is published by the United Nations. The following is the list of characteristics assigned to population which is made use of in our study.

A. Social Characteristics

1. Sex
2. Age
3. Race
4. Colour
5. Place of residence Rural & Urban, etc.
6. Nativity
7. Place of birth
8. Percentage
9. Mother tongue
10. School enrolment
11. Years of school-completed
12. Citizenship
13. Marital status
14. Children ever born
15. Literacy
16. Religion

B. Economic Characteristics

1. Employment status
2. Occupation of the worker
3. Class of worker (Private wage, Govt., Self-employed, and Unpaid family workers)
4. Income of the family

According to Amos Howely (Professor of Sociology, University of Michigan) the demographer is interested in studying the composition of populations for the following reasons.

(1) Data on composition makes elaboration of the description of a population possible and therefore permits detailed interpopulation comparisons.

(2) Such data also constitute an inventory of the human resources of a society.

(3) These data describe the variables (age, sex, marital status etc.) essential for analysing demographic processes (e.g., birth, death, migration and growth). In the absence of direct information of demographic processes, the composition data, particularly age and sex data, provide a means for estimating the evidence of birth and death.

(4) Demographic variables together with the population size are the most important factors affecting the formation and change of social structure.

The basic characteristics of age, sex, race, religion, marital status, educational level, occupation, etc., are familiar to us. We also know that communities differ from one another in respect of these characteristics.

Age, sex and race are considered biologically produced attributes and so they are hereditary and unchangeable attributes. These are also called 'ascribed attributes'. But socially acquired characteristics like marital status, educational level, etc., can be altered by the will or effort of a individual and the community in which he lives. These are called "acquired or achieved characteristics".

7.3.1. SEX COMPOSITION

The Population is composed of males and females. This type of distribution of population by sex is called "sex composition". This is a biological attribute. The most common measure used to show the sex composition of population is the sex ratio. The sex ratio is the number of males per 100 females. It is obtained by dividing the number of males with the number of females multiplied by 100. But of India the "sex ratio", means the number of females per 100 males.

There are many reasons for higher or lower sex ratios in a given population. Reasons for higher sex ratio in some countries are: (1) net out-migration of females, (2) net immigration of males. (3) high female mortality, (4) error in data because of under-reporting of females or over-reporting of males. Lower sex ratio in some other countries is due to (1) Net immigration of females, (2) net out-migration of females, (3) excessive male mortality (for instance in war) and (4) error in data.

In general, the urban areas are benefitted by a higher sex ratio than the rural areas.

Table 1. SEX RATIOS FOR TOTAL POPULATION : URBAN AND RURAL POPULATION (M/F x 100)

Sl	Country	Year	Sex Ratios		
			Total Population	Urban Population	Rural Population
1.	G.D.R.	1971	85.5.	84.1	89.3.
2.	India	1981	106.9	116.6	105.4
3.	Indonesia	1971	98.0	100.0	96.2
4.	Japan	1975	96.9	97.6	93.4
5.	Pakistan	1972	112.9*	122.7	110.7
6.	Phillipines	1970	99.0	93.3	101.5
7.	Srilanka	1971	105.5	112.5	103.5
8.	U.S.A.	1970	94.8	93.0	100.0
9.	U.K.	1971	94.4*	93.6	98.5
10.	U.S.S.R.	1970	85.5	86.4	84.3

Source : Asha Bhendea and Tara Kanitkar : Principles of population studies. 1978 p.146.

Table 2. Over all Sex Ratio in India in the twentieth century

$$\text{Sex Ratio} = (M+F) \times 100$$

Census Year	Sex Ratio
1901	102.9
1911	103.8
1921	104.7
1931	105.3
1941	105.8
1951	105.7
1961	106.3
1971	107.5
1981	107.1

Sources : (1) 1901-1971 computed from census centenary 1972, Pocket Book of Population Statistics, pp. 18-19
 (2) Computed from Registrar General & Census commissioner of India, census of India 1981, provisional population Totals, Series 1, India paper 1 of 1981.

7.3.2. AGE COMPOSITION

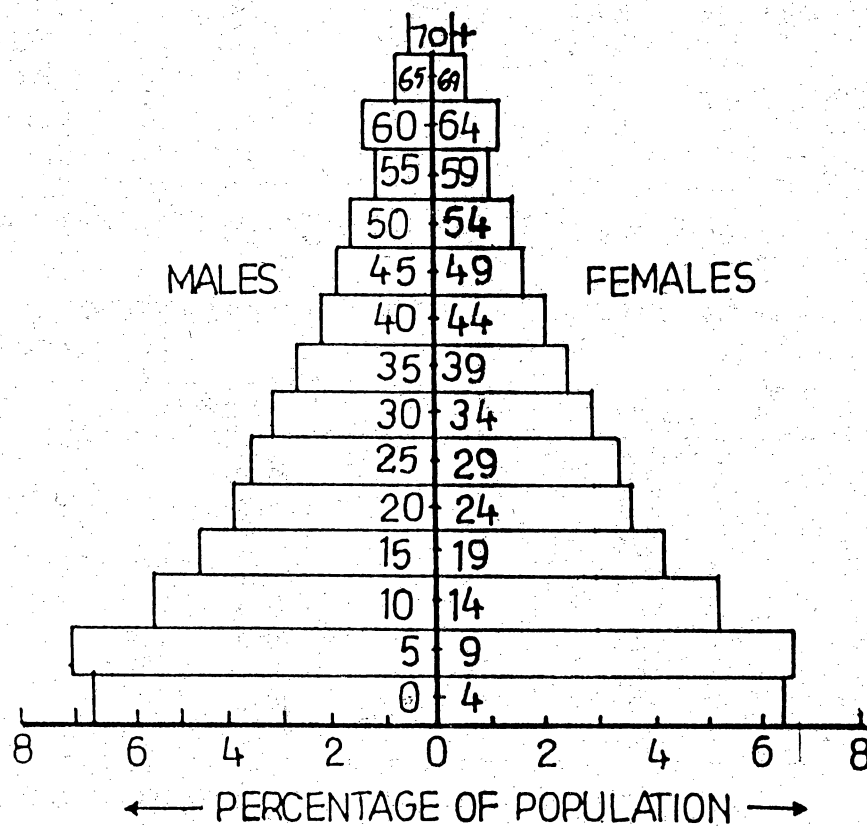
The United Nations has defined age as the estimated or calculated interval of time between the date of birth and the date of census, expressed in completed solar years². In the census,

the data on age is collected by asking the individual to indicate his/her date of birth or age in completed solar years as on his/her last birth-day. But many illiterate people may not be in a position to give information as regards their date of birth. So the data is collected by asking the individual about the age in completed years as on his/her latest birthday. It is difficult to get correct information about age. The main reasons for errors in age data are due to (2) wilful or intentional concealment, (2) ignorance or carelessness. There are three types of errors in age data: (1) Overstatement or under-statement of age (2) preference for a specific age, (3) preference for an age ending in specific digits. In the rural areas there has been high misappropriating of ages in the cases of children. The demographers evaluate the nature and magnitude of the effectiveness of the data. The necessary corrections are made before consolidating the data for analysis.

(a) Analysis of Age data

The age data is generally available in single years (for instance the number of people of 13 to 14 years or age. But the data is classified into 5 or 10 years age groups like 0-4, 5-9 10-14... etc., or 0-9, 10-19, etc. It is the data thus classified that is used for analysis.

The Age Pyramid



The age structure of any population is most commonly studied with the help of simple measures like the percentage distribution or age pyramid. The data is also measured in averages like Mean, Median and Mode.

The simplest measure is the percentage distribution of the population in various five or ten years groups. It helpful in knowing the age structure of any population which is used for describing. It is used for comparing the age.

Table 3. Distribution of population of India According to Five Year age groups. 1971 & 1981.

Age Group	Populations figures in thousands		Percentage	
	1971	1981	1971	1981
0-4	87,970	83,751	16.07	12.59
5-9	77,445	93,639	14.15	14.08
10-14	65,031	85,675	11.88	12.88
15-19	53,986	64,037	9.87	9.63
20-24	47,100	57,308	8.61	8.62
25-29	41,642	50,747	7.61	7.63
30-34	36,815	42,442	6.73	6.38
35-39	31,824	38,895	5.82	5.85
40-44	26,700	34,212	4.88	5.14
45-49	21,907	29,250	4.00	4.40
50-54	17,458	25,440	3.19	3.83
55-59	14,861	16,441	2.53	2.47
60 +	10,410	43,172	1.26	6.49
70 +	8,190	-	1.50	-
Not available	771	278	-	-
Total	5,47,950	6,65,289	100,00	100,00

1. Source - Asha Bhende, Tarakanitkar Principles of populations studies Himalaya Publishing House (1985) Page 133.

Table 4. Age distribution of India (1971 & 1981) & the United States (1970 & 1980) according to important age groups.

Age Group	India		U.S.A.	
	1971	1981	1970	1980
0-4	15.07	12.59	8.45	7.39
5-14	26.03	26.96	20.05	14.95
15-24	18.48	18.25	17.44	18.36
25-34	14.38	14.01	12.25	16.93
35-44	10.70	10.99	11.37	11.53
45-54	7.19	8.23	11.42	9.82
55-59	-	2.47	-	5.06
55-64	5.43	-	9.15	-
60+	-	6.49	-	15.95
65+	2.76	-	9.87	-

- Sources :
- (1) Census of India 1971, Series 1 India, Miscellaneous series, paper 2 of 1974, Age & life tables (one percent sample) pp 8-9
 - (2) Computed from United Nations Demographic year 1972 pp. 176- 177 & 1980, 218-219
 - (3) P.Padmanabha, 1981 series, India Paper 2 of 1983, Key population statistics based on 5% sample data pp 8-9 (Excludes Assam)

It is evident from the table that the percentage of population in the age group 0-4 in India is much more than that of U.S.A. On the other hand, the percentage of population in the age

groups 45-54, 55-64 and 650 in the USA are much more than those of India. So it is clear that there are more children in India than in the USA and more elderly people in America than in India.

This dependency ratio is not a fully accurate measure for assessing the dependency burden for not all the persons in the working age group are employed nor are all persons are economic dependents. However, it gives a broad idea of the dependency burden. The dependency burden varies from country to country.

Table 5. Distribution of Population Dependency Ratio's of Selected Countries

Country	Year	Child dependency	Aged dependency	Total dependency
Developing Countries	1980	68.77	6.88	57.0
Developed Countries	1980	35.07	17.34	52.41
Pakistan	1980	91.92	5.59	97.51
United Kingdom	1980	32.64	23.54	56.18
Japan	1980	34.96	13.43	48.39
India	1981	73.33	12.03	85.36
SriLanka	1981	58.40	7.19	65.59
U.S.A.	1981	33.74	17.29	51.03

Source :Asha Bhende and Tara Kanitkar; Principles of population studies 1985 p.136

The table shows that the developed countries have a low dependency ratio while the developing countries have a high dependency ratio. For instance, the developing countries like India, Sri Lanka, Pakistan, etc, have higher dependency burdens than developed countries like USA, USSR Japan, etc.

7.3.3. AGE-SEX COMPOSITION

The basic difference between the earlier discussed topics and this is that in the earlier ones sex or age is classified, but here the sex groups are divided according to age groups. But we find it difficult to study the patterns of age-sex composition unless it is depicted on the graph. The most readily understood form of graphic representation is called 'Population pyramid'. When the age-sex compositions of the most of populations are plotted graphically, they form a pyramid. The broad base represents the Youngest population and the sides gradually slope towards a point representing the decrease by deaths over successive years. If the demographer wants to study how the size of populations differs in age-sex composition without regard to the size of total population, he can use the Age Pyramids. He has to take proportions of population in each age, sex group, where the area of the total population in all pyramids is the same. The pyramids, it may be seen differ in shape when one pyramid is super-imposed on another. Five year age groups are generally adequate and involve much less work.

The population is always dynamic whereas the pyramid is a static picture. The proportions of population in various age and sex groups change because of the continuous action of mortality, fertility and migration. In the figures given above, the age pyramid of India in 1981 is placed on that of 1971. The total is the standardised 100%. The fluctuations in specific age groups occur due to the birth rate, death rate and migration.

7.3.4. MARTIAL STATUS

Martial status is a social attribute. The study of population according to Martial status has several purposes. Formation of biological family is through marriage in almost all societies. In these societies marriage is universal and procreation is legally Permitted through marriage. The martial status is an important factor affecting fertility. It is taken into account in the case

of females. The pattern of marital status in any society is influenced by the combined effect of various biological, social, economic, religious and legal factors. For instance, in India the universality of marriage may be explained by pointing out that as set forth in the religious epics, the Hindu has to fulfill his religious duties which involve marriage and procreation. In Ireland marriage age is the result of peculiar social, economic and political considerations, just as there are various factors which influence the pattern of marriage.

Classification of Marital Status

The United Nations recommended the classification of individuals according to the marital status into the following four groups: (1) Single (unmarried); (2) Married not legally separated; (3) Widowed and not remarried; (4) Married but legally separated. But generally the data on marital status are classified under the following categories. (1) Newly married; (2) Currently married (husband and wife living together), (3) Widowed (Widowed but not remarried); (4) divorced or separated (legally divorced or legally separated and not remarried). Sometimes the last three categories are combined and called 'Ever married'. In some cases some authors have combined the divorced and the separated under one heading as they are not participating in the procreation.

Table 6 Distribution of females in India by age and marital Status.

Age-group	Single	Currently married	Widowed	Divorced or Separated	Total
10-14	93.35	6.59	0.03	0.03	100.00
15-19	55.90	43.47	0.21	0.42	100.00
20-24	10.05	88.44	0.69	0.82	100.00
25-29	3.29	94.33	1.50	0.88	100.00
30-34	1.20	94.81	3.12	0.87	100.00
35-39	0.64	93.17	5.42	0.77	100.00
40-44	0.55	87.81	10.86	0.78	100.00
45-49	0.44	82.93	15.96	0.67	100.00
50-54	0.43	69.23	29.71	0.63	100.00
55-59	0.36	67.33	31.79	0.52	100.00
60-64	0.40	43.09	56.05	0.46	100.00
65-69	0.43	40.62	58.55	0.40	100.00
70+	0.44	21.71	77.55	0.30	100.00
15+44	15.96	80.48	2.92	0.74	100.00
15-49	14.47	80.70	4.09	0.72	100.00

Source : Census of India 1981, Series 1, Indian paper 2 of 1983, Key population statistics based on 5 per cent sample data p. 10.

7.3.5 ETHNIC COMPOSITION

In many countries there are linguistic minorities, i.e. those whose languages are different from that of the Politically dominant group. They are multilingual countries. The presence of different language groups created many political, social and economic problems. It has a decisive influence on the life of nation. The presence of different language groups in a country may make it all the more difficult to formulate national policies in respect of health, education and economy and in many other respects. Moreover a distinct language group has certain other cultural characteristics like religious beliefs, marriage customs, agricultural practices, dietary habits, etc. Thus the ethnic composition is the classification of individuals on the basis of colour, nationality, religion or other cultural factors. The ethnic composition may be studied in relation to the linguistic composition.

The Three types of data on language found in the tables are:

- (a) Mother Tongue (Languages spoken in the family in childhood)
- (b) Currently or usually spoken at home:
- (c) Knowledge of a specific language or languages.

As regards the relative value of language data for exploring the ethnic composition of a population, the Year Books says, "Language is perhaps a more sensitive index than birth place, because linguistic differences tend to persist until complete cultural assimilation has taken place. Common ancestral customs may be reflected in the mother tongue of the individuals long after persons have changed their citizenship, perhaps several times."

Table 7. Religious composition of population in India (1951-81.)

Religion	1951	1961	1971	1981.
Hindus.	84.98	83.51	82.71	82.65
Muslim.	9.91	10.70	11.21	11.35
Christian.	2.35	2.44	2.60	2.43
Sikh.	1.74	1.79	1.89	1.97
Buddhist.	0.05	0.73	0.70	0.71
Jains.	0.45	0.46	0.47	0.48
Others.	0.52	0.34	0.40	0.41
Total	100.00	100.00	100.01	100.00

Source : 1. Asha Bhende and Tara Kanitkar; Principles of Population studies Page 158.
2. Year Book of family welfare programme in India 1982. Page 83.

7.3.6. RELIGIOUS COMPOSITION

Religion is important among the various social characteristics of a population. It influences various types of demographic behaviour. A demographic analysis of religion is undertaken by describing the percentage distribution of the people in various religious groups. Table 7 presents the percentage distribution of India's population by religion from 1951-1981. It shows that there has been record increase in the percentage of the Muslims, Christians and Sikhs in the Indian population.

7.4. POPULATION CHANGE

The study of the size of the population was a major concern in the early days when the size of the population was not generally broken down into its components. The early literature on population was concerned with the question of optimum population. But decision on optimum population depended upon their chosen goals. For instance the Romans thought of optimum population as that which enable them to maintain a large empire. Plato and other Greek philosophers regarded the optimum population as one that would allow Constitutional Government and secure adequate division of labour. For the Chinese the optimum population was one that would provide an adequate balance between land and population for the type of agriculture economy prevailing in the country. In much later periods, the writings on population dealt with population change over a period. According to Quetelet, the population tends to grow more and more slowly as time goes on. According to Pearl and Read, the population grows in the form of a logistic or 'S' shaped curve and the causes of change proposed are biological and not social in origin. Some writers put forward biological explanations for it. CorredoGini is of the opinion that population follows a cause of growth like that of individual human beings. He also suggested "demographic metabolism, a sort of biological factor to explain the behaviour of

population". Thus this factor influences the population through its impact on fecundity or the ability to have children.

Some other writers viewed population as the effect of other processes in society. Some others felt that population change caused other changes in society as well. Some economists emphasised that the size of population was related to the division of labour, the cost of increase or decrease of production, the level of employment, etc. But these writings are not primarily concerned with what produces population change of a given kind but with how population change affects various aspects of the economy.

7.4.1. COMPONENTS OF POPULATION CHANGES

According to the first theory or explanation for population change the basic components of population change are (1) Births, (2) Deaths, and (3) Residential mobility. As regards the population change, the population at any point of time is equal to the population at an earlier point of time plus the births minus deaths, plus the movements of persons into areas minus movements to outside areas. In symbolic representation the basic population equation appears as follows:

$$P_2 = P_1 + B - D + M_i - M_o$$

Where P_1 or P_2 are the populations at earlier and later points respectively.

B = Births

D = Deaths

M_i = Movements into the area

M_o = Movements outside the area

This formula assumes that the land area under consideration remains unchanged. The population of a given city may increase or decrease because of boundary changes resulting from annexation or cessation of territory.

The net effect of the components of the population equation (births and deaths) constitute the natural increase or decrease. Births and deaths are natural phenomena while the movements of people are social phenomena.

7.4.2. CAUSES AFFECTING THE COMPONENTS OF POPULATION CHANGES.

The components of population change are Fertility, Mortality and Migration respectively. Fertility is defined as the actual number of children born. i.e, the number of births. It is influenced by exposure to intercourse, contraception and gestation and parturition. Some variables which are influencing fertility are stable marital unions, fecundity, uses of contraception, etc. According to Freedman, these variables are influenced by the norms prevailing in the society:

Mortality is defined as the death of a member in the population. The United Nation included a list of probable factors related to mortality, They are (1) level of living, (2) level of education, (3) number of medical and health service units available etc.

As migration between countries is minimised its effect on the population change becomes almost nil. So population change is mainly influenced by births and deaths.

7.5. SUMMARY

Population refers to the total number of persons residing in a given area at a point of time. Population census, sample surveys, Registration of vital events and United Nations Demographic Year Book are the major sources of population data. Age, sex, race, religion, marital status, educational level, occupation are the basic characteristics which are used as bases for describing

or classifying the population. The components of population change are fertility, Mortality and Migration.

7.6. SUGGESTED BOOKS

Asha Bhende and Tara Kanitkar	:	Principles of Population Studies
Bogue, D.J.	:	Principles of Demography
Davis, K.	:	The sociology of Demographic Behaviour
Hans Raj.	:	Fundamentals of Demography

7.7. MODEL EXAMINATION QUESTIONS.

I. Answer the following in about 30 lines each.

- (a) Describe the characteristics of population.
- (b) Discuss the Age Pyramid.
- (c) What is the concept of population change? How does the population in a given area change over a period of time?

II. Answer the following in about 10 lines each.

- (a) What are the major sources for the population data?
- (b) Discuss the significance of marital status.
- (c) Explain what is meant by Ethnic composition?
- (d) What do you mean by dependency ration?
- (e) Explain the significance of the religious composition of population?

UNIT-8 : AGE, SEX AND MARITAL STATUS

Contents

- 8.0. Aims and Objectives
- 8.1. Introduction
- 8.2. Sex Composition
 - 8.2.1. Sex ratio
 - 8.3.2. Age Composition
 - 8.3.1. Age Structure
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 - 8.3.3. Dependency Ratio
 - 8.3.4. Dependency Ratio and Economic Development
- 8.4. Age, Sex Composition or Age Pyramid
- 8.5. Marital Status
 - 8.5.1. Age at Marriage
- 8.6. Summary
- 8.7. Suggested Books
- 8.8. Model Examination Questions

8.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the composition of population.

By the end of this unit you will be able to :

- explain the composition of population.

8.1. INTRODUCTION

The population is affected by births, deaths and social mobility. Social mobility has the least effect on population change, at the country level. But it has an important role at local level. The remaining two components fertility and mortality have a striking effect on population structure and population structure effects fertility and mobility. Age, sex and marital status of the population affects population change. So the study of age, sex and marital composition of population is very important. Age and sex components are biologically determined characteristics and marital status is a social characteristic, but it helps to form the biological family.

8.2. SEX COMPOSITION

Sex is a biological characteristic. It is the prime source of ascribed status. It is a visible, indisputable and convenient indicator of status in the society as a whole. Societies attempt to rationalise the roles of the sexes.

For the study of sex structure of any population the following two measures are generally adopted :

- 1) The percentage of males in the population;
- 2) Sex ratio.

But the sex composition is generally determined through the sex ratio only.

8.2.1. SEX RATIO

Sex ratio is the most common measure used to show the balance of the sexes in a population. It is determined as the number of males per 100 females. It is obtained by dividing the total number of males by the total number of females and multiplying the result by 100. It can be calculated for a total population or for any part of a population. According to 1981 census the sex ratio is 107.14, which means that there are 107.14 males per every 100 females.

In almost all countries there are more males than females at the time of birth. In urban industrial areas the sex ratio at birth is 105. Prenatal losses are very low in these areas. In other areas it is 102, Prenatal deaths are more and many more which are unregistered in among females. In general males have a higher death rate than females. The numerical excess of males gets progressively cut down until in the older age groups females outnumber the males. This general pattern does not occur, in some populations because of certain distorting events. For instance the sex ratio is higher in some countries because of 1) the net out migration of females 2) net immigration of males, 3) high female mortality 4) errors in data. On the other hand the sex ratio is low because of 1) the net immigration of females 2) the net out-migration of males 3) excessive male mortality and 4) errors in data.

The sex ratio of a population is affected by 1) the sex ratio at birth 2) the mortality differences in the sex ratio, 3) the sex ratio of the net migrants.

The sex ratio at birth is always favourable to males. The number of male babies is always slightly higher. In most of the countries it is higher than 100. Generally, around 105 that is 105 males per 100 female babies. It varies from 101.2 to 106.6 from country to country. It is determined biologically and therefore only slight variations are observed from population to population. It appears that nature's balance is slightly more favourable to males than females at birth. Though the sex ratio at birth is determined by biological factors, the variations are caused by demographic factors like the age of the mother and order of the live birth. There appears to be an inverse relationship between the age of the mother and the order of the birth on one hand and the sex ratio at birth.

Table 1. Sex Ratio at birth in selected countries :

Country	Year	Sex Ratio at Birth M/F X 100.
Canada	1979	106.0.
South Africa (coloured population)	1977	102.3.
White population	1977	104.6.
Trinidad & Tobago.	1976	104.0.
United States	1979	105.2.
Chile	1980	104.4.
Japan	1980	106.0.
Peninsular Malaysia.	1979	106.2.
Belgium	1980	105.0.
Denmark	1980	105.0
France	1980	105.3.
Federal Republic of Germany	1980	105.4.
Ireland	1980	105.0
Norway	1980	106.7.
Romania.	1974	105.9.
Sweden	1980	105.6.
United Kingdom (England and wales)	1980	106.0.
Australia	1980	105.6
U.S.S.R.	1973	105.1.

Differences in mortality affect the total sex ratio and the sex ratio at various age levels. Differential mortality in sex ratio varies from country to country. The sex ratio of the deceased is above 100 in all countries except India where more than 100 males die per 100 females, The male is biologically more delicate than the female. It was observed that expectation of the life at birth for females is higher than that for males. In most countries, at each age the death rates are usually higher for males than for females. The table 2 shows the sex ratios for the age groups below 15 are above 100 because of the high sex ratio at birth, Sex ratios decrease in the age group of 65 and above. Thus the sex differentials in mortality tend to make the sex ratio of the total population more favourable to females than males.

Table 2. Sex Ratio for three main Age groups for various Regions of the world 1980.

Sex Ratio = (M/F) X 100.

Regions	Age Groups.			
	Below 15	15-64	65+	All ages.
Africa.	101	98	75	98.
North America.	103	98	73	95.
Western America.	103	100	88	101
East Asia.	104	105	86	104
South Asia.	105	104	95	105
Europe.	104	99	66	95
Oceania.	103	104	80	102
U.S.S.R.	103	91	42	88
World	104	102	76	101

Source : Asha Bhende and Tara Kanitkar Principles of population studies. 1982 Page 125.

The sex ratios of the net migration also affect the sex ratio of the total population. Migration is sex selective which means that only one sex tends to predominate in migration movements. For instance, the net migration to urban areas is male dominated in nature. Rural-to-rural migration is female dominated on account of factors like marriage.

Table 3. Sex Ratio of population in Indian cities with one million or more population in 1971 and 1981.

Sex Ratio = (M/F) x 100.

City	Sex Ratio.	
	1971	1981.
Calcutta.	142.6	127.7
Bombay.	139.6	129.4
Delhi.	125.3	123.7
Madras.	110.7	107.5
Ahmedabad.	120.5	115.3
Hyderabad.	109.1	108.7
Banglore.	114.4	111.9
Kanpur.	131.2	123.5
Pune.	116.2	113.6

Source : Asha Bhende and Tara Kanitkar Principles of Population studies. Page 127, 1982.

The city of Calcutta has the highest sex ratio (142.6) followed by Bombay, Kanpur, Delhi and Ahmedabad. In India the sex ratio in urban areas is favourable to males.

Table 4. Overall sex Ratio in India in the twentieth century.

Census Year.	Sex Ratio.
1901	102.9
1911	103.8
1921	104.7
1931	105.3
1941	105.8
1951	105.7
1961	106.3
1971	107.5
1981	107.1

Sex Ratio = (M/F) x 100.

Source : Asha Bhende and Tarakanitkar, Principles of population studies. 1982 page 127.

The sex ratio in India in 1981 is 107.1, which shows that males outnumber females in the total population. From 1901 to 1971 the magnitude of the excess of males over females has increased except in 1951 census. 1981 census shows that there is a drop in the Sex Ratio.

Sex composition is free from the misleading statistics of such events as birth, death and delinquency. Differences in the sex ratios cause differences in their marriage ratio, age composition and birth rate.

8.3. AGE COMPOSITION

The age composition of the population is more difficult to construct than its sex composition. Age can be classified in a number of ways. There is however, a little confusion regarding the definition, reporting and recording of age.

The United Nations has defined age as "the estimated or calculated interval of time between the date of birth and the date of Census, expressed in completed solar years." Information on age data should be collected by the Population Census. The Census Enumerator asks the individuals his age on his last birth-day. The information on age is collected sometimes by finding out the age completed on the last birth-day. It is easy to ask a question but is rather difficult to get correct information. So errors occur in the age data.

The errors in age data are 1) over-statement or under statement 2) preference for a specific digit, and 3) preference for specific ages. Such information is furnished intentionally or unintentionally 2) ignorance or carelessness. There is a great deal of apathy in this regard. The age data show concentration of population at certain ages. For instance, Indians prefer the digits '0' and '5'. The defective age data is tested and certain necessary adjustments are made before using such data.

8.3.1. AGE STRUCTURE.

The data are generally available in single years. But for demographic purposes the age data in single years is not useful. So it is necessary to classify the data into units of five years, like 0-4, 5-9, etc.

The age structure of population can be studied by means of percentage distribution and simple measures like the age pyramid. The other measures are mean, median and mode for a given population. The simple measure of percentage distribution is based on the age group and the percentage of people in the particular age group. This measure is helpful in knowing the age structure of any population. It is useful for comparing the same population at different points of time with that of another population at the same point of time. The following table is an example of the age distribution of two countries at same point of time.

Table- 5. Comparision of Age Compositions of India and the U.S.A.

Age	India		U.S.A.
	1981	1971	1971
0-4	12.59	16.07	8.45
5-14	26.95	26.03	20.05
15-24	18.24	18.48	17.44
25-34	14.01	14.34	12.25
35-44	10.99	10.70	11.37
45-54	8.22	7.19	11.42
55-64	5.20	4.43	9.15
65 +	3.80	2.76	9.87
	100.00	100.00	100.00

Source : For (1981) India -Census of India Series I Part II special report based on 5% example data.

For (1971) India, U.S.A.- Quoted from principles on population studies -P 161.

The table shows that the age distribution of the Indian population changes from time to time and differs from that of the U.S.A. at the same point of time.

8.3.2. MEAN AGE AT MARRIAGE

It is the most commonly used measure of age composition. It means the age at which the population is divided into two equal points. The median age has been increasing and mortality has been declining and expectation of life at birth has been increasing. For instance, in America the population data on median age and its increase is presented in the following table 6.

Table-6 : Median Age of the Population in the U.S.A.

Year	Median
1900	22.9
1910	24.3
1920	25.3
1930	26.6
1940	29.0
1950	20.2
1960	29.2
1970	28.1

Source : Quoted from Thompson and Lewis - population problems- (Tata Mc. Graw - Hill Publishing Company Ltd. New Delhi 1976) p, 87

For 1900 & 1970 - Quoted from Charless B Nam and Susen D Gusteries-Population Dynamics of Demographic Change. Houghton Mifflin Company Bostan, 1976) p 192.

There was a steady rise in the median age of the USA from 1900 to 1950. This was due to combined effects of declining mortality and a declining fertility.

CHECK YOUR PROGRESS.

1. How can you assess age.

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2. What are the errors in age data?

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There has been considerable variations in respect of the median age in different countries. There has been a strong negative relation between the median age on the one hand and birth and death rates on the other. So the higher the birth rate and death rate the younger the population is, and the lower these rates are the older the population is.

Table -7 : Median Age and Dependency Ratios of selected countries, 1961

Country	Median age	Dependency ratio		Total
		Youth	Aged	
Ceylon	19.8	73	6	79
Canada	26.4	60	19	79
India	21.4	66	10	76
U.S.A.	29.5	56	24	80
Japan	25.7	49	15	64
U.K.	35.9	38	29	67
France	33.3	45	30	75

50 Source : Quoted from Thompson and Lewis, Population Problems (Tata Mc Grew Hill Publishing Company Limited, New Delhi, 1976) p 90

8.3.3. DEPENDENCY RATIO

The calculation of Dependency ratio is more complex than that of the median age. But it is a useful way of describing the age distribution of a population. Every member of the society is a consumer but only some members are producers. A country is prosperous which has a large number of members producing goods and services, other things being equal. But the fact is that all other things are not equal. For instance, societies differ with regard to the sections of their populations which are expected to be economically active. Biology may set the lower and upper limits but actually they vary from country to country. For instance, the age 15 is the approximate lower limit of the productive power and the age 60 is the uppermost limit. So people under 15 years are called as young dependents, and those over 60 the dependent aged. The people of the age group 15-59 form the economically active population.

Young dependency ratio is calculated as the number of persons below 15 years to 100 persons aged 15-59. Similarly, the number of persons aged 60 and above to 100 persons of 15-59 is called aged dependency. The total dependency is calculated as the number of persons below 15 years and the number of persons above 60 years per 100 persons aged 15-59.

$$\begin{aligned} \text{Young Dependency Ratio} &= \frac{\text{PO-15}}{\text{P 15-59}} \times 100 \\ \text{Aged Dependency Ratio} &= \frac{\text{P 60+}}{\text{P 15-59}} \times 100 \\ \text{Dependency Ratio} &= \frac{\text{PO-15} + \text{P 60+}}{\text{P 15-59}} \times 100 \end{aligned}$$

Where PO-15, P 15-59, and P 60 + are the number of persons in the age groups 0-15, 15-59 and 60 + respectively.

The dependency ratios differ from country to country. A high dependency ratio always means that a large proportion of the population is under 15 years of age. The dependency ratio is closely and positively associated with youth dependency ratios and are inversely but less closely associated with the aged dependency ratios.

Another measure for the age structure of population is the "dependency ratio". This measure indicates the ratio of the number of persons in the age of 0-15, 15-59 and above to 100 workers in 1960. The dependency ratio is as follows.

$$\text{Dependency Ratio} = \frac{P_{0-15} + P_{65+}}{P_{15-64}} \times K \text{ where}$$

P 0-15, P 15-59 and P 65+ are the populations in the age groups of 0-15, 15-59 and 60+ respectively and K is 100

$$\text{Dependency Ratio} = \frac{230,416 + 16,060}{301,703} \times 100 + 81.36$$

$$\text{Young Dependency Ratio} = \frac{230,416}{301,703} \times 100 + 76.37$$

$$\text{Old Dependency} = \frac{150,60}{301,703} \times 100 + 4.99$$

$$\begin{aligned} \text{Total Dependency Ratio} &= \text{Young Dependency Ratio} + \text{Old Dependency Ratio} \\ \text{Hence } 81.36 &= 76.37 + 4.99 \end{aligned}$$

Dependency burden in 1981

$$\text{Dependency Ratio} = \frac{263065 + 431172}{358772} \times 100 = 85.36$$

$$\text{Young Dependency Ratio} = \frac{263065}{358772} \times 100 = 77.33$$

$$\text{Old Dependency Ratio} = \frac{431172}{358772} \times 100 = 13.03$$

$$\begin{aligned} \text{Total Dependency Ratio} &= \text{Young Dependency Ratio} + \text{Old Dependency Ratio} \\ \text{Hence } 85.36 &= 77.33 + 13.03 \end{aligned}$$

8.3.4. DEPENDENCY AND ECONOMIC DEVELOPMENT

The age composition of a country is related to the economic development of the country. The countries with the lowest dependency ratios are already highly urbanised and industrialised and have a high level of living. High birth rate creates a heavy dependency ratio. A sudden drop in birth rate would quickly reduce the dependency ratios in developing countries because the number of dependent youth would decrease. On the other hand countries with higher birth rate and lower death rate would have a high dependency ratio. The higher dependency ratio reduces the size of the economically productive population which in turn lowers the economy. Thus the higher the dependency ratio, the lower the economy will be. So there is a negative correlation between the dependency ratio and the economically active population.

8.4. AGE-SEX COMPOSITION OF AGE PYRAMID

Age sex composition on a population is a cause and consequence of population change. The most useful device for determining the age sex composition is the age pyramid. When age and sex compositions of most populations are plotted graphically the result is a pyramid. This can be constructed with the population of each sex age category. For instance, the bars at the bottom denote the percentages of the population of each sex aged below 5 years on either side of the vertical line. Theoretically, the age pyramids are used to compare the age-sex distribution of a population at a given time with the distribution of other times. In a population with constant birth and death rates and no migration the figures should be a perfect pyramid.

The population pyramid may be based on absolute numbers or on proportions, Pyramids based on numbers can be used for comparing both the sizes and shapes of population. The pyramid is nothing more than two bar graphs placed on either side and put back to back. The figures are identical in area but differ in shape. The conclusions to be drawn are the differences in the relative distribution of the various age and sex groups. The relative size of each age and sex group in the U.S.A. pyramid can be compared directly with the same age and sex group in the Indias pyramid. For instance India, has proportionately a larger population of age below 5 years than, the U.S.A.

A population is always dynamic where as the pyramid is static because the proportions in each age group are affected by mortality, fertility and migration. The population pyramid freezes this nation at a particular moment in time. Thus the pyramid can be valued as a picture of the biological history of population, the result of 100 years of births, deaths and migration. A number of countries today have pyramids similar to that of India, but because of recent and spectacular successes in the reduction of the infant and child mortality rates the bases of some pyramids are even broader than India's. These countries are growing more rapidly than India.

8.5. MARITAL STATUS

The study of the characteristics of population includes the study of marital status unlike age and sex compositions. It is a socially acquired characteristic. There are several reasons for studying the marital status. The first is that marriage involves the formation of a biological family. In most of the societies reproduction takes place only in marriage. So it affects fertility.

The pattern of the composition of population by marital status is the combined effect of various biological, social, economic, religious and legal factors. For instance, the Hindu religion emphasizes the universality of marriage. Marriage is essential to man to fulfill the duties of grihasthashram which includes the begetting of children. For a women it is essential, since marriage allows her to participate along with her husband in carrying out sacraments of the grihasthashram. In Ireland, it is the result of peculiar social, economic and political conditions.

Table 8- Distribution of females of Age 15-44 in India by Marital status 1951-1981.

Census Year	Single	Currently married	widowhood and Divorced.	Total
1951	8.22	82.81	8.97	100.00
1961	7.44	85.81	6.75	100.00
1971	11.00	84.50	4.50	100.00
1981	15.86	80.48	3.66	100.00

Source : Asha Bhende and Tara kanitkar; Principles of population studies. page 151.

From 1951 to 1981 several changes have occurred. The main change is that the percentage of single women has increased and the other categories has decreased.

The percentage distribution of males and females by marital status and age groups is useful for the study of marital status patterns in a particular country or various countries or regions such as rural and urban at a particular point of time.

The marital status distribution differs from country to country. For instance in India, the proportion of child marriages is more since the custom of universality of marriage prevails. On the other hand, in Ireland persons marry at a very late age. In between these two extremes there are various other patterns of marital status distribution. In India about 43% of females are single in the age group of 15-19 where as in Pakistan, U.S.A and Ireland in this age group there are 68.6%, 88.1% and 98.4% respectively. On the other hand, only 1.95% of women are single in the age, group of 25-29 in India whereas 5.6%, 12.16% and 37.75% of them are in Pakistan, U.S.A. and Ireland respectively. This shows that almost all the females are married before they attain the age of 30 years in India.

Table 9 - Marital Status of Females in Selected countries

Country	Age Group	Single	Currently married	Widowed	Divorced or Separated	Total
India (1981)	15-19	55.90	43.47	0.21	0.42	100.00
	20-24	10.05	88.44	0.69	0.82	100.00
	25-29	3.29	94.33	1.50	0.88	100.00
Pakistan (1978)	15-19	68.60	31.10	0.13	0.17	100.00
	20-24	18.04	80.99	0.41	0.56	100.00

	25-29	5.60	92.24	1.44	0.72	100.00
U.S.A.	15-19	88.12	10.75	0.24	0.88	100.00
(1970)	20-24	35.28	57.90	0.68	5.13	100.00
	25-29	12.16	79.15	1.05	7.64	100.00
Ireland	15-19	98.4	1.59	0.01	-	100.00
(1966)	20-24	74.78	25.15	0.07	-	100.00
	25-29	37.75	61.99	1.27	-	100.00

Source : Quoted from Asha A Bhende and Tara Kanitkar Principles of Population Studies p. 178.

8.5.1. AGE AT MARRIAGE

It is another measure of marital status. The age at which marriage takes place is called age at marriage. Decennial censuses of India are assessing the age at marriage for the first time in India.

The calculation of the mean age at marriage is done by taking a series of decennial censuses. The procedure is to isolate the marriage experiences of a decade by calculating the probabilities of people remaining single between the age 'x' at time 't' to age 'x + 10' at time of 't + 10'. For instance, the proportion of single people of age 0-4 and 10-14 are found in the census at time 't + 10' because these proportions are logically the result of the marriage experience of the decade.

The age at marriage has been increasing year after year as disclosed by the data on age at marriage in India, It has risen from 13.41 years in 1901 to 18.66 years in 1981.

Table 10 - Age at Marriage.

Year	Age at Marriage (years)
1901	13.14
1911	18.16
1921	13.67
1931	12.69
1941	14.69
1951	15.59
1961	15.83
1971	17.75
1981	18.66

Source : (1901-61) B. Kuppaswamy - Population and Society in India. 1975, p 110
(1971-81) Family Welfare Programme Year Book, 1982-83.

Age at marriage differs from country to country. The mean age at marriage is dependent upon many social, economic and cultural factors.

8.6. SUMMARY

Population has defined characteristics like age, sex and marital status. Each has a defined role in population change. The young population has high fertility and mortality rates whereas the aged population has less fertility and mortality rates. The impact of age at marriage is also inversely proportional to that of fertility, mortality, age and sex structure of population. That means the lower the age at marriage the higher is the fertility and mortality rates. Thus age, sex and marriage status influence population change.

8.7. SUGGESTED BOOKS.

Asha Bhende and Tara Kanitkar	:	Principles of Population
Bogue, D.J.	:	Principles of Demography
Thomlinson	:	Population Problems
Bhattacharya	:	
Davis, K.	:	The Sociology of Demographic Behaviour

8.8. MODEL EXAMINATION QUESTIONS.

I. Answer the following in about 30 lines each.

- What do you mean by sex ratio? Describe the level of sex ratios in the world.
- What is dependency ratio? What is its impact on economic development?
- Classify the marital status of population at the international level.

II. Answer the following in about 10 lines each

- Explain what is meant by the age Pyramid?
- Explain what is meant by the age at marriage?
- Describe the impact of differences in mortality rates on the sex ratio.
- Explain the impact of the sex ratio of net migrants on the sex ratio of the total population.
- What are errors in age data?
- Mention the levels of age at marriage in different countries.

UNIT-9 : RELIGION AND ETHNIC COMPOSITION

Contents

- 9.0. Aims and Objectives
- 9.1. Introduction
- 9.2. Religious Composition
 - 9.2.1. Religious composition and Population Change
- 9.3. Ethnic Composition
 - 9.3.1. Ethnic Composition and Population Change
- 9.4. Language Composition
- 9.5. Summary
- 9.6. Suggested Books
- 9.7. Model Examination Questions

9.0. AIMS AND OBJECTIVES

The aim of this unit is to explain the distribution of population according to the religious and ethnic composition and their effect on population change.

By the end of this unit you will be able to:

- explain Religious composition and population change,
- explain ethnic composition and population change.

9.1. INTRODUCTION

Religion as a system of belief or worship has social significance and may be said to be a social attribute of population. It can be changed at any time in one's life. Religion provides a frame work of ideas within which every kind of experience finds a significant form. However religion has a tremendous influence on the individual's conduct and behaviour. It, therefore has a considerable impact on the social, economic and demographic characteristics of the society. For instance - muslims and catholics are, generally, not in favour of restricting the size of the family through the use of contraceptives. Thus religion indirectly influenced population change.

9.2. RELIGIOUS COMPOSITION

Religious composition may be defined as the distribution of population by religion. The population of India is made up of several religious groups. The largest of which are those of hindus, muslims, christians, budhists, jains and parsis. Such religious groups are found in different proportions in different countries. For instance, in India the majority of the people are of Hindu religion, while in Pakistan they are of Muslim religion. Religion, it may noted, affects the life style of the people concerned and accounts even for the values distinguishing them from others.

There may be changes in proportions which are brought out by the census conducted every 10 years. It is, therefore, possible to make a comparative study of them from the census. The following table shows the variations in this regard from the census of 1951 till that of 1981.

Table-1 : Distribution of population by religion in India

Religion	1981	1971	1961	1951
Hindus	82.65	82.74	83.50	84.98
Muslims	11.37	11.21	10.70	9.91
Christians	2.43	2.60	2.44	2.35
Sikhs	1.97	1.89	1.79	1.74
Buddhists	0.71	0.70	0.74	0.05
Jains	0.48	0.47	0.46	0.45
Others	0.41	0.41	0.37	0.52
	100.00	100.00	100.00	100.00

Source : (1951-1971) - P.J. Bhattacharjee: Population in India (Vikas Publishing House Pvt. Ltd; Calcutta; 1976) p. 64
(1981) Social Cultural tables volume-1, census tables.

The table 1 shows that the hindus community constitutes in major proportion of total population, The other communities form minor proportions except the muslim community (11.35% as per the census of 1981) The table also shows that while all minor religious communities are growing in numbers the hindu community is shinking in its strength from decade to decade. For example, the proportion of muslims has increased from 9.91% in 1951 to 11.37% in 1981. Likewise, the proportion of christians has also increased from 2.35% in 1981. On the other hand, the proportion of hindus has decreased from 84.98% in 1951 to 82.65% in 1981. If we observed decade growth rate for each religious community that of the minority population clearly may be found to be on the increase.

9.2.1. RELIGIOUS COMPOSITION AND POPULATION CHANGE

Religious composition affects the population change in every country. The birth rates and death rates of different religious groups differ from country to country. They are affected by the social and economic status of the community. Some religious groups in some countries, for instance, christians favour the small family and late marriages. These two norms stabilise or reduces the population by decreasing the population growth. For example, in canada, the Majority of population is christian which favours the small family, their birth rate is 15 and death rate is 7. But the growth rate was 0.8, according 1983. In some countries, muslims favour the large family norm and early marriages. In such countries-the population doubles itself in a very limited number of years. For example in pakistan the birth rate was 43 and death rate 15 and the growth rate was 2.8, so it takes 25 years of Pakistan to double its population. Thus the religious composition of population has an impact on population change.

9.3. ETHNIC COMPOSITION

Ethnic composition of population is another variable. In some countries it is both the cause and consequence of population change. The ethnic origin of population is known from the data on the racial composition of a population. It should be noted that several countries have become melting pots of ethnic groups.

9.3.1. ETHNIC COMPOSITION AND POPULATION CHANGE

Each ethnic group has defined characteristics which affect on fertility and mortality and migration of the population change for instance, in southern U.S.A. a high proportion of population are the blacks who have a high birth rate. The blacks tend to move into central

cities, where low birth rates are current. So with the influx of the Blacks the birth rate in central cities has been rising year by year. Again, social conditions affect the fertility rates which may lead to decline in the fertility rate.

However the high fertility of some ethnic groups produce a greater proportion of young population than others, which in turn brings an increasing number of women into the child bearing age. Thus the ethnic composition has a bearing on population change.

9.4. LANGUAGE COMPOSITION

Many countries are multilingual, i.e., these countries have different linguistic communities. Their presence creates not only political problems but also social and economic problems in the country. The mere inability of different groups to communicate readily with one another makes for suspicion and reluctance to cooperate fully with one another in matters of national interest. The presence of these groups make it all more difficult to develop national policies in such matters as health, education and economic development. The data on language groups can be obtained under the following three categories, 1) mother tongue, 2) language currently or usually spoken at home, 3) knowledge of language or languages. According to the demographic year book of 1956 "language is perhaps, a more sensitive index than birth place, because linguistic differences tend to persist until complete cultural assimilation has taken place. Common ancestral customs may be reflected in the mother tongues of the individuals long after those persons have changed their citizenship, perhaps, several times"

In some countries language and nationality are not so politically and socially important as the ethnic composition. In the U.S.A., the ethnic composition is calculated on, the basis of both the native born and the foreign born.

Table-2. Percentage distribution of the population by language in selected countries

Country and Language	Percentage	Country and Language	Percentage
Canada (1951)	100.0	India (1951)	100.0
English	59.1	Hindi	
		Urdu	
		Hindustani	42.0
		Punjabi	
French	29.0	Telugu	9.3
Ukrainian	2.5	Marathi	7.6
German	2.4	Tamil	7.4
Indian or Eskimo	1.0	Bengali	7.0
Polish	0.9	Gujarathi	4.6
Yiddish	0.7	Kannada	4.1
Italian 0.7	Malayalam	3.8	
Netherlands	0.6	Oriyan	3.7
Others	3.1	Others	10.5
Switzerland (1950)	100.00	Belgium (1947)	100.00
German	72.1	Flemish	41.8
French	20.3	French	34.2
Italian	5.9	French & Flemish	15.6
Others	1.7	Others	8.4
Yugoslavia (1951)	100.00	Romania (1948)	100.00
Serbian and Croation	73.2	Romanian	85.7

Slovenian	8.8	Hungarian	9.4
Macedonian	5.5	German	2.2
Squittarian	4.6	Yiddish	0.9
Hungarian	3.0	Others	1.8
Others	4.0		

Source : Thompson and Lewise: Population Problems.

9.5. SUMMARY

Religion as a system of belief or worship has social significance and is said to be a social attribute of population. Religious composition of population has impact on population change. Ethnic origin of population is both a cause and consequence of population change.

9.6. SUGGESTED BOOKS

Asha Bhende & Tara Kanitkar	:	Principles of Population Studies
S.N. Agarwal	:	Population Problem in India
Thomlinson	:	Population Dynamics
Bogue, D.J.	:	Principles of Demography
Hans Raj	:	Fundamentals of Demography

9.7. MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Consider the religious composition of population and its effect on population change.
2. Consider the significance of the language composition of population with special reference to India.

II. Answer the following in about 10 lines each.

- a) Discuss religious composition of population in India.
- b) Define "ethnic composition of population" in India.
- c) Discuss the changes in the religious composition of the population in India.
- d) What is the need for the study of religious composition of population?

UNIT-10 : OCCUPATIONAL AND EDUCATIONAL COMPOSITION

Contents

- 10.0. Aims and Objectives
- 10.1. Introduction
- 10.2. Occupational Composition
 - 10.2.1. Working Women
 - 10.2.2. Occupational Composition and Population Change
- 10.3. Educational Composition
 - 10.3.1. Educational Composition and Change
 - 10.3.2. Literacy
 - 10.3.3. Literacy rate in Selected Countries
 - 10.3.4. Literacy rate in India
- 10.4. Educational Attainment
- 10.5. Summary
- 10.6. Suggested Books
- 10.7. Model Examination Questions

10.0. AIMS AND OBJECTIVES

The main aim is to acquaint you with the literacy and occupational composition.

By the end of this unit you will be able to :

- discuss the occupational composition and population change,
- explain the educational composition and population change.

10.1. INTRODUCTION

One of the important indicators of development is the level of literacy and educational attainment. It is considered to be an important factor in the process of modernization. The level of education is effecting on all demographic variables like marriage, fertility mortality and migration as well as participation in labour force. Participation of labour force in turn affects the level of income, level of standard of living, educational attainment etc., So educational attainment, and occupation are mutually related to each other. So the study of occupational and educational composition or population is needed.

10.2. OCCUPATIONAL COMPOSITION

Occupational composition of the population is an important indicator. Occupation is defined in census reports of Economic Characteristics as the activity of the person, For example professional manager characteristics clerk, labourer etc, But measurement of occupational study is more difficult than that of labour force. There is a difference between regular and actual occupations. There is also the problem of enllocation of retired persons who work occasionally. Effective analysis requires identification and differentiation of casual occupation,

present occupation, previous occupation, prospective occupation etc., Some times some persons are holding two or more jobs of different types. It is difficult to clarify in such circumstances.

The common classification of labour force in U.S.A. is as follows 1) Professional, technical and kindred workers 2) farmers and farm managers 3) managers, officials and proprietors except from 4) clerical and kindred workers. 5) Sales workers 6) Craftsman, foreman and kindred workers 7) operatives and kindred workers 8) private house hold workers 9) Service workers except private household 10) labours except from and mine. 11) Others.

Working adds to the national productive output and individuals work to acquire the means to buy necessities and luxuries. According to Alba Edwards "Education is a very large factor in the social status of workers and wage or salary income is a very large factor in thier economic status".

Occupation refers to activity of the individual and industry refers to the activity of the organisation employing the person. Class refers to the relation of the person to other persons for instance self employed, government employed and private and employed one examples of class of work.

Industries are grouped into three types, based on their proximity to nature. Primary or extractive industries produce raw materials. Example agriculture, hunting, fishing, forestry, mining and quarrying. Secondary industries manipulates raw materials. Examples manufacturing, building and construction. Tertiary industries do not produce or alter a product, although some of them do things with finished products, Example sales, commerce, service, transport communication and education.

Changes in occupational composition follow industrial changes. A relative decline in agricultural employment opportunities is accompanied by absolute decrease in the rural population. In U.S.A. industrial composition has changed, so occupational composition has also changed. The proportion of workers working as farmers and farm managers as well as farm labourers and farm foreman constitutes approximately 40 per cent in 1900 reduced to six per cent in 1960. Labourers, except farm and mine also decreased from 12.5% to 4.8% during the same period. There are also sizeable increases in all categories.

Technological change has had an uneven impact on the society and its' economy. There are certain jobs we have an ample supply of labour than job opportunities. The job opportunities are increased for the educated and the skilled but reduced for the un-educated and un-skilled.

In India the occupation composition is distributed among three sectors. In primary sector the proportion of population was 72.2" in 1971 but it reduced to 67.7% in 1981. During 1971 in rural areas 56% males were cultivators 2.6% agricultural labourers and 2.5% plantation workers. Among females 33% were cultivators, 5.4% were agricultural labourers and 26% were plantation workers.

Table 1. Shows the occupational distribution of working population in India Since 1901. Over the last 80 years the proportion of of working population engaged in primary sector has been steady.

Table 1:
Occupational classification of workers 1901-1981

	1901	1921	1951	1961	1971	1981
A. Primary sector (1+2+3)	71.7	76.0	72.1	71.8	72.1	68.8
1. Cultivators	50.6	54.4	50.0	52.8	43.4	41.6
2. Agricultural Labourers	16.0	17.4	19.7	16.7	26.3	24.9
3. Livestock, forestry, fishing, hunting plantations.	4.2	4.2	2.4	2.3	2.4	2.3

B. Secondary sector (4+5+6)	12.6	10.5	10.7	12.2	11.2	13.5
4. Mining & quarrying	0.1	0.3	0.6	0.5	0.6	0.6
5. Manufacturing	11.7	9.3	9.0	4.2	6.0	7.8
a) Household industry(a)	b	b	b	6.4	3.5	3.5
b) otherthan household industry	11.7	9.3	9.0	4.2	6.0	7.8
6. Construction	0.8	0.9	1.1	1.1	1.1	1.6
C. Tertiary sector (7+8+9)	15.7	13.5	17.2	16.0	16.7	17.7
7. Trade & Commerce	6.1	5.7	5.2	4.0	5.6	6.2
8. Transport, storage and communications.	1.1	0.9	1.5	1.6	2.4	2.7
9. other services	8.5	6.9	10.6	10.4	8.7	8.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

- Notes :
- a) includes persons engaged in household activities under category 3 and 4 also.
 - b) includes under categories 3, 4, and 5 (ii)
 - c) Excludes Assam.

Source : compiled from CMIE, Basic statistics relating to the Indian Economy Vol I. All India, Aug 1985.

Broadly occupations are divided into three types Primary, Secondary and Tertiary. Agriculture, animal husbandry, forestry, fishery, etc are collectively known as primary activities or industries. They are primary because their products are essential for human existence. Manufacturing industries both small and large are secondary activities. Mining is also including in this category. Transport, Communications, banking, finance, and services are tertiary activities. The occupational structure of a country refers to the distribution or division of its population according to different occupations.

In secondary sector 9.4% total workers working among them 10% were males 7% were females. The remaining balance of population were engaged in tertiary sector or service sector.

Higher proportion of non-agricultural workers were in urban areas. In India it is observed the proportion of population in primary sector is going on reducing while service sector and secondary sector the proportions are going on increasing.

10.2.1. WORKING WOMEN

Traditional beliefs on working of women outside the house have undergone a striking change since 19th century. They do work outside the house as men do. Previously, males opted to work outside and provide bread and butter to the family and women were not allowed to work outside it was considered as prestige.

But today non working women are characterised as a major social loss and the largest group of them are considered wasters in the country. Modern house wives are working to justify their daily existence and to keep from being bored Economically the female population especially married women, constitute a reserve man power supply capable of exerting a steadying influence on the employment situation in times of distress. On the whole, the status held by women in the western world is under going a major transition.

The prosperity to work varies greatly among cultures. In western nations women participate fairly and extensively in the labour force. In Thailand the women have considerable power in the home often having control of family finances and doing most of the buying and selling.

At another extreme end, Arab Middle East, the women rarely works outside the house. Traditional Muslim women marry early, and attend assiduously to wants of their husbands and male children and stay home. In egalitarian societies 50% of jobs are for women.

Labour force participation by American women is on the rise. Valerie Oppenheimer reviewed that the major female professions are nursing, teaching, librarianship and social work. These personality characteristics are normally regarded as feminine.

10.2.2. OCCUPATION COMPOSITION AND POPULATION CHANGE

The occupational composition has an impact on population change. The manual occupational groups have high fertility and mortality and net migration movements. For instance the farm labourers, labourer service workers and private workers have high fertility rates. The population composition is young i.e., more proportion of children are depended upon the lesser proportion economically active population. On the other hand, professional workers, managers officers, clerical staff have less fertility rates and so have less effect on population change. On the whole where a greater proportion of labourers are unskilled workers there is rapid population change vice-versa, low proportion of labourers have less effect on population change.

10.3. EDUCATIONAL COMPOSITION.

One of the important indications of social development is the level of literacy and educational attainment. Education is an important variable effecting demographic behaviour as well as participation of labour force,

10.3.1. EDUCATIONAL COMPOSITION AND POPULATION CHANGE

It is observed that there is negative relationship between educational attainment and population change. It is found that the higher the educational status the lower is fertility level. There are many studies which enumerate that higher education leads to low birth rates. On the other hand low education levels lead to high birth rate and growth rate. For instance in U.S.S.R, the literacy rate is 100% but the birth rate is 19 per 1000 population and death rate is 10 per 1000 population, but in Algeria where literacy rate is 18.8% the birth rate is 46 per 1000 population and death rate 16 per 1000 population. Thus educational composition on population has an impact on population change.

10.3.2. LITERACY

The United Nations has defined literacy as the ability of a person to read and write with understanding a short simple statement of his every day life. The main concept in the definition of literacy is the ability to read and write with understanding. On this basis a person who can only write his name or numbers or recites a nursery rhyme is not treated as literate.

Measurement of literacy rate is done by the number of literate persons for a population of 100.

The crude literacy rate : $\frac{L \times 100}{P}$, where L=number of literates, P=total population.

Using this formula literacy rates can be calculated for each sex, region, occupational group, etc.,

10.3.3. LITERACY RATE IN SELECTED COUNTRIES

Level of literacy is not at the same level in all countries. Some have more literacy rates and some have less rates. The following table 1 reveals the same fact that some countries have more literacy rates and many have less rates. At one extreme low end Nepal stands with 12.5% in 1971 and the other end is the U.S.S.R where almost the entire population is literate. In almost

all countries female literacy rate is lower than the male literacy rate. The developing countries like Nepal, Iran, India etc., the difference between male literacy rates and female literacy rate are particularly observed significantly.

Table 2 : Literacy Rates for Males and Females of Age 15 and Above.

Country	Year	Percentage of literates among persons of aged 15 and above.		
		Total	Males	Females
Algeria	1966	18.8	29.9	8.0
Mexico	1966	74.2	78.2	70.4
Argentina	1966	92.6	93.5	91.7
Chile	1966	88.3	89.2	87.5
Indonesia	1966	59.6	70.8	49.0
India	1971	33.4	46.9	18.9
Iran	1966	22.8	32.1	12.2
Nepal	1971	12.5	22.4	2.6
Philippines	1970	83.4	84.6	82.2
U.S.S.R.	1970	99.7	99.8	99.7
Yugoslavia	1970	83.5	91.9	75.7

Source : Asha A. Bhende and Tara Kanitkar - Principles of Population studies.

10.3.4. LITERACY RATE IN INDIA

There was progress in total literacy rate and male and female literacy rates since 1901. The government of India has started a number of schools and colleges to educate the masses. National Adult Education Programme was started in 1977 to eradicate illiteracy completely by 2000 A.D. All these programmes make successful attempts to raise the literacy level of the population.

The table 2 enumerates the level of literacy rate since 1951. The literacy rate increased from 16.7% in 1951 to 36.2%. It is almost double in the males. The literacy rate was nearly doubled during the same period. It was increased from 24.9% in 1951 to 46.7% in 1981. But in the case of females the literacy rate has tripled. It has increased from 7.9% in 1951 to 24.9% in 1981. The details are presented in the table 3.

Table 2: Literacy Rate in India During 1951 -'81

Year	Total	Males	Females
1951	16.7	24.9	7.9
1961	24.0	34.4	13.0
1971	29.5	39.5	18.7
1981	36.2	46.7	24.9

Source : (1951-71) P.J. Battacharjee-Population in India 1981-Year book-Family Welfare programme in India

10.4. EDUCATIONAL ATTAINMENT

Educational attainment of males and females is an important indicator for the study of population characteristics. Generally it is measured by percentage distribution of various levels of educational attainment in the literate population of aged 15 and above. In India sizeable percentage of people do not undergo formal school education but they learn reading and writing outside the formal school. So, the separate category is created to allocate them in specific category, or "literate but no formal education". The essential feature of the education attainment in the population is only 22 percent of the literate males and 15 percent of literate females had either studied upto the matriculation standard or beyond that level.

Table 3. EDUCATIONAL ATTAINMENT IN INDIA 1971 AND 1981.

Educational Attainment	Total Population	1971		1981	
		Males	Females	Males	Females
1) Literature but no formal education	25.05	24.67	26.03	29.38	33.42
2) Primary	32.24	30.44	37.05	30.29	33.98
3) Middle	22.78	28.32	21.24	17.98	16.78
4) Matriculation or Higher Secondary.	16.06	17.32	12.68	17.27	12.48
5) Non-technical diploma or certificate not equal to degree.	0.17	0.18	0.15	.09	.09
6) Technical diploma or certificate not equal to degree.	0.38	0.40	0.35	.57	2.96
7) Graduates and above.	3.32	3.67	2.40	4.42	2.96
	100.00	100.00	100.00	100.00	100.00

Source : Asha Bhende and Tarakanitkar. Principles of population studies. page 156.

10.5. SUMMARY

Occupation refers to activity of an individual. Changes in occupational composition follow industrial changes. One of the important indications of social development is the level of literacy and educational attainment. Education is an important variable effecting demographic behaviour as well as participation of labour force.

10.6. SUGGESTED BOOKS

Ahsa Bhende & Tara Kanitkar	: Principles of Population Studies
Bogue, D.J.	: Principles of Demography
Thomlinson	: Population Dynamics
S.N. Agarwala	: Population Problem in India
Hans Raj.	: Fundamentals in Demography

10.7. MODEL EXAMINATION QUESTIONS

I. Answer the following in the about 30 lines each.

- a) Describe the occupation composition in U.S.A.
- b) Describe the changes in school enrolments in U.S.A.
- c) Describe the literacy rate in different countries.

II. Answer the following in about 10 lines each.

- a) Describe status of working women.
- b) Describe the changes in literacy rate in India.
- c) Describe the educational attainments in India.
- d) Describe the concept of "illiteracy".
- e) Describe the role of educational attainment in population change.
- f) Describe the role of occupational composition in population change.

UNIT-11 :RURAL - URBAN DIFFERENCES IN POPULATION COMPOSITION

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- 11.2. Census definition of Urban and Rural Population
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- 11.4. Rise of Urban Areas
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- 11.5. Geographic Difference in Urban and Rural Composition
- 11.6. Social Differences in Rural and Urban Composition
 - 11.6.1. Rural Urban differences in sex ratio
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 - 11.6.3. Rural Urban differences in age structure
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 - 11.6.5. Rural Urban differences in population change
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11.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the characteristics of rural and urban life.

By the end of this unit you will be able to :

- explain the difference between urbanization and urbanism,
- explain the social differences in rural and urban composition.

11.1. INTRODUCTION

In the previous units we have studied about population composition and change, Age, sex, and marital composition, Ethnic and religious composition, occupational composition and educational composition. In this unit we will study rural and urban differences in population.

11.2. CENSUS DEFINITIONS OF URBAN AND RURAL POPULATION

In 1910 the bureau of census in the USA defined urban population. According to this definition, the urban population is what is found living in incorporated places of 2,500 or more at the time of a decennial census. The rural population represents the residue consisting of

those who remain after the urban population has been identified but this does not represent the actual state of population distribution.

So in 1950 a new definition of "urban" was put forward. According to the U.S. bureau of census, the urban area can be said to be the physical entity as distinguished from both the legal entity and the metropolitan community. In general, urban areas are more thickly populated than the rural areas. The census geographers include the limits of the urbanised area urban residential density or devoted to commercial, industrial transportational and other purposes functionally related to the central city. An urbanised area may be regarded as one divided into the central city (of 50,000 or more) or cities and the remainder of the area of the urban fringe. All the fringe population is classified as urban. Many cities have such fringe populations which are included in urban population.

In India in 1961, a new definition was set forth to delimit the urban area and distinguish it from the rural areas. Based on this definition the urban area can be classified by registrar general of census using the following criteria a) a density, not less than 400 persons per 1 sq. Km. b) a Population of 5,000 persons; c) 3/4 of the adult male population engaged in non-agricultural activities d) and other places which have urban characteristics and amenities.

CHECK YOUR PROGRESS.

1. Define urban and rural population

- 11.1.1. Rural Urban differences in sex ratio
- 11.1.2. Rural Urban differences in marital status
- 11.1.3. Rural Urban differences in age structure
- 11.1.4. Rural Urban differences in literacy level
- 11.1.5. Rural Urban differences in population change
- 11.7. Summary
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11.3. URBANISATION AND URBANISM

The term urbanisation is defined as the process by which an increasing proportion of country's population comes to live in cities. The "urbanism" refers to the style of living usually found in cities.

According to W.S. Thompson, urbanisation is the movement of people from communities concerned chiefly with agriculture to other communities, generally larger, whose activities are primarily centred in government, trade, manufacture or allied interests. The rate of urbanisation varies from time to time and from country to country.

The concept of urbanism refers to lifestyle that characteristically develops under urban conditions of living. Lewis Wirth regarded transiency, superficiality and anonymity as the distinctive features of inter-personal relations in the urban milieu. According to Nelsons urbanism as a way of life is both complex and fluid and tends to become all the more so. The typical urban person is inclined to be more sophisticated, less bound by tradition, and in fact more urbane than the rural person.

11.4. RISE OF URBAN AREAS

In 1910 the bureau of census in the USA defined in the USA definition, the urban population is what is found living in incorporated places of 2,500 or more. In the early days, the shift from nomadism to settled agriculture, took place in response to the needs of defence at first and later to those of and commerce, politics, and religion. Many

cities and urban areas of today were small villages at the beginning of the 20th century. For instance, in India, the Chandigarh of today, was a small village at the beginning of the present century.

Name of the State	1921	1961	1971	1981
India	17.42	17.44	17.01	17.01
Andhra Pradesh	17.42	17.44	17.01	17.01
Assam	17.42	17.44	17.01	17.01
Bihar	17.42	17.44	17.01	17.01

11.4.1. ANCIENT CITIES

The small size of the cities of antiquity was due to the inability of the agricultural hinter-land to produce and transport daily the huge quantities of food and other necessities required by a large non-agricultural population. It is difficult to trace the origin of cities. On the basis of archaeological evidence it may be said that in 4000 B.C. for the first time cities like the Mesopotamian cities emerged. Much later there appeared the greek city state consisting of a city and its immediate environs. The hinterland supplied food for consumption and often products such as olive oil for export. We have little demographic knowledge concerning those times. In 430 B.C. in a greek city state there were about 40,000 adult male citizens and a total free population of 1,50,000 of whom less than 1/2 lived in the city.

11.4.2. MEDIEVAL CITIES

The city states of Phoenicia, Greece and Italy had their counter parts in the medieval communes of Italy and Flanders. But the medieval cities differed from the earlier ones in three important respects (1) They were dependent upon other areas, (2) They were economically specialised and (3) they had the first really urban man. The castle and the market towns were not self-sufficient. They imported most of their necessities from other areas. They specialised in industrial and mercantile activities. The emergence of the middle class bourgeoisie was the result of the separation of urban areas from the rest of the areas.

11.4.3. MODERN CITIES

The medieval cities are forerunners of the modern cities, The modern cities developed because of industrial or political causes. For instance, in India, Chandigarh was created to serve as the capital of newly created states (Punjab & Haryana). The city of Bombay was created due to the development of industries. The present day cities are densely populated because of the influx of rural population. The most populous cities are Shanghai, Mexico, Tokyo, Beijing, New York, etc.

11.4.4. FUTURE CITIES

Lewis Mumford anticipated a tremendous growth of cities. The cities of 2,000 AD may well turn out to be replicas of the most populous cities of the world of today. Thanks to the automobile and other transportation media which would enable commuters to travel over 50 kms up and down to place of work with ease and comfort.

11.5. GEOGRAPHIC DIFFERENCES IN URBAN AND RURAL COMPOSITION

In any country there are differences in population composition depending upon geographic conditions.

In India the percentage of urban population differs from one geographical area to another. The states are taken into consideration as geographic limits in India. The percentage of urban population is given in the following table 1 for the selected states:

Country	1971	1975	1981	1985
India	17.01	17.01	17.01	17.01
West Malaysia	17.01	17.01	17.01	17.01
Nepal	17.01	17.01	17.01	17.01
U.S.A.	17.01	17.01	17.01	17.01
China	17.01	17.01	17.01	17.01

Table 1. Percentage of Urban Population in Selected States in India.

Name of the State	Percentage of Urban Population			
	1951	1961	1971	1981
India	17.29	17.97	19.91	23.31
Andhra Pradesh	17.42	17.44	19.31	23.32
Assam	4.65	7.69	9.23	10.29
Bihar	6.77	8.43	9.33	12.47
Maharashtra	28.75	28.22	31.17	35.03
Tamilnadu	24.35	26.35	30.76	32.95
Uttar Pradesh	13.64	12.85	14.02	17.05

Source: (1951-61) P.1. Bhattacharjee-Population in India Appendix-1 (1971-81) Year book-Family Welfare Programme in India 1982-83.

11.6. SOCIAL DIFFERENCES IN RURAL AND URBAN COMPOSITION

In rural areas life is simple and based on caste, kinship organisation. contacts are mutual, literacy is low, civic amenities are few and medical, public health and educational facilities are inadequate. Communication and transport facilities are not properly developed. Incomes are low, production techniques are crude, traditional values and superstitions dominate in the rural life.

In urban areas life is different from that of rural areas. The urban life is complex and based on heterogeneity. Literacy rate is high and medical, public health and educational facilities are ample. The urban people are highly susceptible to any change in the society.

11.6.1. RURAL URBAN DIFFERENCES IN SEX-RATIO

In general the urban areas are better placed in respect of the sex-ratio than rural areas. Males usually migrate to urban areas in search of employment and females from one rural area to another. So the growth of urban areas is reflective of the natural growth and net migration. The following table 2 sets forth the data concerning the sex-ratio in some selected countries. Where the sex-ratio is dominated by males. This trend is observed in developing countries also.

Table 2. Sex ratio to total population, urban and rural population.

Country	Year	SEX-RATIO (M/FX 100)		
		Total Population	Urban Population	Rural Population
India	1971	107.5	116.6 (1971)	105.4
	(1981)	106.9		
Pakistan	1972	112.9	122.7 (1968)	110.7 (1968)
Japan	1970	96.4	97.6	93.4
West Malasia	1970	101.6	101.3	100.9
Nepal	1971	101.4	117.3	100.3
Sri Lanka	1971	105.5	112.5	103.5
Phillipines	1970	99.0	93.3	101.5
U.S.A.	1970	94.8	93.0	100.0
Chili	1970	95.3	90.7	111.6

United Kingdom	1971	94.4	93.6	98.3
France	1970	93.3	93.3	99.3
			(1968)	
Sweden	1975	98.7	96.7	114.5
German Democratic Republic	1971	85.5	84.1	89.3
U.S.S.R.	1970	85.5	86.4	84.3

Source : Asha Bhende and Tara Kanitkar-Principles of Population Studies. Page 146

But in developed countries the females are dominant in urban areas and the males in rural areas. This rural urban difference in sex ratio in developed countries is one manifestation of the complex community interdependence characterising the urban industrial societies. For instance, a rural women who is single or who has lost her husband through death or divorce, is more likely to move in to an urban community than a male in similar circumstances. So in developed industrialised countries the urban areas prove more beneficial to females than males.

11.6.2. RURAL URBAN DIFFERENCE IN MARITAL STATUS

Rural and urban population differ in respects of the rate of ever married proportion. In general in the case of India a large proportion of males & females in rural areas stay married as they are tradition bound. The table 3 presents the percentage of population under the category of "ever" married.

Table 3. Percentage of the ever Married in Rural and Urban areas for selected age groups in India 1981.

Age group		Percentage of ever married		
		Total population	Rural	Urban
All age groups	males	44.69	45.22	42.03
	females	54.28	55.17	51.24
15-19	Males	13.48	14.95	5.61
	Females	44.10	49.65	28.21
20-24	Males	43.86	49.85	29.79
	Females	89.95	90.06	73.48
25-29	Males	78.52	82.48	68.58
	Females	96.71	98.02	92.25

The table shows that a greater proportion of males and females in rural areas are married than that of urban areas. This indicates the rural urban difference in respect of marital status.

11.6.3. RURAL URBAN DIFFERENCES IN AGE STRUCTURE

The age composition of rural composition is different from that of urban composition. The proportion of economically active population is greater than that of old age population. In population composition of the U.S.A. 1960; the age groups 5-19 had a greater Proportion of people in rural areas than in urban areas. On the other hand, in the age groups 20-44, the proportion of people in rural areas was less than that of urban areas.

11.6.4. RURAL URBAN DIFFERENCES IN LITERACY LEVEL

In general there are more opportunities to study in urban areas than in rural areas. So the level of literacy rate is high in urban areas compared to that of rural areas. For instance, in India, the literacy rate in 1981, was 27.9% in rural areas and 60.2% in urban areas. In the U.S.A. in urban areas the median school years completed in 1960 was 11.1 years and in rural areas 8.8 years.

11.6.5. RURAL URBAN DIFFERENCES IN POPULATION CHANGE

There are five possible causes of population change in urban areas as well as in rural areas. They are independent of each other. Their individual and collective behaviour changes from decade to decade. The components of population change in urban areas are 1) National increase, 2) migration, 3) political annexation or detachment, 4) change in definition of urban populations 5) change from one classification to another.

Historically rural areas have produced populations and urban areas have consumed them. The growth of larger cities prior to the Industrial revolution was probably due to immigration. In U.S.A. where living conditions were favourable there were excess births over deaths. But in 1860 there were more deaths than births in urban areas. After 1860, the trend was reversed and the urban growth was dominated by net migration. Some of the American cities had migrants from other countries as well as from rural areas. After the Industrial Revolution the growth of industrial and commercial cities was one of the net migrants.

The change in the urban population is also due to the annexation or detachment of certain areas of an annexed area which would not have developed into urban areas. Its annexation increases the population of the place which annexes it and also increases the urban population at the national level. On the other hand, in the case of detachment of an area, the total proportion of urban population would not be affected but only the area from which detachment was done, may suffer a decrease in population.

Age Group	1970	1975	1980	1985
All age	44.69	42.22	42.03	42.03
Females	44.10	43.86	43.86	43.86
Males	45.28	40.82	40.82	40.82
20-24	89.92	89.92	89.92	89.92
Females	89.71	89.02	89.02	89.02
Males	90.13	89.82	89.82	89.82

The urban growth is also due to change in classification according to "Donald J. Bogue" Emergence of same urban places is an important source of urban population. It adds the entire population of the place whose classification has been changed to urban. Thus rural urban differences arise in population change.

CHECK YOUR PROGRESS.

- What are the components of population change in urban areas?

The table shows that a greater proportion of males and females in rural areas are married than that of urban areas. This indicates the rural urban difference in respect of marital status.

11.6.3. RURAL URBAN DIFFERENCES IN AGE STRUCTURE

The life system of the people of rural areas, differs from that of urban areas. Urban areas are benefited by males in developing countries and by females in developed countries. The rural urban differences affect the population change.

11.7. SUMMARY

11.8. SUGGESTED BOOKS

Asha Bhende & Tara Kanitkar	:	Principles of Population Studies
Bogue, D.J.	:	Principles of Demography
Thomlinson	:	Population Dynamics
S.N. Agarwala	:	Population Problem in India

11.8. MODEL EXAMINATION QUESTIONS.

I. Answer the following in about 30 lines each.

- a) Explain the socio-geographical differences in rural urban composition.
- b) Give an account of the components of urban population growth.

II. Answer the following in about 10 lines each.

- a) Examine the rural-urban differences in respect of the literacy rate.
- b) Elucidate the rural-urban differences in age and sex composition.
- c) Consider the rural urban differences in marital status.
- d) Define "urbanization" and "urbanism."
- e) Explain the concept of rural and urban population.
- f) Consider the emergence of modern cities.

UNIT-12 : POPULATION COMPOSITION OF INDIA

Contents

- 12.0. Aims and Objectives
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- 12.3. Regional Imbalances in Population
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 - 12.4.4. Age Pyramid
 - 12.4.5. Marital Status
 - 12.4.6. Literacy Composition
 - 12.4.7. Literacy Rate in India
 - 12.4.8. Religious Composition
- 12.5. Summary
- 12.6. Suggested Books
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12.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the characteristics of population in India.

By the end of this unit you will be able to:

- explain the characteristics of population in India

12.1 INTRODUCTION

India is the second most populous country in the world after China and at present every seventh person in the world is an Indian. According to United Nation's estimates the population of India in 1983 is 7030 millions and in China it was 1023.3 millions. These two countries put together account for 1753.3 millions out of 4677 millions of world population in 1983. India alone accounts for 15% of the world's population.

12.2 POPULATION GROWTH IN INDIA

In India the population was taken into consideration from 1901 onwards. Eventhough the census counting was started in 1871 A.D., there was no accurate and full information on population. So it was accounted that there were 238 Millions of people in 1901 in India. It was increased by 5.75% during 1901-11 as there was higher birth rate and death rate. The absolute increase was only 14 millions and it reached to 252.1 millions in 1911. But in the following decade there was heavy death tolls in various parts of the country. There was a heavy incidence of Plague, Cholera, Malaria etc. In 1914 and 1916, the crops failed extensively due to failure of monsoon. At the same time the worst, great epidemic of influenza broke out in 1918, in many

parts of the country. So on the whole the population of India was decreased by 0.03 during 1911-21 and reached to 251.3 millions.

Before 1921, the birth rate was around 50 per 1000 population and death rate was at 45 per 1000 population. But during 1921-31 there was much care in controlling the effects of incidence of severe national calamities. So there was a steady decline in the death rate but the birth rate was at the stationery standard. So there arose wide gap between birth and death rates. So during 1921-31 the population was increased by 11 percent. This is the huge percentage of increase of the population. So the year 1921 has been called as the **great decade**.

Table 1
Population in India: Birth rate and death rates.

Year	Population (Million)	Decadal Change (%)	Birth Rate	Death Rate
1901	238.4	-	45.8	44.4
1911	252.1	5.75	49.2	42.6
1921	251.3	0.31	48.1	47.2
1931	278.9	11.00	46.4	36.3
1941	318.8	14.92	45.2	31.2
1951	361.1	13.31	39.9	27.4
1961	439.2	21.64	41.7	22.8
1971	548.2	24.80	41.2	19.0
1981	683.3	25.00	37.1	14.8

Source : Year book Family welfare Programme in India 1982-83 Government of India.

The size of population increased from 278.9 millions in 1931 to 361 millions in 1951. 82 millions increased in a period of 20 years. But during 1951-61 the population increased from 361 millions to 439 millions in 1961. During this decade the birth rate slightly decreased from 45.2 to 39.9 per 1000 population. But the death rate was decreased from 31.2 to 27.4 per 1000 population. So the gap between birth rate and death rate increased. The population increase was highest during 1951-61. So the year 1951 has been used to call as "**Demographic Gap**".

From 1951 onwards in India the population was increasing at an alarming rate. Science and technology has played a dominant role in the population change. It helped to bring down death rate from 47.2 per 1000 population in 1921 to 14.8 in 1981. But the birth rate was steady or slow. The gap between birth rate and death rate was becoming increased decade after decade. The population was going on increasing every year. In 1981 it was 683,329, 097 and in 1991 it is 843, 930, 861 million.

It was estimated by UNESCO that the population of India will reach one billion mark by the end of 20th century.

12.3. REGIONAL IMBALANCES IN POPULATION

There was positive growth in all states in India during 1971-81. The size of population is dependent upon the density of population, inhabited area and political boundary of the state. The most populous state Uttar Pradesh has more density of population and large area than any other state. It's population has increased from 88.3 million in 1971 to 110.9 million in 1981 at a rate of 2.27 percent which is higher than that of nation level. The second most populous state is Bihar. Here the population increased from 56.4 millions to 69.8 millions during the same period with 2.14 rate of change in population.

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Lowest populous state was sikkim with 0.3 millions in 1981. The density was 44 per Sq. Km. But it has experienced highest growth rate during the same period.

The highest was found in Kerala 654 per Sq. K.M. There are many opportunities for livelihood in the plantations. Coconut plantations in rural areas and industries in urban areas. Lowest density of population was found in Sikkim (44). The reasons are that there are limited scopes for getting livelihood, because it is at the foot hill of Himalayas. Still lowest density has found in Arunachal Pradesh. It is 7 per Sq.K.M. where there is limited scope of livelihood due to snow barriers. This regional imbalances are due to economic, geographic and environmental factors.

12.4. POPULATION COMPOSITION IN INDIA

The population is composed of biological and social characteristics. The biological characteristics are inherited from the parents and social characteristics are achieved from the society. The biological characteristics are age sex, ethnic characteristics and social characteristics are Religion, Literacy, occupation etc. The marital status is a social characteristic but it helps to form the biological unit of family. So it has great importance to play in the population change.

12.4.1. AGE COMPOSITION

It is a biological attribute of the population. United Nations defined age as "the estimated or calculated interval of time between the birth and the date of census expressed in solar years. The data on age is being collected in all census in India. The census collected data on age is got by asking the age at the last birthday. Though it is very easy to ask, but is difficult to obtain correct information. This is due to ignorance or wilfulness of the respondents as well as preference of the individual to certain ages or ages ending with certain digits. In India more people are illiterates. So they are ignorant about their ages, in certain communities old people are given more respect. So some people may prepare to tell more ages on certain cases some people may prepare ages which are ending with '0' or '5' digits or even numbers.

12.4.2. ANALYSIS OF AGE DATA

Age data are usually available in the form of single years that is the No. of persons in the ages of 13, 14, 15, etc. For demographic purpose, it is highly unuseful. It is customary to classify them in five years age groups such as 0-4, 5-9, 10-14 etc. Thus age data is classified in mutually exclusive age groups. These are used for analysis of the age structure of any population and are also useful for wide variety of analytical purposes.

The simplest measure of age data is the percentage distribution of the population based on absolute numbers in various five year age groups. When the population is distributed in percents, the total percentage of the population should always be 100 and changes in age groups should be shown as changes in percentages in each age groups. The table 2 enumerates the percentage distribution of population in India in 1971 and 1981.

Table 2
Percentage of distribution of population according to age groups

Age Group	Percentage of population in 1971	Percentage of population in 1981
0-4	16.07	12.6
5-9	14.15	14.1
10-14	11.88	12.9
15-19	9.87	9.6
20-24	8.61	8.6
25-29	7.61	7.6

30-34	6.73	6.4
35-39	5.82	5.9
40-44	4.88	5.1
45-49	4.00	4.4
50-54	3.19	3.8
55-59	2.53	2.5
60+	4.66	6.5
	100	100

Source - (1971): Asha Bhide and Tara Kaitkar, Principles of Population studies, p. 16

(1981) : From book-Family Welfare population in India, 1982.83.

This measure is helpful in forming an idea about the age structure of any population. The table enumerates that the population of age group 0-4 decreased from 16.07 to 12.59 percent. This may be due to the combined impact of socio economic and demographic factors and propagation family welfare programme. Another significant factor is that 5-34 age groups, the percentage population is higher in 1971 than that of 1981. But the trend reversed after 35 years of age.

Another measure is dependency ratio. It is indicated as the number of dependent persons to 100 workers of working age population. It is measured number of persons of age 0-14 and 60 + to 100 persons of 15-59 age group.

The dependency ratio is not completely accurate measure for assessing the dependency burden as all persons of 0-14 and 60 + are not really unemployed and all persons of 15-59 are not really employed. On the whole it gives an idea on economic dependency burden. It is widely used for all purposes.

12.4.3. SEX COMPOSITION

Sex is a biological attribute of the population. The study of population in each sex group is called as sex composition of population. It is measured as 1) percentage of males in a given population. 2) sex ratio. But for all purposes sex ratio is widely used in sex composition.

Sex ratio-meaning

Sex ratio is defined as number of males per 100 females in a given population. It is measured by dividing the number of males with total number of females and multiplying the product with 100. For instance in India in 1971 the sex ratio is 107.5. It means that there are 107.5 males per every 100 females.

Sex ratio in India

A study of the trend of the sex ratio in India shows that it has been increasing. The sex ratio was increased from 102.9 in 1901 to 107.5 in 1971. The reasons for increasing sex ratio are enumerated before 1) differential enumeration of male and females in Indian census. 2) high sex ratio at birth. 3) higher mortality of females in India and 4) male dominated net migration.

In India there is a possibility that there should be differences in enumeration of males and females in census counting. In other words, the high sex ratio in India may be due to under enumeration of females or over enumeration of males. The male predominance in birth is a biological pattern in India and also in all developing countries. At international level sex selective migration is there. But it has very insignificant effect on population change or sex ratio.

12.4.4. AGE PYRAMID

The age and sex composition of the population is course and consequence of population change. The population is divided by sex according to 5 years or 10 years age groups. This type of the distribution is called age pyramid.

The age pyramid may be based on absolute number on percentage of population in each age group according to sex. The pyramids based on numbers or percentage can be used for comparing both the sizes and shapes of population. The pyramids are identical in area but differ in shapes. This is due to fluxuations in each age group by mortality and migration. The population pyramid freezes this motion at particular moment of time. Thus age pyramid can be viewed as a picture of biological history of population.

In India the age pyramid is different in shapes. It is broad based. This is due to high birth rate in India. The shape of the pyramid is 'conical'. It starts with broad base and ends into a point at the top. The sides are sloping. This shape of the pyramid clearly characterises the high fertility over dependency ratios of the Indian population.

Table 3
Age sex composition in India in 1981

Age group	Male	Females
0-4	12.33	12.87
5-9	14.02	14.12
10-14	13.14	12.60
15-19	9.85	9.38
20-24	8.42	8.82
25-29	7.49	7.78
30-34	6.28	6.49
35-39	5.79	5.90
40-44	5.25	5.03
45-49	4.48	4.30
50-54	4.02	3.61
55-59	3.48	2.47
60-64	2.73	2.73
65-69	1.39	1.47
70+	2.28	2.39

Source - Census of India-Series I-India put II special Reports Board on 5%, samples data Note-Assam excluded.

12.4.5 MARITAL STATUS

The study of composition of population includes the martial status. Unlike age, sex composition, it is not biological characteristics, but it is a social characteristics. The study of marital status is useful for several reasons. Firstly marriage involves in the formation of biological family. Since most of the reproduction takes place only in wedlock. The marital status distinction is an important factor effecting fertility. The pattern of martial status distinction of any society is determined by the combined effect of various biological, social, economic and religious and legal factors affecting marriage.

For example the universality of marriage customs among Hindus in India is explained the individual's opinions, beliefs and status.

All the factors resulted in proportion of married couples (15-44) to 90% in 1971, whereas it was only 7.4% in Ireland.

Marital status is measured in categories 1) never married 2) currently married 3) widowed 4) divorced or separated. The last three groups are called as ever married. The data are made available separately for males and females for various age groups, starting with some minimum age.

Table 4
Marital status of females in India by age is 19

Age	Single	Currently married	Widowed	Divorced
15 Yrs	93.35	6.59	0.03	0.03
16-19	55.90	43.47	0.21	0.42
20-24	10.05	88.44	0.69	0.82
25-29	3.29	94.33	1.59	0.88
30-34	1.20	94.81	3.12	0.87
35-39	0.64	93.17	5.42	0.77
44-49	0.55	87.81	10.86	0.78
45-49	0.44	81.93	15.96	0.67

Source: Year book, Family Welfare programme in India 1982-83

Table 4 enumerates that in India almost all females are getting married before they attained the age of 30 years. Strictly speaking 96% of females are getting married before 25 years of age. This pattern resulted to higher fertility.

The marital status depended upon level of socio-economic status of the society. The distinction of the marital status for females of 15 to 44 age group.

Table 5
Distinction of females of age 15-44 in India by marital status 1951-81

Year	Unmarried	Currently married	Widowed/ Divorced	Total
1951	8.22	82.81	8.97	100.00
1961	7.44	85.81	6.75	100.00
1971	11.00	84.50	4.60	100.00
1981	15.86	80.48	3.66	100.00

Source : Asha A.Bhendi and Tara Kanitkar - Principles Population Studies of (1951-71).
1981 : Year Book Family Welfare Programme in India 1982-83

The table 5 enumerates that the proportion of unmarried is going to increasing for every decade except in 1961. The increase of proportion of unmarried has definitely an impact on fertility rate which in turn has effect on birth rate.

12.4.6. LITERACY COMPOSITION

One of the social indicators for the development is the level of literacy and educational attainment. High level of literacy leads to modernisation. Education has an effect on demographic behaviour. Fertility and migration, marital status, occupation, income, labour force, etc.

Level of education of the country is useful in providing a basis for the preparation of developmental plans as well as for formulation of an education policy. The level of education is measured by literacy rate. In India literacy rate is going on increasing from decade to decade.

12.4.7. LITERACY RATE IN INDIA

The table 6 enumerates the level of literacy which increased from 5.35% 1901 to 36.17% which in 1981. The progress was not systematic. The progress of the rate was high and it increased over 9.50% 1931 to 16.10% in 1941, and the progress was more between 1951-61. The rate increased from 16.57% to 24.05% during the same period.

Table 6
Level of Literacy in India 1901-81
Percents of literates in Population in India 1901 to 1981

Census Year	Total	Male	Female
1901	5.35	9.38	0.60
1911	5.92	10.56	1.05
1921	7.16	12.21	1.81
1931	9.50	15.59	2.93
1941	16.10	24.90	7.30
1951	16.57	24.95	7.93
1961	24.02	34.44	12.95
1971	29.45	39.45	18.69
1981	36.17	46.89	24.82

Source: Asha Bhenda and Tara Kanitkar Principles of population studies 1982. page 154

There was progress in male literacy also. It has increased from 9.83% in 1901 to 39.45% in 1981. The progress was slow in 1901-31 and rapid increase during 1931-41. It was increased from 19.83 in 1901 to 15.59% in 1931 and was 24.90% in 1941 and in the same way there was rapid progress during 1951-61 and it has increased from 24.95% to 34.44% during this period. In case of females, the literacy rate has increased from 6.69% in 1901 to 24.88% in 1981. But the salient feature of male and female literacy was that female literacy rate is neraly half to the literacy rate of males.

a) Literacy rate in various states in India.

There are differences in literacy rates among the states. Some states have high literacy rates, whereas, some states have low literacy rate. Kerala State stood first with 69.17% and Arunachal Pradesh stood least with 29.09% in 1981. Second highest state in literacy is Chandigarh with 64.68%. Kerala also stood first in female and male literacy rate with 64.68 and 74.03% respectively. The lowest literacy rates of males and females are in Arunachal Pradesh. Some states have crossed the level of national literacy rate. They are Gujarat, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Nagaland, Punjab, Tamil Nadu, Tripura and West Bengal. The remaining states have not achieved the literacy rate to national level.

b) Rural Urban Difference in Literacy rate

Most commonly the urban areas have achieved high rate of literacy when compared to rural areas. The literacy rate for urban area was 57.49% and for rural area it was 29.65% in 1981. It was 65.83% among urban males and 49.82% among urban females. It was 40.97% among rural males and 17.96% among rural females.

This rural literacy rate increased from 23.69% in 1971 to 29.63% in 1981, and in urban rate it increased from 52.37% to 57.40% during the same period.

12.4.8 RELIGIOUS COMPOSITION

The distribution of population according to religion is another important attribute of population. The society in India is organised on the basis of religion. The attitudes and behaviors of the people are different from one another according to their religion. There are differences in daily conduct of the individual's religion. So study of distribution of population according to religion is an important aspect.

a) Distribution of population according to religion in India

There are six major religious communities in India. They are Hindus, Muslims, Sikhs, Buddhists, and Jains. Only a least percentage of population belonged to zoroastrianism, Judaism, etc.

In India Hindu community has the highest proportion of population in all censuses from 1951-81. But the proportion of Hindu population is going on decreasing from 84.98% in 1951 to 82.65% in 1981. Absolutely the population was increasing but proportionate population was decreasing. This is due to over increase in proportionate population of other religious communities. Second major religion is Muslim. The proportion of muslim population was going on increasing from decade to decade. It increased from 9.91% in 1951 to 11.37% in 1981. This was due to religious belief on large family norm.

Third largest community is Christians Community. There was growth in the proportion of Christian population during 1951 to 1971. But decrease was observed in 1981. The proportion of Christians increased from 2.35 in 1951 to 2.60 percent in 1971 and decreased to 2.43 percent in 1981.

The fourth largest community in India is Sikhs population which is going on increasing every decade. It increased from 10.74% in 1951 to 1.97% in 1971.

The Buddhist religion stood in the fifth place in population distribution on population according to religion. It increased from 0.05% in 1951 to 0.74% in 1961. This was due to mass conversion of Hindu minorities to Buddhism. But afterward many people reconverted and adopted Hinduism. So there was fall in proportion of Buddhist population in 1971, but slight increase was there in 1981.

The sixth famous religious community was Jainism. They comprised about 0.45% in 1951 and 0.48% in 1981.

Thus the Indian population is composed of six major religions.

b) Distribution of population according to religion in various states of India.

The proportion of each religious population is different among all states of India. Some states have more proportion of a particular religion and less proportion of population of other religions. Domination of each religion is discussed herewith.

a) Hindu :

All states, except Assam, Jammu and Kashmir, Punjab and West Bengal, have more than 75% of total population of Hindus. The growth rate of Hindus was closest to population growth during inter census period except in Jammu, Kashmir and Punjab. Orissa state has highest proportion of Hindu population (96.3%) and lowest in Jammu and Kashmir (30.4%)

Muslims :

The proportion of Muslim population was going on increasing in all states. In Jammu & Kashmir 60% of population was muslims. This stood first in proportion on Muslim population. The other states of Muslim population are Assam (22.67%), West Bengal (20.46%), Kerala (29.5%), Uttar Pradesh (15.48%), and Bihar (13.48%)

In Assam, Jammu & Kashmir, Gujarat the proportion of Muslim population was slowly decreasing.

Christians :

Highest proportion of Christians are in Kerala. It is followed by Assam, Tamil Nadu, and Andhra Pradesh etc.

Sikhs :

Highest proportions of sikh community is living in Punjab (35%). The other states which are have highest sikh population U.P. (3.6%) Rajasthan (3.3%) and Jammu & Kashmir. (1%) In Punjab the proportion of Sikh population increased from 33% in 1951 to 35% in 1971.

Budhists and Jains :

Jains are found in Western parts of India. According to 1971 Maharastra had 27%. Rajastan had 19.7%, Gujarat had 17.3%, Madhya Pradesh had 13.3%. The other states have limited number of population belonging to Jain community, 86% of Budhists were in Maharastra and they constitute 6.47% of the total state population.

One of the important feature is that minority religious communities in different states are growing faster than that of major religious because of non adoption of family planning methods, to strengthen their numerical numbers and religious fear. For instance highest growth rate are in Jammu and Kashmir was in Hindu, where the Hindu community was at minority level. In all states there was a decrease in growth rate among Hindus in other states Muslim population has been going on increasing where they were at minority level.

Thus minority religions are growing faster than the major religions.

12.5. SUMMARY

India is the second most populours country in the world after China. The size of the population is dependent upon the density of population, inhabited area and political boundary of the state. The population is composed of biological and social characteristics. Age, sex, marital, status, educational attainment, religious composition, occupation are some biological and social characteristics.

12.6. SUGGESTED BOOKS

Asha Bhende & Tara Kanitkar	:	Principles of population studies
Thomlinson	:	Population Dynamics
S.N. Agarwala	:	Population Problem in India
Bogue, D.J.	:	Principles of Demography

12.7 MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

- a) Explain how population was growing in India.

- b) Describe the age and sex compositions of population in India.
- c) Describe the religious composition in India

II. Answer the following in about 10 lines each.

- a) Explain the age pyramid in India.
- b) Explain the distribution of population in India according to Martial status.
- c) Describe the growth of literacy rate in India.
- d) What is sex ratio. What are the reasons for high sex ratio in some religions.
- e) Enumerate the rural Urban differences in literacy rate.
- f) Explain regional imbalances among Hindu population in India.

UNIT-13 : FERTILITY, MEANING AND SIGNIFICANCE

Contents

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- 13.2. Importance of the Study of Fertility
- 13.3. Fertility of Indian Women
- 13.4. Trends in Fertility
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 - 13.5.1. Fecundity and Fertility
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 - 13.5.5. Social and Cultural factors affecting Fertility
 - 13.5.6. Family Size and Social Norms
- 13.6. Summary
- 13.7. Suggested Books
- 13.8. Model Examination Questions

13.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss the meaning and importance of studying human fertility and the various factors influencing fertility such as the fecundity and fertility, reproductive age, sterility, biological factors, social and cultural factors, family size and social norms.

By the end of this unit you will be able to :

- explain the importance of studying fertility,
- explain the factors which influence fertility.

13.1. INTRODUCTION

The study of fertility is one of the important aspects in the study of population. Human fertility, in other words is the biological replacement which is responsible for the continuance of the human society. The world's population growth depends entirely on human fertility. Thus, in population dynamics, fertility acts as a positive force through which population expands, counteracting the force caused by mortality. If the replacement of the human number is not adequate, i.e., if the rate of deaths in a particular society is more than the rate of births, it is likely to face the danger of becoming extinct.

On the other hand, if the number of births is more than the number of deaths it can also create several social, economic and political problems for a country. The process through which the human replacement takes place (fertility) is a complicated process. Within the biological limits of human fertility there are various social, cultural, economic, psychological as well as political factors involved. These factors are responsible for determining the levels and differentials of fertility.

The study of human fertility prior to the Second World War was mathematically oriented. Factors like the social, cultural, psychological, economic and political were not given much importance. The main reason for this limited study is that the discipline of population studies was not developed to any appreciable extent.

13.2. IMPORTANCE OF THE STUDY OF FERTILITY

The study of aspects of fertility was undertaken when the "Great Depression" in the early 1930's in North-West Europe, and North America showed a declining trend in the birth rate. It started rising, stabilized and then declined. Since then demographers realised that the birth rate would continue to decline or stabilise at lower levels. Following the economic recovery there appeared a phenomenon known as the baby boom which caused much embarrassment to the demographers. This phenomenon made the social scientists, especially the demographers realize the need to study fertility in a broader perspective giving due importance to such factors as the social, the economic, the cultural and the political. The same phenomenon brought to light the fact that planned families could be small.

Other countries also experienced fluctuations in fertility rates which might be the result of social, cultural, economic and political factors. For example, in Rumania when the abortions were legalised the birth rate declined showing a substantial decrease in the population in 1966, i.e., from 24.2 per thousand population in 1956 to 14.3 per thousand population in 1966. But in 1966 when the abortions facilities were withdrawn the birth rate shot upto 27.4% in 1964 which was the most rapid increase in the birth rate ever registered in one year.

In the 1960's it was realised that the main problem for the growth of population in the developing and developed countries was the birth rate. The growth rates depend on the birth and death rates. In other words, the levels of fertility and mortality are not much affected by the migration of people from one place to another or from one country to another. The death rate has considerably declined in the developing countries and is expected to decline further, but the birth rate increased enormously which became a threat to the economic development of the country. Though the birth rate could be brought down, it was soon realised that the bringing down of the birth rate could only be successful when adequate knowledge of fertility behaviour in the social, cultural, economic and political context was available. This realisation created an interest in it among social scientists in several fields such as sociology, psychology, economics and anthropology. Even biologists started showing interest in the study of fertility. Apart from these people, policy makers, administrators, doctors and journalists have started showing a great deal of interest in the study of fertility and applied the same knowledge to programmes of family planning. They have also contributed to research in the field, and as a result of these developments it gave an impetus to the study of fertility in the developing countries after 1960.

One of the reasons for the growing interest in the study of fertility is the age structure of population. The age structure of any population is basically determined by fertility and a variation in age structure can lead to serious problems with social, economic and political aspects. Another reason is that because of the development of sociological methods such as the sample survey and the introduction of new techniques of fertility measurement, like cohort fertility, the study of fertility is made from different angles. The study of various aspects of fertility could be undertaken with the help of carefully designed technique sample surveys. This method made it possible to study many aspects of human fertility, such as the contraception, coitus, abortion etc. But these aspects were regarded as too personal to carry out a systematic analysis. In spite of the same problem, various personal aspects of human fertility are undertaken successfully in different cultural settings in the present days.

Further the publication of population total from the 1981 census has created a greater degree of interest in the subject. This is because several scholars thought that the average crude birth rate (CBR) during 1971-81 was as high as 39 per thousand. As a result the scientists expressed a deep concern over the growth of population.

CHECK YOUR PROGRESS.

1. What are the reasons for the growing interest in the study of fertility.

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13.3. FERTILITY OF INDIAN WOMEN

Based on the sample surveys it has been observed that an average Indian woman gives birth to 6 to 8 children till the end of her reproductive period, that is, between the age of 15 to 45 years in her married life. Usually giving birth to a large number of children depends on the age at which a woman is married. For example, a woman from Hutterite community (on the borders of USA and Canada) could produce 12 children if she is married at the age of 18 and lived with her husband till the end of her reproductive period. Women from Cocos islands give births to 10-8 children if they marry at the ages between 14 and 15. If married at the age of 16 years the number of children born are 9.3, 8.8. and 7.3. Among the muslims and the Chinese the average number lies between 7 and 8. Thus Indian fertility is observed as lower than that of the other countries, where contraception is not practiced. This is mainly due to the psychological, social and cultural factors.

A woman's fertility is indicated by the number of children she gives birth to during her entire period of reproduction. The number of births in a country depends on the social conditions besides the biological and cultural factors. For example, changes in the social customs or social structure lead to a major drop in fertility. A low birth rate of a country is an indication of declining population or a "Zero growth of rate" as it occurred in France. A high birth rate leads to a very rapid population growth and puts pressure on the resources, jobs, housing and education. Suffering becomes common in that country. If the country witnesses a high birth rate or high death rate or a moderate birth rate and death rate it would give an indication of the stage of civilization in which the society exists.

13.4. TRENDS IN FERTILITY

Before we proceed any further we shall discuss briefly about the fertility trends which constitute an important aspects of demographic changes. The trends throughout the world (UN 1965) divided the countries into low fertility and high fertility countries. The low fertility group has crude birth rate of under 30 per 1,000 or above, and the high fertility group has 30 thousand or above.

The low fertility countries are divided into three sub-groups. The first sub-group consists of majority of countries in Western and Central Europe, including Argentina, Australia, Canada, Israel, New Zealand and the USA. In 1930's these countries have shown a decline in fertility rate in late 1930's or early 1940's. Again it turned upward and resulted into a baby boom in the late 1940's and early 1950's and then levelled off. The second sub-group of low fertility included those countries of southern and south-eastern Europe. These countries were less industrialized than the former sub-group. There was a consistent decline in the level of fertility throughout 1930's, 1940's and 1950's. The average level of fertility was much lower than at the end of 1950. It was closer to the low levels of first sub-group. Rumania strictly observed a policy in restricting the abortions and suddenly there was an increase in the birth rate. However, in 1967 the birth rate increased to 28 per thousand since then it followed to decline to 19 per thousand in 1975.

The third and the last sub-group of low fertility consists of countries like Japan and Ryuku Islands. They represented a high fertility until the end of World War II, a sharp decline in fertility in 1950's and some subsequent recovery of fertility.

Countries having high fertility are in Africa, Asia, Middle America and South America. Only few countries have reliable series of birth statistics of over a period of two decades or more.

Fertility trends in India constitute an important part in demographic change. More live births occur in India annually than in any other country. According to the information given by the United nations, at present India exceeds China by about 4 million births a year.

From the 1981 census the total population of India created a greater degree of interest in the subject. This is mainly because the average annual rate of population growth over 1971-1981 of 2.2. per cent was similar to that of the decade 1961 -71. Several demographers considered that the average crude birth rate during 1971-81 may have been as high as 39 per thousand. As a result a serious concern was expressed whether the family planning programme had any impact on the demographic aspects.

Let us briefly go through an over view of fertility change by the available sources of data that can give us with some idea, mainly about national birth rate trends. The registered data in India do not give us correct data of birth rate, because of the under registration of the vital events. The data have been derived from the indirect methods such as "quasi-stable techniques or the data are obtained from the census age- distributions using "conventional intercensal estimation procedures". The above techniques are used for estimating crude birth rate (CBR) from the census during the first period at round 45 per thousand and it was approximately 40-42 per thousands during 1961-71 decade. The indirect method such as the reverse survival and the quasi-stable. Population techniques were used in obtaining the birth rate of 45.2 for 1931-41, 39.9 for 1941-51, 41.7 for 1951-61 and 4.1 for 1961 - 71.

According to the recent estimates of sample registration system estimation of birth rate was around 38.9 in 1971 and 32.9 for 1977. These estimates have shown that the birth rate in urban areas is lower than in rural areas. This was because of the low fertility in urban areas. In general the fertility rate in India is high. We find differences from one area to another. It is due to the variation in adopting the family planning programmes.

CHECK YOUR PROGRESS.

2. What are the criteria by which countries are divided into groups?

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13.5. FACTORS INFLUENCING FERTILITY

13.5.1. FECUNDITY AND FERTILITY

It is important to note the differentiation between fecundity and fertility before we discuss the factors such as the social, cultural and economic which affect the reproductive power of women. Let us understand briefly what is fecundity and what is fertility.

"Fecundity is the capacity of a woman or man, as a couple to participate in reproduction i.e., the production of a live child". In other words fecundity refers to the reproductive capacity of a woman to bear children. It can be applied to an individual or a group. Fecundity cannot be studied from the view point of measurement. On the other hand fertility can be studied from the statistics of births though fertility of an individual is limited by his or her reproductive capacity, which again depends on the psychological capacity to reproduce.

Fertility refers to the actual reproductive performance whether applied to an individual or group. Actually fertility means the number of children born to a woman during the reproductive or child bearing age.

The fecundity of a woman or a couple may be normal but at the same time the fertility performance may be low, because the term fecundity is biological where as the term fertility refers to the actual reproductive performance determined by the variables such as social, cultural, economic as well as psychological as already mentioned. Fecundity also determines the maximum fertility that can be reached. As Kuczynski explained that "the upper limit of fertility is determined by fecundity". The upper limit can be attained if the woman gives birth to as many children as she possibly can. Then the lower limit would be zero. The terms fecundity and fertility are treated as synonymous in all the countries of the world, although in India there is a much higher degree of estimation than in the West.

It is said that in fact for any conceivable human being there must be a gap between fecundity and fertility. In UK and in other western countries the gap between fecundity and fertility is more wide i.e., the capacity of reproduction is not realised fully because of the large proportion of unmarried woman and also due to the late average age of marriage and the general use of contraceptives. But in India the above devices are not operative. The gap between fecundity and fertility is not very wide. In Indian woman within her average age of 30 years of reproductive period gives birth to 6 and 7 children as compared to 2.6 in U.K. and 2.4 in U.S.A. 5.2 children in Japan. Therefore the rate of fertility is high in India.

13.5.2. STERILITY

A man or a woman or a couple giving birth to a live child is considered as fertile. One who has not had a child is called sterile. However, in practice the term sterility is commonly applied to women. Sterility can be either natural (involuntary) or artificial (voluntary) and the term sterility is used in an involuntary birth control. Therefore sterility is the lack of capacity of a man or woman or a couple to bear children. This may be due to various reasons such as malformation of the male organ, a long separation of the couple, distortion of the uterus, pelvic disorders, irregular menstrual cycle and the psychological factors which affect the birth of a child.

13.5.3. FERTILITY BIOLOGICAL FACTORS

We all know that the birth of a child is a biological phenomenon. Child-bearing always takes place in a social set up affecting the social structure as well as the social customs, values and beliefs which are related to the various aspects of child birth. As we have said, fertility is subject to biological factors affecting fecundity. It has been shown that fertility to some extent depends on the social customs, values and also the sexual behaviour of men and woman which results in the conception from the sexual act. Generally the value system of any society demands that reproduction should take place within the frame work of marriage and the social norms, and customs regarding the marriage affect social reproduction. Therefore, the point to be noted is that fertility also varies according to race, religion, occupation, social status, urban and rural environment and geographical region, corresponding to the reproductive age of man and woman and a number of social, cultural, economic and psychological factors involved in it.

13.5.4. REPRODUCTIVE AGE

The process of reproduction is purely a biological function. It is closely connected with age and sex. It is only the married women between the ages of 15-45 who are responsible for procreation. It starts at puberty and has a tendency to decline with the advancing age. That is a woman's capacity to produce children comes to an end with the onset of menopause or when the menstruation ceases. It is assumed that women in tropical countries mature and grow old earlier than women in cold or temperate climate. According to Englemen the average age at which girls mature is 12.9 years in the torrid zone, 15.5 years in the temperate zone. However the recent research studies indicate that the average age at which menarche (i.e. first menstrual period) occurs is not the same everywhere but differs with place and time. The change in the environment, food and genetical factors appear to be responsible for a change in the average age for menarche. A survey carried out by Kumudini Dandekar in 1956, observed that the average age at which a girl attains puberty in rural India is 13.8 years. Raymond Pearl conducted his study in 142 countries, where he found that the reproductive capacity (fecundity) of a woman comes to an end at the age of 46 years. It ranged between the ages of 44-49 years. But according to Kumudini Dandekar, for the Indian woman menopause occurred before she reached the age of 50. Evidently on the basis of research we can conclude that the reproductive span or the childbearing age of a woman is between 15 and 44 or 49 years. Thus the average age of a woman to bear children is between 30 and 35 years. The reproductive span for a man is not well defined but it is much longer than that of women.

It has been said that the fecundity among females is not alike throughout the reproductive period of 30 or 36 years. "Women's age is an important factor when her reproductive capacity is considered". Fecundity is at a low level during the adolescent age. This is called as adolescent sterility. It is most prevalent among girls between the ages of 13 to 19 years. This occurs because the menstrual cycle is not established for two or three years after the onset of menstruation. The interval between menarche and the attainment of full biological maturity, to bear children is, therefore called the period of adolescent sterility". A woman's highest capacity to bear children is reached at the age of 20-25 years after which it starts declining slowly and then rapidly after the age of 38 years and it falls to zero level at the age of 50 years.

13.5.5. SOCIAL AND CULTURAL FACTORS AFFECTING FERTILITY

Fertility is affected by social and cultural factors such as the age at which one is married, the number of women not married, the number of marriages broken by divorce, separation or desertion, the union between the couple broken by the death of the husband, physiological disabilities like impotence, illness and unavoidable temporary separation, and finally the use or non-use of contraceptives. There may be also foetal mortality due to involuntary and voluntary causes.

The above mentioned variables are affected by social or cultural factors. Each of these variables affects fertility either in a negative or positive form. For instance of more number of couples successfully make use of contraceptives, the result would be a decline (negative) in the level of fertility and if there is no practice of contraception in a society, the level of fertility would increase having a positive value. All these variables are present in every society operating in different conditions and circumstances to reduce or to enhance fertility.

13.5.6. FAMILY SIZE AND SOCIAL NORMS

Several studies have been made regarding the family size in different types of cultural settings with differing economic conditions. The opinions given by ordinary men and women about the ideal number of children on the average was four with two sons to ensure the continuance of the family and to perform the last rites of parents in order to save his father's soul from wandering in the after world (Hell). Sons are required to take care of the parents in case of sickness or death of the husband. However, not all respondents had similar views regarding the ideal number of children but we often get responses such as "we cannot do anything in this matter" Children are God's gift which must be accepted with reverence".

It is interesting to note that the above norms are determined by social and economic conditions. For instance, in a well advanced society where women's educational attainment is high, the norms are different and ideals with regard to a small family are considered. Women develop rational attitude towards child bearing and intend to have a planned family. Child marriages are rare in such societies. On the other hand, in a society in which illiteracy of women is high, child marriages are common and there is a limited scope for women to change their biological roles as wives and mothers and also towards having a planned family. Thus, in such societies we find that some of the factors are favourable to high fertility.

However, societies which favour high fertility, usually have norms, customs and practices that do not support high fertility. For example, In Indian Societies a mother cannot be pregnant when her daughter is expecting one, She is looked down upon and in fact she is subject to criticism. Such type of social constraint has an effect upon fertility. Therefore, a number of psychological, social, economic and cultural factors affect fertility through social norms such as age at marriage, widowhood, widow remarriage, religious and traditional taboos on sex relationship, length of breast feeding after the child birth and incidence of primary and secondary sterility. Also physiological and cultural factors like malnutrition, early maternity, ban on widow marriage and prolonged lactation inhibit fertility. All these factors operate and affect fertility through social norms relating to family size. Recently a high fertility rate is checked through family planning services sponsored by the state programmes. This may be possible through raising the age at marriage, where the difference is in age distribution. A lower level of fertility produces fewer number of children each year, having an immediate effect on reducing the fraction of population at the younger ages. Fertility can be reduced by providing education and employment to the girls leading to modification of women's role in society and by promoting voluntary family planning programmes by sanctioning incentives for the couples who adopt them.

CHECK YOUR PROGRESS.

3. List out the factors which influence fertility.

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13.6. SUMMARY

The study of fertility is one of the important aspects in the study of population. Human fertility is responsible for the continuance of the human society. One of the reasons for the growing interest in the study of fertility is the age structure of population. Change in the social customs or social structure lead to a major drop in fertility. Fertility trends in India constitute an important part of demographic change. Various factors such as fecundity and fertility, reproductive age, sterility, biological, social and cultural, family size and social norms influence fertility. Fertility can be reduced by providing education and employment to the girls leading to modification of women's role in society and by promoting voluntary family planning programmes by sanctioning incentives for the couples who adopt them.

13.7. SUGGESTED BOOKS

- | | | |
|---------------|---|-----------------------------|
| S.N. Agarwala | : | India's Population Problems |
| Thomlinson | : | Population Dynamics |

3.8. MODEL EXAMINATION QUESTIONS

I. Answer the following in 30 lines each.

1. Discuss the importance of the study of fertility.
2. Discuss various trends in fertility.
3. Explain the various factors which influence fertility.

I. Answer the following in 10 lines each.

1. Explain how family size and social norms affect fertility.
2. Highlight some of the biological factors that affect fertility.

UNIT-14: MEASURES OF FERTILITY

3.8. MODEL EXAMINATION QUESTIONS

Contents

14.0. Aims and Objectives	1. Discuss the importance of the study of fertility.	Answer the following in 30 lines each.
14.1. Introduction	2. Discuss various trends in fertility.	
14.2. Measures of Fertility	3. Explain the various factors which influence fertility.	
14.2.1. Crude Birth Rate		
14.2.2. The General Fertility Rate		Answer the following in 10 lines each.
14.2.3. Age Specific Fertility Rate	1. Explain how family size and social norms affect fertility.	
14.2.4. Total Fertility Rate	2. Highlight some of the biological factors that affect fertility.	
14.2.5. Gross Reproductive Rate		
14.2.6. Measure based on Census Age Distribution		
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14.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the basic measures of fertility such as the crude birth rate, general fertility rate, age specific fertility rate, total fertility rate, gross reproduction rate and the measure based on census age distribution.

By the end of this unit you will be able to:

- explain the various measures of fertility.

14.1. INTRODUCTION

In the previous unit, the meaning and the factors that influence fertility were briefly discussed. In this unit the basic measures of fertility will be explained in a summarised form.

Birth registration in India has existed for over a century. Demographers have been using it when studying fertility trends in the past, (e.g. Carr-Saunders. 1936. Wyon and Gordon. 1971). The Recent fertility trends must be estimated because the registration statistics is of a poor quality to serve as a reliable indicator of fertility and mortality. Moreover, there are different interpretations of the censuses that are taken for every ten years with respect to vital rates. A recent research study indicated that only about 40 percent of Indian births were registered over 1961-71.

However, vital registration of births could ensure reliable data, as the registration of births was certainly much better than 40 per cent in some States. Secondly, the vital registration birth rates were available regularly in every calendar year. Along with this information, additional information such as date of birth, sex of the baby, order of birth, religion of parents, their occupation and place of residence were available. "The Demographic book of the United Nations" publishes each year the information regarding the registered live birth from various countries with the age of the mother, sex of the baby and crude rates for rural areas etc. In the years 1945-50, 1959, 1969 and 1975, fertility was a special topic which supplied a great deal of additional information on fertility from various countries. We shall focus our attention on the history of the collection of fertility statistics, the rates and the indices that can be developed

from the annual registration data. Fertility data derived from the censuses would be described and presented in the form of analysis, eg. the study of family distribution and of differential fertility. This is the classical mode of analysis.

14.2. MEASURES OF FERTILITY

On the basis of data obtained from the sources, such as vital registration, census and surveys different measures of fertility may be computed. Thus, there are three types of measures which include period measures, sample survey and census.

The first type of measures are related to a particular period of data. That is, the vital registration system acquires data on the number of births during the period of one year. The data on the number of births obtained from the last one year in census and sample surveys, are the same which is prevalent from the vital registration system. Such data can also be referred to a period of one year.

The second type of measures of fertility applies to the reproductive capacity of women within a given period of time. The data on "the number of children born" is taken during census and in the course of sample survey.

Finally, the third type of measures of fertility endeavours to measure fertility on the basis of "age and sex distribution of population" which is provided by the census.

14.2.1. THE CRUDE BIRTH RATE

This is one of the most common, easily computed and understood measures of fertility. The crude birth rate provides the ratio of the total registered live births in a specified year of a particular area. The total mid-year population of that area is multiplied by 1,000. It is calculated in the following manner:

- B is the total number of births a year
- P is the total population in the middle of that year
- X is 1,000

For eg. the crude birth rate for a sample area of Madras city for 1965-66 may be computed as follows:

$$\begin{aligned} \text{Number of live births during 1965-66} &= 110 \\ \text{Total mid-year population of that area during 1965-66} &= 6,280 \\ \text{Crude birth rate during 1965-66} &= \frac{110 \times 1000}{6,280} = 17.38 \end{aligned}$$

The crude birth rate is the important measure of fertility which directly gives us the population growth of a specified area. The total number of births can be acquired through a simple means of calculation for which minimum data is required. The level of fertility of a society is known through this method. As the name itself suggests that crude birth rate is only a crude measure of fertility having several limitations as that of a crude death rate. But several modifications were made to ensure that fertility is measured in a more precise manner.

14.2.2. GENERAL FERTILITY RATE

We have seen in the above calculation of the crude birth rate the denominator is the total mid-year population of an area which includes all the males and females who are above and below the age of reproduction, that is below the age of 15 and above the age of 44 or 49. These people need to be excluded from the denominator. Hence the modifications in the crude birth

rate has been introduced by including only the number of women in child bearing age (15 to 44). This method is known as the "General Fertility Rate". Thus it is defined as the ratio of the total live births in some specified year in a particular area to the number of women in the child-bearing age multiplied by 1,000.

That is
$$\frac{B}{P} \times X$$

Where

B is the number of live births during a year

P is the mid-year population of women between the ages of 15 and 44 or 49.

X is 1,000

The general fertility rate in the sample area of Madras during 1965-66 may then be computed as follows

Number of live births during 1965-66=110

Mid-year female population in age group of 15 to 44 during 1965-66 = 1,125

$$\text{General fertility rate during 1965-66} = \frac{110 \times 1000}{1,125} = 97.77$$

The general fertility rate of 97.77 indicates that in 1965-66 in the sample areas of Madras city there were 97.77 births per 1,000 women in the child bearing age group.

With a modification in the general fertility rate it may be considered as a forward step in the direction of refinement of fertility measures. But, it is noted that there is no such effective refinement. It is entirely related to all the women in the child bearing age group. It is a known fact that the fecundity or the reproductive performance of women is not uniformly distributed. The average age-specific fertility rates have been observed in 72 countries stating that the rate of child bearing is low in the younger age groups, that is, in the age group of 15-19 years and reaches its peak at the ages between 20-29 years. The majority of women are married and the fecundity is at its maximum and then it starts declining slowly in some countries and rapidly in other countries till it reaches a zero stage at 50 years. It is obvious that the fecundity of women is not the same during the entire reproductive period and it is likely to be short sighted when the fertility rate is computed. For the same reason the general fertility rate is not considered to be effective.

14.2.3. AGE SPECIFIC FERTILITY RATE

Age specific fertility rates provide information about the age specific fertility rates for women in the age group of 20 -24 and 25-29. The information about the level of fertility of women is usually provided on an annual basis.

For instance
$$\frac{b_i}{p_i} \times X$$

'bi' is the number of live born children to mothers of a specified age group in the population during a year.

'pi' is the mid-year women population in the same age group and 'X' is 1,000

The age specific fertility rate for women in the age group of 20-24 in the same city of Madras during 1965-66

Number of live births to women in the age group of 20-24 during 1965-66 = 40

Number of women in the age group of 20-24 during 1965-66 = 250

$$\text{Therefore, the age specific fertility rate for the age group 20-24 during 1965-66} = \frac{40 \times 1000}{250} = 160$$

The age specific fertility rate of 160 for the 20-24 age group in Madras city in 1965-66 was computed by dividing the number of live born children (40) of mothers between 20-24 years of age by the total number of women of that age (250).

The age specific fertility rate of 160 indicates that in the year 1965-66 in Madras, 160 children were born per thousand women of 20-24 years of age. If you take the age specific fertility rates for all the five year age group in the reproductive period in the sample area of Madras city during 1965-66, the age specific fertility rates are added up and because they are annual averages for 5 year age group, they are multiplied by five (5).

For example

Age Specific Fertility Rates, Total Fertility Rate for the Sample Area in Madras City During 1965-66

Age Group	Number of Births	Number of Women	Age Specific Fertility Rate (25 + (3) x 1000 = (4)
(1)	(2)	(3)	(4)
15-19	10	340	29.4
20-24	47	365	128.76
25-29	38	319	119.14
30-34	27	292	92.46
35-39	8	211	11.04
40-44	2	181	418.35
	132	1708	

Sum of Column (4) = 418.35

Total fertility rate = $(418.35 \times 5) \div 1000 = 2.09$

It may be said that age specific fertility rates are not subject to variation in age structure, therefore, these rates may be considered to be precise. It is possible to compute the age specific fertility rate of only married women, as they are called age specific marital fertility rates and these rates are even more precise than the age specific fertility rates, because it is the married women who are exposed to child bearing.

14.2.4. TOTAL FERTILITY RATE

Further, we can construct the total fertility rates (TFR), which is the sum of the age specific fertility rates of women in five years age group from 15 to 44 or 49. As given at the bottom of table, 1. The sum of the age specific fertility rates (418.35) as already mentioned is multiplied by 5 because each age group consists of women of 20,21,22,23 and 24 years. The product of age specific fertility rate is divided by 1,000, which gives us the total fertility rate generally expressed for women. Thus the computation of the T F R of women in Madras city during 1965-66 is 2.09.

T F R can be interpreted as the number of children (hypothetical) average women would have during her lifetime of reproductive period. T F R rate is a hypothetical rate. The total fertility rate assumes that women in the reproductive age (hypothetical) would survive till they reach the end of their reproductive period. Because the total fertility rate is not affected by age structure and the T F R can perform as an "adequate approximation of average" and serves a useful measure of the level of fertility. T F R can also be useful for a comparison of the age structure of the female populations between the reproductive performance of two groups and provides as explanation of the fertility levels of both the groups.

14.2.5. THE GROSS REPRODUCTION RATE

This is another measure for measuring present fertility rate. In other words, the Gross production rate shares the pros and cons of the T F R. The total fertility rate refers to the total number of children including sons and daughters whereas the gross reproduction rate (GRR) includes only the number of daughters born in a particular year. If the data on births by sex are available for each age group in the reproductive period the specific age fertility rates may be computed for female children. While the GRR rate may be computed by multiplying the TFR by the proportion of female births among live born children, which is a reasonable ratio. In other words, the age specific fertility rates, is multiplied by the sum 5, and finally dividing the product by 1,000. Usually the data on births by sex is not available. In such cases for eg. assuming the sex ratio at birth is 110 per 100 female babies, thus the proportion of females in the total number of births is $100 \div 210$ which is 2.1. Therefore, the gross reproduction rate for the sample area in the Madras city is $2.09 \times 2.1 = 4.38$. From this, it is clear that the gross reproduction rate is essentially a total fertility rate, which is computed only for female births.

Another method to measuring the GRR provide the same result when accurate data are used. First of all "age-specific maternity rates", or the number of female children born per women of a particular age group are computed. As a result, these rates are added up and multiplied by five if the rates are for 5 year age groups.

To sum up, the gross reproduction rate reveals the number of daughters born to a women during her reproductive period, if she continues to have children according to a particular schedule of age specific fertility rates throughout her reproductive period.

The gross reproduction rate is an important measure in providing us the number in the study of group replacement by natural processes of fertility and mortality. The gross reproduction rate guides us to know the number of children a woman is expected to produce during her reproductive period. As it is not correct to assume that all the women in the reproductive age will survive up to the end of the child-bearing period, a modification has been introduced in the gross reproduction rate taking into account the mortality of the women, and the total reproduction rate is computed. Thus the gross reproduction rate is an intermediate step in computing the net reproduction rate". (Dr. A.A. Bhende and Ms. T. Kanitkar).

As regards the fertility, crude birth rate is the result of an interaction of at least three factors. That is, the level of fertility, the age structure of the population and the age distribution of fertility. The crude birth rate is an adequate measure of fertility in studying the comparisons of population between different fertility levels. Where crude birth rates are of a similar order, the level of fertility need not differ but in the case of differences in the age structure, we find a difference in the crude birth rates. At the same time, it is likely that a situation in which fertility levels differ would result in equal crude birth rates because of the difference in the age structures. Another factor which can also cause a difference in the value of the crude birth rate is the age distribution of fertility. Hence we can conclude that the crude birth rate displays apparently differences of fertility adequately. These differences in the crude birth rate are caused by differences in the female age structure or in the age patterns of fertility, but not necessarily by the level of fertility. On the other hand, the TFR and GRR do not reveal the differences of the age patterns of fertility and do not indicate the differences of the age structure. It is necessary that a comparative study of the age specific fertility rates together with a comparative study of the age specific structure reveals the possible age patterns of fertility. Hence, each of these factors can be exposed to further investigation. For instance, the level of total fertility can depend on marriage patterns and on fertility behaviour within marriages.

14.2.6. MEASURE BASED ON CENSUS AGE DISTRIBUTION

The age structure can be an important factor in determining the trends of the crude birth and death rate. What actually matters is whether the population is smaller or larger, the ages at which the respective level of behaviour is high or low. For example, a large proportion of

the population in this twenties will effect the death rate negatively because the mortality rate is very low in this age group. On the other hand, this age group may influence the crude birth rate in an upward direction, as most of the people have children in their twenties.

Changes in the age structure affect the trend of crude death rate and crude birth rate, as the time changes. Of course, the death rate can increase because the population grows older, or in other words, the proportion of the old people will increase, though the death rate may remain unchanged. As a result, we would like to know the demographic factors causing the age structure to change regarding the age distribution. The impact of differences in distribution can affect both the crude birth rate and the crude death rate. Now, let us consider how the age distribution arises. Age distribution is a record of past fertility which is somewhat altered by past mortality. It indicates the number of persons of a specific age, born in a particular year and how many of these survived.

On the other hand, the dates on births obtained in one year are often not available due to the absence of vital registration system or the present vital registration system does not provide adequate and reliable data. In such cases, fertility is measured by utilising census age distribution to compute the child-women ratio, which result in the ration of children unde five (5) years of age to women in the reproductive age.

This measure can be computed as following

No. 4-is the number of children of both sexes under the age of 5 No. 15-14-is the number of women between the ages 15-44 and K is 1000

For egthe child-women ratio for India in 1961 was:

Number of children under 5 in 1961 = 72,225,100

Numbre of children in the age group between 15-44

Years of age in 1961 = 830,190.400

Therefore:

$$\text{The child women ratio for India in 1961} = \frac{72,225,100 \times 1000}{850,190,400} = 849.5$$

Thus, the child-women ratio of 849.5 denotes that in India in 1961 there were 849.5 children under the age of 5 per 1000 women in the age group of 15 to 44.

This measure does not call for any specific advantage in the census, In fact the child-woman ratio is useful for comparing the fertility of various groups, when other measures of fertility are not available. However, it has certain limitations. It is affected by inadequate data relating to children. Especially, children under the age of 5 are badly affected by underenumeration. Another serious drawback of this measure is that it is based on the survivors of those born in the previous 5 years rather than of the births taking place in that particular period and as such, it is affected by infant mortality.

CHECK YOUR PROGRESS

1. How do you calculate crude Birth rate.

.....

2. How can you calculate age specific fertility?

.....

14.3. SUMMARY

On the basis of data obtained from the sources such as vital registration, census and surveys different types of measures mentioned above may be computed. There are three types of measures which include period measures, sample survey and census. The crude birth rate is the important measure of fertility which directly gives us the population growth of a specified area. The gross reproduction rate is an important measure in providing us the number in the study of group replacement by natural process of fertility and mortality.

14.4. SUGGESTED BOOKS

Asha Bhende & Tara Kanitkar	:	Principles of Population Studies
Bogue	:	Principles of Demography
Thomlinson	:	Population Dynamics
Battacharya	:	Population
S.N. Agarwala	:	India's Population Problems
Premi M.K. etal	:	An Introduction to Social Demography

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14.5. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. Explain the basic measures of fertility.
2. Explain how crude birth rate is calculated.
3. What is Gross Reproduction rate.

II. Answer the following in 10 lines each.

1. Explain how total fertility rate is calculated.
2. How can you calculate general fertility rate.
3. Census age distribution.
4. Fertility.
5. Vital registration.

UNIT-15 : DIFFERENTIAL FERTILITY

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15.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss some of the important factors to be considered for the study of differential fertility.

By the end of this unit you will be able to:

- discuss some of the important factors to be considered for the study of differential fertility.

15.1. INTRODUCTION

Fertility varies considerably in various sub-groups of one and the same population. These sub-groups may be based on age, residence, class, religion, education, occupation, income, caste, race, etc. Information about differential fertility is helpful in identifying the factors which determine the fertility levels among different groups of population. The study of differential fertility is important for at least two reasons. The first reason is that the study of the fertility of different population groups provide valuable clues to the factors of reproductive behaviour in general. For example, the level of fertility varies inversely with the level of education. If a proportion of a growing population completes higher education (schools & college), the overall fertility levels will fall. Secondly, fertility differentials indicate changes taking place over a long period in the population composition of a given geographical area. If the developing countries exhibit a faster and higher rate of population than developed countries, the population of the former will constitute a larger proportion of the world's population than that of developed countries within decades. Further the study of differential fertility is helpful from the point of view of the implementation of family planning programmes because it is easy to identify the groups with a high fertility rate on which family planning programmes are to be concentrated. A research project was conducted in this connection in 1930's when there was a sharp decline in the birth rate with a view to finding out the clues for the formulation of policies needed to step up fertility in those groups.

15.2. FACTORS TO BE CONSIDERED FOR THE STUDY OF DIFFERENTIAL FERTILITY

Let us briefly discuss some of the important factors to be considered for the study of differential fertility.

15.2.1. ECOLOGICAL

While studying the ecological we have to concentrate on such important aspects as regional differences in fertility and rural-urban residence and fertility, socio-economic factors, educational attainment and fertility, economic status and fertility, occupation, employment of women, religion, caste, race and fertility.

Fertility differential may also be due to the play of demographic factors such as age and sex, structure of the population, or socio-economic factors. But we are concerned with the study of differential fertility according to various ecological and socio-economic variables, using standardised methods such as the total fertility rate of the average number of children ever born to women who have completed the reproductive age and the number of children ever born to each age group.

It is followed by regional differences in fertility. In India, we do find a great deal of variation in respect of the fertility rate in various States and Union territories. In 1971-72, the sample Registration scheme provided the total fertility rate in the rural areas of the States and Union Territories. For example, the fertility rate ranged from 3.78 children per woman in Goa, Daman and Diu to 7.15 children per woman in Delhi. Such high fertility rates (around 7 children per woman) were registered in Uttar Pradesh, Madhya Pradesh and Rajasthan, West Bengal, and Orissa, while the Southern States of Andhra Pradesh, Kerala, Tamil Nadu and Karnataka had a lower fertility rate, i.e., less than 5.0 children per woman. In Gujarat the total fertility rate indicated 6.42 children per woman. For the remaining states it was between 5.0 and 6.0 per woman.

15.2.2. RURAL URBAN RESIDENCE AND FERTILITY

The differential fertility rates in respect of rural and urban areas have long attracted the attention of scientific observers. Several studies have been conducted and it was found that usually the fertility rates in the urban communities are higher than those of rural communities and these fertility differentials were more or less stable. However, when there had been a decline in the national birth rate, it widened the differential fertility rates in a significant manner among the urban upper classes.

In India, fertility differentials in 1951 between urban and rural areas were relatively smaller because of the gradual narrowing down of these differentials which had been going on since 1931. After 1951 urban fertility was consistently smaller than the rural fertility in most of the States in India. The impact of traditional social customs is greater on the rural dweller than on the city resident. Also owing to the low level of education combined with 'geographical isolation' it is not easy for the rural people to accept the small family norm immediately. In such circumstances it tends to delay the acceptance of the small family ideal.

Economic factors also contribute to this problem, as it is easier to raise a child in a rural society than in the city with its high cost of living. By and large, children are asset to the parents, they often contribute to the family income by working in the fields and farms. And in a number of developing countries parents still depend on these children (sons) to take care of them when they become old or fall sick.

Several studies such as the National Sample Survey and the Sample Registration scheme in India birth rates were higher than the urban circle birth rates. In 1972 the total fertility rates

for urban and rural areas were 5.8 and 4.3 respectively. Even the total marital fertility rate was higher in the rural areas than in the urban areas being 6.8 and 6.0 respectively.

In 1970, a striking negative relationship was observed between fertility and the size of the locality in European countries having low fertility. It was striking in Finland, Hungary and Poland. The study conducted in India in 1972 revealed that the larger the city, the lower was the fertility. The towns with a population of 1,00,000 had a lower total marital fertility rate than smaller towns.

Several research studies in the fertility behaviour of the women in metropolitan areas with different residential backgrounds have shown that the rural migrants to these areas continue to have a high fertility rate. Such types of studies have specifically indicated that in metropolitan areas fertility differentials are based on migration, status and also on the former residence of the migrants. The study on fertility and family planning in Bombay (1966) revealed that the women who migrated from rural areas had the highest average number of children than the migrant women with urban residential background and the non - migrant women.

15.2.3. EDUCATION AND FERTILITY

Education had a strong bearing on the number of children born. Educational attainment and fertility showed a close relationship because an educated woman generally prefers to raise a small family. In the Western Countries with low fertility rates, studies have indicated that the higher the educational level the lower is the family size.

Even the countries with high fertility such as Egypt, Taiwan and Chile provided a clear negative relationship between the educational level of the women and the number of children born to her. Similarly, in India a few studies on the effects of educational attainment of woman on fertility in the major cities showed that highly educated women were found to have smaller families than those women with lower levels of education. National Sample Survey (1960-1961), brought out a clear cut relationship between the educational level of the married urban woman and her family size than in the case of illiterate women who have not completed their primary education. The average size of family of women having very low education 6.10, 6.32 or 6.25. For those who completed the Secondary School Education the average family size was 4.25 or 2.62 (Asha A. Bhende and Tara Kanitkar)

Recently, the studies conducted in the Greater city of Bombay in 1966, a reverse relationship was found between the level of education of married women and that of fertility which was very distinct for each age group. In the case of women in the age group of 40 and above who were matriculates and who had studied beyond that level, the family size was distinctly lower than in that of women with a much lower educational attainment. The Registrar General of India has recently brought out a study of the total marital fertility rates in respect of rural and urban areas. The study shows a negative relationship between the educational attainment of the woman and fertility. Further, it has indicated that " with an increase in educational status, fertility decreases".

All these findings exhibit a progressive emergence of differential fertility in India. The point to be noted is that the relationship between the educational level of the women and fertility has become close. Women with university education tend to marry late and have less number of children than illiterate or semi-literate women who are confined only to the household. It may also be noted that educated women are well informed about keeping fertility under control and limiting the size of the family. Obviously, educated and employed women avoid having big families with a view to achieving a higher standard of living.

15.2.4. ECONOMIC CONDITIONS AND FERTILITY

This is another factor which affects fertility as it is directly linked with fertility. The relationship between income and fertility tends to be negative. Usually, in traditional agricultural

families fertility is high. As we have already noted, fertility is high in villages, to which the prevalence of the joint family system contributes. However, this traditional relationship is undergoing substantial changes in the developing countries. The National Sample Surveys conducted in the years 1959-60, 1960-61 and 1961-62 on fertility and on Family Planning in Greater Bombay as well as the study in fertility differentials carried out in India by the Registrar General in 1966 point out the inverse relationship between economic status and fertility.

In the urban areas education and training pave the way for occupational opportunities which in turn result in high incomes. High income is usually associated with low fertility irrespective of the husband's or the family income. This aspect is related not only to differential fertility but also to effective family planning. In the Western countries family planning was first attempted among the educated, urban, middle and upper middle classes and later spread to other classes. Family planning requires motivation and understanding between spouses, and the ability to adopt the contraceptive devices which is the reason why it has been successful among the educated than among this uneducated. Moreover in India it is believed that every child who is born will start earning something at an early age thereby contributing to the family income. This belief makes for the incidence of higher fertility among the poor sections of the society.

However, the desire for planned family, changes in attitudes toward sexual relationship, fertility control among the high income groups belonging to various groups are mainly responsible for fertility differentials in developed countries.

15.2.5. OCCUPATION

In developed countries the studies in the fertility of the differential occupational groups reveal an inverse relationship between fertility and occupational status. As per the studies conducted in Europe in 1970, the farmers and agricultural workers have generally been found to be the most fertile, followed by the unskilled and semi-skilled workers in factories. These differences were more pronounced in France and the United States than in other countries. A low fertility rate was found among the lower middle class, middle class, clerks, shop assistants, semi-professional people and the owners of small businesses. This is attributed to their being more aware than other of their incomes as well as their needs, which is the reason why the tension between these two is the greatest in these social groups. The strong desire to improve one's status in society tends to lower the fertility rates. It is said that in Western countries fertility among the upper middle class, professionals and proprietors tends to be relatively low though a little higher than that of the lower-middle and middle classes.

In India, studies have revealed that the fertility among professional classes is very low. According to Agarwala, cultivators and labourers had on an average 7.4 children. Those who were professionals are who reported their occupation as service had an average of 6.6 children. Driver found that unskilled workers, agriculturists, and artisans had higher fertility than the clerks.

15.2.6. RACE

The study of race is an important determinant of fertility levels. The differential fertility of various ethnic groups suggests important social and political implications. In the United States Non-Whites traditionally had high birth rates than the Whites. Indians and Eskimos in Canada have shown higher fertility than the national average. Such difference in fertility is not due to inherent differences between racial or ethnic groups but rather the social, economic and cultural aspects which are currently accepted as the most important determinants of fertility. The desire to limit the family size depends largely on the attitude and motivation of the married couple.

15.2.7. RELIGION AND CASTE

Religion is considered to be one of the important determinants of fertility. Fertility of various religious groups is affected by social and political factors. In a democratic society where

the individual has a right to vote, the size of a particular religion, caste, or ethnic group may be an important determinant of the political structure. Various studies have been conducted both in developed and underdeveloped countries to investigate the fertility behaviour of the people under the influence of religion. The main considerations in this regard are as follows. (1) How far does religion dominate society and favour large families as some religions encourage people 'to increase and multiply', (2) Religion may indirectly encourage fertility by condemning the use of contraceptives. The Roman Catholic Church opposed the adoption of artificial birth control in some Latin American countries. In countries like the United States, Switzerland, and Canada where Catholics and Protestants live side by side, fertility was found to be higher among the Catholics than among the Protestants. But for the past few decades the younger generation among the Catholics seems to be ignoring the injunction of the Church regarding the use of family planning devices.

Various religions such as Judaism, Christianity, Islam and Hinduism, emphasize the importance of high fertility because all these religions have their roots in the remote past when there was high mortality. Such an emphasis was only an attempt at a functional adjustment to the high mortality in order to ensure the perpetuation of humanity.

India is a multi-religious country which may be taken as an illustration. Several studies have been conducted regarding the fertility behaviour of various religious groups. It was found that Muslims had larger families than Hindus and Christians. An analysis of Census data of 1971 reveals that the Muslims have invariably reached a high birth rate for each decade. The fertility and family planning study conducted in 1966 in Greater Bombay indicated that the marital fertility among the Muslims was distinctly higher than among the Hindus. Significantly, the Zoroastrian (Parsee) women had the lowest fertility among all the religious groups.

Some sociologists have found that the minority communities such as the Zoroastrians in India and the Jews in the United States have always shown a very low fertility rate than the other religious groups. As already noted, the social and economic factors like education, status of women, the degree of modernization in a particular community are found to affect the fertility of the sub-groups in a society. For example, a study in differential fertility by religion in Greater Bombay has led to the conclusion that a negative relationship exists between fertility and the levels of education among women of each religious group. It is also found that the fertility differentials between the Hindus and the Muslims has narrowed to some extent though they have not disappeared completely. This discussion shows that it is not possible to explain how exactly religion influences fertility but it may be said that it is quite limited.

Caste is an important factor in determining the social status of a person in India. Several studies have been made to work out the fertility differentials by caste. One such study carried out in Lucknow revealed that the Upper caste Hindus had on an average 3.8 births and the lower castes 4.1 births.

To sum up, each variable affects in some way or other the fertility in different sub-groups in a particular society. All these variables are closely interrelated. For instance, we have seen that higher levels of education is related to higher incomes. Higher income groups in turn are the urban and the highly educated. Education and training open up occupational opportunities leading to higher standards of life. In societies where the women have acquired a social status and participated in all walks of life, religion has played a limited role in their lives. On the other hand, religion plays a vital role in the rural community where there is a high proportion of illiterate women. Late marriages are closely associated with the educational attainment of women.

15.3. SUMMARY

Thus the factors which affect fertility are social, religious and economic. These factors are responsible for both high fertility and low fertility in almost all societies, both developed and underdeveloped countries. In a developing country like India fertility differentials have

become increasingly distinct because at present the Indian Society is in a transitional stage of declining fertility. Therefore, various social groups exhibit fertility differentials which have become increasingly more pronounced.

CHECK YOUR PROGRESS

1. List out the factors essential for the study of differential fertility?

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2. How does occupation affect fertility?

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15.4. SUGGESTED BOOKS

Asha Bhende and Tara Kanitkar	:	Principles of Population Studies
Bogue	:	Principles of Demography
Thomlinson	:	Population Dynamics
S.N. Agarwala	:	India's Population Problems
Premi M.K. etal	:	An introduction to Social Demography

15.5. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines.

1. What do you understand by the term differential fertility.
2. Explain the relationship between rural urban residence and fertility.
3. Religion and caste are considered as one of the important determinents of fertility. Explain?

II. Answer the following in about 10 lines.

1. Explain the relationship between ecology and fertility.
2. Income and fertility have a close relationship. Explain.

UNIT-16:MORTALITY, MEANS AND SIGNIFICANCE

Contents

- 16.0. Aims and Objectives
- 16.1. Introduction
- 16.2. Meaning of Mortality
- 16.3. Significance of Mortality
 - 16.3.1. Mortality Data
- 16.4. Sex Difference in Mortality
- 16.5. Age Difference in Mortality
- 16.6. Infant Mortality
- 16.7. Major causes of Death
- 16.8. Summary
- 16.9. Suggested Books
- 16.10. Model examination Questions

16.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the meaning and significance of mortality and the factors associated with mortality like sex, age and infant mortality.

By the end of this unit you will be able to:

- discuss the meaning and significance of Mortality,
- explain the factors associated with Mortality.

16.1. INTRODUCTION

In the last units we have studied about fertility and factors important for the study of differential fertility. In this unit we will study about the meaning and significance of Mortality.

16.2. MEANING OF MORTALITY

Contemporary demographers tend to discuss mortality before analysing the components of population such as fertility and migration. The reason is that mortality needs little explanation. One may have to face controversies regarding the definition of fertility and migration but with mortality there is no such problem. It simply means "termination of life or the end of life, i.e., death. There are several debates concerning the causes of migration or of birth, but none concerning mortality except in the case of suicide.

'Mortality' deals with the number of deaths in a country during a given period, usually a year, and its study is focused on its effects on population. Though the meanings of the terms 'life' and 'death' are obvious, a scientific study of population calls for formal definitions.

According to the United Nations and the World Health Organization, "Death is the permanent disappearance of all evidence of life at any time after birth has taken place". A death can take place only after a live birth and the duration between birth and death is life.

The above mentioned definition does not include any death prior to a live birth. But what is live birth? In some countries like Spain and Cuba if a child expires within 24 hours of its birth it is not considered a live birth but an abortion. Thus abortions and still births are not included in the category of 'deaths' as such but as foetal deaths. In some countries children who are alive on the day of their registration are considered live ones. In these countries the registration of births is allowed even after many days of the birth of a child. When a birth does not possess characteristics of a live birth and abortion it is called 'a still birth'.

Mortality is one of the three components of population change (the other two being fertility and migration) which affects and influences both fertility and birth rate. Historically, mortality played a vital role in determining the size of population which varied according to the changes in the death rate. With the Industrial Revolution in the European countries in the seventeenth century, there had been a steady decline in the mortality and ultimately the fluctuations in mortality disappeared which made for an accelerated growth of population. Indeed, the demographic transition in the developing countries is due to a substantial decline in the death rate. In fact, an important contribution of the demographers is their scientific study of the fall in the death rate leading to a rapid growth of population.

In the earlier times the mortality rate was very high because of inadequate attention paid to problems of health, and paucity of medical facilities. Further, medical science has not advanced as much as it has in the present time.

At present, even in developing countries there has been a steady decline in mortality an account of their being able to avoid themselves of the advances in science and technology. Today many of the diseases are under control. This fact accounts for the increase in the birth rates in modern times.

CHECK YOUR PROGRESS

1. Define Mortality.

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16.3. SIGNIFICANCE OF MORTALITY

An analysis of mortality is useful in forecasting the possible changes in mortality conditions of the future. The determinants of mortality are biological and social. Man's ability to resist infection or to be healthy having less than optimum amount of food varies from individual to individual; and this variation depends on both biological and social factors. The Public health administration is closely associated with the study of mortality. It provides us with statistics on death in the distribution of population on the basis of age, sex and cause of death which are of great value to the formulation, implementation and evaluation of public health programmes. It also furnishes statistics on deaths which form the basis of policies of insurance companies.

To understand the patterns of mortality in a given society it is necessary to study various factors such as the environmental, social, economic and cultural. These factors are closely

related to the health and morbidity and hence with mortality and its changes. Mortality is determined from a demographic point of view when the changes in the size of population and structure are studied. The demographic study of mortality does not usually consider the genetic factor. Thus a social analysis of mortality is an attempt to relate general determinants to the particular distribution of population having several personal characteristics, since each individual is subject to certain relative causes of dying within a certain period. For example, since life seems to depend to some degree on an inherited capacity, children are placed in the same social and economic situation as their parents, may have a similar average length of life which may be due to the genetic factor, the influence of the environment or birth. Moreover, whatever is inherited is not a trait but a reaction in certain ways to various environments. So, with environmental changes what is inherited may change. That is why it is not always possible to determine the role of the genetic factor in mortality. Moreover, constitutional factors such as physical, physiological, anatomical and psychological characteristics of man also play a role which cannot be ignored. Thus, the most important for the demographic study of mortality are sex and age which we shall discuss later. The environmental factors include the natural physical surroundings, and the social and economic situation in which the individual is living and his personal habits.

16.3.1. MORTALITY DATA

It has been realised that it is essential to collect mortality data. However, it is unfortunate that the data about mortality is not very dependable in countries where the death rate is high. It appears from the United National Demographic Year Book that only 1/3 of the world is maintaining proper records about the mortality rate. Particularly in India, in the rural areas, where there are no arrangements for registering deaths on the spot people do not take the trouble for going to a distant place for getting the death registered, unless the death certificate is needed for settlement of property or any other dispute. Another problem is that many people do not know that it is their legal obligation to register death.

It is pertinent to ask why mortality data should be collected. There are many reasons for collecting mortality data. We have to consider some of the social, economic and cultural factors which affect our life.

With the help of this data it is possible to study the problems of widowhood and destitute children and the extent to which such problems could be tackled. These figures are helpful to the identifying of the causes of mortality which reveal the population's level of health, stresses and economic strains, and cases of negligence in providing adequate facilities, etc., responsible for causing death. This is one of the important aspects of the study of mortality because it discloses the nature of the disease causing death and such other details. Usually, the death certificate mentions the immediate cause or the conditions associated with death. The information provided by the data becomes the basis for the study of causes of death. It is noteworthy, that the available data covers less than one third of the world's population (U.N. 1960). A very low percentage of data is available for 21 Asian and 14 African countries with regard to the causes of death. Usually, such data is deficient on account of the under reporting of total deaths, or a number of deaths being not medically certified or a high percentage of deaths being attributed to unknown causes or to more than one cause.

For these countries it is helpful to have data on causes of death in order to study the changes in the causes of death together with the changes in mortality. For example, in India there has been a decline in the death rate since 1951. This data has been taken as a pointer to show how rapidly Indian mortality rates might be expected to fall with the gradual introduction of sanitation, drinking water, the use of antibiotics, the anti-tuberculosis campaigns in India, etc. The public health programmes have proved effective in most of the areas including the low income group areas as where drastic reductions in the mortality rates have been brought about. It has been observed that with a sharp decline in the mortality rates, there is a change in the pattern of the causes of death. It is with the help of this available data that it is possible to

present the estimates of probable causes of mortality in India. It helps in undertaking futuristic studies of the population of the country and also in providing a comparative study of the rate of mortality in the past and the forecast for the future.

CHECK YOUR PROGRESS

2. How is mortality data useful?

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16.4. SEX DIFFERENCE IN MORTALITY

Let us discuss briefly the effects on mortality of such influences as sex and age. It is proved that mortality conditions are not the same for males and females. The general experience is that except during their childbearing years, females generally have lower age specific death rates than males. This is so in the western countries also where no such exception need be made. "The older the age bracket therefore the higher the usual proportion of females" (William Peterson). Exceptions to this rule are countries like India, Bangladesh and Pakistan. In 1970 it was observed that the sex ratio in the USA ranged from 103.8 for those aged under 5 years of age to 72.2 for those 65 and above. It is evident in most countries that the average expectation of life at birth is higher for females than for males. It is obvious that this gap is wider in the developed countries than in the developing countries. A recent observation is that in Sri Lanka the female expectation of life has been higher than the male expectation of life. In 1962 the male and female expectations of life at birth in Sri Lanka were 61.9 year and 61.4 years respectively. On the whole, the mortality conditions in the entire country have been improving and it is the females who have profited from this general improvement to a greater extent than males.

It is interesting to note that the difference between the sexes in respect of mortality is almost certainly inherent, since a large proportion of deaths of males in infancy cannot be accounted for in terms of any variation in the environment. Although it is difficult in the case of adults to distinguish between a biological defect and an environmental one, such a differentiation is made to compare the mortality of monks with that of nuns who were both engaged in the teaching profession. The life styles of these two groups are similar in terms of their activities because of the absence of child bearing for females and dangerous or strenuous occupation for males. Interestingly, the divergence in expectation of life is greater in the case of these "Culturally standardized groups" than in that of the whole population. Moreover, it has been increasing over the past decades thereby indicating that biological factors rather than social and cultural factors which account for the differentiation in mortality rates by sex (William Peterson).

Most of the analysts agree that more males than females die of heart disease, and even social scientists have observed that the longevity of females is more than that of males. Demographers have investigated these differences between the sexes in order to ascertain whether it is biologically determined or whether it is due to the different roles played by males and females in Society. According to Esterline and Conrad's explanation, it is the man who is traditionally the bread-winner of the family and who is exposed to physical and mental strains and also it is he who struggles for a high standard of living in order to achieve a high social status. Moreover, even on retirement he is beset with more problems than his wife. Usually, a typical housewife does not undergo change in her routine and habits in her life time, while retirement involves drastic changes in the life of a man who is the Head of the family. He has to face loss of income, status, and an active life which ultimately affect the physical well-being of man. The question regarding the longevity of females and males needs further investigation.

16.5. THE AGE DIFFERENCE IN MORTALITY

Age is one of the important factors in the analysis of death, as the death rates vary with age and sex. These two principle features of the human beings are the "power of self-renewal and the ability to reproduce species" and both these decline with advancing age.

It is said that the probability of death in respect of an individual doubles about 8 or 9 years after 55 years of age up to the age of 90. However, the rate at which one ages depends upon the life conditions to which one is subject. We know that age is the length of time which has elapsed since birth, but variations in mortality by age cannot be entirely due to the passage of time and the decline in the physiological functions of the body. Environment also plays an important role. Aging is accompanied by the effects of the physiological senescence consisting of two elements, the chronological age or the number of years lived and the biological age or the relative functioning capacity of the person determined by the genetic and environmental factors. For example, a Life Insurance Company grants a policy to an applicant on the basis of not only his chronological age but also his biological age as indicated by his parents longevity, his medical history, his present state of health, his own particular experiences and occupation.

In most advanced societies it is possible to retard the aging of a person to some degree and this may be improved in the coming decades. In case a population consisting of the aged increases the psychological and the physiological characteristics typical of the elderly people may also change. This however, cannot be asserted because at present we know little about how much the biological process of senescence can be altered with the help of a favourable medical, social and psychological environment.

16.6. INFANT MORTALITY

Infant mortality is of considerable significance to demography. The level of death rate at the infant stage is said to be a test of the public health measures of a country. How much a society is able to advance depends much on the extent to which infant mortality is checked and controlled. Whereas the individual at an advanced age is responsible to some extent for his own survival, the infant is entirely dependent upon the care of others for its survival. There are certain difficulties in measuring important segments of reproductive wastage, especially that of foetal deaths, since the relevant statistics are not available in any country. But it appears that one third of each new generation in the world is lost prior to the birth or shortly after the time of birth.

Infant mortality is one of the serious problems of our society. In spite of the efforts made to check infant mortality it is estimated that the rate ranges between 10 and 33 per thousand in developed countries and between 14 and 135 per thousand in developing countries (Hans Raj). There are two factors responsible for the death of an infant. The first is that of inborn defects, i.e., infants are born with genetic defects which give them little chance to survive. Moreover, there are attendant causes such as lack of medical facilities, congenital malformation and premature birth. The second is that of external factors such as accidents and infectious diseases, exposure to cold or heat, pollution, poverty and malnutrition. This may be aggravated by the mother's ignorance, since she may not realise the need for medical treatment after the birth of her child.

16.7. MAJOR CAUSES OF DEATH

Before 1900 death was mainly due to infectious and respiratory diseases which were the main killers in practically all countries. In 1650's nearly 75 per cent of the population in Britain died of infectious diseases, malnutrition and maternity complications. Epidemics like plague claimed more victims among children and older people than among those in between. In Western countries around 1900 the life expectancy at birth was only 50 years and 30 per cent

of all deaths were due to infectious, respiratory, and parasitic diseases. Since then there has been a gradual eradication of these illnesses owing to a better understanding of the nature of the disease as well as the development and introduction of antibiotics and vaccines.

At the same time general environment has been improving in countries like the United States, Canada and Great Britain. Indeed, the environment is safer and cleaner than what it was hundred years ago. In addition to marked improvement in living conditions, personal and public hygiene have made phenomenal progress and improved transport facilities have made it possible for bringing a variety of food to the markets of the industrialized countries. Diet has improved and the resistance to infectious diseases has increased. After 1950 the life expectancy at birth has become 70 years. Now most of the infectious and communicable diseases have been eradicated or brought under control. Most of the deaths reported from the middle and old age groups are due to illness from stomach disorders, cancer and external causes such as accidents, suicide and violence.

Significantly, in India the rate of mortality has been declining since 1951. India was an area of high mortality in 1951 which resulted from poor sanitation, rampant infectious diseases and absence of proper medical facilities. Malaria was a major cause of death in India prior to 1951 of which about 2 million people died every year. As a consequence of the anti-malarial campaign there has been a substantial decrease in mortality due to it since 1953. There are of course other elements which have contributed to a decline in mortality rates in India. Improved sanitation was an important part of the Community Development Programme. This includes an assured supply of drinking water, sanitary latrines, and health services which adopted effective ways to make the rural villages accept the idea of improved sanitation. A large scale campaign for inoculation with B.C. G. as an antituberculosis measure was undertaken. Thus the assistance provided by the World Health Organization has helped in eradicating diseases like malaria and small pox, etc. The expectation of life at the age of 10 years for all India, according to the estimates presented, was 52.3 years in 1971. The death rate under unchanged fertility was estimated at 16.3 per thousand in 1971. It was, therefore, assumed that no further mortality improvements above the age of 5 years will occur after 1971 and below 5 years of age after 1981. This rough approximation is linked to the reduction in prices. A pronounced improvement cannot occur in mortality in the low income areas without important changes in per capita income, but it is doubtful whether India can achieve and maintain the declined mortality rates, if per capita consumption, particularly of food, is reduced from the current levels. The projected mortality rates cannot be accepted as reliable unless there is a change in fertility and supply of essential commodities which are expected to double in the next 30 years. In this respect our estimates of future mortality improvement will depend to a large extent on the economic prospects of our country. It is expected that improvement in mortality after 1971 would have only a minor effect on the size and age composition of the Indian population by 1986 (Ansley J. E.M. Hoover).

CHECK YOUR PROGRESS

3. List out the major causes of death in India.

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16.8. SUMMARY

Mortality means termination of life or death. Mortality is one of the three components of population change which affects and influences both fertility and birth rate. An analysis of mortality is useful in forecasting the possible changes in mortality conditions of the future. To

understand the patterns of mortality in a given society it is necessary to study various factors such as the environmental, social, economic and cultural. Age, sex and infant mortality are the factors associated with mortality.

16.9. SUGGESTED BOOKS

Thomlinson	:	Population Dynamics
Bogue, D.J.	:	Principles of Demography
Bhattacharya	:	Population Problems
Asha Bhende and Tara Kanitkar	:	Principles of Population Studies
S.N. Agarwala	:	India's Population Problems

16.10. MODEL EXAMINATION QUESTIONS

I. Answer the following in 30 lines each

1. Discuss the meaning and significance of mortality.
2. Explain the influence of sex and age patterns on mortality.
3. Explain the causes of death.

II. Answer the following in about 10 lines each

1. Explain the significance of infant mortality to demography.
2. Explain how mortality data is collected.

UNIT-17 : MEASURES OF MORTALITY

Contents

- 17.0. Aims and Objectives
- 17.1. Introduction
- 17.2. Measures of Mortality
 - 17.2.1. Crude Death Rate
 - 17.2.2. Age Specific Death Rate
 - 17.2.3. Standardization of Death Rates
 - 17.2.4. Infant Mortality
 - 17.2.5. Life Table
- 17.3. Summary
- 17.4. Suggested Books
- 17.5. Model Examination Questions

17.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the various measures used in the analysis of mortality.

By the end of this unit you will be able to :

- discuss the various measures used in the analysis of mortality

17.1. INTRODUCTION

A large number of rules are employed to measure and analyse mortality. In every country it is fully well realised that it is very essential to collect an analysis of mortality Statistics. It is considered essential to classify the data keeping in view sex, age, and place of death. First it is possible to measure the absolute number of deaths in a country during a period of one year. World Health organisation (W.H.O.) has collected the mortality data from different countries of the world and classified the same according to causes of death. The organisation tried to lay down broad principles for the analysis and classification of data. Demographers have also prepared a life table (mortality table) to show what the probability is of surviving from any age to any subsequent age, according to the age specific death rates of a particular time and place.

However, the process of mortality can be generally understood by the following basic measures such as Crude death rate, Age specific death rate, the infant mortality rate and the expectation of life at birth.

17.2. MEASURES OF MORTALITY

17.2.1. CRUDE DEATH RATE

The crude death rate is the most simple and the most frequently used measure of mortality. It is an easy method to calculate and understand the level of mortality. It records the total number of deaths per thousand persons per year in any given population.

It is computed as follows :

$$\frac{\text{Number of deaths per year} \times 1000}{\text{Population}} \text{ or } \frac{D}{P} \times K$$

Where D = Number of deaths in the year
P = mid year population
K = is 1,000

The population in the denominator represents the total population at the middle of the year (July 1) For eg. 1975 the crude death in Calcutta was 68,650 may be computed as follows:

Total number of deaths during 1975 (January 1st to December 31)	= 68,650
Total population at the middle of the year (July 1 1975)	= 74,45,000
Therefore, The Crude death rate in Calcutta for 1975	= $\frac{68,650}{7,445,000} \times 1000$ = 9.22

The crude death rate of 9.22 shows that in 1975 in Calcutta 9.22 deaths have occurred per 1,000 population. Thus, it is the simplest method of finding out the number of deaths of the total population which occurs in a particular period. The C. D.R. has the advantage of indicating the level of mortality of the entire population. One more advantage of the C.D.R. is that it provides one of the basis for computing the rate of natural increase in population. This can help to compare with crude birth rate. Both these figures are computed from the same base and for the same purpose. For eg, In a total population in a given period, the C.D.R. is 14 per thousand population and the crude birth rate is 34 per thousand population in the same given period, then the rate of natural increase is $34-14 = 20$ per thousand population, or 2%.

Obviously the calculation is quick and it is the simplest method of finding out death rate, and its meaning is really understood. But it also has important limitations as well. One of the disadvantages arises because of the inadequate death figures (data) collected from registration authorities. The crude death rates of several countries suffer from the same weaknesses and it is for this reason the results obtained are not dependable. Another limitation is that it hides the experience of population groups which have varied death rates. On the other hand it gives more weightage to the mortality experience of large groups in the population. The C.D.R. provides the frequency of death in a given population but it does not take into account the important characters such as age and sex. For eg. Population of England and Wales consists of a larger proportion of older people, and these countries will have a higher death rate than a country with 'younger' population, such as that of United states. In other words C.D.R. is affected by a population's age, composition. The death rate in the United States and Canada is still influenced by the relative youth of their populations. But because of the increase in the life expectancy, and decline in the birth rate which started in 1960's the American population is now aging, and consequently there is a rise in the number of deaths (numerators) per year.

17.2.2. AGE SPECIFIC DEATH RATE

Because of the limitations inherent in the C.D.R. demographers have developed age specific death rates. Sex differentials in mortality are also of important dimension and generally age sex specific death rates are computed. In fact each measure of mortality is usually computed separately for both the sexes.

As we have already noted that in order to overcome the disabilities inherent in the C.D.R. the best known rate in this class is the age specific death rate (A.S.D.R.) which provides the number of deaths under different categories according to age groups in a given year to the total population. The ASDR which provides death rates computed separately under age group gives us a correct picture of mortality as dissociated from the age structure of the population. To acquire precision and comparison the age specific death rates are often computed separately by sex. It is found with the help of the following formula.

$$\frac{\text{Number of deaths of persons of age } i}{\text{Mid year population of people aged } i}$$

OR

$$\frac{D_i}{P_i} \times 1000$$

where D_i = number of deaths of age group i
 P_i = mid year population of that age group
 $K = 1,000$

For eg. We can compute the average age specific death rate in 1972 for the age group 20-25, the formula is as follows :

$$\frac{45,235}{20,541,322} \times 1,000 = 2.20$$

2.20 is the number of deaths in 1000 at age i , in a given year to the total population of age i .

Usually for the purposes of age specific death rate area of a population is decided and a five year period is more commonly used.

That is,

$$\frac{\text{No. of deaths in a specific population of an area of a given period.}}{\text{Total Population of that Specific area in the same period}} \times 100$$

Age group	Total Population	Total deaths	Death rates (3)2 1000
0-1	8,000	2000	250
1-5	12,000	4000	333.03
10-15	15,000	6000	400
16-20	22,000	8000	363.63
21-25	28,000	7000	250
26-30	26,000	5000	192.3
Total	1,11,000	32,000	288.28

It is also possible to find out crude death rate with the help of specific death rate. For most purposes such interval provides adequate information which gives us a reliable picture of the mortality of the various groups.

It becomes difficult to compare between crude death rates that show the actual mortality per thousand population, because crude death rates do not always provide us with reliable mortality conditions. As we have observed earlier, crude death rates are affected by age, composition of the population in different communities. Thus a population with large proportion of old people will have a higher death rate than a population containing a high proportion of young people. The same problem can be solved as said before, by comparing the age specific death rates of

two or more populations. However, this process necessitates large amount of figures to be set aside as it is possible to make separate comparisons according to different age groups.

17.2.3. STANDARDIZATION OF DEATH RATES

For several reasons, it is desirable to express the relation of death rates to either two places or times and is thus always comparative. This implies that the impact of differences in age compositions in the populations compared had been removed. Comparison is one of the main items of statistics. Standardisation or adjusted death rate is a process that allows us to compare the death rates of two or more communities. In other words the method makes it possible to compare the morality of various communities, while retaining its own set of age specific death rates and identical age compositions are assumed. Standardisation can be of two types namely. Direct Standardization and Indirect Standardization.

In direct Standardization, we select a known standard age distribution as our standard population. In other words, different age specific rates are applied to standard population. The choice is arbitrary, but the more realistic the standard population, the more interesting the results. The standard population can be any population, of an area or country or even the sum total of the two populations. Each of the age specific death rates in the actual population is multiplied by the number of people in the standard population who are in different age groups. For every age group an expected number of deaths is obtained that is, it provides us with number of deaths that would have occurred if the actual population had the age distribution of the standard population. Then we sum up the 'imaginary' or expected number of deaths and divide the total by the number of people in the standard population and multiply the quotient by thousand (1,000). The result we obtain is the standardized death rate as expressed as a rate per 1,000 people.

An example will clarify the above method

The age standardized death rates for Kuwait and Austria for the year 1976 are used for calculation, taking the Canadian population of 1971 as the Standard population.

	Standard population, (in thousands)	Age specific death rate		Expected deaths in standard population	
		Austria 1979 (Per thousand)	Kuwait 1976	On the basis of Austria's Col. 2 x 3	On the basis of Kuwait's Col. 2 x 4
0-4	1,686	3.1	7.32	8,332	15,892
5-10	2,154	0.3	0.8	631	1,714
11-15	2,210	0.2	0.4	649	920
16-20	2,112	1.0	0.5	2,124	1,360
21-25	1,786	1.2	1.2	1,525	1,788
26-30	1,542	1.1	1.3	1,882	2,115
and so on	11,490	0.6%	1.0%	15,143	23,789

It can be noted that Austria is the healthier. The difference we notice in the C.D.R. was due to the younger population of Kuwait.

$$\frac{\text{(Column 5)}}{\text{(Column 2)}} \times K = \frac{15,143}{11,490} \times 1000 = 1317.92\% \text{ (Austria)}$$

$$\frac{\text{(Column 6)}}{\text{(Column 2)}} \times K = \frac{23,789}{11,490} = 2,070.409\% \text{ (Kuwait)}$$

This method makes it possible to compare mortality conditions of Kuwait and Austria, while the age structure effect is eliminated.

17.2.4. INFANT MORTALITY

We hear that the pattern mortality is higher among the infants. "the younger the child, the more pronounced the high mortality of that period becomes" (Johnnes Overback). During this period it is interesting to analyse the mortality rate because it becomes an important basis for the other indices of mortality such as the C.D.R. and more so because infant mortality rate has an effect on the socioeconomic development of a nation, its health conditions, availability of medical aid, nourishment and so on.

Infant Mortality Rate (IMR)

This denotes the number of deaths between birth and age one year. That is the incidence of death within one year of age or who have not yet completed age one. It is calculated by dividing the number of deaths registered in a calender year (before the first birthday) by the number of live births registered in the same year.

This can be calculated as follows:- $\frac{D_o}{B} \times K$

$\frac{\text{Number of deaths below age one year}}{\text{Number of live births in the same year}} \times 1,000$

Where D_o = represents number of deaths below age one registered during the calender year.

B = Number of live births during the same year

K = is 1,000

In 1975, for example, the number of live births in Calcutta amounted to 85,724. The number of deaths of children below age one was 8,210.

Therefore, infant mortality rate, for $\frac{8,210}{85,724} \times 1000 = 95.772$

The infant mortality rate of 95.772 per 1,000 live births indicates that in Calcutta during 1975, 95.772 infants per 1000 life born babies died before completing one year of age.

Of course, we can compute separately for males and females infants and also for separate ethnic groups.

Infant mortality is high when compared to other ages. This is because of infant, if born alive, may not be able to remain alive for a long period, and because any baby, even if born alive and healthy, is especially susceptible to disease. In order to get a precise view of the infant mortality, it is relevant to know about the two causes which have been termed as endogenous related to congenital defects, prematurity, weakness of the foetus, difficulty in delivery. Whereas exogenous refer to such causes of death that could have been prevented by proper medical treatment or public health services. A major proportion of infant deaths occur during the first year that is during the first week of life. Such deaths are often the result of antenatal factors that determine whether the child has a good chance for survival. After the first weeks are over, the baby is subject to the external factors in the environment to which the infant is more susceptible than the older persons. Therefore, a distinction is usually made between "Neonatal mortality". It is the mortality the week after the birth of a child. And "post neonatal mortality" refers to the remaining eleven months of the first year. Most of the neonatal deaths occur due to the endogenous causes, while postneonatal deaths are caused by the infections and parasitic diseases and also due to the other exogenous factors in the Child's environment. We can notice in the developed countries that the mortality has been reduced to a large extent in the postneonatal category.

Infants who are born weak their ability to survive depends very much on the hygienic condition and medical facilities. This could be explained as to why in 1970 the death rate of infants ranged from between 10 and 30 per thousand (1000) in the more developed nations. Whereas infant mortality was over 100 in the less developed countries. About 250 years back the rate of infant mortality was very high, which ranged commonly above 200 or 250 per 1,000 in all most all the third world countries. In one of the towns called Chad in africa had a high infant mortality rate of 160 per thousand in 1975.

The trends in infant mortality rates in some of the developing countries have fallen most. For eg. Singapore which had a high infant mortality rate of 152 per thousand in 1935-39, brought down to 29 per thousand in 1964 and a gradual decrease to 20 in 1973. This decrease in infant mortality rate indicates a reduction of 87 percent or more during a period of 34 to 39 years. Sri Lanka also recorded a reduction more than 60 per cent.

In both the developed and developing countries the infant mortality rates have indicated some overlapping of these rates and the phenomenon has raised an important issue regarding the utility of infant mortality rates, as the determinant factors of the socio-economic development of the respective countries were similar to the developed countries, without any significant progress in their social and economic development.

17.2.5. THE LIFE TABLE

A 'Life table' in other words called a mortality table indicates the probability of surviving from any age to any subsequent age, according to the age specific death rates prevailing at a particular time and place (William Peterson).

Rates do not provide answers to all questions regarding mortality such questions as, what is the average remaining life time for persons who have completed certain age? of How long can an infant born in Burma, in 1980 expect to live? The answers to these questions are provided by life tables. This information is also available from life insurance rates, and the life table technique not only helps solve problems involving the number of survivors out of an original group, but also has a much wider range of uses.

Strictly speaking, the life table is not a standardization procedure but rather a method by which a brief account of mortality can be obtained. Hence the life tables prevent in compact form the age sex specific mortality rates in a given period and place. If we observe a cohort (every one born in the same country during the same year) and the experience of this cohort is followed until all the members had died, it is possible to give a detailed account of the mortality of this group and construct a "generation" life table. Since this type of life table can be constructed only after the death of all the members of the cohort, the utility of such a table is limited. Another type of life table, which has a practical significance is called as a "time specific life table". This table presents the mortality experience of a population from birth to death and is constantly used by demographers, planners, as well as by Insurance companies.

Time specific tables are constructed by assuming as a convention, that 100,000 infants are all born on the same day. The life table then proceeds to show, the number of members of the life table cohort will die in each interval and how many survive at the end of each year. The same experience of this cohort is followed until the last surviving member lives. The life table does not indicate " what will happen" but "What would happen" if the age specific death rates remained constant. When there is a sharp fall in the death rates, as in the modern periods, these life tables have to be frequently revised. Sometimes the life tables are calculated for a longer periods (Several years) in order to remove the effect of short term fluctuations. They are usually constructed separately for males and females because of the variations in the death rates of both the sexes.

The life table makes it possible to calculate "expectation of life" which is the average expectation of life for a person of a specific age. The average life expectancy is the expected

average number of years a person lives right from his birth. these tables provide total number of members and the years to be lived by the entire cohort before the death of the last survivor in the annual computation.

In all western countries the average expectation of life at birth for both sexes, taken together at present surpasses 70 years. For most of the countries it was only 40 towards the middle of the century. In the United states, by 1940, the life expectancy at birth had risen to 68.2 ; by 1970- to 70.9. By 1977 average for both sexes was 73.8 for whites and 68.8 for blacks. The white population has always lived longer than the blacks (Johnnes Overbeak).

The average expectation of life at birth for Indian males and females during the first two decades of the 20th century was very low because of poor mortality conditions. In India during 1911-1921, the life expectancy at birth was 19.4 for males 20.9 years for females and 20.1 years for both the sexes taken together. These figures may be considered to be the lowest not only for the country but also lowest among the nations of the world. Over the years the mortality conditions in India have improved thereby increasing the average life expectancy in each successive decade. However, the high infant mortality rates in India have also declined though they are still high when compared to that of other developing countries of Asia. One can conclude that though the mortality conditions in India are much better compared to the past, but they are far from satisfactory when there is wide scope for improvement as well as for the progress of the nation.

CHECK YOUR PROGRESS

1. What is life table?

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2. How is crude death rate computed?

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17.3 SUMMARY

The process of mortality can be understood by the following measures such as crude death rate, age specific death rate, the infant mortality rate and the expectation of life at birth. The crude death rate is the most simple and most frequently used measure of mortality. Because of the limitations in the crude death rate demographers have developed age specific death rates. Life table in other words called a mortality table indicates the probability of surviving from any age to any subsequent age according to the age specific death rates prevailing at a particular time and place.

17.4. SUGGESTED BOOKS

Thomlinson	:	Population Dynamics.
Bogue, D.K.	:	Principles of Demography
S.N. Agarwala	:	India's Population Problems
Asha Bhende and Tara Kanitkar	:	Principles of Population Studies

17.5. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each

1. How is crude death rate calculated?
2. Explain how age specific death rate is calculated.
3. What do you understand by standardization of death rates?

II. Answer the following in 10 lines each.

1. What is "life Table"?
2. How is infant mortality rate measured?

UNIT-18 : DIFFERENTIAL MORTALITY

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- 18.3. Summary
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18.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss the mortality differences such as sex and age, rural urban, socio-economic, occupational, educational, marital status, and lastly ethnic and race.

By the end of this unit you will be able to :

- discuss the mortality differentials.

18.1. INTRODUCTION

We have discussed in our previous lesson the various measures of mortality in order to find out the mortality statistics of different populations with different sex and age composition. There are important variations in the levels of mortality which are evident for different subgroups of any given population. Death as the main indicator operates at different levels in different places and among different groups. "The differential mortality is used to indicate such differences in mortality levels between different segments of the population". We have seen that death rate in all countries of the world have higher mortality rates than others. We saw that mortality rates differ within the international community, with nearly a twenty years difference in the average life expectancy at birth. The same difference could be found between higher and lower income nations. These differences can be measured as already shown in the previous lesson by crude death rates, Age specific death rates and infant mortality rates.

18.2. MORTALITY DIFFERENTIALS

Mortality levels vary also within the same country as for instance the rural/urban areas of the same country provide a wide variation in death rates. We shall discuss the factors such as the age, sex, rural/urban differentials, socio economic differential, occupational, educational and the marital status differential.

18.2.1. THE SEX AND AGE DIFFERENTIAL

We shall have a very brief account of the age and sex difference because we have already discussed the same in our previous lesson. Mortality among both sexes is not the same and it affects both sexes differently. Excess of male over female deaths exist even before birth, with fetal death rate of males being 10 per cent higher in such countries as United States, Canada and United Kingdom. This indicates a biological factor among the others. Females are superior in resisting to infections and not susceptible to degenerative diseases. Men are under more strain when such factors as social, economic and occupational hazards exert greater pressure on men to achieve their goals. Also women openly admit being ill and they are more prepared for the treatment of minor disorders and diseases. It has also been pointed out that women express their emotions more easily which would put them under less strain, than men and same would contribute to greater mental health.

During the twentieth century, in the United States the mortality rates have rapidly declined for women than for men. This has been accelerated by the fall in maternal mortality as well as by the reduction of women who bear a large number of children. In most of the western countries the extent of the gap between male and female mortality tends to widen between the ages of 15 to 29 years because most of the males die due to the accidents. At this stage, accidents are most important causes of death. The death rate among males is higher than those of females. There is a notable difference between the males and females because a higher proportion of men die due to ischemic heart disease (supply of blood is restricted with in the heart muscle), liver damage and lung cancers. All these diseases are related to the habit of smoking and drinking.

In less advanced societies women were often exposed to undernourishment, infections and contagious diseases. Frequent child bearing and lack of medical facilities during pregnancy and also after the child birth contributed to high mortality among women. With the eradication of epidemics of infection, and women started having pregnancies, female mortality gradually declined. This process has been accelerated by the improved sanitation, and medical care. Even more during the modernization and development process female mortality rates declined sharply well below that of the female population.

18.2.2. RURAL URBAN DIFFERENCE

We have already mentioned that variations in mortality levels tend to exist in the rural urban areas. In the past however, cities were also characterized by high mortality rates. In many countries of Europe and North America, the mortality difference were quite substantial. It was due to the lack of hygienic conditions, drinking water facility and poor sanitation. The experience was similar in England and Wales in 1841, while the expectation of life for England and Wales was only 40 years. In those days rural areas had a lower death rate than the urban areas. "Rural areas were looked on as population springs and the cities as population sinks".

In India according to the National Sample Survey (July 1964 to July 1965) the crude death rates for rural and urban areas were "13.01" and "7.97" per thousand population respectively indicating a lower mortality rate for Urban India. In the period of July 1974 to July 1975 the Sample Registration System provided the Urban and rural crude death rates as '9.6' and '16.1' per thousand respectively. This has been noted for each state of the country. The main reason for lower crude death rate in the urban areas is the younger age structure of the urban population, and other contributory factors such as better sanitation, protected drinking water and easy availability of medical care. Even infant mortality rates differ from each other.

In the present century the rural urban mortality difference have narrowed in the more advanced countries. Although it is evident that a relatively high mortality is found in highly industrialized areas and in areas where mining and dock yards are concentrated. Indeed, quite a number of cities are facing problems like pollution, violence, crime and traffic accidents. But these negative aspects are compensated by the easy availability of specialised medical facilities. In so far as mortality rates of the rural areas remain below the urban mortality, these variations

are caused due to the differences in age compositions of the two populations or due to the mobility of higher income groups from the cities as the lower income groups move in.

We have already stated that the urban mortality in developing countries is below the rural mortality. This is because of the inadequate facilities like public health service, protected drinking water, medical care, and personnel are more concentrated in the cities and later in the country side.

18.2.3. THE SOCIO-ECONOMIC DIFFERENCE

Death rates also vary among people belonging to different social classes. The mortality levels were much the same and higher rates were experienced by the smaller socio-economic groups. Since medical care was not easily available, the inability to consult a doctor did not make much difference. Mortality in relation to class emerged during the industrialization process. Many men were exposed to manual work in factories and workshops with low wages and later became unfit for heavy manual work because of impaired health. Otherwise the middle and the upper classes benefitted by the availability of improved medical care. An analysis has been made of the differences between richer and poorer nations, in which mortality rates were high and low. In some countries groups that have achieved highest socio-economic status were measured in terms of education, occupation, income and place of birth. Thus inequalities in the distribution of income and property is associated with inequalities in the distribution of life itself. But in the highly developed nation like Sweden, mortality has declined to very low levels, and "Class specific mortality" tends to disappear.

The socio-economic differences in mortality are explained as both biological and social. A process of "Competitive selection" operates; while individuals who are stronger and capable to hold higher status occupations have less desirable work to the unfit. So also disease may cause disability to a person and place him in the lower income occupation and class thereby affecting the higher mortality rate than the average mortality of that class. Moreover, the lower level occupations expose people to dangerous activities such as, use of explosives, climbing up, working in a polluted atmosphere where one's health is affected. Since occupation determines one's level of income the higher income groups are in a position to take medical care, nutritious food, proper clothing and adequate housing. On the other hand lower income groups have less access to these things and therefore the mortality rate is high.

A general study has been regarding the large proportion of social class mortality. Investigations made at different times revealed that (i) there is not much class difference, when the mortality rates are high or low. The difference emerge mainly during a period when mortality sharply declines from high to low. Upper classes dominate in this period. (ii) class differences were gradually declining in the developed countries due to the general progress towards a low mortality in the country.

It is said that socio economic development may help in the beginning to "widen the disparities in changes of survival" when new health services were made available to the entire population, these facilities are easily within the reach of the privileged classes who can afford to make use of them.

18.2.4. OCCUPATIONAL MORTALITY

The chief purpose of the study of occupational mortality is well recognised for the assessment of the actual risks involved in the type of work an individual earns his livelihood. For instance the worst factory and other employment conditions attributed to the deterioration of health of the workers. Today the industrial environment is changed in the developed countries from what it was fifty or hundred years ago. now it does not cause most deaths at work to any specific hazard. As soon as the trouble or risks at work are identified they are immediately corrected. As such, the investigations on occupational mortality is less necessary than before, but nevertheless occupational mortality still plays an important part in the fields for more research

studies. However, there still exists material differences between the mortality rates of various fields of employment. For eg. In 1950, in the United States, the standardized mortality ratio "for mining workers was 180 whereas for the mail carriers the ratio was 69. It has been observed that the difference must be due to the nature of the particular type of work and also due to the man's surroundings in which the job is carried on.

It is important to study the relationship between a man's occupation and the exposures to risk of mortality from several points of view. A man's occupation is related to his education and as already mentioned his occupation determines his income. Both education and income influence habits of a person his nourishing diet, and housing conditions. In order to study the effects of these factors of mortality researchers have often taken occupation as the main factor. Since 1815 systematic studies on mortality differentials based on occupational class and social class were conducted in England and Wales.

18.2.5. THE EDUCATIONAL DIFFERENCE

Education has a significant relationship with the levels of mortality. The relationship between these two is inverse. Several studies have shown that educational attainment leads to "better health and lower mortality". It is said that different levels of education results in providing different opinions about health conditions "physical risk taking" and proper diet. Schooling helps in contributing effectively to the use of medical facilities and keeps a person aware about current health programmes. Educational attainment of parents especially that of the mother confirmed to the lower level of mortality. It has been observed that the level of instruction of mother is more significant than the family income. Illiteracy of the parents was "more deadly than poverty". For eg. A study has been made in Hungary in connection with the educational status of the parents and infant mortality. An inverse relationship was found between the two, the mother who had not attended school the infant mortality rate was 95 per thousand, for those who has thirteen or more years of schooling it was 27 per thousand. In Greater Bombay in 1966, infant mortality was highly influenced by the level of education of the mother.

18.2.6. MARITAL STATUS AND MORTALITY

This is another important feature of mortality which indicates that the level of mortality is higher for divorced persons, widowers and unmarried people than for married people. Females who are divorced, widowed or unmarried can get along much better than males without spouses. The disadvantage of not being married is more for the males than females.

It has been observed that widowed have higher death rates than the unmarried, while the divorced have the highest rate of mortality. In other words married couples have a longer life than widowed women, widowers, divorce and those who decided to remain single. The main reason is that marriage is selective, both males and females tend to prefer healthy partners as their spouses. Therefore, good health promotes one's marriageability, otherwise unhealthy are bound to avoid marriage and as such contribute to higher mortality levels. Another reason that has been pointed out is that the married people especially the males have greater regularity of life in such things as, they follow regular eating habits, diet is balanced, can sleep well, enjoy regular company and given better care during illness. Being lonely and isolated one do not get on well, with others, feel depressed and takes to excessive drinking, maintain poor diet and as such neglect one's health. The widowed suffer the same disadvantages as the unmarried or single but in addition they feel the loss of their beloved partners. However, we have mentioned that the divorced have the highest death rates, may be because they are not able to adjust themselves to the 'normal' existence.

The married state itself may lead to several direct effects such as both physical and psychological. This may be particularly for women because a change in occupation is liable to cause extra risks and likely to effect health arising from childbearing. As we have mentioned it is the bereaved women and more particularly bereaved men suffer from ill health than those still married, their mortality is higher, particularly in the years following the loss of the partners.

18.2.7. ETHNICITY AND RACE

Differences in mortality levels are also found between several ethnic or racial groups. South Africa and United States are good examples. In the United States mortality rates are consistently low and a longer life expectancy compared to the black population. A greater difference has been found among the young than the old. For eg. the life expectancy at birth for whites in 1900 was 47.6 years and for black population 33.0 years. A real progress has been achieved in 1977, the figures were 73.8 for white population and 68.8 years for black population. In 77 years the gap narrowed from 14.6 to 5 years.

However, there is no biological basis for the "race specific mortality". Most probably it is due to the socio-economic differences between the ethnic groups. Whites are usually economically well advanced. They are better qualified and therefore they enjoy higher incomes. Higher incomes contribute to better medical facilities, nutrition, housing and the like. Further, higher education helps them to avail medical facilities and gain better knowledge about proper diet.

18.3. SUMMARY

To sum up we have briefly discussed the effects on mortality of such influences as age, sex, rural urban, socio economic, occupational, educational and ethnicity and race differentials.

The demographers tend to analyse mortality in somewhat different form from that of fertility statistics. This is because the characteristics of mortality and fertility are different. On the whole mortality is involuntary and is not subject to the human willingness as the fertility is subject to.

Mortality also obviously affects and influences fertility where mortality levels are high fertility tends to be higher. This is because after the death of a child family desires to have surviving children.

In fact, most deaths are caused by the biological and environmental influences which are closely interlinked. The physiological causes of death pertain to the individual organism whereas death control measures are operated through social institutions. In place where food production and death control are efficient mortality may be followed by accidents, homicide and other reflections of social order which have been relatively more important causes of death. The increase in life expectation from about 35 years to 70 years can be ascribed to a large extent of technical improvements in agriculture, medicine and public health services. These are the major causes for bringing down the mortality rates. The recent advances, in death control, have eliminated death before the age of 40 years, ignoring deaths that emerge from social disorganisation.

Now that the infectious diseases are under control, they are relatively unimportant in mortality. They have been replaced by cancers, heart ailments, fatal crimes and accidents. Because of this change in the causes of death, it has meant differentials by age, sex and social groups have indicated a remarkable change. A substantial decline in the infant mortality and young children, whereas for the advanced ages the improvement in control of death has been slow and moderate. All social differentials, in rural urban, social class or occupational groups are converging. Since 1945, the use of insecticides and antibiotics have been doing enormous improvement controlling the mortality rate in the underdeveloped countries. This was mainly due to the expenses borne by the western countries through international agencies.

18.4. SUGGESTED BOOKS

- | | | |
|-------------|---|--------------------------|
| Thomlinson | : | Population Dynamics |
| Bogue, D.K. | : | Principles of Demography |

S.N. Agarwala : India's Population Problems
Asha Bhende and Tara Kanitkar : Principles of population Studies

18.5. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. What is mortality? Why do you think that mortality data should be collected?
2. Do you agree with the statement that infant mortality rate determines a nation's progress and socio-economic development? If so why?
3. What are the major causes of death in the less developed countries?
4. "The mortality rates of middle and upper classes are below those of the lower classes. This is because that all the members of middle and upper classes are biologically superior" Comment.

II. Answer the following in about 10 lines each.

1. Define differential mortality? Briefly explain sex difference in mortality?
2. What is the difference between exogenous and endogenous causes of infant mortality?
3. Why do you think that in rural areas mortality level exceeds urban mortality levels?

UNIT-19 : SOCIO-ECONOMIC FACTORS EFFECTING FERTILITY AND MORTALITY

Contents

- 19.0. Aims and Objectives
- 19.1. Introduction
- 19.2. Fertility
- 19.3. Fertility Differentials
- 19.4. Social Determinants of Fertility
 - 19.4.1. Observance of Taboos
 - 19.4.2. Celibacy and Abstinence
 - 19.4.3. Postponement of Marriage
 - 19.4.4. Contraception and Sterilization
 - 19.4.5. Abortions
 - 19.4.6. Infanticide
 - 19.4.7. Economic and Social Barriers
 - 19.4.8. Improvement in Standards of Living
- 19.5. Mortality
- 19.6. Summary
- 19.7. Suggested Books
- 19.8. Model Examination Questions

19.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss the effect of socio- economic factors on fertility and mortality.

By the end of this unit you will be able to :

- discuss the fertility differentials,
- explain the social determinants of fertility,
- explain the major causes of adverse sex ratio and infant mortality.

19.1. INTRODUCTION

One of the essential features of a society is that it is constituted of people. The persistence, continuity and development of a society largely depends upon the numerical strength and quality of its population. The relation between society and population is so intricate that it is difficult to understand one without the other. The human population is defined not only in terms of the area of its habitation and racial features but also in those of social characteristics. A human population cannot exist apart from a social order because human beings cannot survive apart from socio- cultural interactions.

The society regulates its population with a view to maintaining its strength and quality. Too rapid an increase of population may take away the energy and attention needed for other social

functions. If such a situation threatens the social order, the restraints on such a growth emerge within the society in the form of social mores and institutions, which regulate the fertility and mortality and migrations of human populations. The population trends and the societal forces are thus mutually influencing and interdependent. We shall examine in this lesson the influence of socio-economic factors on the population trends which are related to fertility and mortality.

19.2. FERTILITY

The members of a society are largely recruited through sexual reproduction. The size of a population or its growth in a society mostly depends on the rate of fertility. In population literature 'fertility' refers to actual reproduction, which may be different from the biological ability or potentialities of its women members to reproduce. The ability of reproduction is referred as 'fecundity'. This fecundity indicates the utmost biological capacity of a female to reproduce. A human female has the potentiality of giving birth to children in the age of 15-44. But all humans in this age group may not reproduce on account of several societal factors operating in the society. As such, even in societies where the fertility is very high, the number of births is only a fraction of the possible number of births and it does not help to measure fecundity - the biological maximum - because of the health, socio-economic and cultural conditions. For this reason, it is difficult to measure fecundity. A simple indirect measure of fecundity is calculated in terms of children born to the females in the reproductive age, i.e., the age group of 15-44. But this in real terms is only a fertility ratio. The fertility is measured in terms of the percentage of new births in a population or the number of births per 1000 persons of the population in a year.

$$\text{Thus Fertility Ratio} = \frac{\text{Children under 5 years} \times 1000}{\text{Women in the age group 15-14}}$$

Conventionally, the calculation is expressed as the number of births per 1000 and is called the 'Crude birth rate'. The formula used for the calculation of crude birth rate is :

$$\text{Crude birth rate} = \frac{\text{Births in a year of a population} \times 1000}{\text{Mid year population}}$$

The crude birth rates of fertility ratios are used for easy comparisons of the fertility of different countries or trends within the same country.

19.3. FERTILITY DIFFERENTIALS

There are differences in fertility among different countries in the world and there are differences among different social groups within a country. While the crude birth rate in the world in the 1970s was around 30, it was 47 in Africa, 44 in South East Asia, 30 in Latin America, 18 and 19 in Europe and North America respectively. In most of the European countries it was between 13 and 17, whereas in India the crude birth rate was 33. There are variations in respect of the Crude Birth rate in different states in India. It is 39.8 in U.P., and 37.4 in A.P. (the highest) and it is the lowest in Kerala i.e., 25.9.

Based on the available population statistics, certain generalisations are drawn of the differential fertility. These are :

a) Rural areas have higher fertility than urban areas. In rural India the crude birth rate in 1981 was 34.8 whereas in Urban areas it was 27.3.

b) In general, manual workers and rural farm workers have more children than white collar workers.

c) Fertility among catholics tends to be higher than among the protestants. Fertility among Muslims was found to be higher than among the Hindus in India.

d) Lower income groups and those with relatively low education have shown higher birth rates than middle and upper classes and the relatively well educated.

19.4. SOCIAL DETERMINANTS OF FERTILITY

As the Society depends upon its population, the socio-cultural system always encourages fertility within the limits prescribed by its institutions and customs. It offers inducements to its members to marry and to beget children within wedlock. It thus integrates reproduction with the other patterns in culture. Marriage and parenthood become advantageous to the individual not only emotionally but also economically, politically and spiritually.

In familistic societies where kinship forms the Chief basis of social organisation, reproduction is a necessary means to every major goal of life. The salvation of the soul, security in the old age, the production of goods, the protection and inheritance of property and the assurance of affection may all depend on the support of the progeny. This arrangement is the supreme encouragement to fertility. In ancient societies, fertility of women and virility of men were extolled. It follows that such societies disapproved of such cultural practices, (e.g., non-marriage, contraception, abortion, etc.) when used for purely private ends impeding fertility.

Though fertility has always been encouraged it has never been without any kind of regulative control. In no society the actual reproduction or fertility is as high as the biological capacity to reproduce, i.e., fecundity. There are always restrictions imposed on the fecundity by the socio-cultural system. Ever since the development of culture, human societies have not relied simply on the biological instinct to procreate children. They have come to rely upon induced motivation, within the socio-cultural frame-work upon definition of the situation, upon customs and mores and upon institutions such as marriage, family and religion. In fact there is no culture wholly favourable to fertility.

The social controls over fertility are to a great extent unconscious. These controls operate in different forms.

19.4.1. OBSERVANCE OF TABOOS

In most of the societies, certain taboos are observed in relation to association of males and females. These are powerful social hindrances that keep men and women apart. The incest taboos and various kinds of avoidances, etc., amount to seclusion where by females come into contact with only a few males. The pre-marital and extramarital relations are prohibited universally.

19.4.2. CELIBACY AND ABSTINENCE

Practice of celibacy which is another form of avoidance of sex is highly valued in many societies. There are taboos and restrictions on sexual intercourse even within wedlock between husband and wife. There are often periods when the culture requires observance of abstinence. The taboo on intercourse after the birth of a child may last for a year in some societies since its violation is thought to bring disease or bad luck to the child already born. Such a taboo helps to space children and also emphasises the significance of loving a child.

19.4.3. POSTPONEMENT OF MARRIAGE

Even the institutions of marriage and family which are devoted to procreation do in one way act as checks upon fertility. The customary age of marriage, couples with the usual rule that reproduction should occur only within marriage, restrictions on widow remarriage, etc., help in keeping out a certain portions of each woman's reproductive span from the incidence of pregnancy and child birth.

In modern societies, the average age of marriage comes several years after puberty. The average age of marriage in India has been gradually increasing from 13 years in 1901 to 15.3 years in 1951; 17 years in 1971 and 18.8 years in 1981. There are of course regional variations with Kerala reporting the highest mean age (20.8 years) at marriage, while M.P, Rajasthan, Uttar Pradesh and Bihar have reported the lowest. In some societies a few women prefer to remain unmarried or get into marriage contract with the tacit understanding of not begetting children.

19.4.4. CONTRACEPTION AND STERILIZATION

In the past celibacy and abstinence were adopted as methods to control fertility but in these days contraception and sterilization overshadow these. Contraception is a deliberate method of permitting intercourse without the risk of pregnancy. Sterilization achieves a similar end but on a permanent basis. The social acceptance of the use of contraceptives and sterilization has reduced the birth rate to a great extent in many countries of the world in modern times.

19.4.5. ABORTIONS

Even after conception has occurred, the individual may still think of avoiding child birth for certain reasons. Voluntary abortion in certain special circumstances is sanctioned in most societies. But in other normal circumstances, it is condemned. In modern societies voluntary abortion is sanctioned, since it enables the pregnant women to avoid the birth of an unwanted baby. This has also contributed to reduction in the crude birth rate.

19.4.6. INFANTICIDE

Infanticide also to a certain extent reduces the fertility. In some societies infanticide is permitted in certain circumstances such as appearance of unwanted females, illegitimacy, occurrence of deformity or sickness, plural birth. Though deliberate infanticide may not be practical or acceptable, the social customs governing infant care may nevertheless be so unhygienic as to cause many infant deaths and thus create an effect similar to the lowering of fertility. For example, in India almost half (47%) of the total number of deaths occur in the age group of 0-4 years. About a third of all deaths occur in the first year of life; nearly a fifth of all deaths occur in the first month ; and two fifths in the first week itself.

19.4.7. ECONOMIC AND SOCIAL BARRIERS

There are always financial, class and caste barriers which greatly limit the mutual association of sexes.

19.4.8. IMPROVEMENT IN STANDARDS OF LIVING

Further, the rising standards of living, to prolonged periods of education and training, the delays in securing suitable employment, the high levels of aspirations, individualization, etc., in modern societies force the individuals to postpone marriage and to procreate children according to their choice. These factors to a great extent reduce the rate of fertility in these societies.

CHECK YOUR PROGRESS

1. List out the social determinants of fertility.

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19.5. MORTALITY

The other important factor that affects population in a society is the rate of mortality. The most striking demographic feature of the past three centuries has been the unprecedented increase in the population of the world. The increase resulted primarily from a decrease in mortality rates in spite of a sharp decline in the birth rate.

The crude death rate is calculated in terms of the number of deaths to total population.

$$\text{Crude Death rate} = \frac{\text{No. of deaths in a year}}{\text{Total mid-year population}} \times 100$$

The crude death rate in India in the year 1981 was 12.5 per 1000.

The Mortality rate is higher in India than in many developed countries of the world like Japan (7) ; USSR (8) ; North America (9) ; Australia (9). The mortality rate is higher in developing regions like Africa and Asia than in the developed regions of the world. The death rate in India has considerably declined from 42.6 in 1901 to 12.5 in 1981. Even then its mortality rate is higher than that of many other countries.

The death rate in India varies from state to state. In Uttar Pradesh the death rate in 1979 was the highest i.e., 16.4 per 1000 whereas in Kerala it was the lowest i.e., 6.9 per 1000. The death rate in rural India is higher i.e., 13.7 per 1000 than in urban areas i.e., 7.9. The death rate in rural Uttar Pradesh is 17.3 where as in rural Kerala it is 7 per 1000.

Mortality trends are uneven in respect of adults and infants, males and female, villages and towns. The death rate among females is higher than among males. The female death rate, especially in the peak reproductive age 15-29 years, is reported to be considerably higher than the male death rates in both rural and urban areas. The casual factors for this difference are the hazards of pregnancy and child birth. As a result, India has had an excess of males over females from the start of this century. The sex ratio declined from 972 females per 1000 males in 1901 to 935 in 1981. In 1981 there were 22.9 million more males than the females with the lone exceptions of Kerala where females outnumber males.

The major causes of the adverse sex ratio are :

- a) Higher rates of females deaths from infancy to the end of reproductive age, partly due to discrimination against females in respect of health and nutrition.
- b) a traditionally inculcated attitude of self affacement among females;
- c) hazards of pregnancy and child birth.

Another major factor for a higher mortality rate in developing countries like India is the high incidence of infant mortality. As stated earlier, 47 percent of the total number of deaths occur in the age group of 0-4 years. The causative factors for the high maternal and infantile mortality are :

- a) The poor nutritional status of pregnant woman. Anemia is estimated to be prevalent among 60 per cent of Indian women and upto 50 percent among those in the later part of pregnancy ;
- b) Spacing is less than two to three years between births which entails a higher risk to mothers and children.
- c) Maternal age below 20 and above 34 years involve a relatively greater risk to mother ;
- d) Lack of prenatal and post natal care ;
- e) Malnutrition

f) Lack of immunization against infantile diseases.

Social class differences in female and infantile mortality are also commonly observed. These arise as a result of malnutrition, hazards of environmental sanitation, lack of adequate health and medical facilities, ignorance and lack of education about utilization of facilities, attitude of parents towards child care and up-bringing etc.

CHECK YOUR PROGRESS

2. what are the causative factors of infantile mortality.

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19.6. SUMMARY

Thanks to the rapid advancement of science and technology especially in respect of health and medical sciences, together with improvement in standards of living, there has been a considerable decline in the mortality rate all over the world. But the birth rate has not been declining in the same proportion. This has resulted in the unprecedented growth in World population and is posing a threat to its survival. Consequently, the world society is actively involved in taking necessary steps to maintain the population equilibrium by way of reducing the birth rate.

19.7. SUGGESTED BOOKS

Bogue	:	Principles of Demography
Thomlinson	:	Population Dynamics
Agarwala, S.N.	:	India's Population Problems
Premi M.K. et al	:	An Introduction to Social Demography
Ashok Mitra	:	India's Population
Asha Bhende and Tara Kanitkar	:	Principles of Population Studies

19.8. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each

1. Define fertility and explain how fertility is measured?
2. What are the causes for high fertility & Mortality?
3. What are the determinants of fertility?

II. Answer the following in about 10 lines each

1. What are the causes of high maternal and infantile mortality?
2. What are the major causes for adverse sex ratio?
3. What are the social and economic factors affecting fertility in India?

UNIT-20 : TYPES OF MIGRATION

Contents

- 20.0. Aims and objectives
- 20.1. Introduction
- 20.2. Major types of Migration
- 20.3. Migration from five perspective
 - 20.3.1. Space Aspect
 - 20.3.2. Time Aspect
 - 20.3.3. Cause Aspect
 - 20.3.4. Number Aspect
 - 20.3.5. Stability Aspect
 - 20.3.6. Other types
- 20.4. Summary
- 20.5. Suggested Books
- 20.6. Model Examination Questions

20.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the various types of migration.

By the end of this unit you will be able to:

- discuss the various types of migration.

20.2. MAJOR TYPES OF MIGRATION

There are several types of migration caused by various factors. A classification of these types is necessary to understand the frequency of a particular type of migration taking place in a given society.

There are two major types of migration

- i. emigration : in case it is out migration from a country; and
- ii. Immigration or in-migration from any country of the world to a particular one.

20.3. MIGRATION FROM FIVE PERSPECTIVES

These major types of migration of population can be considered in five perspectives, viz., space aspect, time aspect, cause aspect number aspect and stability aspect.

20.3.1. SPACE ASPECT

In respect of the space aspect the interchange of place of residence is considered; for example, Sakas and Huns migrated to India and European countries from Central Asia.

The space aspect of human migration has four sub-types:- i. inter-continental migration, ii. international migration iii. interstate migration and iv. local migration.

i. Inter-Continental Migration

The migration of people from one continent to another is known as inter-continental migration. This type of migration has been taking place since the 17th century to the 20th centuries to North America, South Africa, Australia and New Zealand.

ii. International Migration

This type of migration results from the crossing of the international borders: for example, many Indians have migrated to Mauritius permanently to work as labourers in sugarcane plantation.

iii. Inter-State Migration

This means the migration of people from one province to another within the same country; for example many Punjabi and Sikhs have settled in U.P. and Bihar. Many Marwaris have settled in Calcutta, Bombay and almost all the big cities of Northern India for business purposes.

iv. Local Migration

This type of migration refers mainly to migration from rural to rural and rural to urban areas and also to the commuting population of industrial centres.

In the 20th century industrialisation has taken place in almost all countries of the world. It has helped the development of big industrial cities. The growing industrial pockets and service facilities have led to the migration of people from rural to urban areas. In India the stream of rural to urban migration is directed towards the big industrial centres like Bombay, Calcutta and certain other growing industrial centres like Hyderabad, Bhilai, Rourkela, Jamshedpur etc. As the first two cities are already overurbanized the latter ones are attracting migrants who are unemployed and underemployed agriculture labourers from nearby and distant rural areas.

20.3.2. TIME ASPECT

In the process of migration the time factor also plays an important role. Thus any special movement of population has to be considered in terms of periods-centuries, decades or years. Some migrations continued for a long period of time than others as in case of Aryans, Sakas and Huns from Central Asia. This particular type of migration is known as long range migration. Some migrations are periodic and seasonal. The migrations which took place in the Pre-historic times are known as prehistoric migrations.

i) Periodical or Seasonal Migration

This type of migration takes place at successive intervals of time. For example, in the summer season the Eskimos of the Tundra region of the Arctic usually migrate from their places to hunt for food. During the winter they migrate to regions which are comparatively warmer, along with their families, goats and sheep. Here they spin woolen cloth and work as cattle ranchers.

In the beginning of summer they return to their native places.

20.3.3. CAUSE ASPECT

Two forces constantly operate in the process of migration, (i) emigrating forces and (ii) immigrating forces.

i) Emigrating Forces

These forces lead to outside migration of the permanent residents of any place. The occurrence of floods, famines etc., force people to move out of their native lands.

Thus various physical, economic (under-employment and unemployment) and social hardships (caste discrimination) cause outside migration of people.

ii) Immigrating Forces

These forces are responsible for in-migration of people from outside places. For instance cities experiencing industrialisation generally act as an immigrating force and attract people from rural areas and other smaller townships.

20.3.4. NUMBER ASPECT

In the analysis of migration, it is essential to know the number of emigrants and immigrants in order to ascertain the balance between the two. Sometimes the increase or the decrease in the number of migrants affect the patterns of migration on a large scale.

The number or volume of migration varies within the degree of diversity of areas and people figuring in the territory. The number aspect of migration is closely related to the difficulties which people face on the way from their place of origin to their destination and the fluctuations in the economy. There would be continuous flow and increase in the number of migrants only when a given society is undergoing economic and industrial development and when the people do not encounter any obstacle on their way from their place of origin to their destination.

Emigration represents the departure of persons from any region.

Immigration represents the arrival of population from outside places. Number-wise there cannot be a symmetry between the incoming and outgoing populations.

According to the number aspect, migrations are of three types :

1. Large scale migrations,
2. Moderate scale migrations, and
3. Minor scale migrations.

In the 18th and 19th centuries the historic migrations which took place on a large scale are known as inter-continental migration.

In modern times in almost all the urbanized societies commuting populations are found moving daily from rural to urban industrial centres and vice versa.

20.3.5. STABILITY ASPECT

From the point of the view stability aspect migrations can be classified as (i) casual migration, (ii) temporary migration, (iii) semi-permanent and (iv) permanent migration.

i) Casual Migration

It involves the smaller or accidental movement of people. This may be a forward or backward movement of people into the neighbouring villages or towns. Such a migration results from the birth or marriage of a female. The migration resulting from the marriage of a female is also known as " Marriage migration". Female migration in India takes place mainly because of village exogamy in various parts of India. As a result of exogamy "associational migration" also takes place among females because they accompany their migrant husbands. Females in India generally do not migrate for economic reasons i.e., in search of jobs, etc. Even in big cities it is seen that female workers constitute only a small portion of the total female migrants.

ii) Temporary Migration

Such a migration is usually the result of journeys undertaken for (i) business purposes ; (ii) visits to fairs, village markets, and places of pilgrimage ; and (iii) temporary demand for labour in construction works like new roads, buildings, bridges or railway lines.

iii) Semi-Permanent Migration

In this category of migration the migrant earns his livelihood at another place but maintains his connection with his native place and home where some members of his family reside. In such a migration migrant usually visit their native places at regular intervals and live their permanently. In this particular type of migration males tend to out number females. In the case of the migrants, especially those among the lower classes it is generally found that males tend to leave their families behind in their native villages, stay alone at the places of work and send money to other dependents. In doing so they have the advantage of adding to their earnings from agriculture in their respective villages where the agricultural activities are taken up by the other members in the family (generally a joint family). As most of the females being illiterate cannot find any occupational placement in the modern industrial set-up, they stay back in their villages and engage themselves in agriculture.

iv) Permanent Migration

Such a migration takes place due to over-crowding which drives people to vacant fringe areas or where there is some such inducement for migrants to settle. Such settlements will prove helpful to the development of those areas, as they result in the healthy organization of an emerging society. In this type of migration females usually equal males.

20.3.6. OTHER TYPES

Besides some of these major types there are certain types of migration such as chain migration in which each migrant induces another to migrate. Once the people coming from village are settled in jobs and set up their families they tend to invite other relations to follow suit.

There is collective type of migration in which groups of families or individuals collectively migrate.

Individual migration also takes place in which the individuals alone migrate.

There are cases of Voluntary Migrations in which people voluntarily move from one place to another for their livelihood or any other purpose. Their migration is not caused by any force.

Sometimes there are cases of forced migration in which the element of coercion is involved: for example, a person may be forcibly sent out of his country.

There are sometimes inter-local migrations in which people move from one locality to another for the purpose of changing their residence, etc.

Thus the process of migration involves basically a change of residence across an administrative boundary. Depending upon the direction in which a migrant moves it can be classified as (i) rural to rural, (ii) urban to urban, (iii) urban to rural and (iv) rural to urban.

Generally, rural to rural migration takes place when people are not equipped to find any employment in an urban environment, etc. This type of migration, therefore, results in horizontal spatial as well as social mobility, since an individual does not have a chance to move upward in occupational and economic status. For example, most of the labour force in the agrarian sector is hired by the big land owners of various villages from time to time for the same type of work. The change in level of wages is not very significant and encouraging.

ii) In the case of urban to urban migration the migrants moving to a similar type of society have chances of realising social as well as occupational mobility as the metropolitan urban centres provide better job opportunities and an open society where there are bright chances for upward social mobility.

In certain government services workers are transferred from one urban place to another to work in the same official positions. In such cases only horizontal mobility takes place. But even in such circumstances migrants can receive all the benefits of an open society.

iii) Occasionally though not very frequently, urban to rural migration also take place. In such migrations people having farms in their villages move to them for sometime to look after their agrarian property and come back to their urban homes. These can therefore, be treated as a temporary type of migration.

Sometimes urban placed government officers involved in rural development programmes, etc. are posted to rural areas. There are also occasional cases of voluntary migration to rural areas involving doctors of voluntary social workers who move to rural areas in order to dedicate their services for the cause of the welfare of the rural society.

Sometimes urban people go to their farm houses to spend their week-ends, etc., in peaceful rural surroundings.

iv) Rural to urban migration is the most frequent type of migration taking place in India as a result of various push factors operating from the rural side. These push factors are drought, floods, unemployment among village youth and under-employment among farmers. At times the adventurous rural youth also migrate to urban areas. As has been pointed out caste discrimination also forces people to leave their native villages, especially those belonging to lower castes who find it difficult to face the situation prefer to migrate to an open urban society which is free of such discrimination.

As the traditional caste occupations have lost their market as a result of growing industrialization in urban areas, the village based people migrate to urban areas to work in the modern industrial occupational setup.

Along with push factors there are certain pull factors which operate from the urban end and attract the masses from rural areas. They are employment opportunities open to the rural labour force as a result of industrialization. Most of the farm labour force migrating from rural areas is absorbed in semi-skilled and unskilled type of work. Owing to lack of adequate formal education these people cannot be considered in high level positions within the industrial occupational structure.

Various other attractions are recreational facilities available in urban areas like theatres, clubs, different types of social organizations operating within the city, etc. Thus it is found that rural to urban migration resulting from push and pull factors is frequent and is also responsible for bringing about occupational and social mobility among the migrants moving from rural areas to different urban centres in India.

The present lesson on types of migration focuses on only the most important types of migration.

CHECK YOUR PROGRESS.

1. What are perspectives from which migration can be studied?

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2. What are the reasons why people migrate?

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20.4. SUMMARY

Emigration and Immigration are the two types of migration. The above two major types of migration can be considered in five perspectives - Space aspect, Time aspect, Cause aspect, Number aspect, Stability aspect. Certain other types of migration are chain migration, collective migration, individual migration, voluntary migration, forced migration and inter local migration. The process of migration involves basically a change of residence across an administrative boundary.

20.5. SUGGESTED BOOKS

Alan. A. Brown	:	Internal Migration
K.C. Zachariah	:	Migration in greater Bombay
Jackson	:	Migration
Roy & Turner	:	India's Urban Future
Asish Bose	:	Six Decades of Urbanization
Mandal	:	Frontiers in Migration Analysis
Jeffery	:	Migration and Refugees
F.D. Sott	:	World Migration in Modern Times
Thompson & Lewis	:	Population Problems

20.6. MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each:

1. Describe the various types of migration emerging from the spatial movement of population.
2. What do you understand by periodic or seasonal migration? Give appropriate examples.
3. How do emigrating and immigrating forces operate in the process of migration?
4. Describe the various types of migration emerging from the different aspects of migration.

II. Answer the following questions in about 10 lines each:

1. What do you understand by semi-permanent migration?
2. Explain local migration.
3. What is casual migration? Explain with appropriate examples.
4. Explain the process of rural to urban migration in India.

UNIT-21 : FACTORS OF MIGRATION

Contents

- 21.0. Aims and Objectives
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- 21.2. Brief analysis of Migration in India
- 21.3. Factors of Migration
 - 21.3.1. Physical Causes
 - 21.3.2. Economic Causes
 - 21.3.3. Socio-Cultural Causes
 - 21.3.4. Political causes
 - 21.3.5. Push and Pull Factors
- 21.4. Summary
- 21.5. Suggested Books
- 21.6. Model Examination Questions

21.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the factors of migration with reference to India.

By the end of this unit you will be able to :

- discuss the various factors of migration.

21.1. INTRODUCTION

In the previous unit we have studied about the different types of migration. In this unit we will study about the various factors of migration with reference to India.

21.2. ANALYSIS OF MIGRATION IN INDIA

Migration refers to a relatively permanent movement of people over a significant distance. It is widely acknowledged that the rural population of India is comparatively non-migratory because it is too strongly rooted to its village moorings by bonds of kinship, marriage customs, language and centuries of in-group living. Hence several proposals have been made to provide villagers with employment opportunities in their native villages in the form of cottage and other handicraft industries. "Factories without cities" seemed to be the attitude towards urban migration in India particularly during the early fifties. In 1951 only 3.1 per cent of the total population was living outside the state of birth. This was also indicated by the earlier Census. A large part of India's population lives and dies in or very near its birth place.

Contrary to this the past history of India has been one of great invasions and migrations with considerable mobility of population. Therefore, it cannot be asserted that India's population has been totally immobile. The data available on migration shows that Indian peasants have moved into areas like Assam and foreign lands (e.g. Burma, Sri Lanka, Malaya and Africa) to work in new plantations. The recent trend is a movement towards certain European and Arab countries.

21.3. FACTORS OF MIGRATION

There are several factors responsible for migration in general and rural to urban migration in particular. Migrations are the out come of the play of physical, economic, social, cultural and political factors which tend to influence a society.

21.3.1. PHYSICAL CAUSES

Climate played a major role in early human migration. In Central Asia during the historic period owing to its dry climate migrations to China, India and the European countries took place. The Aryans had migrated to the valley of Indus on the fertile plains of the Punjab, Iran and Europe like the Sakas, Hains, Mongols, Tantas etc. In the inner Himalayan region seasonal migration takes place every year. Besides adverse climatic conditions, the physical causes of migration are, floods changing courses of rivers, drought, famine, earth-quake, volcanic eruptions, infertile soils, rise and fall of sea coasts, etc. The changing courses of rivers like the Ganges, Kosi, Burhi-Gandak and the Indus in Punjab and Pakistan are also responsible for migration.

Rajasthan is subject to frequent migration due to drought at intervals of one decade sometimes. In the year 1944 West Bengal suffered from severe famine due to political and economic distress that resulted in a large scale migration of High Bengalees to nearby States.

The migration to industrial and urban areas have also been caused by soil erosion and the decline in soil fertility. Such migrations have taken place in North Indian Plains, China and Bangladesh.

21.3.2. ECONOMICAL CAUSES

Search for means of livelihood is the chief cause of migration. The areas where there is non-availability of livelihood tend to make people move to productive areas (industrial and textile). Some of the chief economic causes for migration are the following :

1. High density of population and lack of the means of livelihood;
2. availability of new land for agriculture in outer regions;
3. attraction of good productive land;
4. facility of irrigation;
5. availability of mineral resources;
6. availability of forest resources;
7. facility of transport;
8. attraction of industrial centres;
9. facility of trade and commerce;

Owing to high density of population in northern India people have been migrating to other regions in recent times. In the past people from various regions migrated to the the river basin of the Indus and the Ganges. Owing to the availability of canal irrigation in the Punjab and Sindh provinces people migrated to these regions just after the first World War.

Industrial establishments have also attracted people. (e.g. Jamshedpur, Bokaro and Bhillai iron and steel works have attracted a large number of migrants). People migrated to big urban centres like Calcutta, Bombay, Madras, Ahmedabad, Kanpur, Delhi, Bangalore, etc.

21.3.3. SOCIO-CULTURAL CAUSES

Migrations are also influenced by various socio-cultural factors:

From 50 to A.D. 500 thousands of Indians migrated to Burma, Ceylon, Indo-China, Malaysia, Siam, Sumatra, Java and Bali which resulted in the spread of Indian culture and religion. As per various archeological surveys, traces of Indian culture and evidences of Indian settlement can still be found in these islands.

In 1947 with the Partition of India hundreds and thousands of Muslims from India migrated to Pakistan and lakhs of Hindus to India from Pakistan. Thousands of Muslims from India, Pakistan, Iran, Egypt, etc. migrate temporarily to Mecca for Haj or mass prayer.

Several people from the U.S.A., U.S.S.R., and U.K. migrate to India to study its culture. Many migrants visit Indian Universities each year. Similarly, thousands of Indians travel abroad each year to foreign universities to study Engineering, Science etc.

Tourists, players, artists, singers, actors, members of Parliament, traders, etc. from India also visit foreign countries from time to time and vice versa.

The international migrations are increasing day by day.

21.3.4. POLITICAL CAUSES

These involve four factors :

(i) invasion, (ii) conquest, (iii) colonization and (iv) forced migration.

During the 17th Century A.D. the Muslim invasion brought thousands of Muslims to India.

In the 17th Century the Britishers who came as traders settled in India after waging war with local chieftains.

In the process of colonization the French and the British migrated to Africa; the Dutch to Indonesia and the Spanish to South America in the 16th Century A.D.

Under forced migration negroes of Africa were brought to South America in the 18th and 19th Centuries by Portuguese, the Spanish and the French to work as slave labour.

Besides these factors the urban sociologists like Bogue distinguish between certain 'push' and 'pull' factors of migration.

Push factors operate from the rural side and pull factors from the urban side.

21.3.5. PUSH AND PULL FACTORS

1. Push Factors

Some of the push factors are: (i) rural poverty, (ii) drought, (iii) earthquake, (iv) floods, (v) epidemics, (vi) rural unemployment or underemployment, loss of employment, (vii) ambition of the rural poor to lead a better life free from injustice and discrimination (viii) adventurism, and (ix) political upheavals (partition of India).

2. Pull Factors

Some of the pull factors that operate from the urban side are (i) expanding employment opportunities in the growing city in contrast to hurdles that are created in rural areas in their way of earning livelihood, (ii) encouragement or inducement by relations in the cities, (iii) labour contractors' offer of attractive or adequate employment in urban areas, (iv) attraction of urban surroundings, recreational facilities of entertainment etc., (v) facilities for education in general and higher education in particular and chances of achieving occupational placement in urban areas and permanent settlements in cities (Thus big educational centres situated in cities attract masses from rural areas), (vi) growing industrialization, (vii) Female migration towards urban areas after marriage. Since the above stated factors operate jointly resulting in rural urban migration, We shall discuss the play of both the factors causing pull-push effect.

The expanding employment opportunities for skilled and semi-skilled workers are found in a growing city in its informal sector like various types of construction, petty traders, professional services as those of sweepers, barbers, tailors, washermen etc., household services, and also odd jobs in organized firms and public establishments. While there is a growing demand for labour in all these spheres of activity associated with the economic growth of the city, there is increasing unemployment and underemployment of different degrees in rural areas in general. The shrinking of income earning avenues is due to the over-crowding on agricultural land as a result of the population explosion. There is no land substituting technology available in rural areas. Farmers in general and small (self-subsistent) farmers in particular are the worst affected and hence get gradually alienated from their land and join the landless labour force. Such a situation prevails in thickly populated areas like Eastern Uttar Pradesh from where most of the people tend to migrate to large metropolitan cities like Bombay, Calcutta, Hyderabad, etc. Theft, robbery and other types of social evils (as stated earlier) force villagers to leave their place and move towards urban areas. Low rainfall and chronic drought result in repeated crop failures and low agricultural productivity. This affects, on the one hand, the marginal farmers as their crops are damaged and the agricultural labourers on the other, so they are deprived of adequate wages. In such circumstances, those who are in distress are forced to leave their villages to seek their livelihood elsewhere. Another factor that has to be noted is the decline in employment opportunities and the failure of traditional crafts and professions as a result of competition from the modern industrial sector. Thus caste occupations like pottery, blacksmithy, oil pressing, etc., find it difficult to compete with the modern industrialised sector and hence lose their economic as well as social status. This particular situation forces an average villager to leave his village for the larger world of the city in search of better prospects; and it is this search for new avenues of life that provides the necessary motivation to individual villagers to leave their village. Even, if there are employment facilities in rural areas (other than caste occupations) the villagers may migrate to cities which offer higher wages. Thus in this particular context the city acts as a strong force and absorbs the maximum rural labour force.

The expanding employment opportunities and higher wages in urban areas and shrinking employment opportunity and comparatively low wages in stagnating villages cause 'pull' and 'push' effect that finally results in rural-urban migration. The disparity in the income potential between the city and the village is basically the most potent economic factor and provides a constant stimulus to the spatial mobility of potential labour among the rural poor. In the initial stages only male labour force migrates to the cities and once they are settled in some occupation they bring their families from their native villages. In certain cases the menfolk live collectively in single room apartments without their families, maintain a common kitchen and send money to their families living in their native villages.

In addition to economic factors there are also certain social factors accounting for the differences in the tendencies to migrate. Often migration from the rural side results from the encouragement or inducement of city based relations that helps the villager to make up his mind to migrate.

Again, there is enough evidence to show that the male youth migrate to cities only to satisfy their sense of adventurism. As they find it difficult to adjust to the old village value system and the traditional occupational structure they move to cities. In a study conducted in the city of Hyderabad it was found that many teenagers had migrated to enjoy city life. It is interesting to note that some of these boys are sons of big landlords in the Eastern Uttar Pradesh region. To escape the monotonous dull village life they have migrated to the city of Hyderabad. Such people, interestingly, do not mind accepting semi-skilled jobs in various industries. Sometimes though these boys belong to rich village landlord families they do not have sufficient formal education to occupy higher positions in the industrial occupational structure.

At certain times rural migrants particularly experience a psychological 'pull back' at least during the early years of their stay in the city.

Sometimes there tends to operate a 'push back' factor from the urban side, i.e., when the urban land is over crowded with additional population pressure (as it is generally found in

overurbanised cities like Bombay and Calcutta), it tends to reverse the flow from rural areas to the urban thereby causing the 'push back' effect. Thus it is seen that generally certain social and economic factors tend to influence migration. In some circumstances certain political upheavals are also responsible for migration (e.g., the partition of the Indian sub-continent into India and Pakistan has been responsible for the movement of population in India). Between 1946 and 1951 about 6.2 million Muslims left India for Pakistan and 7 million Hindus came to India from across the border. These refugee movements resulted in considerable changes in the population structure of certain towns, districts and states. Thus during the Partition period lakhs of displaced persons moved from their respective native lands.

Besides certain major factors discussed above, there are others like the size of the receiving town also which tends to determine the rate of migration. Thus generally the migration to the bigger metropolitan cities is frequent when compared to migration to smaller towns (e.g., the flow of migration is towards greater cities like Bombay and Calcutta which are highly urbanized cities.

Thus if we examine the process of migration in India we find that in recent times it has become a very wide spread phenomenon.

Streams of migration are flowing not only towards the largest cities but also to hundreds of medium size and smaller cities in all regions. This urban land migration began late in 1930's. Family and village ties are strong enough to create an obligation for the successful migrant to help sponsor new entrants to the city.

Besides what has been said above, it should be also noted that illiteracy among rural population is not a strict bar to migration. As a result of development in the field of transportation and communication rural people irrespective of their literacy level are migrating towards urban areas and working in industrial sector mostly as semi-skilled and unskilled labourers. Almost all the migrants to the city tend to leave their traditional (caste) occupation including agriculture and seek entry into the new urban industrial occupational structure.

In conclusion it may be said that there are several factors responsible for migration of which the most important are discussed in this lesson.

CHECK YOUR PROGRESS.

1. What are the causes of Migration?

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2. What are the push and pull factors of migration?

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21.4. SUMMARY

There are several factors responsible for migration in general and rural to urban migration in particular. Physical, economic, social, cultural, political and push and pull factors are causes for migration. As a result of development in the field of transportation and communication rural people irrespective of their literacy level, are migrating towards urban areas and working in industrial sector mostly as semi-skilled and unskilled labourers. Almost all the migrants to the city tend to leave their traditional (caste) occupation including agricultural occupational structure.

21.5. SUGGESTED BOOKS

Alan.A. Brown	:	Internal Migration
K.C. Zachariah	:	Migration in greater Bombay
Jackson	:	Migration
Roy & Tunner	:	India's Urban Future
Asish Bose	:	Six Decades of Urbanization
Mandal	:	Frontiers in Migration Analysis
Jeffery	:	Migration and Refugees
F.D. Sott	:	World Migration in Modern Times
Thompson & Lewis	:	Population Problems

21.6. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each:

1. Define migration and analyse the process of migration in India.
2. Which are the various physical and economic causes of migration?

II. Answer the following in about 10 lines each:

1. What do you mean by socio-cultural causes of migration?
2. 'Political factors also influence migration' - Comment.
3. Industrialization acts as a pull factor of migration. Discuss.
4. What do you understand by 'push- back' factor in migration'?
5. 'Push-pull factors jointly are responsible for rural urban migration' - Comment.

UNIT-22 : CONSEQUENCES OF MIGRATION

Contents

- 22.0. Aims and Objectives
- 22.1. Introduction
- 22.2. Early Migration
- 22.3. Migration in India
- 22.4. Rural Urban Migration and Urbanization
- 22.5. Rural Urbanization and Industrialization
- 22.6. Rural-Urban Migration and Social Mobility
- 22.7. Summary
- 22.8. Suggested Books
- 22.9. Model Examination Questions

22.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the consequences of migration.

By the end of this unit you will be able to :

- discuss the various consequences of migration

22.1 INTRODUCTION

Migration as a process of spatial mobility has various consequences as a result of which societies at both the ends (origin and receiving end) experience change. For example, if X persons leave their country A and migrate to country B it would result in changing the size of the two populations. The population of country A is decreased and that of B is increased by X. But this will indicate only one aspect of the change that is temporary.

If the young migrants have their children in their new country, its fertility rate may go up while that of their native country goes down. The remaining population of country A will get older and its death rate may go up while in country B it goes down.

Thus Malthus has also felt that migration is a partial and temporary factor with no permanent effect on population size. This is likely to be true of any country where the mortality of infants and children is high (emigration will also reduce the rate) or where marriages and conceptions are postponed because of economic pressure. As a result the emigration of people from these countries would result in a higher fertility in receiving countries.

If such indirect effects are included in the analysis the changes in the population of the receiving country is also difficult to estimate.

22.2. EARLY MIGRATION

In the pre-historic period people generally depended for their living largely on hunting and fishing and the gathering of natural vegetable products and the pastoral people who depended chiefly on their flocks always lived in rather small clan or tribal groups scattered over a considerable area. They were nomadic and could move about easily because they possessed

cattle. Most hunters had few possessions to move, while the pastoral people could drive their animals before them, a few of which were loaded with their scanty household requirements. For ages such people must have played an important role in taking possession of neighbouring or nearby lands either by force or by moving into these uninhabited or at best sparsely settled.

22.3. MIGRATION IN INDIA

The out migration from India to other countries before Hind World War was much smaller than that after it. About 2,130,000 Indians lived abroad in 1924. About 100,000 of these lived in other parts of the British Empire, chiefly in ceylon, Malaya, South Africa, Fiji and Mauritius.

The Depression of 1930 caused a strong return movement among Indians. This situation prevailed during the Pre- Independence period prior to the Partition of India, i.e., before 1947. No detailed data is available on this particular aspect of migration. The actual modern migration from and into the present India and Pakistan started after Partition in the year 1947.

These movements probably had comparatively little effect on the size of population in either of these countries although they did have a substantial effect on the distribution of Hindus and Muslims in the different areas of the Indian sub- continent. However, in order to eliminate as far as possible disturbances which are expected to arise from religious differences after Partition, both Hindus and Muslims irrespective of their places of residence were permitted to migrate to the territory of the State in which they preferred to maintain citizenship.

This resulted in tremendous migration. The 1951 Census of Pakistan gives the total number of displaced persons as 7,227, 000. The Second Five Year Plan of India referred to the 8,550,000 displaced persons for whom rehabilitation measures were taken up.

This particular migration had a slight adverse effect on population growth between 1941 and 1951 in India and a significant effect on the growth of population in Pakistan. The Census of India after Partition showed a slightly larger increase in population between 1941 and 1951 (14.1 per cent) than between 1931 and 1941. The Census of Pakistan showed less than half of the percentage increase between 1941 and 1951 (7.9 per cent). The 1951 Census of Pakistan must have been comparatively complete than that of India because of the lack of efficient administrative services. It was expected that considerable (information is not available) numbers of Hindus and Muslims would die during transit and many more might have died prematurely after arrival in camps for displaced persons before the official counting was done. It was rather difficult for both the countries to cope with such a vast number of displaced persons, but India was perhaps better prepared than Pakistan to face the situation. Thus although both the countries suffered heavy losses of population as a consequence of partition, Pakistan's growth (1941-1951) was probably more adversely affected by the hardships resulting partition than that of India.

22.4. RURAL URBAN MIGRATION AND URBANIZATION

Generally, it is found that migration is sex selective, since females are left behind in their native villages. Only males migrate to other economically productive areas for their livelihood. In order to avoid extra expenditure they leave their families in their native places. In the Indian context it is also true that the level of education among females, especially those in the rural sector, is very low or sometimes even negligible. With such a low level of literacy rural women find it difficult to find employment in the modern industrial sector. Another problem is that of security in urban areas. In the initial period of their stay in urban societies even males find it difficult to adjust to their new environment. As time passes they slowly get socialized into the urban society and then think of settling permanently in urban areas and it is at this stage they think of bringing their families from their native villages.

In terms of age it is found that children and old people do not migrate to other places as

they are not in the productive age. When there is an economic crisis in an urban area affecting employment opportunities the labour force migrating from rural areas is pushed back to its place of origin. In densely populated countries migration reduces pressure on local resources. In the case of India nearly seventy percent of its total population depends on agriculture. These days it is found that the pressure on the agrarian land is such that many of our villages experience additional population pressure on agrarian land. The man and land proportion is disturbed. In such circumstances the only alternative is to siphon off the excess of population from rural areas to preferably urban areas. This process results in the balancing of population between rural and urban areas. The distribution of land and land use pattern also undergoes change, particularly in the non-agrarian sector.

The process of migration also results in the increase of per capita income as many of the rural unemployed and under-employed masses find jobs in industrial sectors. Rural to urban migration, therefore, helps in solving the problem of population distribution, unemployment, and underemployment while raising per capita income and ensuring a decent standard of living for masses.

CHECK YOUR PROGRESS.

1. What is meant by early migration?

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2. What is meant by urbanization?

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22.5. RURAL URBANISATION AND INDUSTRIALISATION

From the Second Five Year Plan onwards the Government of India has launched massive programme of industrialization in order to strengthen the economy. Therefore, from the Second Plan onwards, unlike in the first two plans, an additional emphasis has been placed on the kind of industrialization which allows an effective use of agriculture as well as of industry. With such a type of economic programme it is possible to maintain a balance between the agrarian and industrial sectors and also help absorb the local labour for developmental purposes. The locally available labour in agricultural areas and migrant labour in industrial areas constitute a second capital base for the overall economic development of the country.

It is an accepted fact that the process of urbanization, industrialization and economic development are interrelated in that all the three processes are the consequences of migration. Migration precedes and promotes urbanization which is necessary for industrialization in a given area. In fact, industrialization emerges in response to urbanization which offers job avenues to various categories of unemployed people in an urbanizing country thereby helping in increasing its economic standards in terms of per capita income, national income and standard of living.

In India as the population in general, and rural population in particular, is immobile comparatively, it is lagging behind in the industrial as well as economic development.

The urbanised migration in India is a fairly recent phenomenon which began in the late 1930's. Prior to that it was generally felt that Indian population was tied down to its native home and kin groups, living within joint families.

In recent times the rate of migration has increased because of the changed attitude of the people in rural areas and also because of such push factors opening from the village side as severe drought, flood, exploitation of agricultural labour by the landlords, caste discrimination, unemployment and underemployment. Villagers have these days been progressively becoming more and more oriented towards the new urbanized economy and with newly emerging channels of migration to urban areas. India is entering a phase of unprecedented urbanization.

Very little urbanization can take place in the absence of migration. For example, in the city of Calcutta the registered number of deaths was always greater than the registered number of births up to the year 1951. The rate of urbanization is, therefore, equal to the rate of net immigration to towns. Hence the rural to urban migration is a major component of urbanization. It is the chief mechanism by which the world's great urbanization trends have been achieved. It is, therefore, necessary to focus on rural to urban migration to understand the process of urbanization.

As has been pointed out, the process of immigration to cities accelerates urbanization and industrialization as well. It is generally seen that most of the heavy and capital goods industries are located in urban areas. To mention some of them, the gigantic steel plant located in Bhilai area in Madhya Pradesh is able to absorb thousands of labourers from nearby villages and towns. Similarly, Chitaranjan, Rourkela, coal mines in Bihar and Mysore, Kolar Hatti Gold Mines have been able to absorb massive labour force coming from various parts of the country.

CHECK YOUR PROGRESS.

3. What is meant by Industrialization?

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22.6. RURAL-URBAN MIGRATION AND SOCIAL MOBILITY

It is also known that the new type of industrial structure emerging from an urbanizing society gives rise to a different type of society based upon certain modern industrial values. Thus new values pertaining to size of family (hence low birth rate) and style of living in general are responsible for the formation of small nuclear families (consisting of husband, wife and their children). Various family planning methods, sophisticated child rearing practices through welfare programmes, etc., help women to take up jobs outside their homes.

Besides the demographic consequences there are various social consequences of migration also whereby migrants achieve upward social mobility. Therefore, migration cannot be analysed independently of its cultural context or by counting heads.

22.7. SUMMARY

Migration as a process of spatial mobility has various consequences as a result of which societies at both the ends (original and receiving end) experience change. Migration results in urbanization, increase in the per capital income, industrialization and economic development. Besides the demographic consequences there are various social consequences of migration whereby migrants achieve upward social mobility.

22.8. SUGGESTED BOOKS

Alam A. Brown	:	Internal Migration
K.C. Zachariah	:	Migration in Greater Bombay
Jackson	:	Migration.
Roy Turner	:	India's Urban Future
Ashish Bose	:	Six Decades of Urbanization
Mandal	:	Frontiers in Migration Analysis
Jeffery	:	Migration and Refugees
Thompson & Lewis	:	Population Problems

22.9. MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each:

1. Discuss how the process of migration affects the distribution of population in areas of origin and in the receiving areas- Give examples.
2. 'Urbanization is the result of migration' -Discuss.
3. 'Migrant population in cities contributes to the process of industrialization' - Comment.

II. Answer the following in about 10 lines each:

1. Discuss the effect of rural urban migration on rural areas.
2. Explain the effect of migration as a result of partition on India and Pakistan.
3. 'Rural Urban migration in India is responsible for occupational mobility among the migrants' - Comment.

UNIT-23 : UNDER POPULATION AND OVER POPULATION AND THEIR CONSEQUENCES

Contents

- 23.0. Aim and Objectives
- 23.1. Introduction
- 23.2. Mercantalism and the Population Problem
- 23.3. Physiocracy and the Population Problem
- 23.4. Malthus on the Population Problem
- 23.5. Marxian Concept of Surplus Population
- 23.6. Optimum Population
- 23.7. Under Population and Over population
- 23.8. Consequences of under population
- 23.9. Consequences of over population
- 23.10. Summary
- 23.11. Suggested Books
- 23.12. Model Examination Questions

23.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss the concepts of population, under population and over population.

By the end of this unit you will be able to :

- explain the concepts of under population and over population,
- discuss the consequences of under and over population.

23.1. INTRODUCTION

The trends in world population growth from 10000 BC to the present time point to striking changes in demographic situation. From a mere one million population around 10000 BC the population of the world reached 500 million by 1650 AD. This entire period marks only a very small growth rate. Between AD 1650 to 1920, the population of the world increased to 1.8 billion at a marginal growth rate. By 1984, it rose to 4.9 billion and the population increased at an alarming rate of 1.7 per cent per year. Hence it can be said that a demographic transition had taken place since 1650 A.D. During this phase of transition the population of the world was considered to be low at times and beyond the capacity of known means at other times. The fluctuations in population caused maladjustments between the population and means of life or subsistence. These maladjustments have been regarded as population problems.

23.2. MERCANTILISM AND POPULATION PROBLEM

The economic philosophy of the Sixteenth and Seventeenth century European leaders is regarded as mercantilism. The mercantilists led by Antoine De Montchretien in France, Sir Thomas Mun and Sir William Petty in England propagated the cause of population growth for economic reasons. They believed that economic development would be restricted by a low

population. For mercantilists population increase is a prior condition for development of trade and industry. Increased population has been regarded as a sign of national prosperity for the following reasons:

1. Increased labour supply reduces the cost of production and leads to profit ;
2. Increased population raises the demand for goods and enlarges the scope of market ;
3. Increased production leads to expansion in trade and export; and
4. War amenities and services can be expanded and thus the nations can become stronger.

Thus a lower level of population has been regarded as a negative factor for economic and political development by the mercantilists. Population increase is held to be favourable to the society through increased production, demand and export which in turn results in a higher per capita income and better standard of living.

23.3. PHYSIOCRACY AND POPULATION PROBLEM

As a reaction to mercantilism, physiocracy implying the 'rule of the nature' or the 'need for agriculture', was advocated by a group of thinkers in the mid 18th century. Francis Quesnay, Jacques Turgot, Marquis de Mirabeau, Meicier de la Reviere and other physiocrats considered the population growth to be dependent upon natural forces. While mercantilists favoured population growth for economic gains through industry, the physiocrats were of the opinion that a large population could be sustained only through development in agriculture. They were of the opinion that population growth would be beneficial to the society only to the extent that it would not interfere with the natural order. The growth of the population would always be limited by the availability of the means of subsistence. Thus the physiocrats preferred population growth only to the extent of available means of subsistence. In this context, Quesnay felt that population growth could be preferred only when there was suitable growth in income levels and in agriculture. Population beyond a point was regarded by them as the cause for misery and grief.

23.4. MALTHUS ON POPULATION PROBLEM

The impact of growing population was felt by the European countries to some extent in the early 19th century. Falling agricultural production, famine, and poverty caused misery to the population which in turn made many think afresh of population growth. Malthus was the first among these thinkers to consider the relationship between population and subsistence. As discussed earlier (in Lesson 5), Malthus drew the attention of the world towards the possible dangers of growing population and the resultant population problem.

Basing upon the postulates that food is essential for human existence, that human beings continue to be born and that returns from agriculture diminishes with time, Malthus has cautioned that population growth leads to the problem of scarcity of means of subsistence. He has argued that the population grows in a geometric proportion while the means of subsistence grow in arithematic proportion. In a span of 100 years, according to him, population will increase 16 times as against 5 times increase in the growth of food thereby causing scarcity of food and misery to the people. He envisaged that the population problem would lead to war for establishing control over subsistence, disease on account of malnutrition, and poverty.

23.5. MARXIAN CONCEPT OF SURPLUS POPULATION

Karl Marx, the founder of Communism, was of the opinion that over population was not a product of biological process but an offshoot of capitalism. In a capitalist system, he argued, the problem of subsistence is restricted to only the working class on account of prevalent exploitation, unemployment and poverty. He preferred to call them 'surplus population'. He

said that with the change from capitalist to collective mode of production, reduction of inequality and enhanced income and improved living standards, the surplus population would disappear.

Some of the theoretical issues discussed so far suggest that a low population leads to under utilisation of resources, lower production, less demand etc., as propounded by mercantilists. A population beyond the subsistence level is supposed to cause misery and sorrow, as indicated by physiocrats. The competition for employment among the workers and the resultant exploitation by the capitalist as per Marx lead to a surplus population and other related problems. Malthus did draw the attention of the world towards the problems of overpopulation and more specifically towards the scarcity of food. He warned that the world will be subjected to wars, malnutrition, disease and poverty on account of overpopulation. These observations are important in that they focus the problems caused on account of two population situations, namely, 'Underpopulation' and 'Overpopulation'. Before we discuss the concepts and consequences of underpopulation and overpopulation, let us examine another related concept, i.e., 'optimum population'.

23.6. OPTIMUM POPULATION

The optimum theory of population also depends upon the relationship between population and resources. Karl Winkelblech classified nations, according to the size of the population into three categories, viz., underpopulated nations, overpopulated nations and nations with normal population. The nations under third category are said to have the maximum possible productivity. The population which produces maximum productivity was subsequently called 'Optimum Population' by Edwin Cannan.

A number of interpretations of optimum population have been offered by different thinkers. According to Carr-Saunders, 'the population which produces maximum economic welfare' is the optimum population. For the purpose of computing the optimum, he suggested that maximum real income per head might be taken instead of maximum economic welfare. K.E. Boulding has defined optimum population as "the population at which the standard of life is maximum". Dalton took per capita income for determining optimum population.

According to Dalton, the optimum population indicates the size of the population which can provide the maximum income per head at a given period of time. Any increase or decrease in population at the optimum level will result in a reduction in the per capita income. Under a set of natural resources, production technique and constant capital, if the increase in population leads to an increase in per capita income, the nation is said to be underpopulated. Such nations could afford to raise the population further to achieve a better per capita income. In case the increase in population is associated with a decrease in per capita income, the country can be said to be over populated. To maximise the per capita income such countries should attempt to reduce the population.

23.7. UNDERPOPULATION AND OVERPOPULATION

The theories offered by mercantilists, physiocrats, Marx and his followers, propounders of optimum population and demographic transition, and especially by Malthus help us in identifying the demographic situations called underpopulation and overpopulation. Any population cannot be regarded as either underpopulation or overpopulation in isolation. They must be understood in relation to other issues like subsistence, resources, production, per capita income, welfare, etc. Underpopulation and overpopulation indicate different degrees the continuum of demographic situation at a given point of time.

The population that falls short of subsistence level and that fails to utilise the resources for maximum production for want of numbers can be called underpopulation. When the increase in population results in increased production, higher per capita income and better welfare, under a given set of resources, skills and effort, the population would be characterised as under population.

The population which cannot sustain itself with the available means of subsistence and which experiences scarcity of resources can be called overpopulation. When the increase in the population is associated with a decrease in the per capita income and a fall in the standards of living under a set of given resources, skills and effort, the population can be called 'overpopulation'. John Clarke distinguishes between the absolute overpopulation and relative overpopulation. Absolute overpopulation is marked by low living standards even after the attainment of the absolute limit of resource development. Hence the problems caused by absolute overpopulation can only be tackled through a reduction in the population. Relative overpopulation is marked by a situation where the population is subjected to the problems of scarcity due to under utilisation of resources and lower productivity. Such problems could be solved to some extent by planned development and proper use of resources.

As stated earlier, overpopulation and underpopulation are relative terms. As a result, it is difficult to identify them. Dalton sent forward a simple formula for identifying the situations of overpopulation and underpopulation. The deviation of actual population from optimum population is taken as maladjustment. The maladjustment is computed with the following formula:

$$M = \frac{a-O}{O}$$

- M= Maladjustment
- a= actual population
- O= Optimum population

The values of M indicate the type of population of a given country or region. Positive value indicates overpopulation, negative value expresses underpopulation, and a zero value denotes that the country has an optimum population.

CHECK YOUR PROGRESS.

1. What is meant by overpopulation and underpopulation?

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23.8. CONSEQUENCES OF UNDERPOPULATION

Many countries in the world have experienced underpopulation at different times. To quote a few instances, United States of America, with a land area of 9,168,660 sq. kilometers had only 7.6 crores of people in 1900. Its population increased only to 22.6 crores by 1980. Japan occupying an area of 3,77,700 sq. kms. has a population of 4.29 crores around 1900 and 11.69 crores in 1980. Australia and New Zealand together had only 1.8 crores of people in 1980 with a density of just two persons per sq. kilometer. Countries like Japan, England, Germany, France and Russia experienced underpopulation on account of decline in the birth rate, large numbers of deaths during the two World Wars and the period of economic recessions. The U.S.A., New Zealand and Australia, the Newfoundland had come to the populated on an appreciable scale only on recent times and thus were subjected to underpopulation.

Underpopulation leads to various socio-economic and political disadvantages. For instances, countries with underpopulation has suffered greatly on account of lack of work force. Scarcity

of workers had resulted in underutilisation of resources as well as less production. The labour had to be paid higher remuneration in underpopulated countries than those in overpopulated countries which in turn led to escalation of production cost. In addition, the economy suffered due to lack of demand as the number of consumers is small. As a result, the underpopulated countries faced economic hardships.

The underpopulated countries tend to become politically weak owing to lack of sufficient military strength. The countries subjected to the problems of underpopulation in the aftermath of war faced the problems of enhanced dependency ratios and imbalances in the population skewed in favour of women. These in turn caused various social problems.

Underpopulation which was caused by rapid decline in death rates and in birth rates led to an imbalance in the age composition of its population. These countries had more old people than young people for whom many welfare services had to be organised.

While some of the political and economic problems caused by underpopulation have been overcome with advancement in technology, the problems related to the increase in the number of old persons are still continuing. On the other hand, the decline in the number of young persons is becoming a serious problem for these countries as the producers are not being replaced adequately. By encouraging immigration and by propagating pro-national population policies the underpopulated countries are trying to solve this problem.

CHECK YOUR PROGRESS.

2. What are the consequences of underpopulation?

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23.9. CONSEQUENCES OF OVERPOPULATION

The majority of the countries in the world, especially in Asia, Africa and Latin America, are confronting the problems of overpopulation. A rapid decline in the death rate and only a marginal decline in the birth rate are primarily responsible for it. In fact, overpopulation at present is not a problem only for the underdeveloped countries but for the world as a whole, since the world population is growing at a fast rate. It is thus considered a global problem. The magnitude of overpopulation in the world has been described by Raymond Ewell. According to him

1. The world is running out of suitable living place;
2. The world is running out of food ;
3. The world is running out of fresh drinkable water and sometimes out of fresh air to breath;
4. The world is using up its irreplaceable resources at rapidly increasing rate; and
5. The increasing population densities of many countries are causing many social problems of steadily increasing magnitude.

The consequent problems of overpopulation can be discussed under three different categories, namely, economic problems, social problems and political problems. Unemployment, poverty, low per capita income, declining savings, low investment, increased burden of welfare expenditure, growing indebtedness and trade deficit are some of the economic problems resulting from overpopulation. These problems are not only interdependent but intensify one another.

Overpopulation is normally associated with widespread unemployment. The traditional economy based on agriculture is not in a position to withstand the pressure of overpopulation. Owing to lack of investment potential, the industrial growth would not be able to keep pace with the increase in population. Thus the problem of unemployment becomes all the more severe in overpopulated countries. The stiff competition for subsistence leads to increased cost of living and reduced savings. In the absence of savings the country fails to invest in development and thus the GNP's growth is restricted. With the addition of more people to the population the per capita income becomes stationary or gets reduced.

The demand for goods falls in an overpopulated country as the purchasing power goes down on account of poverty. These countries find it difficult to find resources for both welfare expenditure and development investment. In the process, these countries look for external aid and loans. Increased imports and diminishing exports result in a trade deficit. The deficit grows further, on account of payment of interest on the borrowed sums. While the country becomes economically backward and underdeveloped, the people tend to become poor and unemployed on account of overpopulation.

A population affected in poverty and unemployment suffers with malnutrition, insufficient health facilities and illhealth. The problems of malnutrition illhealth and illiteracy strain the economy further. Countries with overpopulation depend on external borrowings and thus become politically weak internationally. Mass illiteracy weakens the country's potential for development.

In the face of growing economic, social and political problems, overpopulated countries are adopting anti-naturalist population policies in order to regulate population growth. These will succeed if accompanied by planned socio-economic development.

23.10. SUMMARY

The fluctuations in population cause maladjustments between the population and means of subsistence. These maladjustments have been regarded as population problems. Any population cannot be regarded as either under population or over population in isolation. They must be understood in relation to other issues like subsistence, resources, production, per capita income, welfare. Under Population and over population indicate different degrees of the continuum of demographic situation at a given point of time. The consequent problems of over population can be discussed under three different categories namely economic, social and political problems.

23.11. SUGGESTED BOOKS

- | | |
|--------------------------------------|-----------------------------------|
| Thompson and Lewis | : Population Problems |
| Asha Bhende and Tara Kanitkar | : Principle of Population Studies |
| Madam G.R. | : Social Problems in India, vol.I |
| Thompson Warren P. | : Population Problems |
| Sinha & Zachchria | : Elements of Demography |

23.12. MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each:

1. Discuss the various theories concerning population problems.
2. Ennumerate the consequences of overpopulation.

II. Write short notes on the following in about 10 lines each:

1. Physiocracy and population problem.
2. Dalton's formula for identifying underpopulation and overpopulation.
3. What is meant by Surplus population?
4. What is Mercantilism?
5. What are the Consequences of underpopulation?

UNIT-24: WORLD POPULATION GROWTH WITH SPECIAL REFERENCE TO INDIA

Contents

- 24.0. Aims and Objectives
- 24.1. Introduction
- 24.2. World Population Growth before 1650 A.D.
- 24.3. World Population Growth from 1650 A.D. to 1920
- 24.4. World Population from 1920 to 1984
- 24.5. World Population Prospects
- 24.6. Population Growth in India
- 24.7. Population Growth in India upto 1650 A.D.
- 24.8. Population Growth in India from 1650 to 1921
- 24.9. Population Growth in India since 1921
- 24.10. Prospects of India's Population
- 24.11. Summary
- 24.12. Suggested Books
- 24.13. Model Examination Questions

24.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss about the world population growth during the pre-industrial-period (upto 1650 A.D.), industrial period (A.D. 1656 to 1920) and in the recent modern period (1920 to 1984).

By the end of this unit you will be able to:

- discuss the growth of population from 1650 A.D. to the recent modern period (1984),
- discuss the reasons for population variations in each period,
- discuss about the population growth in India.

24.1. INTRODUCTION

The population of the world at the end of the year 1984 was estimated to be 4.9 billion or 490 crores. This voluminous population of today is the net result of population growth taking place throughout the world, some times steadily and at other times rapidly, ever since homo sapiens came into existence. It is very difficult to trace the history of world population growth because the evidence in support of it is very scanty. The method of collecting information of population through census began only in the nineteenth century and that too in only a few countries. Upto the Second World War, many nations in the world did not conduct many census at all. The census collected by some of the underdeveloped countries even in modern times, are far from reliability. We have some kind of reliable information about world population from 1920 only. The more we go back in time, the statistics on population are increasingly fragmentary and unreliable and so most of the knowledge on world population is born out of scholarly and scientific guesses. Based upon the reliability of the data and the extent of population growth, world population growth can be studied under three different periods. The

first period covers population growth from 10000 BC to 1650 AD. The second period deals with population variations from 1650 AD to 1920. The third period looks into population growth from 1920 to the present decade.

24.2. WORLD POPULATION GROWTH BEFORE 1650 AD.

Estimates of world population before 1650 AD are based upon the interpretation of descriptive materials of the past, anthropological observations and evidences obtained from archeological excavations. During 10,000 B.C., i.e., approximately at the end of the Ice Age, human beings were scattered over the world in small numbers. A total population ranging from one lakh to one million was estimated to have inhabited our world around 10,000 B.C. In the next 5000 years, as shown in Table 1, the world population enhanced at a very slow rate. Around 5000 BC the population of the world was estimated at 5 million to 20 million. At the beginning of Anno Domini, as per the estimates of Brock and Webb, the population of the world was around 256 million. By 1300 A.D. it increased to 400 million. During the next 250 years one hundred million people came to be added to the world's population. By 1650 A.D. the population of the world was estimated to have reached 500 million.

Table 1
World Population
From 10000 BC to 1650 A.D.

Year	Population
10000 BC	1 lakh to 1 million
5000 BC	5 million to 20 million
1 AD	256 million
1300 AD	400 million
1650 AD	500 million

The population growth from 10,000 B.C. to 1650 A.D. shows that the rate of growth was very slow. It was mainly on account of the then existing socio-economic situation. Assuming that the fecundity of the human race was more or less constant and that the fertility was not restricted, birth rate in the pre-industrial era should have been relatively high, at 40 or more per 1000 per year. In spite of the high birth rate, there was no rapid growth in population during this period on account of an equally high death rate in the pre-industrial period.

1. During the pre-industrial era, especially in the earlier centuries hunting, fishing and food gathering were the main means of life. As a result population was subjected to scarcity of food due to lack of proper tools, non availability of game in the forest and fish in the ponds at the needed time.
2. There were evidences to indicate that the world was subjected to famines of various degrees which resulted in acute shortage of food and water.
3. The world was exposed to severe epidemics, more particularly after famines, leading to large scale deaths among human beings.
4. Population in the pre-industrial era was subjected to diseases of different kinds which took a heavy toll of human life.
5. Wars among the tribes in the pre-industrial era not only caused large scale deaths but also resulted in destruction of food supply which endangered the lives of even the survivors. Natural checks in the form of scarcity of food, famines, epidemics, disease and wars were largely responsible for large scale deaths in the pre-industrial era. The high death rate was thus responsible in controlling population growth to a minimum level, even though the birth rate was very high in the world before 1650 AD.

24.3. WORLD POPULATION GROWTH FROM 1650 AD TO 1920.

This period in the history of human race indicates an improvement in the techniques of production. From 1650 AD the Western world witnessed a revolution in agriculture and thereupon the industrial revolution from the early eighteenth century. During this period, which is generally referred to as the industrial period, the development of agriculture, transport and industry made life easier for human beings. The problem of food scarcity was reduced to a large extent. As a result the population of the world gradually started growing at a rapid pace.

Table 1
World Population Growth From 1650 to 1920

Year	Population	Percentage of increase
1650	0.5 billion	---
1700	0.6 billion	0.10
1750	0.7 billion	0.30
1800	0.9 billion	0.40
1850	1.2 billion	0.50
1900	1.6 billion	0.60
1920	1.8 billion	0.65

However, it must be understood that facts regarding world's population or its growth rate were not available for most of the early industrial period. Only a few countries had reliable data about the size of their population in AD 1800. Many Latin American, African and Asian countries started compiling data on population only in the late nineteenth century or in early years of the present century. In the absence of reliable data, population particulars of the world for the period 1650 to 1920 can only be understood based upon carefully prepared estimates drawn from the available evidences. Such population estimates were prepared by Willcox and Carr Saunders. In understanding the world's population for this period we look into the estimates of Carr Saunders, which are preferred by many other demographers.

Table 2 indicates that the population of the world during 1650 was estimated to be half a billion. It rose to 0.6 billion by 1700 A.D., recording a growth rate of 0.1 percent or one person per every 1000 people. The population of the world reached 0.7 billion in 1750 and 0.9 billion by 1800. The world witnessed for the first time a population of more than one billion between 1800 and 1850 A.D. During this period the world population grew at the rate of 0.5 percent. By the end of the 19th century the world recorded a population of 1.6 billion and a growth rate of 0.6 percent. By 1920 the population of the world further increased to 1.8 billion. There was also an increase in the rate of population growth to 0.65 percent per year.

The population of the world reached 500 millions over a span of nearly 116 centuries that is from 10,000 B.C. to 1650 A.D., whereas the next 500 millions were added in a span of less than 200 years. While it shows that population of the world increased substantially after 1650 A.D., the rate of population growth showed only a marginal increase, i.e., from 0.1 percent in 1700 to 0.65 percent in 1920.

The gradual growth recorded in the world population between 1650 to 1920 was mainly due to a slight decline of the death rate. This decline was more apparent in the European countries, followed by North America and Australia. High death rates continued even in this period in Asian and African countries. Accordingly most of the growth in world population was, in this period, in the European countries and North America.

24.4. WORLD POPULATION FROM 1920 TO 1934

The world witnessed a sudden growth in its population from 1920 onwards. This sudden growth in population came to be referred as "Population explosion". It was mainly on account of a drastic decline in the death rates throughout the world due to a revolution in the field of medicine. The use of sulfa drugs from 1930 and the wide spread application of antibiotics from 1940 helped mankind to combat infectious diseases. The possibility of immunization against several destructive diseases was possible by the end of II World War. The most dreaded epidemics like typhoid, yellow fever, cholera, small pox and plague came to be regulated through immunization. Inoculation of the children against scarlet fever diphtheria, whooping cough and other diseases helped to reduce infant mortality to a great extent. Widespread use of D.D.T. controlled malaria through out the world. The growth of medical services in the public, private and voluntary sectors enabled the population to derive the benefits of innovations in medicine. As a cumulative effect of these improvement in medicine, the death rates declined to a greater extent there by leading to a sudden growth in the population of the world.

Table 3
World population from 1920 to 1985

Year	Population	Percent increase per year
1920	1.8 billion	0.65
1930	2.0	1.07
1940	2.2	1.11
1950	2.5	1.10
1960	3.0	1.79
1970	3.6	1.92
1980	4.4	1.81
1984	4.9	1.70

From 1920 to 1970 the world experienced unprecedented growth in its population. During this period the rate of growth enhanced from 0.65 per cent per year in 1920 to 1.92 in 1970. The population of the world that stood at 1.8 billion in 1920 grew rapidly to 2 billion in 1930, to 2.2 billion in 1940 and to 2.5 billion in 1950. 500 millions of people were added to the world's population in a span of a mere ten years between 1950 and 1960, the population of the world had reached the astronomical figure of 3 billion or 3000 million. During the subsequent decade ending with 1970, 600 millions were added to it. A highest population growth of 1.92 percent per year was recorded for the decade 1960-70.

Table 3 indicates that the population growth rate of the world is on the decline from 1970 onwards even though the number of people are increasing continuously. As against 3.6 billion people in the world in 1970, 4.4 billion were recorded in 1980. In the subsequent four years, i.e., by 1984 the world's population reached 4.9 billion. However, the growth rate of the population recorded a marginal decline from 1.92 percent per year in 1970 to 1.81 in 1980 and 1.7 in 1985. This decline was on account of the deliberate attempts on the part of various countries to reduce the birth rate. While most of the advanced countries succeeded in reducing the birth rate to the level of death rate in the early decades of twentieth century, the under developed countries are still trying to do so.

The most populous country in the world, China, succeeded in reducing the birth rate from 37 per 1000 in 1950 to 19 per 1000 by 1984. The birth rates in India, the second most populous country in the world, were also on the decline. The number of births per 1000 in India recorded at 42 in 1950, came down to 36 in 1974 and declined further 33 in 1981. A similar trend was visible in most other developing countries in the world. As a result of decline in the birth rate,

the world population growth registered a down-ward trend, even though it is still a long way before the world population comes to a point of stabilisation.

CHECK YOUR PROGRESS.

1. What are the causes for population explosion?

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24.5. WORLD POPULATION PROSPECTS

The demographic picture of the world at present continues to be alarming. The death rate declined from 19.7 per 1000 during 1950-55 to 10.6 per thousand during 1980-85. While the death rate in developed countries has remained stable for the past four or five decades between 9 and 10 per thousand, in the developing countries it came down to 11 only recently. Coming to fertility rates, the world is experiencing slow but certain decline. For example, there has been an overall decline in the average number of children born to a woman from 4.5 in 1970-75 to 3.6 in 1980-85. While the number of children born to a woman in developed countries is around two or less than two, in developing countries the number is around four children per woman at present. The fertility continues to be very high in African countries. More than 6 children are born to an African woman on average.

The latest report of the United Nations on population indicates that there will be a continuous decline in population growth rate of the world. The world population is projected to reach 6.1 billion in the year 2000. After reaching 10.5 billion around the year 2095 the world population is likely to stabilise with a zero rate of growth.

24.6. POPULATION GROWTH IN INDIA

The population growth in India, as in the case of the world population, presents variations at different periods. India's population was more or less stable from 300 BC to 1850 AD. Since 1850 it started growing at a marginal rate upto 1920 with minor fluctuations. The year 1921, termed as "the year of great division", marked a new era in India's population. Since then the population of India went on increasing very rapidly upto 1971. During the years between 1971-85, the population growth of India started declining. More facts about India's population are discussed in detail hereunder.

Table -4

India's Population from 300 BC to 1871 AD

Year	Population in Crores
300 B.C.	10 to 14.0
1600 A.D.	10.0
1650	12.5
1800	12.5
1846	13.0
1855	17.5
1868	19.4
1871	21.5

Source : Asha Bhende and Tara Kanitkar , Principles of population studies.

CHECK YOUR PROGRESS.

2. Which year is called the "year of great divide" why?

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24.7. POPULATION GROWTH IN INDIA UPTO 1650 AD

The first population census was taken in India in 1871 and there after once in every ten years. In the absence of census, India's population prior to 1871 was estimated according to archeological, historical and literary descriptions of the past. India had thickly settled population as well as large and densely populated cities way back in 4000 BC as suggested by the excavations at Harrappa and Mohenjodaro. Around 300 BC, ancient India was inhabited by a population ranging from 10 crores to 14 crores as per the estimations of Davis and Pran Nath. For about 2000 years there was little change in India's population. At the beginning of the 17th century, the population of India was estimated at crores by Moreland and at 13 crores by Shirras. Davis observed that the population of India was around 12.5 crores in 1650 AD. This shows that between 300 BC and 1650 the population changes in India were very negligible. As was the condition with to rest of the world for this period, India too was subjected to a high fertility rate and an equally high mortality rate. As a result, the population of India remained more or less stable in this period.

24.8. POPULATION GROWTH IN INDIA FROM AD 1650 TO 1921

During this period, while the Western countries experienced a gradual decline in the death rates on account of progress achieved in food production technology, the death rate in India remained more or less at the level of birth rate initially. Hence India's population was stabilised around 12.5 crores between AD 1650 and 1800. As argued by Thompson, political instability on account of the breakdown of Moghul rule, civil strife, arbitrary taxation and stagnation in agriculture had an adverse effect on the death rate in India during this period. The establishment of British rule marked a change in the demographic situation of India since AD 1800. Political, social and economic life of India was subject to a gradual change after the advent of the British and a gradual decline in the death rate was noticed there after. The decline in the death rate resulted in the growth of population. From 12.5 crores in 1800, India's population reached to 17.5 crores by 1855. As indicated in Table 4, India's population continued its growth and was estimated to have reached 19 crores in 1868. The trend continued further and the first census of India conducted in 1871 recorded a population of 21.5 crores.

The period between 1871 to 1921 in India is marked by wide fluctuations in the population growth. The decade 1871-81 recorded a slow rate of population growth i.e., less than one person per thousand. As a result only 18 lakhs of people were added to the population in this decade. From 1881 to 1891, India experienced a rapid growth in its population from 21.68 crores. The growth rate for the decade went up to 9.3 per cent. Table. 5. shows that there was a decline in India's population during 1891-1901 and that the population decreased at an annual rate of 0.05 percent.

Table -5
Fluctuations in India's population from 1871 to 1921

Year	Population in crores	Percent increase per annum.
1871	21.5	--
1881	21.68	0.09
1891	23.59	0.93
1901	23.55	- 0.05
1911	24.90	0.56
1921	24.81	-0.04

(The figures are adjusted for the area that was constituted into India after 1947)

The out break of famine and severe epidemic in the form of plague was responsible for a high death rate in India during the decade 1891-1901. By the year 1911, 24.9 crores of people were enumerated in our country.

The decade 1911-1921 was extraordinary in the history of population situation in India. Before the First World War, the epidemic of plague struck our country and took a toll of nearly three million lives. After the War epidemic broke out in the form of most severe influenza. About 13 million people in India died out it within a short span of four months in the year 1918. The death rate reached a staggering 63 per thousand during this year. Consequently, the growth rate declined to 0.4 percent for the decade and the total population recorded a reduction to the extent of 9 lakhs when compared to the previous decade.

24.9. POPULATION GROWTH IN INDIA SINCE 1921

1921 is aptly termed the "year of great divide". The population of India went on increasing very rapidly since then. From 24.81 crores in 1921, the population of India rose to 27.55 crores by 1931 registering a growth rate of 1.04 percent per year. The growth rate increased subsequently to 1.27 percent per year, and in 1941 the population of India reached 31.28 crores. The decade ending with 1951 showed a further growth in total population as well as in growth rate. The census of India in 1951 enumerated 35.69 crores of people. The growth rate crossed two percent per annum during the decade 1951-61 as nearly 8.23 crores of people were added to India's population. The decade 1961-71, as indicated in Table 6, recorded the highest growth rate per annum on average at 2.48 per cent. As a result, the population of India crossed 50 crores and reached 54.8 crores by 1971.

The population of India was more than double in a short span of fifty years i.e., from 1921 to 1971. It was mainly on account of drastic decline in the death rate. The death rate which stood at 43.6 per thousand during the decade 1911-21 declined to 31.2 for the period 1931-41 and to 18.9 for the decade 1961-71.

Table-6
Population growth in India from 1921-1981

Year	Population in crores	Percent increase per annum
1921	24.81	--
1931	27.55	1.04
1941	31.23	1.27
1951	35.69	1.33
1961	43.92	2.15
1971	54.80	2.48
1981	68.38	2.47
1991	84.39	

The birth rate, on the other hand, registered only a marginal decline from 48.1 per 1000 in 1911-21 to 41.1 for the decade ending with 1971.

The importance given to family planning and population control programmes in India since independence started yielding results since 1971. Accordingly, the birth rate declined to 33.4 per 1000 for the decade 1971-81. The impact of this decline in birth rate was not felt very much as the death rate further came down to 14.2 per 1000 for the same period. However, the growth rate declined to a small extent for the first time after 60 years. From 2.48 per cent per annum for the period 1961-71, the growth rate of India's population was reduced to 2.47. The negligible reduction had little impact on the overall population. Nearly 14 crores were added to the population of India during the decade 1971- 81. The 1981 census thus enumerated 68.38 (683 millions) crores and 1991 census enumerated 843, 930, 861 millions of people in our country.

24.10. PROSPECTS OF INDIA'S POPULATION

The future of India's population depends largely on the effect of its family planning programme in reducing the birth rate. It may be noted that the death rate for India declined to 11 for thousand in 1982. It is almost nearer to the death rate for the advanced countries in the world and hence the decline in death rate hereafter will only be marginal. Hence the decline in birth rate in our country will be felt clearly and can be visualised in the decline of the growth rate. The birth rate of 33.4 per 1000 in 1981 declined to 30 by 1983. As a result, there was a considerable decline in the growth rate and for the first time it fell short of 2 per cent for the year 1982-83.

The Seventh Five Year Plan allocated Rs. 6400 crores for family planning representing a four-fold increase from the Sixth Plan. It envisages to protect 42 per cent of the couples from unwanted pregnancy by 1990, as against 32 per cent protected couple at present. The Seventh Plan proposes to protect 60 per cent of couples by 2000 AD so as to achieve a Net Reproductive Rate (NRR) of one, at which rate of population shall get stabilised. If NRR of one is achieved in India by 2000 AD, it's population is likely to stabilise around 130 crores. A delay in reaching the NRR of one by 20 years will see India's population stabilising at 190 crores by 2020 A.D.

24.11. SUMMARY

The world population growth can be studied under three different periods. The first period covers population growth from 10000 B.C. to 1650 A.D. The second period deals with population variations from 1650 A.D. to 1920. The third period looks into population growth from 1920 to the present decade. Estimates of world population before 1650 A. D. are based upon the interpretation of descriptive materials of the past, anthropological observations and evidences obtained from archeological excavations.

The population growth in India, as in the case of the world population presents variations at different periods. The future of India's population depends largely on the effect of the Family Planning Programme in reducing the birth rate.

24.12. SUGGESTED BOOKS

- | | | |
|-------------------------------|---|----------------------------------|
| Asha Bhende and Tara Kanitkar | : | Principles of Population Studies |
| Vignেশa | : | Demography |
| Sinha and Zacharia | : | Elements of Demography |
| Agarwala. S.N. | : | Population. |

24.13. MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Trace the world population growth from 1650 AD.
2. Draw the pattern of India's population growth.
3. What are the factors that contributed for the growth of world's population from 1920 onwards.

II. Answer the following questions in about 10 lines each.

1. Briefly discuss the reasons for marginal growth of population in the world before 1650 A.D.
2. Explain the reasons for a reduction in India's population during the decades 1891-1901.
3. Draw the effects of medical revolution over world population in the twentieth century.

UNIT-25 : THE CONCEPT OF POPULATION CONTROL AND METHODS OF CONTROL

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25.0. AIMS AND OBJECTIVES

The main aim of this unit to examine the concept of birth control and its synonyms and the methods of birth control.

By the end of this unit you will be able to :

- explain the different methods of birth control.

25.1. INTRODUCTION

Human beings have been conscious of the need to restrict population and to limit their families, since a long time. Methods of birth control were recorded in ancient Egypt nearly 4000 years ago. The Greek philosophers discussed birth control around 600 B.C. The first documented

methods of controlling births are more than 1,600 years old. The Chinese reference to birth control can be traced to a medical text which is nearly 1300 years old. Though we do not know exactly what made the ancient people think of birth control, the rapid population growth experienced by the world in the industrial age certainly made many people think about and evolve methods of birth control.

25.2. CONCEPT OF BIRTH CONTROL

The term birth control, as is used today, was coined by Margaret Sanger in the year 1914. Since then it is applied widely to indicate contraception or voluntary attempts to control births. Encyclopaedia Britannica notes that birth control encompasses "voluntary ways of limiting reproduction including postponement of marriage, sexual abstinence within marriage, surgical sterilization and induced abortion". A number of terms, such as fertility control, family limitation, planned parenthood, family planning, family welfare etc., are subsequently used as substitutes for birth control. Prevention of unwanted pregnancies and births are the primary objectives of fertility control. Family planning, on the other hand, envisages a scientific approach to the problems of family life and underlines the need for controlling the size of the family. Family welfare has a larger perspective of socio-economic wellbeing of the members of the family, ofcourse, primary through restricting the family size. Thus it can be concluded that most of the terms substituted for birth control aim at easy social acceptance but in content they are similar to birth control.

25.3. ANCIENT METHODS OF BIRTH CONTROL

Contraceptive practices that are being used presently have been evolved in the nineteenth and twentieth centuries. However some of them were applied in crude forms in the ancient period. Rhythm method was practiced by the ancient Madris of New Zealand and the Indians of Mexico. The Japanese in the past advocated avoidance of sexual intercourse during the ten days following menstruation. In India, Vatsyana's principles forbid coitus fourteen days after menstruation.

Pessaries of the past consist of various combinations of naturally available materials that acted as spermicides. The oldest pessary dates back to 1850 BC in which crocodile dung mixed with honey was used. A paste of elephant dung and honey was used in India as a pessary. Rhazes, a ninth century physician of Baghdad suggested pessaries made of cabbage, colocynth pulp, elephant dung, and other materials. Animals bladders in Rome and vegetable sheaths in New Guinea found application as condoms in the past. The Chinese used oiled silk paper while Japanese used leather in preparing sheaths that were used as condoms.

Varieties of oral preparations were enlisted in ancient Indian scripts for prevention of conception. A decoction of chitrake (plumbago Zeycomica) boiled in rice water, was said to prevent conception. For inducing permanently sterility, women were given three year old molasses for a fortnight. Even mechanical devices found place among the ancient birth control methods. Half a lemon without pulp was used as a cervical cap. Sometimes cotton inserted into the cervical passage was also advocated to prevent conception.

Male and female sterilisation was also in vogue in the ancient period. Slaves in ancient Arabia used to be castrated. Slitting the urethra of men, there by allowing the semen to dribble out, was practiced by primitive tribes in Australia. This method was called by them 'Mica' and sometimes 'Kooipi'. Among the women, sterilisation was carried out by much more crude and barbarian methods. Australian aboriginal tribes used to mutilate the womb by inserting emu feathers into the uterus through vagina and then slitting it. Sometimes the uterus was bent backwards to prevent conception. In most cases, the sterilisation methods adopted in the ancient period were crude and painful.

Our discussion, made so far, indicates that methods of birth control were not merely the products of our modern age, and that they were is vogue in the past also, but in primitive and crude forms.

CHECK YOUR PROGRESS.

1. Define Birth Control.

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2. List out some substances used in birth control.

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25.4. MODERN METHODS OF BIRTH CONTROL

Birth control in the modern age is made possible in different ways. The couples have a choice to select from among various methods of birth control. Some of these methods aim at prevention of conception temporarily and thus help in the postponement of pregnancy and birth. Other methods are permanent, in the sense that by adopting these methods, sterility is caused more or less permanently. Rhythm, abstinence, coitus interruptus, creams and jellies, oral pills, diaphragm, condom, loop etc., are some of the temporary methods of birth control while vasectomy and tubectomy come under permanent methods.

25.5. CLASSIFICATION OF BIRTH CONTROL METHODS

Chasteen classified birth control methods into three categories, namely, biological, mechanical and chemical methods. All methods which try to eliminate the causes of conception without the need of external materials are included in the biological methods. Rhythm, coitus interruptus, abstinence, vasectomy and tubectomy thus can be included under biological methods of birth control. Mechanical methods of birth control suggest the usage of materials like condoms, diaphragms, cervical caps, loops etc., for preventing the possibility of conception. Chemical methods of birth control make use of chemical substances that have spermicidal qualities or estrogen properties. Oral pills, creams, jellies, washing chemicals used in douche etc., belong to chemical methods of birth control.

The methods of birth control can be also be classified into male oriented and female oriented methods depending upon the user. Oral pills , creams, jellies, diaphragms, loops, rhythm, tubectomy are thus female methods of birth control. Coitus interruptus, American tip, condom and vasectomy are male methods of birth control.

Classification of methods of birth control into four categories viz., natural, mechanical, chemical and surgicl methods , is more useful to understand different methods of birth control. Rhythm, abstinence or biological alterations, constitute the natural methods. Surgical methods,

like vasectomy, tubectomy and abortion, depend upon surgical ways of avoiding conception or termination of the pregnancy. The mechanical and Chemical methods, as already indicated, use mechanical contraceptive devices or chemical substances respectively.

The following discussions helps us in understanding the nature of various methods of birth control and their merits and limitations.

25.5.1. RHYTHM

Rhythm method is also popularly called "safe period" method. The menstrual cycle is divisible into two periods, namely, safe period and unsafe period. The first seven days and the last eleven days in the menstrual cycle are considered as safe period and the remaining days as unsafe period. It is during the unsafe period that there is a possibility of conception. By restricting coitus to only the safe period, rhythm method can be successfully adopted by couples willing to prevent births.

This method costs nothing and at the same time needs no application of any other material or substance. Hence the natural feelings are retained in using this method. However, the couples adopting this method should have sufficient self-control to avoid sexual intercourse during the unsafe period. Before adopting this method, the history of menstruation must be maintained properly and the safe period and unsafe period must be identified in consultation with doctors. As a result, it requires not only motivation but some education on the part of the couples willing to adopt this method.

The enzyme paper test developed recently made it easier for the couples to identify the unsafe period. However, to use enzyme paper properly, it requires expertise once again. The success or failure of this method depends largely on identifying the unsafe days exactly. Women with irregular menstruation cannot adopt this method, the newly weds also face problems in controlling themselves during the unsafe days and as such this method may not be suitable for all couples.

25.5.2. COITUS INTERRUPTUS

This method is also known as 'withdrawal' or 'holding back' method. It permits natural intercourse except that it envisages withdrawal of the male organ from the vagina just before ejaculation. By allowing ejaculation to take place outside the genital canal, the semen is prevented from entering the vaginal cavity and the uterus. It is the most widely practised method throughout the world for prevention of conception due to the following reasons :

1. Coitus interruptus is a simple method and can be practiced at any time.
2. It does not require any pre-coitus preparation nor any appliance of a mechanical or chemical nature. As a result it does not require any expenditure.
3. It allows natural intercourse and hence the natural sensation and feelings are left unhampered in its application.

However, coitus interruption is also associated with certain disadvantages that are sexual, physical and psychological in nature. They are :

1. It is often difficult for the man, more so when he is new to sexual life, to expect the moment of ejaculation and to withdraw at the right time.
2. It is also possible for the semen to pass into the vagina even before the ejaculation occurs and under these instances it cannot be considered as a cent per cent safe method.
3. Withdrawal of the male organ before ejaculation may result in hindering the attainment of orgasm in both male and female partners.

4. When coitus is interrupted frequently, the sexual centres become chronically congested and irritable and may result in partial erection and premature ejaculation among men and pelvic pain and vaginismus among females.
5. Tension over possible ejaculation during the coitus and the resultant inability to reach orgasm may lead to psychological anxiety and cause sexual frigidity.

25.5.3. ABSTINENCE

Abstinence implies keeping away from sexual intercourse and hence is regarded as a natural method of controlling births. It proposes voluntary discard of sex through self-restraint. It depends upon the moral argument that sex need not be a part of marital life and love. However abstinence from sexual life is associated with physiological and psychological stress since sexual urge is innate and strong. The suppression of this sexual urge, even on moral grounds is injurious to the health of the concerned. In addition, complete abstinence is inconceivable among healthy marital partners and as such it remains in most cases as unpracticable. Hence, abstinence cannot be considered as the right way of prevention of conception, even though it is cent per cent successful as a method of birth control.

25.4.4. CONDOM

The condom is widely used contraceptive device and has been regarded as a safe, preventive and prophylactic device. It is a thin rubber sheath, measuring 6 to 8 inches in length and 1 to 2 inches in diameter. The condom is mounted over the erect male organ and is unrolled gently to cover the whole of it, before coitus. After ejaculation, the semen is locked inside the tip of the condom and such as it is totally prevented from entering the vaginal cavity. Though the use of the condom is very simple, enough precautions must be taken for its effectiveness. While mounting the condom and rolling it over the penis, care must be taken to leave the tip of the condom freely so that there is sufficient space for the semen to be collected. Condom used without sufficient space is most likely to get burst, spilling the semen into the vagina. Similarly, enough care must be taken to withdraw the condom along with the penis without spilling the semen.

As 100 per cent prevention of conception is achieved by the condom, it is considered the safest aid for birth control. As 3 pieces of condoms are sold for a mere 25 paise, it is cheap and less expensive. It has no psychological or physiological side-effects, and as such it is a safe method. Since it can be mounted easily and in just a few seconds, it does not require any break in the sexual play. In addition, condom acts as a prophylactic as it prevents sexual transmission of diseases.

There are certain disadvantages also in the usage of the condom as a contraceptive device. Since the condom covers the entire male organ, the normal sexual sensation is impaired to some extent. In other instances there is a possibility of the condom interfering with the sexual act, more so when it is too big or too small in size. At times, the condom is likely to tear resulting in spilling the semen and thus the purpose of using a condom, suffers. But most of these disadvantages can be eliminated by carefully using thin, pressure tested, and lubricated condoms of better quality.

25.5.5. AMERICAN TIP

American tip is a modified form of condom and is popularly called as 'glans condom' or 'glans cap'. It is a small latex cap that is fitted over the glans. While fixing the American tip, the prepuce of the penis is pulled back and the elastic ring of the cap is fitted at the base of the glans. It functions just like that of any condom with an added advantage of retaining natural touch. Since the cap covers only glans, the greater part of the penis is exposed and thereby allows the natural sensation to take place during intercourse.

25.5.6. CERVICAL CAPS

While condoms and American tips are male oriented mechanical devices, cervical caps, diaphragms and loops are female oriented devices. The cervical cap is a rubber or celluloid cap like material with a solid rim. The rim of the cap is fitted firmly on the cervix or neck of the womb, covering the mouth of the womb totally. Since the entry is prevented by using the cervical caps. To ensure further safety, the rim of the cap is coated with a spermicidal material before it is fitted on the cervix. However, the woman needs some orientation before she is allowed to use a cervical cap. The cervical cap needs to be selected through expert guidance as the unsized ones cause either inconvenience or permit the sperm to enter the womb.

The cervical caps are available in three different sizes ranging from 55 mm to 80 mm. The small caps are suitable to such women who are yet to give birth. For the women who were pregnant once or twice, the medium caps are prescribed. For those who had more than two or three pregnancies, the large caps are suggested. The selection of a cap, a vital thing, must be done under proper guidance for ensuring proper protection from conception.

The cervical caps are used mostly on account of the following advantages :

1. Once oriented, the women can apply these devices on their own.
2. The cap lasts for years and hence need not be purchased frequently.
3. The presence of the cap does not impair the natural feeling in any way.
4. The cap once properly fitted can be retained until the subsequent menses.

25.5.7. DIAPHRAGM

Diaphragm resembles any cervical cap except that it is larger in size. Its diameter ranges from 5 cms to 10 cms. It is fitted into the deeper part of vagina. The rim of the diaphragm, like a coiled spring, affixes itself over the peritorium and thus prevents the passage of the semen. Along with all the advantages of using a cervical cap, the diaphragm has an additional advantage of easy application. However it cannot be retained inside for a longer duration. The diaphragm can be mounted before conjugation and needs to be removed 68 hours after coitus.

25.5.8. INTER-UTERINE CONTRACEPTIVE DEVICE (IUCD)

Popularly known as 'loop'. IUCD is found to be widely used device by females through out the world. It is available in different shapes like spiral coil, ring, or bow and in different sizes from 27.5 mm to 30 mm. The loop forms a major part of the IUCD with two tapering threads hanging out from the tip. The loop is inserted into the uterus with the aid of an instrument by medical experts, leaving the two threads dangling at the opening of the cervix. The threads enable the women to check the position of the loop and also help at the time of removing the loop. A loop can be retained within the uterus for two or three years and needs to be replaced with a new one through IUCD and as such it has been recognised as the best possible mechanical device for birth control.

Merits of IUCD

1. For prevention of conception temporarily, IUCD is the sure and best possible method.
2. The device can be inserted with a simple technique.
3. It accommodates itself most naturally without causing any inconvenience to the concerned user.
4. Complications like cleaning and reapplication are eliminated completely.
5. There is no necessity of using any other method of contraception when IUCD is inserted.

Demerits

As is the case with most temporary ways of birth control, IUCD presents certain disadvantages. They are :

1. Moderate to heavy bleeding may take place in some cases during the post-insertion period.
2. Side effects like irregular menstruations, pains during menstrual period, back-ache and pains in thighs and lower abdominal portions are reported by some of the loop users.
3. In some instances, the loop is expelled from the uterus during the initial months after insertion. By periodically checking the position of the loop with the help of dangling threads, the user can satisfy herself about the position and can prevent expulsion.

25.5.9. FOAM TABLETS

Foam tablets contain spermicidal chemical substances and are available in different brand names such as contabs, plainitabs, volpar etc. These tablets are dipped in water and are inserted deep into the vagina a few minutes before coitus. They produce rich foam inside the female organ. The foam acts fast and kills the sperm instantly.

The cheap, easily available and convenient to use foam tablets are effective in the prevention of conception. However, they are not suitable for all women alike. In the case of women with dry vaginal conditions these tablets may not produce the required amount of foam. In other instances, the foam causes irritation and burning sensation for the women and there by leads to inconvenience. Besides, foam tablets take 5 to 10 minutes to produce the necessary foam and thus coitus has to be delayed until the foam is produced to the required level.

25.5.10. JELLIES AND CREAMS

Jellies and creams also act like foam tablets and have spermicidal effect. They can be applied with the help of an injector into the vagina just before sexual intercourse. They spread quickly over the walls of vagina and the cervix and act against the sperm instantly. They are easily available, at nominal cost under different names such as volpar paste, spermalin, koromex cream, orthgynal jelly etc., The jellies and creams are also reported to be allergic for some and messy at other times.

25.5.11. ORAL PILLS

Oral pills have come to stay as effective chemical contraceptives throughout the world and more so in western countries. They contain chemicals of estrogen and progestagen which are proved to be successful in neutralising the ovum. The common oral pills are used from the fifth day after menstruation and continued thereafter for 21 days. The process is repeated as long as the couple wish to avoid conception. Oral pills are available in the market for a nominal price under the names of Ovral, Ovrlen, Lyndiol, Orlest etc., While pills called are widely used by females, male oriented pills anti-spermatogenesis are being evolved of late.

The oral pill too has its own set of advantages or disadvantages. The pills can be procured easily and can be used by any person willing to control pregnancy. However, failure to take a pill for a day or two may not ensure protection. Some women using oral pills are prone to side effects ranging from menstrual irregularity, tender breasts, loss of libido, onset of nausea and vomiting sensation, and putting on weight. In some other instances serious effects like cardio-vascular diseases, hypertension, jaundice etc., have also been reported. Hence the use of the oral pill must be undertaken under medical advise only.

25.5.12. STERILISATION

While most of the methods discussed so far enable us to prevent conception temporarily, sterilisation helps in finding a permanent solution to the problem of birth control. Sterilisation

is advised for couples with a sufficient number of children, and for these who do not wish to produce children any more. Before sterilisation is carried out, the couples must be properly educated as it is normally difficult to de-sterilise them. Sterilisation can be a male centred one, through vasectomy, or can be carried on the female partner, through tubectomy.

25.5.13. VASECTOMY

Vasectomy is a simple way of sterilising a male person. The vas deferens, which enables the flow of sperms, is blocked through a minor surgical alteration. In fact, the vas on both sides is cut in the middle and the loose ends of the vas are either tied up or clamped backwards in vasectomy. The entire process is completed within 10 minutes, by giving local anaesthesia. The person undergoing vasectomy can walk off from the operation table soon after the vasectomy without any discomfort or problem. Within a week after the operation, the person can undertake all his routine activities including sex. However, for a period of two months following vasectomy, he should adopt any temporary methods of birth control, since there is a possibility of the left over sperms coming into contact with the ova during conjugation.

25.5.14. TUBECTOMY

Tubectomy involves a complicated procedure of blocking the passage of ova. In this method, the fallopian tubes or oviducts of the female reproductive system are blocked either by surgical operation or through cauterization. The surgical operation is performed by cutting open the lower abdomen. Once the fallopian tubes are traced, each tube is tied or ligated at two places and then an incision is made between the ligatures. It is a complex process and the woman undergoing tubectomy thus needs at least 3 to 4 weeks to recoup herself. With the advent of the laproscope, tubectomy is made less complex. The instrument enables cauterization of the fallopian tubes without the necessity of cutting the abdomen.

Female sterilisation becomes less complicated when it is carried out within one or two days after delivery. The female reproductive organs are in an enlarged condition after a delivery, and as such it will be more suitable to undertake tubectomy. The recouping period taken by a woman after delivery will also be sufficient for the woman to return to normal condition after undergoing tubectomy. Hence it is always advised to undergo tubectomy soon after a delivery.

Both vasectomy and tubectomy are the most effective ways of controlling births. Once sterilisation is performed and certified as fruitful, the couples are spared the ordeal of using any other appliances or devices. They can lead a sexual life without any tension or fear of conception. Most of the after effects of sterilisation like loss of sexual desire, premature ejaculation, impotency, physical inability etc., have been proved to be unscientific. They are more psychological than real.

25.5.15. ABORTION

Abortion refers to premature termination of pregnancy. It can be on account of natural reasons or can be induced artificially. The artificially induced abortion is considered as a birth control method during post-conception period. Abortions are permitted in most of the countries on medical, eugenic and ethical considerations. Medical termination of pregnancy is made legal in India in the year 1971, abortions are permitted in our country when the continuation of pregnancy is likely to cause any of the following :

1. danger to the life of the pregnant woman,
2. grave physical or mental injury to the pregnant woman, and
3. likelihood of the child being born with physical and mental abnormalities.

The pregnancy can be terminated under humanitarian and social grounds also when the pregnancy is caused by rape or incest; or when the pregnancy is caused by a failure of contraceptive methods.

Abortions are medically undertaken with the consent of the guardian only. However, the pregnancy should not exceed 12 weeks duration. Under extraordinary circumstances it can be undertaken before completing 20 weeks. Since termination of pregnancy is likely to cause physical and mental stress and since it involves moral aspects, abortion remains a controversial practise.

Birth control methods offer a wide range of choice to the couples who wish to practise them. The couples, just married, can opt for any temporary method and can delay the first child. Temporary methods also help in spacing the second child and there by enable the mother and the child to grow healthy. For the couples with two children or more, sterilisation offers a permanent solution to stop further conception and to leave a happy life with a small family.

CHECK YOUR PROGRESS.

3. List out some modern methods of birth control.

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25.6. SUMMARY

Human beings have been conscious of the need to restrict population and limit their families since a long time. There were number of birth control methods in ancient Egypt, Greece and China. Methods of birth control were not merely the products of modern age, but they were in vogue in the past also but in primitive and crude forms. Birth control methods are classified into four categories - natural, mechanical, chemical and surgical.

25.7. SUGGESTED BOOKS

Agarwala, S. N.	:	Population
Asha Bhende and Tara Kanitkar	:	Principles of Population Studies
Government of India	:	Book-lets on Family Planning methods issued by Ministry of Information and Broadcasting and Ministry of Health and Family Welfare.

25.8. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. Describe any four methods of birth control along with their merits and demerits.
2. What are the important mechanical devices used in birth control and what precautions are to be followed in their application.
3. Classify the methods of birth control with suitable examples.

II. Answer the following questions in about 10 lines each.

1. State under which conditions termination of pregnancy is permitted in our country.
2. Discuss about ancient methods of birth control.
3. Write a brief note on Rhythm method.
4. Write a note on 'birth control' as a concept.

UNIT-26 : ECONOMIC DEVELOPMENT AND POPULATION CONTROL

Contents

- 26.0. Aims and Objectives
- 26.1. Introduction
- 26.2. Economic Development
- 26.3. Development and Population
- 26.4. PQLI Model and Population
- 26.5. Multiple Indicators of Economic Development
- 26.6. Effects of Population on Economic Development
- 26.7. Impact of Economic Development on Population Growth
- 26.8. Summary
- 26.9. Suggested Books
- 26.10 Model Examination Questions

26.0. AIMS AND OBJECTIVES

The main aim of this unit is to discuss the inter relationship between economic development and population and the experiences of developed and developing countries in this regard.

By the end of this unit you will be able to :

- explain the relationship between economic development and population.

26.1. INTRODUCTION

There is a general agreement that population and socio-economic development are very closely interrelated. The United Nations World Population Conference held in Bucharest in 1974 lend support to this view. A growing population indicates economic development through the emergence of enlarged labour force, widened need base, enlarged market and others. But population growth beyond a point leads to economic backwardness on account of large scale unemployment, growing dependency ratio, increased consumption, reduced savings, retarded capital and investment and poverty. While the size of population has a bearing on economic development in turn is determined by the extent of development. The consequences of economic development, namely employment of level, literacy of level, urbanisation, improved medical facilities, higher per capital income, greater Gross National Product, increased life span and others at a certain critical stage cause a decline in fertility.

26.2. ECONOMIC DEVELOPMENT

By development we mean the planned, directed and stimulated upward movement of the entire social system in all its aspects - social, cultural and economic. Economic development specifically refers to sustained increase in income, production and consumption levels at the people. National income, per capita income and standard of living are generally taken as indices of economic development. In addition to them land, food grains, mineral use, energy requirements, nutrition levels, educational and medical facilities, employment, etc. also serve as a measure of economic development.

26.3. DEVELOPMENT AND POPULATION

The relationship between development and population has been examined in depth by the United Nations World Population Conference held in 1974. The Conference observed that population would decrease with an increase in literacy and employment. The decrease in population is bound to be sharp when economic social options are available to women. Hence the Conference emphasised that a population policy should take into account social and economic development. Family planning will find increasing favour with increased economic opportunities and better living conditions. Socio-economic development is thus regarded as a possible solution to the population problem.

The Conference stressed the need for determining the effect of different development components on population trends. These components include education, health, industrialisation, urbanisation, status of women, rural development, per capita income and income distribution. The sessional group on Population Change and Economic Development emphasised that the international development strategy, should aim at improving the well-being of the population and on bestowing benefits on all individuals.

26.4. POPULATION AND PQLI MODEL

Economic development used to be measured in terms of Gross National Product (GNP) and per capita income. The Overseas Development Council felt that these two factors were no representative and adopted 'Physical Quality of Life Index' (PQLI) for measurement of development. David Morris who evolved the PQLI model, feels that GNP and per capita do not reflect the correct extent of development especially when the income is unequally distributed. The poor in a system of unequal economic distribution, may not be anywhere near the per capita income level. Their income may actually decline further with the passage of time.

The PQLI model of Morris is based upon the assumption that the basic individual needs and desires are concerned with better nutrition, proper maintenance of health, productive employment and a longer span of life.

Life expectancy, infant mortality, and literacy are used as three indices of development. In measuring the PQLI rate the actual achievements are taken into account rather than the efforts put in by the respective nations in this direction. PQLI rates can also be used to measure the change over a period of time.

The effectiveness of PQLI model can be illustrated with the help of the following example. While the per capita income and per capita food availability in Sri Lanka and India more or less the same, their PQLI values differ to a great extent. The PQLI of India stood at 28 in 1950 and increased to 42 in 1978, and that of Sri Lanka at 62 in 1950 and rose to 83 in 1978.

Harrison Brown examined the relationship between PQLI values and birth rates and concluded that at a PQLI of 40, the birth rate would begin to decline and that at 75 the decline would be sudden and radical. Thus, it can be concluded that the overall economic development of the people is inversely related to population growth. In other words the lower the economic development the higher will be the rate of population growth. There will be a marked decline in the birth rate and growth rate with increasing economic development.

26.5. MULTIPLE INDICATORS OF ECONOMIC DEVELOPMENT

As has been pointed out, the extent of economic development has a certain bearing on population. In order to decide the level of economic development and its allied areas of development, the United Nations Research Institute came up with a list of indicators. The indicators pertaining to different areas of development are presented here under.:

Area	Development Indicator
1. Health and related aspects	(a) Infant mortality rate (b) expectation of life at birth (c) inhabitants per hospital bed (d) inhabitants per physician
2. Nutrition	(a) per capita calorie consumption (b) per capita protein consumption (c) per capita animal protein consumption
3. Education	(a) Percentage of literacy (b) percentage of enrolment (5-19 years)
4. Housing	(a) average number of persons per room. (b) percentage of dwellings with electricity
5. Communications	(a) Newspaper circulation per thousand population (b) Telephones per thousand population
6. Transport Services	(a) Per capita Railway freight (b) per capita railway kilometres (c) Motor Vehicles per thousand population
7. Agriculture	(a) agricultural production per head (b) agricultural Male labour per 100 male workers
8. Industry	(a) per capita electricity consumption (b) per capita energy consumption (Kilogramme of coal) (c) percentage of economically active population in manufacturing
9. Trade	Foreign trade per capital
10. General	(a) G.N.P. (b) per capita income (c) percentage of savings in national income

26.6. EFFECTS OF POPULATION GROWTH ON ECONOMIC DEVELOPMENT

Developments countries like the United States of America, Canada, the United Kingdom, France, Australia, Japan, etc., experienced a distinctly higher population growth from 1750 to 1920. When the population started growing these countries had relatively small populations while the natural resources remained unexploited to a large extent. In such circumstances rapid population growth became a positive asset. An increased population not only provided additional manpower to produce goods but also generated more demand for the goods. As a result, these countries experienced rapid economic development on account of population growth. The economic development in turn led to improved health and prologned life span which caused a decline in death rate. The decline in the death rate was accompanied by improved standards of living, higher education and new life styles. Thus it can be stated that population growth resulted in the economic development of the developed countries.

In the case of underdeveloped countries with large populations, population growth hindered economic development for various reasons. First, the large population exerted a greater pressure on land, water and other resources. Secondly the per capita returns from the natural resources diminished. Thirdly the diminishing returns reduced the scope for savings. Fourthly, even

o maintain the existing standards of life, most the savings are used for services and welfare. Fifthly, increased expenditure on services resulted in a cut in investment expenditure. Sixthly, reduced investments caused unemployment and lack of opportunities for earning sufficient income. Lastly, unemployment and low income levels led to wide spread poverty.

It is generally agreed that economic development depends on industrial growth. The scope for industrial growth is restricted to a great extent in underdeveloped countries with high growth rates. The low levels of income, diminishing savings and increased expenditure on consumption leave very little capital for investment in industry. Thus the population growth has an adverse effect on economic development in underdeveloped countries.

CHECK YOUR PROGRESS.

1. What is meant by development?

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2. What is meant by economic development?

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3. List out some indicators of economic development.

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26.7 IMPACT OF ECONOMIC DEVELOPMENT ON POPULATION GWOth

The population growth has a varying effect on economic development. Let us now examine the impact of economic development on population.

The theory of demographic transition shows that the presently advanced societies had very high birth rates and equally high death rates around the year 1750. These countries had a standard of life at subsistence level, and had limited medical facilities. Similarly, the under developed countries of the world today have a low per capita income and a low standard of living, associated with high birth and death rates. It shows that in the initial stages of economic development, the population growth is slow and steady on account of high birth and death rates.

The period of early economic development in the developed countries was marked by improved agricultural practices increased agricultural productivity and marked improvements in health. Aided by medical innovations and improved standard of life the death rate declined

to a considerable extent while the birth rate remained more or less constant. Thus the early economic development indicates demographic changes like increase in expectancy of life at birth, declining death rate, high birth rate and rising growth rate. While these demographic changes were already experienced by the developed countries. Some of the underdeveloped countries on the verge of economic development had also experienced similar changes, for example, witnessed a decline in the death rate, continuity in the birth rate and a gradual development of growth rate between 1931-71.

When economic development reached a peak, the developed countries had experienced a different set of demographic changes since 1920. The birth rates gradually came down to the level of death rates and as such these countries almost got stabilised at nearly zero and population growth is viewed with suspicion by the people of the developed countries. They consider it a burden on resources and a cause for decline of the standard of life. This realisation has driven the people to birth control, late marriage, a liberal attitude toward abortion and use of contraception. Small family norm became the foundation of socio-economic philosophy. Thus economic development acted as a check on population growth in the developed countries.

Studies in economic development and population in developing countries at a take off stage also indicated a similar relationship between economic development and population. In Sri Lanka and Malaysia, the birth rates have been declining and the growth rates have been coming down gradually. The studies in economic development, family planning acceptance and the birth rates among different states in India also reveal the same trend.

Compared to a per capita income of Rs. 640 (1970-71) and 20 percent family planning adoption and 33.9 births for 1000 people at all India level, some of the states like Punjab, Kerala, Gujarat and Maharashtra which had a higher per capita income fared better in promoting family planning adoption and in reducing the birth rate. Punjab, for instance had a per capita income of Rs. 995 and recorded 27.2 acceptance rate of contraception and a birth rate of 33.3 in 1970-71. As against a per capita income of Rs 844, Haryana had 36.8 per cent of acceptors per 1000 people and recorded a birth rate of 36.2. Thus economic development at the beginning is said to have an impact on population on account of a reduction in the birth rate and growth rate.

Further economic development in the developing countries should result in higher literacy and greater employment opportunities accompanied by reduced birth rate and stabilized growth rate. While the developed countries took about two centuries to record a demographic transition towards population stability the developing countries with large populations are likely to take more time to reach the stable situation.

The foregoing analysis raises crucial questions for the policy makers in the less developed countries. These questions are 1. Whether these countries have sufficient time for natural transformation of population through economic development? 2. Should these countries try for reducing the birth rate and growth rate deliberately? Presently, a mixed and complex policy is being pursued by the developing countries. They are attempting to reduce the birth and growth rates simultaneously aiming at economic development.

26.8. SUMMARY

There is a general agreement that population and socio-economic development are very closely interrelated. National income, per capita income and standard of living are generally taken as indices of economic development. In addition to them land, foodgrains, mineral use energy requirements, nutrition levels, educational and medical facilities, employment also serve as a measure of economic development. The consequences of economic development, employment level, literacy level, urbanisation, improved medical facilities, higher per capita income, greater Gross National Product, increased life span cause a decline on fertility.

26.9. SUGGESTED BOOKS

- Agarwala, S.N. : Population
- Asha Bhende and : Principles of Population studies
- Government of India : Book-lets on Family planning methods issued by ministry of Informaton and Broadcasting and Ministry of Health and Family Welfare.

26.10. MODEL EXAMINATION QUESTIONS

I. Answer the following questions in about 30 lines each.

1. Briefly discuss the relationship between economic development and population.
2. Explain the effects of population growth on economic development.

II. Answer the following in about 10 lines

1. What are the indicators of economic development.
2. What is the impact of economic development on population in developed countries.
3. Explain the concept of economic development.
4. explain PQLI model of economic development.
5. What are the constraints on economic development in underdeveloped countries with large populations.

UNIT-27 : FAMILY PLANNING AND FAMILY WELFARE

Contents

- 27.0. Aims and Objectives
- 27.1. Introduction
- 27.2. Concept of Family Planning
- 27.3. Concept of Family Welfare
- 27.4. Family Planning and Family Welfare in India
- 27.5. Family Planning and Family Welfare in India
- 27.6. Summary
- 27.7. Suggested Books
- 27.8. Model Examination Questions

27.0. AIMS AND OBJECTIVES

The main aim of this unit is to examine the meaning of family planning and family welfare and their interdependence considered with special reference to the Indian context.

By the end of this unit you will be able to :

- explain the concepts of Family planning and Family welfare,
- explain the relationship between Family Planning and Family Welfare.

27.1. INTRODUCTION

Family planning is generally used as a synonym for birth control. To limit the meaning of family planning to birth control is to adopt a narrow perspective. In a broader perspective, family planning aims at welfare of the family at micro-level and national welfare at macro-level. Since its beginning the family planning programme in India not only aimed at controlling unwanted births but also sought to promote births among couples without children. In addition family planning covers all such programmes as are concerned with the promotion of family welfare. Such programmes include maternal health, pre - natal and post natal health, better nutrition, child guidance services family counselling, sex education, eugenics. etc., While family planning and family welfare programmes were implemented simultaneously earlier, they are now being implemented as an integrated programme.

27.2. CONCEPT OF FAMILY PLANNING

Family planning is a vague term as it has a wide range of meanings from birth control to the welfare of the family and nation. Sometimes family planning is also used to denote the socio-economic development of the individuals in the family. As pointed out in Lesson 25 the term, birth control coined by Margarer Sanger in 1914, came to be equated with other terms like fertility control, family limitations, family planning, planned parenthood and so on. As birth control is concerned with the control of births through contraceptive practices, family planning also implies the same. In fact the term, family planning is widely used even at present to denote the ways of controlling births through different contraceptive methods in order to arrest the population growth.

One of the reports of the World Health Organisation (Series 433 of 1971) listed the objectives of family planning in terms of birth control only. These are :

1. avoidance of unwanted births.
2. regulation of intervals between pregnancies;
3. controlling the time of the births in relation to the age of the parents;
4. determination of the number of births to suit the requirements of family; and
5. Promotion of births among childless couples.

The above mentioned objectives suggest that family planning is concerned with not only spacing, postponement and control of births but also with promotion of births among childless couples.

The scope and the meaning of family planning has been enlarged further by Reynold Boyd. He considered family planning to be a programme that promotes the health and wealth of mothers. Thereafter, family planning has come to be regarded as a programme of birth control with the overall objective of promoting family welfare.

One of the committees appointed by the World Health Organisation in 1974 regarded family planning as a way of thinking and living by couples in a manner that promotes the health and welfare of the family and development of the country. Thus planning has come to include not only birth control but also wider issues as family welfare and national development. In fact, a planned and limited family will certainly help the cause of development, more so in a world of rapid population growth.

From the foregoing discussion it may be noted that family planning refers to all such efforts as prevention of unwanted pregnancies, spacing of births to suit the convenience of parents and promotion of small families for the welfare of the family and progress of the nation.

27.3. CONCEPT OF FAMILY WELFARE

Family is one of the fundamental institution of the society. Along with perpetuation of race, family undertakes various other functions for satisfying the social, emotional, economic, educational and recreational needs of its members. Along with the changes taking place in the society family has also been undergoing change. As a result, the structure and functions of family are subjected to change on account of industrialisation and urbanisation. The relationships among the members of the family are becoming more and more loose and flexible owing to strained interactions between the spouses and increasing generation gap between parents and children. The modern family is also subjected to economic, emotional and social stresses.

The traditional family had the support of the community, caste and religious institutions, in carrying out its functions. The rapid social change has affected the functioning of these traditional supporting institutions. On account of the stress and strain within the family and the disintegration of traditional supporting institutions, the modern family finds it difficult to carry out its functions.

Even though some of the functions of family have been taken over by various institutions, it is largely left to the state to compensate for the failures of family. The modern welfare states are concerned with the welfare of the family in general and its members in particular. Through marriage counselling and family life education, the modern states are trying to rebuild the relationships among family members. Health, educational and recreational needs of the population are being looked after by the public agencies. Special services for children, youth, women and the old are organised by the modern government. All these are being sponsored by governmental bodies in order to promote family welfare.

27.4. FAMILY PLANNING AND FAMILY WELFARE

The world has witnessed an unprecedented growth of population since 1920. The population of the world which stood at 1.8 billion in 1920 shot up to 4.9 billions by 1984. As explained earlier (in lesson 24), the abrupt population growth was mainly on account of a drastic decline in the death rate. The growing population caused different types of population problems, ranging from pressure on land to poverty, unemployment, inadequate health facilities, insufficient educational and recreational facilities, scarcity of drinking water, scarcity of resources, increased pollution and so on. To solve the population problem, many countries in the world resorted to the reduction of the birth rate to the level of death rate. In doing so, the birth control or family planning has come to be advocated.

As has been pointed out, family planning is primarily a programme for controlling and spacing of birth. The problem of birth control and spacing of birth includes various other problems connected with family welfare. The use of contraceptives enables the married couple to have a carefree sexual relationship without worrying about unwanted pregnancies. Sexual satisfaction, is an elementary requirement for family welfare. Contraception also permits the couple to have voluntary parenthood at their convenience. Thus parenthood is not forced upon the couple, it becomes a matter of choice. It helps them in upbringing and educating the child as they like.

Family planning enables the spouses to have to a limited number of children to suit their economic situation. In the process, they would be in a position to do justice to their roles as parents. As indicated by Boyd, "the proper use of contraceptive is not to prevent family but to limit children to reasonable numbers and to space their arrival in a manner most suited to the health and wealth of the mothers". Thus by ensuring limited children and thereby the health of the child and mother, family planning contributes to family welfare. To sum up, family planning through birth control and spacing promotes family welfare in the following ways.

1. Prevention of unwanted pregnancy permits the couples to enjoy sexual life freely.
2. Parenthood becomes voluntary rather than forced.
3. Parents can have only as many children as would suit their economic status.
4. Planned parenthood enables the parents to take care of the requirements of the children without undergoing needless hardships.
5. The health of the mother and child can be properly maintained through spacing.
6. Small families enable its members to gain maximum emotional satisfaction and economic security.

Family welfare involves the overall well-being of all the members of family. It has been stated that family welfare is increasingly becoming the responsibility of the Governments in modern society. Many modern states have policies aiming at the welfare of individuals and families. These policies cover different activities like provision of minimum requirements such as food, shelter and clothing; and special welfare services for socially, economically and physically deprived sections.

While most of the modern states are committed to family welfare, their efforts are frustrated by rapid population growth. The consequences of overpopulation like poverty, unemployment and ill health are forcing more and more people to seek welfare assistance from the public agencies. With limited resources, the modern states are facing the problem of allocating the resources between welfare service and development investment. Many modern states with overpopulation are, therefore, forced to undertake social welfare measures along with birth control. Thus it may be seen that family welfare and family planning are interdependent. To quote Rahimuddin, they go 'hand in hand'.

CHECK YOUR PROGRESS

1. What are the ways in which family planning promotes family welfare.

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27.5. FAMILY PLANNING AND FAMILY WELFARE IN INDIA

Even though birth control happens to be the primary concern of India's family planning programme, it has also taken into account the need for family welfare. Right from the pre-independence phase to the present time, birth control and family welfare have been emphasised in family planning. The National Planning Committee under the Chairmanship of Jawaharlal Nehru resolved in 1938 that the population issue in India had a bearing on social welfare. The Committee observed that unrestricted increase in population would affect adversely the standard of living and tend to defeat social and ameliorative measures. The committee propagated the cause of eugenics and healthy children through the sterilisation of persons suffering from transmissible diseases of serious nature. It also urged the government to take up measures to propagate contraception for safeguarding the health of mothers and children.

The First Five Year Plan brought out India's commitment of family welfare and social welfare through family planning. The plan observed. "Increasing pressure of population on natural resources retards economic progress and limits seriously the rate of extension of social services". The Plan conceived family planning not only as a birth control programme but also as "a step in the direction of improvement in health, especially mothers and children". Eradication of disease and deformity among children was envisaged through First Five Year Plan in India.

Family planning Research and Programmes Committee, formed in May 1953, stipulated the following functions for family planning centres.

1. Imparting sex education and hygiene;
2. Marriage counselling;
3. Health education and medical assistance;
4. Nutrition education;
5. Counselling for overcoming sterility; and
6. Spread of contraception.

It is thus evident that family planning in India has been aiming at family welfare through family planning clinics.

The Second Five Year Plan, which was responsible for launching the National Family Planning Programme, described family planning as a programme of national welfare and economic development. By reducing the rate of population growth, family planning was supposed to improve the per capita income and standard of life. In the subsequent plan, family planning was intergrated with family welfare. In this context, the Third Five Year Plan observed that "the family planning programme should include sex and family life education and advice on such other measures as may be necessary to promote the welfare of family". The Third plan also

supported the cause of female education and employment for promoting family welfare. Family welfare thus became an integral part of India's family planning programme.

Family planning has been integrated with maternal and child health during the Fourth Plan period. Immunization of infants and pre school children, immunisation of expectant mothers against tetanus, supplementary nutrition programmes for mothers and children, prevention of blindness among the children and many other maternal and child health programmes had been taken up as part of an integrated family planning programme since 1970.

The Medical Termination of Pregnancy Act, enacted in 1971, provided further scope for family welfare and family planning. The Act permitted termination of pregnancy (i) on health grounds to avoid any danger to the life of women or risk of grave injury to them (ii) on humanitarian grounds - for - terminaton of pregnancy caused by rape and (iii) on eugenic grounds - to prevent mental or physical abnormality of the child.

The National Population Policy of India 1976 also emphasised family welfare. Along with family planning programmes like health, nutrition and education have been given sufficient importance. In 1976, the child and maternal health programmes were implemented on a massive scale. As a result, 19.6 Lakh children were immunized against DPT. 21.72 lakh were given vitamin A for preventing blindness while 10.22 lakh children were covered with supplementary nutrition. About 10.73 lakh women were helped to have nutritious food while 6.28 lakh expectant mothers were immunized against tetanus in the same year.

The Revised National Population Policy of 1977 equated family planning with family welfare. While propagating the cause of voluntary birth control, the new policy envisaged family welfare through the provision of health, nurtition, food, clothing, shelter, safe drinking water and education for all.

Thus the family planning programme in India aims not only at reduction in birth rate but also at family welfare. In Promoting family welfare, India's family planning programme has taken into account different aspects like maternal and child health, nutrition, food clothing, shelter, safe drinking water and education for all.

Thus the family planning programme in India aims not only at reduction in birth rate but also at family welfare. In promoting family welfare, India's family planning programme has taken into account different aspects like maternal and child health, eugenics, sex- education marriage counselling, family life education, nutrition, provision of mininum needs, education and employment of women, etc. Family planning in India has been viewed also as a means of promoting standards of life and economic development.

CHECK YOUR PROGRESS

2. What are the functions of family planning centres?

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27.6. SUMMARY

Family planning was initially used as a term to denote birth control and methods of birth control. Subsequently, the scope of family planning has been enlarged to include family welfare. Family planning thus aims at family welfare through the controlling and spacing of births.

Family welfare aims at the well-being of the members of family. As the modern family is not in a position to provide sufficient support to its family members, the responsibility of providing welfare services to the people shifted from the family to the state. In countries with rapid population growth, the states found themselves facing the problem of allocating the resources between welfare needs and development investment requirements. To continue the tempo of development and welfare, these states promoted family planning or birth control programmes. Thus family welfare came to depend upon family planning.

In India family planning was launched primarily as a birth control programme with the objective of promoting family welfare. Subsequently, family planning has been integrated with various family welfare programmes like maternal and child health, nutrition, etc. Of late family planning in India has come to be equated with family welfare.

In conclusion, it can be stated that family planning and family welfare are interdependent. They go hand in hand in promoting each other.

27.7. SUGGESTED BOOKS

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|-------------------------------|---|---|
| Agawala S.N. | : | Population |
| Asha Bhende and Tara kanitkar | : | Principles of population studies. |
| Government of India | : | Booklets on Family planning methods issued by Ministry of Information and Broadcasting and Ministry of Health and Family Welfare. |

27.8. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. Explain the meaning of family planning and family welfare.
2. Discuss the role of family planning in promoting family welfare in India.

II. Answer the following in about 10 lines each.

1. Family planning.
2. The need for family welfare.
3. Areas of family welfare.
4. Grounds for Medical Termination of Pregnancy.

UNIT-28 : INDIA'S POPULATION POLICY

Contents

- 28.0. Aims and Objectives
- 28.1. Introduction
- 28.2. Definition of Population Policy
- 28.3. Types of Population Policies
 - 28.3.1. Mortality Influencing Policies
 - 28.3.2. Migration Influencing Policies
 - 28.3.3. Fertility Influencing Policies
- 28.4. India's Population Policy
 - 28.4.1. Population Policy in the pre-independence phase
 - 28.4.2. Population Policy from 1949 to 1975
 - 28.4.3. India's Population Policy during the Emergency phase (1975-77)
 - 28.4.4. Population Policy in Post Emergency Phase
 - 28.4.5. Family Welfare in the Seventh Five Year Plan
- 28.5. Summary
- 28.6. Suggested Books
- 28.7. Model Examination Questions

28.0. AIMS AND OBJECTIVES

The main aim of this unit is to acquaint you with the different types of the population policies in India.

By the end of this unit you will be able to :

- discuss the various population policies in India.

28.1. INTRODUCTION

The contributions of Malthus to population studies resulted in a series of reactions to population problems. The imbalances between population and the resources and the consequences of such imbalances are generally regarded as population problems. The majority of the countries in the world are facing a rapid growth in their populations and are experiencing problems of scarcity of resources. At the same time some other countries are facing the problem of dwindling birth rates and that of scarcity of man power. A few countries are experiencing typical pollution imbalances with in their territories and are facing scarcity of resources as well as inadequate man power. These variations in the population problems resulted in the search for solutions which in turn led to the evolution of different types of population policies.

India with a high birth rate and declining death rate was the first country in the world to come up with an official anti-natal population policy.

28.2. DEFINITION OF POPULATION POLICY

In simple terms, 'population policy' can be said to be the strategy for solving the population problem of a country or region by promoting or reducing of the population. The Ad hoc Consultative Group of Experts on population policy, set up by the Population Commission of the

UNESCO, adopted the following definition of a population policy. A population policy, according to them, includes "measures and programmes designed to contribute to the achievement of economic, social, demographic, political and other collective goals, through affecting demographic variables, namely, the size and growth of population, its geographic distribution (national and international) and its demographic characteristics".

Based upon the above mentioned definition, the following can be said to be the principle features of a population policy :

1. Population policy includes all such measures and programmes launched by the Government.
2. The measures are directed towards bringing about changes in the size, growth and distribution of population.
3. The population policy aims at achieving economic, social, political and other collective goals of the country.

The third feature of population policy indicates that it aims at achieving the collective goals on different fronts. On the economic front, the population policy strives to maximise the per capita income and per capita food availability at the individual level. It also aims at promoting national production through the effective use of human and material resources. On the social front, the population policy concerns itself with the promotion of nutritional standards and health facilities on one hand and qualitative improvement in educational, cultural and aesthetic aspects of the society on the other. Politically, population policy aims at extending justice, freedom, equality and peace to all the people. Environmental balancing, through regulation of urban growth, redistribution of industry, development of forests, pollution control, etc., forms another objective of a population policy.

28.3. TYPES OF POPULATION POLICIES

As has been pointed out, the population policy affects the size and growth of population. In doing so, the policy attempts to redress the components of population, namely, mortality, migration and fertility. Indeed the population policies can be classified into 3 types - Mortality influencing policies, Migration influencing policies and Fertility influencing policies.

28.3.1. MORTALITY INFLUENCING POPULATION POLICIES

The mortality influencing policies always aim at reducing the mortality. The creation of the World Health Organisation and the subsequent spread of the public health and disease control programmes enabled most of the countries to take up programmes for eradicating mass killer diseases like Malaria, Smallpox, Tuberculosis, Cholera, etc. As a result the health condition of population in various countries improved to a great extent. This in turn caused a substantial decline in mortality. Reviewing the various population policies, the World Population Conference held in 1974 observed that all the countries in the world have formulated policies intending to reduce morbidity and mortality.

28.3.2. MIGRATION INFLUENCING POLICIES

Population policies relating to migration attempt at effecting changes in the migration process. In doing so, they deal with internal migration and international migration. Internal migration refers to migration that takes place within the country from place to place, state to state, rural to urban and urban to rural areas. As internal migration is generally a constitutional privilege of the people, the governments resort to the regulating of the internal migration process in order to relieve population pressure. The forced internal migration of American Indians to reserved areas and large scale shift of Russians from one part of the country to another part are striking examples of inter migration caused by Government efforts. The ever increasing burden of cities on account of rural urban migration forced many countries in the world to discourage migration to metropolitan cities. A few countries came out with policies to divert migration from rural areas to non- metropolitan urban centres only.

Policies regarding international migration are well defined by most of the countries. Both emigration and immigration came to be governed by firms regulations. Growing population, escalation in the cost of living, increased unemployment and other similar issues led to the imposition of restrictions over immigration even in countries like Australia, Great Britain and America which were hitherto open to immigration. On the other hand, countries like India, are trying to impose restrictions on emigration of highly educated, qualified professionals and specialised technocrats in order to control 'brain drain'.

28.3.3. FERTILITY INFLUENCING POLICIES

Among the population policies of different types, fertility influencing policies receive the utmost attention. The overall population is affected to a great extent by the fertility influencing policies. These policies are of two types-pro-natalist and anti-natalist.

The population policy which aims at expanding the population by encouraging fertility and by promoting the birth rate is called a pro-natal population policy. The policy is based on the belief that a large population leads to prosperity and development. Germany, Italy and Japan advocated pro-natalist policies during the years between the World Wars. France in the Post-War years and Sweden in recent years followed pronatalist practices.

The pro-natalist policies encourage the begetting of children through various methods. Pro-natalist propaganda, motivation for having a large family, social rewards for high fertility, economic assistance to support many children, encouraging early marriages, abolition of induced abortions, tax reductions and exemptions for large families, etc., are some of the methods followed by countries with pro-natalist policies.

Anti-natalist policies are concerned with reduction in fertility. From time to time different countries adopted anti-natalist policies in order to check the population growth. The anti-natalist policies promote various programmes intended to reduce fertility both directly and indirectly. The direct programmes include promotion of contraceptive use, liberalisation of abortion laws, prescription of lower limits for age at marriage and so on. The indirect methods of the fertility controlling policies include programmes such as incentives for small families, disincentives for large families, improvement of the status of women, population education and others.

CHECK YOUR PROGRESS.

1. Define population policy.

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2. What are the different types of population policies.

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28.4. INDIA'S POPULATION POLICY

The enormous size of India's population, the alarming growth rate and growing population problems were jointly responsible for India being the first country in the world to sponsor the fertility control programmes through family planning. India's population seeks to reduce the birth rate and at the same time promote family welfare. As India aims at fertility control, India's population policy can be regarded as a fertility influencing policy in general and an anti-natal policy in particular. As the welfare of every individual and family is also the concern of India's population policy, it can also be regarded as a responsive population policy.

India's population policy, as it stands today evolved through different phases. These phases can be listed as (i) the Pre-Independence phase (ii) the phase covering the years 1949 to 1975 (iii) the phase of emergency and official population policy (1975 to 1977) and (iv) the post-emergency phase. The particulars of the population policy set forth in India in each phase are furnished here under.

28.4.1. POPULATION POLICY IN PRE-INDEPENDENCE PHASE

The British Government in India had the least concern about the growing population. As indicated by Chandrasekhar, the British measured the prosperity of their rule to some extent by the magnitude of the net addition to India's population. As a result, the growing population in India became the concern of a few intellectual circles, social reformers and voluntary organisations in our country.

A pioneering effort in drawing the attention of the masses towards the seriousness of the population problem was made in the year 1916 by Pyare Kishan Vattal through his book **The Population Problem in India**. Prof. Raghunath Dhono Karve advocated birth control and started the first clinic to provide family planning services in 1925 in Bombay. During the same period the Neo-Malthusian League was formed in Madras. The Neo Malthusian argued in favour of fertility control in order to provide better living conditions to the people.

The first government sponsored birth control clinic in the world was started by the Mysore Government in the year 1930. Subsequently, birth control clinics were set up in the Victoria and Vani Vilas Hospitals in Bangalore and Krishna Rajendra Hospital in Mysore. The Government of Madras followed the trend in 1932. University of Madras by then had accepted the proposal to provide instruction in the methods of contraception.

The cause of population control was taken up subsequently by many organisations like the Women's Conference, the Indian National Congress, Matru Seva Sangh and others. The All India Women's Conference at Lucknow in 1932 passed a resolution in favour of imparting instruction to men and women in birth control methods. The Indian National Conference appointed a 'National Planning Committee' under the Chairmanship of Jawaharlal Nehru in the year 1935. The recommendations made by the Committee has a historic impact on the population policy of India. The recommendations in brief are the following :

1. The unrestricted increase in population affects adversely the standard of living and tends to defeat many social and ameliorative measures.
2. Self-control and the use of birth control methods are to be advocated in the interest of social economy, family happiness and national planning.
3. It is desirable to raise the age at marriage and to discourage polygamy in order to limit the size of the family.
4. Eugenic programmes should include sterilisation of persons suffering from transmissible diseases.
5. Appropriate machinery for the maintenance of vital statistics and for carrying out periodical demographic surveys are to be devised.

The Society for the Study and Promotion of Family Hygiene was founded in 1935 which took up the cause of restricting the number of births in a family. Dr. A.P. Pillai conducted training courses in birth control in the same year. By 1939 Matru Seva Sangh in Madhya Pradesh and 'Birth Control World Wide' in Uttar Pradesh established birth control clinics.

In 1940, P.N. Sapro successfully moved a resolution in the Council of States for the establishment of birth control clinics. The Government of India appointed a Health Survey and Development Committee in 1943 under the Chairmanship of Sir Joseph Bhore. The Committee recommended that birth control services should be provided through public institutions for the promotion of the health of the mothers and children. The Committee also suggested that the government should have control over the manufacture and sale of contraceptive, and that it should assist research for evolving a safe and effective contraceptive and for undertaking a continuous study of population problems.

Thus in the Pre-Independence phase, the population policy of India was shaped mostly by the reformers, social workers and voluntary organisations. Self-control was advocated as a means of birth control while contraception was promoted mainly to safeguard the health of the mothers and children.

28.4.2. POPULATION POLICY FROM 1945 TO 1975

In the Post-Independent India, voluntary efforts to promote birth control continued to play a significant role. The establishment of the Family Planning Association of India in 1949 at Bombay under the Presidentship of Smt. Dhanvanthi Rama Rao marked a new phase in India's efforts to limit its population. The association has been working since then to promote population education and to make family planning acceptable.

The Government of Independent India realised the gravity of the situation and committed itself to the control of births. The draft outline of the First Five Year Plan observed that since the increasing pressure of population on natural resources retarded the country's economic progress, a population policy should be formulated. In its final version it declared "The pressure of population in India is already so high that a reduction in the rate of growth must be regarded as a major requirement".

The First Five Year Plan (1951-56) set a goal for 'reduction' of the birth rate to the extent necessary to stabilize the population at a level consistent with the requirement of national economy'. For the attainment of this goal, the plan listed the following objectives for the family planning programme.

1. to obtain a picture of the factors responsible for population growth at a rapid pace ;
2. to gain a fuller knowledge regarding human fertility and means of regulating fertility;
3. to devise the ways of educating the public ; and
4. to make the family planning service an integral part of health services.

Family planning was advocated on a voluntary basis in the early phase of the implementation of the population policy of India. In order to provide family planning services to the people 147 clinics were opened by the Government and grants were extended to 205 clinics run by State Government, local bodies and voluntary organisations. Spread of basic knowledge among the masses regarding the need for family planning and the training of the workers engaged in family planning education were taken up in this period. Thus India became the first country in the world to come up with an official family planning programme.

The Second Five Year Plan (1956-61) gave increased importance to family limitation. In order to improve the per capita income and the standard of living, the Second plan stressed the need for curbing the population growth through birth control. To achieve this the plan sought

a 'Clinical approach' to family planning. The major activities emphasised in the Second plan are the following :

1. Provision of clinical services to the public ;
2. Use of mass communication to spread the message of family planning;
3. Establishment of adequate training centres for imparting training to family planning staff;
4. Encouragement of research in family planning.

During the Second Five Year plan period, the Director of Family Planning at the national level and the Family Planning Officers at the State level were appointed. Family Planning Boards were established at Central and State levels to coordinate the work. 1079 clinics in rural areas and 423 in urban areas were established.

The Third Five Year Plan (1961-66) period witnessed a dramatic change in India's efforts to control population. From voluntary and clinical approach there was a major shift to 'extension approach'. Family planning message, services and contraceptives were taken to doorstep of the people. Extension education, not merely communication, was adopted to educate the masses. Motivation became a regular activity of the family planning workers. Extensive research was conducted in family planning education and motivation. Demographic, biological and medical research was encouraged to find solutions to the population problems and to evolve effective birth control methods. A fullfledged Department of Family Planning was created in 1966 in the Ministry of Health and Family Planning for effective planning, implementation, coordination and evaluation of family planning programmes.

The Annual Plans (1966-69) allotted more money for family planning activities than before and continued to emphasise an extension education. Nearly 74 lakh vasectomies and 21 lakh IUD insertions were carried out in first three years surpassing the previous achievement. This unexpected success gave an impetus to family planning programme in the Fourth Five Year Plan (1969-74).

The Fourth Five Year Plan gave a high priority to family planning and allotted Rs. 330 crores to it. The plan set a target of bringing down the birth rate from 39 per thousand to 25 per thousand by 1980. To achieve this, the plan envisaged a vigorous drive for disseminating family planning information among the rural and urban populations and for making people accept the idea of a small family as the norm. Most of the family planning outlay in this period was meant for free distribution of condoms, loops and pills and for provision of incentive to acceptors and promoters. The plan also witnessed the integration of family planning with the general, maternal and child health services. Introduction of the Medical Termination of Pregnancy Act of 1971, the organisation of mass vasectomy camps and the introduction of Post-partum services furthered the cause of family planning during this period.

The Fifth Five Year Plan (1974-79) continued the time bound and target oriented family planning programme. It called for the reduction of the birth rate of 30 per thousand by the end of the plan period. A target of 18 million sterilisations, 5.9 million IUD insertions and 8.8 million conventional contraceptive users was fixed for the plan period. Before the plan period was completed the declaration of the Emergency and the announcement of the national population policy brought about dramatic changes in the family planning programme.

28.4.3. INDIA'S POPULATION POLICY DURING THE EMERGENCY PHASE (1975-77)

Family planning registered a sudden upward trend during the Emergency period. The declaration of the National Population Policy, the introduction of compulsory family planning through legislation, the excesses committed in implementing the family planning programme were the most important features of this phase.

National Population Policy

On April 16, 1976 India declared its National Population Policy. The policy statement took into account the multifaceted nature of population problems and suggested certain political, economic and social measures concerning population. Politically, the policy froze the strength of the Lok Sabha and the State Legislatures upto 2001 AD, as per the Census figures of 1971. Similarly, the statement also fixed the basis for Central assistance and allotment of States as per 1971 population figures. It also stressed that 8% of the Central assistance to the States should be allocated for family planning performance.

The National Population Policy of 1976 envisaged the raising of the legal minimum marriageable age of girls from 14 years to 18 years and that of boys from 18 to 21 years. This measure was proposed in order to limit the birth rate to 15 in the long run. The postponement of marriageable age reduces the effective child bearing period.

The policy stressed female education since it would help in persuading them to accept late marriages, postponement of pregnancy and spacing of births. To encourage and option of family planning measures, the population policy proposed monetary incentives and preferential treatment for individual acceptors. To improve its performance, group incentives were provided for the medical practitioners, Zilla and Panchayat Officers, teachers and family planning personnel. A rebate was announced in the income tax assessment for the amount donated to voluntary organisations and other agencies engaged in family planning.

The National Population Policy also dealt with the question of compulsory sterilisation. It stated that the Government of India had no immediate proposal to enact any Central legislation regarding compulsory sterilisation. However, the States were permitted to enact their own laws on compulsory sterilisation taking into account the regional conditions.

The policy statement brought out the Government's intention to encourage by all means family planning research, education and motivation. Research in reproductive biology and contraception were given a high priority. Extension education based upon a new multi-media motivational strategy was envisaged with a view to utilising the radio, the press, films and visual displays effectively. Population education, registration of marriages, effective health care and medical aid were the other areas touched upon by the policy. In brief, the National Population Policy intended to accelerate the implementation of family planning programme and encourage its adoption in the interests of the individual, family and national welfare.

The National Population Policy became most controversial on account of its statement with reference to legislation for compulsory sterilisation.

During the period of Emergency, family planning achieved a higher target than ever before. While only 1.35 million sterilisations were conducted in the country in 1974-76. The number further increased to 8.11 million in 1976-77. The percentage of protected couples rose from 16.3 in 1974-75 to 25.6 in 1976-77. The North Indian States which had a poor family planning record until 1974 performed extraordinary well during the Emergency period. To quote an example, as against 13.2 per cent achievement of sterilisation targeted for the year 1974-76 and a phenomenal 78.62 per cent during the year 1976-77.

Even though the sudden upsurge in family planning caused wide-spread interest all over the world in India's Population Policy, the compulsory sterilisations, disincentives and family planning excesses resulted in causing a set-back to the family planning programme in the years that followed. In view of the widespread dissatisfaction among the people, the family planning programme as well as India's Population Policy was reviewed and reformed by the Janta party which came to power in the Post-Emergency period (1977)

28.4.4. POPULATION POLICY IN THE POST EMERGENCY PHASE

The new Janata Government redesignated the family planning programme as 'Family Welfare Programme'. Compulsion, coercion and force were discarded in implementing it and family

welfare became a voluntary programme. The word, 'sterilisation'. The word 'targets' had been replaced by the word 'expectations'. The programme of family planning became a welfare oriented one with emphasis on education, health and nutrition, preventive health services, rural sanitation, provision of drinking water and production of inexpensive drugs.

In spite of adopting an integrated welfare approach, the component of birth control remained the primary concern of the revised population policy based on voluntary acceptance of it.

It envisaged the reduction of the birth rate to 25 per thousand by 1984. 'Brahmacharya' and self-control were stressed as ways of birth control in addition to voluntary sterilisation.

The revised population policy sought the help of the State Governments in popularising voluntary sterilisation. The incentive amount for voluntary sterilisation was raised to Rs. 70 per head. A new provision was made to pay an amount of Rs. 5000.00 as compensation to the spouse in the event of the death of the sterilised person within 10 days after sterilisation. To motivate the people for voluntary family welfare planning community health workers-selected from their own communities were engaged after providing them with sufficient orientation and training. Community elders, Panchayat leaders and others came to be involved in family welfare education and motivation. In spite of these changes and introduction of popular ideas, the family welfare programme received a set-back in the years immediately following the Emergency.

The Sixth Five Year Plan (1980-85) made a bold attempt to revive the family welfare programme to meet the challenge of population growth. An outlay of Rs. 1,010 crores was made in this plan for family welfare. Family planning adoption recorded an overall improvement. In the Sixth Plan period, 17 million sterilisations and nearly 7 million insertions were carried out. About 9.31 million conventional contraceptive users were enrolled. As a result, the percentage of protected eligible couples increased from 22 to 32 by March 1985.

28.4.5. FAMILY WELFARE IN THE SEVENTH FIVE YEAR PLAN

Family welfare received a new thrust in the Seventh Plan as evidenced by its out lay of Rs. 3256.26 crores. The plan aimed at achieving a net reproduction rate of 1 by the end of 2011 A.D. and envisaged the following goals for the year 1990 ;

1. to protect 42 per cent of the eligible couples;
2. to reduce the birth rate to 29.1 per cent;
3. to bring down the death rate to 10.4 per cent;
4. to limit the infant mortality to 90 per thousand;
5. to universalise the immunisation programme; and
6. to expand the anti-natal care to 75 per cent of the target group.

In order to reach the target of 42% Couple protection Rate, the Seventh Plan stipulated that 35 million sterilisations and 21.25 million IUD insertions should be carried out along with the covering of 14.5 million people through conventional contraceptives. The government reiterated its commitment to promote family planning on a voluntary basis and sought the active participation of voluntary agencies, women and youth groups in family welfare programme. A strategy for social enforcement of late marriages, promotion of "two-child" norm, and elimination of bias against female children was suggested under the Seventh Plan for promoting family welfare. Care of the pregnant and nursing mothers, programmes for caring the new-born, young children and school-going children, mass immunisation and others were included under family welfare programmes.

The cumulative effect of the population policy adopted by India can be gauged by the achievements of the family planning programme. By 1982 17.4 crores or 27 per cent of the total eligible couples were protected. Of them 363.6 lakhs underwent sterilisation, About 953.5 lakh adopters opted for IUD insertions, 423.5 lakh persons used conventional contraceptives. The

percentage of protected couples increased to 32 by March 1985. More than 60 million births had been averted upto 1983 and it was estimated that another 22 million births might have been prevented in the two subsequent years.

India's population policy thus is basically an anti-natalist policy which aims reducing the birth rate. On account of its efforts, the birth rate registered a decline. The birth rate which stood at 41.7 per thousand in 1951 declined to 39% in 1961 and to 36 in 1981. The growth rate which went on increasing continuously from 1931 showed the first signs of reversal during the decade 1971-81. At this rate, it is estimated that India's population could be stabilised around 2020 A.D.

Since Independence India has been pursuing a policy of integrated family planning. While the emphasis is more on birth control, than on any other component the population policy of India is responsive to the social and economic needs of its population. A higher per capita income, a better standard of life, education for all, health and sanitation, better nutritional standards, provision of basic needs such as drinking water, housing, low priced drugs, etc., have been the concern of India's Population Policy.

28.5. SUMMARY

The variations in the population problems resulted in the search for solutions which in turn led to the evolution of different types of population policies. Population policy is said to be the strategy for solving the population problem of a country or region by promoting or reducing the population. Population policies are classified into 3 types - Mortality influencing policies, Migration influencing policies and Fertility influencing policies. India's population policy is basically an anti-nationalist policy which aims reducing the birth rate. A high per capita income, a better standard of life, education for all, health and sanitation, better nutritional standards, provision of basic needs such as drinking water, housing, low priced drugs have been the concern of India's population policy.

28.6. SUGGESTED BOOKS

Agarwala, S.N.	:	Population
Asha Bhende and Tara Kanitkar	:	Principles of Population Studies
Bhaskar D. Misra	:	An introduction to the study of population.

28.7. MODEL EXAMINATION QUESTIONS

I. Answer the following in about 30 lines each.

1. Define population policy and explain the different types of Policies.
2. How does mortality influence population policy.
3. Explain the different stages of India's Population Policy.

II. Answer the following in about 10 lines each.

1. Explain the different types of fertility influencing policies.
2. What are the main objectives of family planning programme.
3. Objectives of First Five Year Plan.
4. Objectives of Second Five Year Plan.

Books Consulted & Suggested Readings

- Agarwala, S.N. : Population
- Asha Bhende and Tara Kanitkar : Principles of Population Studies.
- Bhaskar D. Misra : An Introduction to the Study of Population.
- Ghosh B.N. : Fundamentals of Population Geography.
- Thompson and Lewis
- Government of India : Book-lets on family planning methods, issued by Ministry of Information and Broadcasting and Ministry of Health and Family Welfare.
- Mandelbaum : Human fertility in India
- Mamoria, C.B. : India's Population problems
- Srivastava S C. : Studies in Demography
- Malgavkar P.D and panandikar : Population and Development
- Permi M.K. et.al. : An Introduction to Social Demography
- Ashish Bose et.al. : Population in India's Development
- Barmabas A.P. : Population Control in India
- Government of India : Encyclopaedia of Social Work in India (Vol. I)
- Madan G.R. : Social Problems in India (Vol. I)
- Hans Raj : Fundamentals of Demography
- Thompson Warren, S : Population Problems
- Shrivastava O.S. : A Text Book of Demography
- Sinha and Zacharia : Elements of Demography
- Srivastava S.C. : Studies in Demography
- Thompsan and Lewis : Population Problems 5th edition Tata Mc Graw-Hill Publishing Co. Ltd. New Delhi
- International Encyclopedia of Social Sciences : Vol. 10 Macmillan and Free Press
- Manda : Frontiers in Migration Analysis 1981
- Turner and Roy : India's Urban future
Bombay, Oxford University Press,
University of California Press

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Dr. B.R. AMBEDKAR OPEN UNIVERSITY

Undergraduate Programme

Syllabus for Third Year

Sociology

Course III - Social Demography

BLOCK - I	:	FIELD OF DEMOGRAPHY
Unit-1	:	Nature and Scope of Social Demography
Unit-2	:	Social Demography and other Social Sciences
Unit-3	:	Sources of Demographic Data
BLOCK - II	:	POPULATION THEORIES
Unit-4	:	Pre-Malthusian Theories
Unit-5	:	Malthusian Theory
Unit-6	:	The Demographic Transition Theory
BLOCK - III	:	COMPOSITION OF POPULATION
Unit-7	:	Population Composition and Change
Unit-8	:	Age, Sex and Martial Composition
Unit-9	:	Ethnic and Religious Composition
Unit-10	:	Occupational and Educational Composition
Unit-11	:	Rural and Urban Differences in Population
Unit-12	:	Population Composition in India
BLOCK - IV	:	FERTILITY
Unit-13	:	Fertility, Meaning & Significance
Unit-14	:	Measures of Fertility
Unit-15	:	Differential Fertility
BLOCK - V	:	MORTALITY
Unit-16	:	Mortality, Meaning and Significance
Unit-17	:	Measures of Mortality
Unit-18	:	Differential Mortality
Unit-19	:	Socio-economic factors effecting Fertility and Mortality
BLOCK - VI	:	Migration
Unit-20	:	Migration - Types
Unit-21	:	Factors of Migration
Unit-22	:	Consequences of Migration
BLOCK - VII	:	POPULATION PROBLEM
Unit-23	:	Under Population and Over Population
Unit-24	:	World Population Growth with special reference to India
Unit-25	:	The Concept of Population Control and Methods of Control
Unit-26	:	Economic Development and Population Control
Unit-27	:	Family Planning and Family Welfare
Unit-28	:	India's Population Policy

Dr. B.R. AMBEDKAR OPEN UNIVERSITY

B.A. THIRD YEAR (3 YEAR DEGREE COURSE) EXAMINATION

MODEL QUESTION PAPER

SOCIOLOGY

COURSE III

SOCIAL DEMOGRAPHY

Time : 3 hours

Max. Marks : 100

SECTION - A

(Marks 15 x 4 = 60)

Answer any four of the following eight questions in about 30 lines each

1. Discuss the sociological perspective of demography.
2. Explain the interdisciplinary nature of demography.
3. Explain how crude death rate and age specific death rate are calculated.
4. Discuss the various theories concerning population problems.
5. Migrant population to cities contributes to the process of industrialisation - comment.
6. Briefly discuss the reasons for marginal growth of population.
7. Discuss the role of family planning in promoting family welfare in India.
8. Explain the effects of population growth on economic development.

SECTION - B

(Marks 5 x 8 = 40)

Answer any five of the following in about 10 lines each

Each question carries 8 marks

9. Explain the characteristics of population.
10. What are the sources of demographic data?
11. What are the indicators of Economic development?
12. What is PQLI model of economic development?
13. What were the reasons for population stability in the pre-industrial period?
14. Explain the role of occupational composition in population change.
15. Explain the relationship between Migration and Mobility.
16. What is the relationship between social class and mortality?
17. How do Socio-economic factors effect fertility.
18. Discuss the consequences of urbanization

Dr. B.R. Ambedkar Open University,

FACULTY OF SOCIAL SCIENCES

UNDERGRADUATE COURSE-III YEAR

SUBJECT : SOCIOLOGY

COURSE III : SOCIAL DEMOGRAPHY

ASSIGNMENT - I

NOTE:

1. Do not copy the answer from any book.
 2. As far as possible try to answer the question independently in your own words.
 3. If it is necessary to quote from any source mention the source from which you are quoting.
 4. Use your own foolscap paper for writing the assignments.
 5. Leave sufficient margin for the comments of the evaluator.
 6. Completion of this assignment normally should not take more than two hours.
-

PART - A

I. Answer the following questions in about 30 lines each.

1. Discuss the nature & scope of demography.
2. Explain the interdisciplinary nature of demography.
3. Discuss on the premalthusian theory and Malthusian theory of population.

PART - B

II. Answer the following questions in about 10 lines each.

1. Discuss the importance of population census.
2. Explain the relationship between demography and sociology.
3. Explain the three stages of demographic transition.

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

5300 S. LINDSAY DRIVE

CHICAGO, ILLINOIS 60637

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FAX: 773-936-3701

WWW.PHYSICS.UCHICAGO.EDU

PHYSICS 435

LECTURE 1

1.1. THE CLASSICAL LIMIT

1.2. QUANTUM MECHANICS

1.3. THE SCHRÖDINGER EQUATION

1.4. THE HEISENBERG UNCERTAINTY PRINCIPLE

1.5. THE DIRAC EQUATION

1.6. THE PAULI EXCLUSION PRINCIPLE

1.7. THE SPIN-ORBIT INTERACTION

1.8. THE FINITE POTENTIAL WELL

1.9. THE TUNNELING EFFECT

1.10. THE QUANTUM HALL EFFECT

1.11. THE QUANTUM DOT

1.12. THE QUANTUM WIRE

1.13. THE QUANTUM WELL

1.14. THE QUANTUM DOT

1.15. THE QUANTUM WIRE

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1.20. THE QUANTUM DOT

1.21. THE QUANTUM WIRE

1.22. THE QUANTUM WELL

1.23. THE QUANTUM DOT

**Dr. B.R. Ambedkar Open University,
FACULTY OF SOCIAL SCIENCES
UNDERGRADUATE COURSE-III YEAR
SUBJECT : SOCIOLOGY
COURSE IV : SOCIAL DEMOGRAPHY
ASSIGNMENT - 2**

NOTE:

1. Do not copy the answer from any book.
 2. As far as possible try to answer the question independently in your own words.
 3. If it is necessary to quote from any source mention the source from which you are quoting.
 4. Use your own foolscap paper for writing the assignments.
 5. Leave sufficient margin for the comments of the evaluator.
 6. Completion of this assignment normally should not take more than two hours.
-

PART - A

I. Answer the following questions in about 30 lines each.

1. Critically explain the demographic transition theory.
2. Religion and caste are considered as the important determinants of fertility. Explain?
3. What is mortality? Explain the influence of sex and age patterns on mortality.

PART - B

II. Answer the following questions in about 10 lines each.

1. What are the major sources for population data.
2. Describe the role of occupational composition on population change.
3. Explain how mortality data is collected.

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THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
58 CHEMISTRY BUILDING
CHICAGO, ILLINOIS 60637

Dear Sirs:

I am pleased to inform you that your application for admission to the Ph.D. program in Chemistry has been accepted. You will be admitted to the program in the fall of 1968. Your advisor will be Professor [Name].

You should contact Professor [Name] at the above address to arrange for your admission. You should also contact the Graduate Office at the University of Chicago for information regarding the application process and the requirements for admission.

Very truly yours,
[Name]

Yours sincerely,
[Name]

Dr. B.R. AMBEDKAR OPEN UNIVERSITY

FACULTY OF SOCIAL SCIENCES

UNDERGRADUATE COURSE-III YEAR

SUBJECT : SOCIOLOGY

COURSE IV : SOCIAL DEMOGRAPHY

ASSIGNMENT - 3

NOTE:

1. Do not copy the answer from any book.
 2. As far as possible try to answer the question independently in your own words.
 3. If it is necessary to quote from any source mention the source from which you are quoting.
 4. Use your own foolscap paper for writing the assignments.
 5. Leave sufficient margin for the comments of the evaluator.
 6. Completion of this assignment normally should not take more than two hours.
-

PART - A

I. Answer the following questions in about 30 lines each.

1. What are the causes for high fertility & mortality.
2. Explain the various physical and economic causes of migration.
3. Enumerate the consequences of over population.

PART - B

II. Answer the following questions in about 10 lines each.

1. What are the causes of high maternal and infantile mortality.
2. What is the Dalton's formula for identifying under- population & over population.
3. Classify the methods of birth control.

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SECRET

