

## Islam and Family Planning

In Islamic literature there are two terms on family planning, the *tanzīm al-nasl* (birth control) and *tahdid al-nasl* (birth limitation). The first (*tanzim alnasl*) regulates pregnancy by using various ways which can prevent pregnancy, with the aim to prevent pregnancy in a certain period of time because of the beneficiaries. While the second (*tahdid al-nasl*) is to prevent pregnancy forever that may cause infertility (*ta'qim*) and abortion (*isqat al-haml*).

### Concept of Sexuality and Contraception in Islam

Applying criteria derived from a feminist perspective to the analysis of reproductive choice in Islam is a complicated task, because of the existing polarization of views on the relationship between Islam and women's status.

Many discussions of women's health and fertility in Islamic countries link adverse outcomes to the oppression of women, which in turn is attributed to the way in which Islamic law defines women's status. Nonetheless, current Islamic practice emphasizes tradition and interpretations already established, and it is therefore necessary to look at Islamic attitudes towards sexuality and reproduction from a historical perspective. Within the confines of marriage, sexuality is treated as one of the good things in life that a Muslim should enjoy. Marriage is commendable and is recommended for whoever can afford it. Its purpose is seen as twofold. First, it unites the two elements of humanity; this is reflected in the following verse of the Quran: Amongst His signs is that He created consorts (in marriage) for you from amongst yourselves, so that you may find tranquility with them, and (He) set love and compassion between you. Verily, in this are signs for those who reflect. (Quran S. 30:21). The institution of marriage and the want to have children was the custom of the best of creation, the prophets and messengers chosen by Allah. Allah says about them: *“And indeed We sent messengers before you and made for them wives and offspring”* (al-Raad 38).

The best example for the believers is the example of the prophet Muhammad (saw), who married and had children. These prophets and messengers are the people whom Muslims should look to emulate. Allah says: *“They are those whom Allah has guided. So follow their guidance”* (al-Anaam 90).

They should be emulated and not the disbelievers of the West, whose new lifestyles - mostly out of concern for enjoying this life or obtaining as many worldly goods as possible - discourage women from having more children.

Islam has forbidden celibacy, monasticism and castration for such purposes. The prophet (saw) made this clear when he told those companions who were considering acetic forms of life: *“I pray and I sleep; I fast and I break my fast; and I marry women. Whoever turns away from my way of life is not from me.”* The prophet (saw) not only encouraged marriage but he encouraged marrying those women who are child-bearing. He stated: *“marry the loving, child-bearing women for I shall have the largest numbers among the prophets on the day of Resurrection.”* (Recorded by Ahmad and ibn Hibban)

From the Islamic perspective, children are a gift and a blessing from Allah. Allah mentions some of the bounties that He has bestowed upon mankind in the following verse: *“And Allah has made for you spouses of your own kind and has made for you, from your wives, sons and grandsons, and has bestowed upon you good provisions.”* (al-Nahl 72)

Allah also said: *“Wealth and children are the adornment of the life of this world.”* (al-Kahf 46).

## Concept of Birth Control in Islam

A Muslim has three sources of knowledge to obtain answers to the questions pertaining to various aspects of human life. These sources are:

- 1) The Holy Quran
- 2) Sayings (hadith) and acts (Sunnah) of the Holy Prophet PBUH
- 3) The views of the leaders of Juristic school qualified to interpret the teachings of Islam.

### 1) The Holy Quran

Quran says “And not kill your children for fear of poverty. We shall provide for them as well as for you. Surely, the killing of them is great sin”

At another place it is mentioned in the Holy Quran “And no moving (living) creature is there on earth but its provision is due from Allah”

In the above-mentioned verses killing of children have been forbidden but there is difference in killing contraception as it does not amount to killing a human. These verses infact were revealed to forbid the pre- Islamic Arab practice of killing or burying alive a newborn child (particularly) a girl on the account of the parent’s poverty or to refrain from having a female child. Perhaps in those days, people did not know safe methods of contraception and early abortion.

### 2) Hadith

The principle of preventing conception was accepted in those sayings of Holy Prophet (PBUH) which allowed some of his followers to practice *azl* or coitus interruptus. These ahadiths embodied the earliest legal reasoning of Muslim on contraception and were essential instruments of arguments in later Islamic thought on contraception. There is sufficient number of a hadiths on contraception. The commonly quoted ones are the following.

- 1- According to Hazrat Jabir R.A “ We used to practice coitus interruptus during the Prophet’s (PBUH) lifetime. News of this reached him and he did not forbid us”
- 2- According to Hazrat Jabir R.A “ A man came to the Prophet (PBUH) and said “ I have a slave girl and we need her as a servant and around the palmgroves. I have sex with her, but I am afraid of her becoming pregnant, The Holy Prophet (PBUH) said” practice *azl* with her if you so wish, for she will receive what has been predestined for her”
- 3- According to Abu Sa’id “ We rode out with the prophet (PBUH) to raid Banu al-Mustaliq and captured some female prisoners.....we desired women and abstinence became hard. But we wanted to practice *azl* and asked the prophet (PBUH) about it. He said “You don’t have to hesitate, for God has predestined what is to be created until the judgment day”
- 4- According to Abu Sa’id “The Jews say that the coitus interruptus is minor infanticide, and the prophet (PBUH) answered, The Jews lie, for if God wanted to create something, no one can avert it (or divert Him)”
- 5- According to Umar Ibn Khattab “ The Prophet (PBUH) forbade the practice of *azl* with a free women except with her permission”
- 6- According to Anas “A man asked the prophet (PBUH) about *azl* and the prophet (PBUH) said’ Even if you spill a seed from which a child was meant to be born on a rock, God will bring forth that rock a child”
- 7- According to Judhamah bint Wahab “ I was there when the Prophet (PBUH) was with a group saying “ I was about to prohibit the *ghila* (intercourse with a women in lactation) but I observed the Byzantines and the Persians, and saw them do it, and their children were not harmed, they asked him about coitus interruptus, and the Prophet (PBUH) replied” it is hidden infanticide”

These ahadiths from judhamah was an approximation to homicide traditions of the Jewish and Christian traditions. This hadith provided support for Ibn Hazm's minority view that *azl* was prohibited by the prophet (PBUH) but the medieval jurists used the hadith about the Jews to refute the argument for the prohibition. They claimed that how the Prophet (PBUH) could have maintained that the the Jews lied by calling *azl* akin to infanticide and then have maintained the same opinion himself

### Views of Medieval Muslim Jurists

Organized family planning programs that provide modern contraceptives and related services have become increasingly common worldwide in the last 40 years. These programs have aimed to improve the health of women and children and to slow population growth in countries where rapid population growth is seen as a barrier to socioeconomic development. The United Nations 1994 International Conference on Population and Development (ICPD) and the 2000 Millennium Development Summit called for universal access to family planning information and services. Islamic countries attending the ICPD generally endorsed the conference's Programme of Action with the reservation that they would interpret and adopt its recommendations in accordance with Islam—a position necessary for Muslim countries to take the conference recommendations home for implementation. The ICPD's Programme of Action focuses on human development and provides a holistic framework for slowing population growth and improving people's lives. The Programme calls for a wide range of investments to improve health, education, and rights—particularly for women and children—and to provide family planning services in the context of comprehensive reproductive health care. A central recommendation of the Programme is universal access to a full range of safe and reliable family planning methods. Islam's position on family planning and the circumstances under which it can be practiced has a direct bearing today on how Muslim countries can achieve their development goals, including the ICPD goals. The ICPD Programme of

Action acknowledges that the implementation of its recommendations “is the sovereign right of each country, consistent with national laws and development priorities, with full respect for the various religious and ethical values and cultural background of its people, and in conformity with universally recognized international human rights.

Muslim jurists do not speak with one voice on the question of birth prevention, on its lawfulness, on condition for practice and on method which comprises four principles include reasoning (*usul*); Two of these (*Quran*) and (*Sunnah*) are religious sources. The other two principles of include analogical reasoning (*qiyas*) and the consensus of the *Ulma* (*ijma*).

Islam, like other major world religions, embraces a body of doctrine that permits different interpretations. One of the areas where Islamic doctrine has been subject to alternative explanations concerns limitation of family size and the use of contraceptives

Thus, Islam would be sympathetic to family planning if spacing pregnancies and limiting their number made the mother more physically fit and the father more financially at ease, particularly since these actions do not violate any prohibition in the *Quran* or in the Prophet’s tradition (*Sunnah*). If excessive fertility leads to proven health risks for mothers and children, or economic hardship and embarrassment for the father, or the inability of parents to raise their children properly, Muslims would be allowed to regulate their fertility in such a way as to reduce these hardships. After reviewing various sources of Islamic jurisprudence, Dr. Omran developed a list of justifiable reasons under Islam for using contraception.

Muslims may use contraception to:

- Avoid health risks to a breastfeeding child from the “changed” milk of a pregnant mother;
- Avoid health risks to the mother that would result from repeated pregnancies, short birth intervals, or young age;
- Avoid pregnancy in an already sick wife;
- Avoid transmission of disease from parents to their offspring

Preserve a wife's beauty and physical fitness, thereby continuing the enjoyment of her husband, ensuring a happier married life, and keeping the husband faithful;

- Avoid the economic hardships of caring for a larger family, which might compel parents to resort to illegal activities or exhausting themselves to earn a living;
- Allow for the education, proper rearing, and religious training of children, which are more feasible with fewer children;
- Avoid the danger of children being converted from Islam in enemy territory;
- Avoid producing children in times of religious decline; and
- Enable separate sleeping arrangements for boys and girls after puberty, which is more feasible with fewer children.

## **Population and Environment**

### **Environmental Concepts and Definitions**

The world inhabited by humans is known to scientists as the biosphere—the zone of Earth in which life is found. As mentioned in Chapter 1, the biosphere consists of three major parts: (1) the lower part of the atmosphere (known as the troposphere—the first 11 miles or so of the atmosphere above the surface of the earth); (2) the hydrosphere (most surface water and groundwater); and (3) the lithosphere (the upper part of the earth's crust containing the soils, minerals, and fuels that plants and animals require for life). Within the biosphere are ecosystems representing communities of species interacting with each other and with the inanimate world. All of the world's ecosystems then represent the ecosphere, which is the living portion of the biosphere.

All living organisms in the biosphere require three basic things: (1) resources (food, water, and energy); (2) space to live; and (3) space to “dump waste.” The carrying capacity of the biosphere, or of any ecosystem within the ecosphere, is the number of organisms that can be sustained indefinitely—the number for whom there are renewable resources, sufficient space to live, and sufficient space to get rid of waste products (all forms of life generate waste products). If the population exceeds an ecosystem's carrying capacity in any one of these categories, we have a situation of overshoot or overpopulation.

### **Damage to the Lithosphere—Polluting the Ground**

We survive on the thin crust of the earth's surface. Actually, we live on only 29 percent of the surface. The rest is covered with water, especially the oceans, which we tend to treat as open sewers, but we also exploit resources that are in the ground under that water. The land surface of the earth is where most things we humans are interested in grow, and the damage we do to this part of the environment has the potential to lower the ability of plants and animals to survive. We have been busy



doing damage such as: (1) soil erosion; (2) soil degradation from excess salts and water; (3) desertification; (4) deforestation; (5) loss of biodiversity; (6) strip mining for energy resources; and (7) dumping hazardous waste.

Almost every step of improving agricultural productivity has its environmental costs—from irrigation to the use of fertilizers and pesticides to the creation of energy sources and the production of machinery. “In spite of the increasing pace of world industrialization and urbanization, it is ploughing and pastoralism which are responsible for many of our most serious environmental problems and which are still causing some of our most widespread changes in the landscape” (Goudie 2000:420). If not carefully managed, farming can lead to an actual destruction of the land (think of the Dust Bowl in the United States in the 1930s). For example, improper irrigation is one of several causes of soil erosion, to which valuable farmland is lost every year. In the United States alone it is estimated that during the past 200 years, at least one-third of the topsoil on croplands has been lost, ruining as much as 100 million acres of cultivated land (Brown and Mitchell 1998). Even if cropland is not ruined, its productivity is lowered by erosion, because few good chemical additives exist that can adequately replace the nutrition of natural topsoil. Unfortunately, the push for greater yield per acre may lead a farmer to achieve short-term rises in productivity without concern for the longer-term ability of the land to remain productive.

In many human cultures, agriculture is practiced as an extractive industry, in which the nutrition in the soil is sucked out by the repeated growing of crops, and soils continue to be degraded throughout the world. Continuation of the observed rate of soil degradation from 1945 to 1990 suggests an effective half-life of the vegetated soils of the earth of about 182 years. Such conversion of land to agricultural purposes alters the entire ecosystem, and the resulting impact on soil structure and fertility, quality and quantity of both surface and groundwater and the biodiversity

of both terrestrial and aquatic communities diminishes present and future productivity. Crop rotation and the application of livestock manure help to reduce soil erosion, but in some parts of the world the land is robbed of even cow dung by the need of growing populations for something to burn as fuel for cooking and staying warm. The eroded soil has to go somewhere, of course, and its usual destinations are river beds and lake bottoms, where it often causes secondary problems by choking reservoirs. Desertification and deforestation are ecological crises associated with the pressure of population growth on the environment. The southern portion of the Sahara desert has been growing in size as overgrazing (complicated by drought) has denuded wide swaths of land. At the dawn of human civilization, forests covered about half of the earth's land surface (excepting Greenland and Antarctica). Only about half of that forest is left. Most, if not all, of that deforestation can be attributed to the impact of population growth, either directly through people moving into areas and clearing forests for their own use, or indirectly through the economic demands for more resources made by growing populations elsewhere in the world. One of the most discussed areas of the world is the huge Amazon forest in Brazil. Over the past several decades, population pressure has led the government to encourage people to head for the Amazon Basin in search of land. The land they find is covered with a rain forest, which they have been cutting down at a prodigious rate, despite concerted efforts at reforestation. Forests are also susceptible to the effects of air pollution, which can damage the vegetation and lessen the plant's resistance to disease. In their turn, fewer trees and less-healthy trees may alter the climate because the forests play a key role in the hydrologic cycle as well as in the carbon cycle. In the hydrologic cycle, water is being continuously converted from one status to another as it rotates from the ocean, the air, the land, through living organisms, and then back to the ocean. Solar energy causes evaporation of water from the oceans and from land, and it condenses into liquid as clouds, from whence comes rain, sleet, and snow to return water to the ground. Trees are important in this cycle both directly, because water

transpires through the plants and is evaporated into the air, and indirectly, because the trees slow down the runoff and heighten the local land's absorption of the water. More than half of the moisture in the air above a forest comes from the forest itself (Miller 2004), so when the forest is gone, the local climate will become drier. These changes can mean that an area once covered by lush and biologically diverse tropical forest can be converted into a sparse grassland or even a desert.

The carbon cycle is that process through which carbons, central to life on the planet, are exchanged between living organisms and inanimate matter. Plants play an important role in this cycle through photosynthesis, and forests are sometimes called the earth's "lungs." Deforestation thus has the effect of reducing the planet's lung capacity, so to speak, and that contributes to global warming because it increases the amount of greenhouse gases that, in the right number, otherwise keep us at just the right temperature for normal existence.

### **Damage to the Atmosphere—Polluting the Air**

The atmosphere is the mixture of gases surrounding the planet, and it is a layered affair (each layer being a "sphere"). We spend our life in the troposphere, that part of the atmosphere near the surface, where all the weather takes place. But other layers are of importance as well, such as the ozone in the stratosphere that protects us from the ultraviolet radiation from the sun. Most famous of the gases are the greenhouse gases (mainly carbon dioxide and water, but also ozone, methane, nitrous oxide, and chlorofluorocarbons) which allow light and infrared radiation from the sun to pass through the troposphere and warm the earth's surface, from which it then rises back into the troposphere. Some of it just escapes back into space, but some of this heat is trapped by the greenhouse gases and this has the effect of warming the air, which radiates the heat back to the earth (Drake 2000). In general, the greenhouse effect is a good thing, because without it the average temperature on the planet

would be zero degrees Fahrenheit ( $-18^{\circ}\text{C}$ ) and life would not exist in its present form, but too many greenhouse gases have the effect of global warming—an increase in the global temperature.

As already mentioned, and you probably know anyway, global warming has the potential to change climatic zones, warm up and expand the oceans, and melt ice caps. The result would (will?) be a rise in average sea level, inundating coastal areas (where a disproportionate share of humans live), and a shift in the zones of the world where agriculture is most productive. The evidence is virtually overwhelming that we have been adding to greenhouse gases and that human activity is contributing to a rise in global temperature. This has happened as a polluting side effect of trying to support more humans, and to do so at a higher standard of living.

Population growth, the intensification of agriculture, and the overall increase in people's standard of living have been made possible by substantial increases in the amount of energy we use. Holdren (1990) has estimated that in 1890, when the world's population was 1.5 billion, the annual world energy use was 1.0 terawatts. (A terawatt is equal to five billion barrels of oil.) One hundred years later, in 1990, when the world's population was at 5.3 billion, total world energy use had rocketed to 13.7 terawatts. This is an important number because *“energy supply accounts for a major share of human impact on the global environment”*. The by-products of our energy use (especially carbon dioxide and methane) wind up disproportionately in the atmosphere and contribute to global warming. As you can see from Table 11.3, we have met the enemy who is pumping carbon dioxide ( $\text{CO}_2$ ) into the atmosphere and the enemy is us. The United States leads the list of  $\text{CO}_2$  producers in absolute terms and is third (after the United Arab Emirates and Kuwait) in terms of per-person emissions. Canada is eighth on the list in absolute emissions but fifth in terms of per-person emissions. Mexico is eleventh in terms of

total output of carbon dioxide emissions, but its volume is only a tiny fraction of the United States' volume and its per capita use does not make the world's top 20 list.

The gases that we send into the environment—especially chlorofluorocarbons—have the potential to thin the **ozone layer**, which protects us from deadly ultraviolet light. These “holes” in the ozone layer, which have been documented especially in the southern hemisphere, can damage crops and livestock and, of course, humans as well. Although the switch from wood to coal for creating steam may have helped save forests, the by-product of burning coal is “acid rain”—sulfur particles trapped in the air, which then cause damage by killing plants, undermining animal habitat, and eroding human-built structures, especially those made of marble and limestone. Photochemical smog produced by automobile and industrial emissions creates a wide band of air pollution known to be harmful to humans, other animals, and plants as well. In a variation on the theme “what goes up, must come down,” the gases and particles that we pump into the atmosphere come back to haunt us in myriad ways, none of them beneficial.

### **Damage to the Hydrosphere—Water Supply and Water Quality**

Water is an amazing liquid. It covers 71 percent of the earth's surface, including almost all of the southern hemisphere and nearly half of the northern hemisphere. You are full of it—about 65 percent of your weight is water. Despite all of that water, only a small fraction—3 percent—of it is the fresh water that humans, other animals, and plants need. Furthermore, most of that 3 percent is water that is locked up as ice in the poles and glaciers or in extremely deep groundwater. Only about 0.003 percent of the total volume of water on the planet is fresh water readily available to us in lakes, soil moisture, exploitable groundwater, atmospheric water vapor, and streams. Although fixed in amount, the water supply is constantly renewed in the hydrologic cycle of evaporation, condensation, and precipitation. The principal issues with respect to water

have to do with its management (distributing it where it is needed), purity from disease (in order to be drinkable), and pollution.

It has been estimated that in 1850 the freshwater resources in the world were equivalent to 33,000 cubic meters per person per year (United Nations Population Fund 1991), but by 2000 that had shrunk to scarcely more than 7,000 (World Resources Institute 2000), and the World Resources Institute estimates that only 15 percent of people in the world live in relative water abundance. Within the ecosphere, salt water is converted to fresh water through the hydrologic cycle, but it is very expensive to mimic nature. In fact, it has been joked that the two most difficult things to get out of water are politics and salt.

Most desalination plants are based on a process of distillation that imitates the water cycle by heating water to produce vapor that is then condensed to produce fresh, potable (drinkable) water. The problem is that it is very costly to heat the water and, as a result, desalinated water is typically several times more expensive than drinkable local water. Reverse osmosis as a desalination process may hold some promise, but it seems unlikely that anything but naturally generated fresh water will be able to supply human needs for the foreseeable future, and we will have to survive by using that resource more efficiently than in the past.

All over the globe more people are competing for water even as water consumption per person has been on the rise, and, all the while, we have been sending pollutants into the water, degrading the already limited supply. Some of the pollution goes directly into the water, and some goes into the ground where it seeps into the water supply or into the air where it then falls on us as acid rain. We know as well that polluted water can alter marine life, killing fish and other sources of marine food. Ironically, one of the sources of water pollution is the chemicals we add to the soil to improve agricultural productivity, and this is aggravated by using irrigation, which increases the amount of water exposed to the

chemicals.

Irrigation requires dams, of course, and there has been a worldwide movement to stop the construction of dams as we learn more about the ecological damage caused upstream, downstream, and on the cropland itself by dams and the irrigation water, not to mention the millions of people who have been displaced around the world because their home was going to be underwater in the reservoir behind the dam. Most of the choice dam sites have already been taken, but not all. Asia has a higher percentage of its land under irrigation than any other area of the world, and China, in particular, is adding to the total. During the past century, while the world's population tripled, the aggregate use of water increased six fold, with irrigation consuming over 70 percent of available water. These increases have come at high environmental costs: half of the world's wetlands disappeared over the last century, with some rivers now no longer reaching the sea, and 20 percent of freshwater fish now endangered or extinct. If current trends continue, 4 billion people will live under conditions of severe water stress by 2025, particularly in Africa, the Middle East, and South Asia.

## Population Structure and Composition

Population structure means the 'make up' or composition of a population. Looking at the population structure of a place shows how the population is divided up between males and females of different age groups.

While population size, concentration, and distribution provide a general picture of a market area, additional information on the composition of a population is necessary to fully appreciate the characteristics of a population. Since not all individuals or groups are at equal risk of becoming ill or consuming health services. Demographic factors such as age, income level, and sex provide valuable information for identifying individuals and groups with greater or lesser than average risk. Together, these variables are labeled compositional measures.

The distribution of the population according to the characteristics such as age, sex, marital status, socio-economic status (caste, religion, language, occupation, etc.) and so on is called **composition of population**. It is the main pillar of the population studies. The study of composition of population helps us to find out the structure of the population of a country. Population structure is usually shown using a **population pyramid**. A population pyramid can be drawn up for any area, from a whole continent or country to an individual town, city or village. **Population composition** refers to the demographic makeup of persons within a geographic area. The composition of an area's population is useful in projecting the incidence of disease and death, and thus health care needs and demand. Two communities of equal size do not have the same health care needs if one has a younger, more affluent and racially homogeneous population than the other. Health-related behavior, such as the percentage of persons who smoke cigarettes, may vary as well. Knowledge regarding changing demographic composition over time is also important. Though the present demographic composition of a given area may indicate a relatively low level of demand for a specific health service, the impact of fertility, mortality, and migration processes or its present composition may result in a much different level of demand in the future. Variables related to population composition are usually thought of as descriptive. Initially, their usefulness is derived from their ability to profile a population in terms of its traits. An area's age distribution, racial makeup, income level, and dominant religion are the types of characteristics that give a population its "personality."



Population can be distributed in term of:

- Age
- Sex
- Marital Status
- Language
- Religion
- Occupation
- Race and Ethnicity
- Urban and Rural

### **Age Composition**

The age structure of a population, that is; the distribution of the population in different age groups, constitutes an important subject of demographic analysis and development planning. Age structural dynamics includes fertility, mortality and as well as related changes in family planning and social arrangements. The use of age structure goes beyond demographic analysis to other important areas. Public policies aim to improve the welfare of a population; population welfare in turn is determined and shaped by the needs of present and future population; a population's needs and its potential are strongly shaped by its demographic composition- i.e. by age-structural transition

### **Sex Composition**

Sex composition of the human population is one of the basic demographic characteristics, which is extremely vital for any meaningful demographic analysis. Changes in sex composition largely reflect the underlying socio-economic and cultural patterns of a society in different ways. Sex ratio defined here as the number of females per 100 males in the population. Sex composition of a given society influences directly the incidence of marriage, birth, migration, economic activities, etc. Sex ratio is an important social indicator of the equity prevailing between males and females at a given point of time. Factors influencing the sex ratio are, mainly, the differentials in mortality, sex selective migration, and sex ratio at birth and, at times, the sex differential in population enumeration. Development programmes may also have differential impact on male and female's quality of life.

### **Marital Composition**

Marital status, living arrangements, and family structure are all ways of looking at household characteristics. In the past, marital status was thought by demographers to be the best indicator of household relationships. However, as the traditional family gave way to new and

different types of households, other measures of household characteristics became more salient. Individuals are typically grouped into four marital status categories: single, married, widowed, and divorced. The Census Bureau also recognizes a “married but separated” category, although this does not constitute a formal marital status in all states. In addition to the current marital status of individuals, information may be collected on previous marriages and selected characteristics of any marriage (e.g., age at marriage, race/ethnicity of bride and groom, etc.)

### **Occupational Composition**

Occupation implies trade or profession. It reveals the nature of economic progress of a country. It is related to agriculture, industry and services. Population composition by occupation denotes the involvement of number of people into various occupations. In other words, it shows the major economic activities which people are involved in. Occupations depend up on the degree of economic development and sophistication of country.

Occupational structure influences many aspects of population in a region. The occupational characteristics of population are reflected in the working force, dependency load, employment and unemployment. In spite of that, occupational structure is a key component and manifestation of population composition. It gives a proper illustration of ratio of the working and non-working population in an area or a country. Occupational structure also influences the socio-economic development of an area

### **Ethnicity and Race Composition**

In many nations, **ethnicity** is another common factor of population composition. This is important because different ethnic populations can often change at different rates. Race and ethnicity are at the same time biologically determined and socially constructed. Racial identity is based on physical characteristics such as skin color. Ethnic identification, on the other hand, is based on a common cultural heritage. Both “race” and “ethnicity” are social constructs with race, in particular, having no scientific basis. Thus, the number of racial groups and the basis for racial categorization varies from society to society.

### **Rural-Urban Composition:**

The division between rural and urban areas is significant in terms of geographical distribution of population. The percentage of rural population is higher in farm-based agricultural countries, while industrially, developed regions have higher share of urban population. For a long time now, there has been a nearly universal flow of population from rural into urban areas. The most highly urbanized societies in the world are these of western

and northern Europe, Australia, New Zealand, temperate South America, and North America: in all of these, the proportion of urban population exceeds 75 per cent.

In many of the developing countries of Asia and Africa, the urbanization process has only recently begun; less than one-third of the population lives in urban areas. But the rate of growth of urban areas has shown a great increase. The general rule for developing countries is that the rate of growth of urban areas is twice that of the population as a whole. Rural and urban communities may be distinguished from each other on the basis of several criteria like occupation, size, and density of population, environment, homogeneity-heterogeneity, social stratification, mobility and system of interaction. The main occupation of people in rural community is agriculture though a few people are engaged in non-agricultural pursuits also. People in urban community are mainly engaged in non-agricultural pursuits like manufacturing, trade and commerce, service and professions.

## Structure, Composition and Population Explosion

For improvement in life, people with working potential are far more important than the mere large number (size) of population. The age-sex pyramid gives us an understanding of the working potential available within a given population. In fact, the working potential of a country can be detected from the shape of the age-sex profile. On the basis of age, the human potential can be classified into three classes:

1. Children, non-productive age group (0-14 years)
2. Productive, adult population (15-64 years)
3. Non-productive, elders (more than 65 years)

It must be mentioned that, in the world today, there are millions of children who work in various economic enterprises. They are economically productive and are deprived of their freedom. Likewise, there are older people who are deprived of their old age comforts and suffer in life to make a living.

There are certain ideas that can be inferred from this pyramid:

1. The country represented by the pyramid has a large population of children of 0 to 14 years of age and a small population of elders of more than 65 years old. The economically active population of 15 to 64 years is relatively small in number.
2. The children and the elders are dependent on the middle-aged population which is economically active. It is because most children are in school while the elders lack working potential but include those who are retired with pension. Hence, they could participate in the country's developmental activities only to a limited extent. A large portion of the population of these ages will not be able to be active economically. Nor do they take part in reproductive function.
3. It is the middle aged who are economically very active. There are chances for increasing working potential in the future because of the reproductive ability of the middle-aged population. That is, when the population becomes reproductive population through marriage, they add to the working potential. And when the children of age group 10-14 years move into 15-30 years, they become the work force as well. And, the broad base of children of age group 0-15 years also means that there will be very high growth of population in the future.

Thus, it is possible to draw inferences from the age pyramid pertaining to the working potential and the population expansion of the future. There are in fact several different age-sex pyramids. The shape of the pyramid of any given country depends on the structure of the

population of that country. The different pyramids help us to infer a number of important ideas.

### **Progressive Age Structure**

In pyramids such as these, there is an indication to high birth and death rates. Of the total population, 55 per cent will account for children of 0-14 years while 10 per cent will account for old people. The rest of 35 per cent is the economically active population. Countries with such pyramids have to take care of a very large population with little or no working potential. Unable to satisfy their basic needs, there will be shortfalls in economic development creating social disruptions. These will form the challenges for planning and economic development. Particularly, with no proper social security, there will be high adult mortality and high infant mortality rates. With no proper and adequate medical and health care, the children of 1-6 years die in large numbers. The population in the next three upper age groups, 7-10, 11-14 and 15-19 years of age, suffer from physical handicaps and health problems. Lack of adequate health workers, insanitation, lack of or no immunization practices and little or no use of medicines all cause death of children of young ages. For example, in Africa and Latin America, poverty and malnutrition are the severe problems.

### **Regressive Age Structure**

In countries with such age pyramids, there will low birth and death rates. Children will account for 30 per cent of the total population while the older people account for 15 per cent of the total population. However, the economically active will account for 55 per cent of the total population numbers. As the economically active account for higher proportion, these countries are economically developed. The needs of the dependent, non-working population are satisfied with ease.

Such pyramids are characteristic of the developed countries. By an estimate, the children's population is small and the aged account for 13 per cent. Increasing number of the aged indicates to problems of social security and old age protection in the future. Yet, there is a concern for their standard of living, education and social awareness in these countries. Good food and medical attention are available to the all ages.

Hence, childbirth is within limits. With industrial development, there is fast life and a corollary increase in the un-cared for population of the elders as well. Therefore, despite social security provided by the governments in these countries, the elders are mentally affected. They are generally afflicted with cancer and heart diseases which cause what is known as the 'new death'. There is a large number of psychologically affected as well, in these countries. There are reports indicating one million Europeans being locked up in the mental asylums.

### Intermediate Age Structure

Such pyramids as these have tendencies for changing their shapes and characteristics. These pyramids are found in countries with various development levels. At some time, these countries may have had progressive age structures. In the future, the structure is likely to change to regressive age structure. India and China are the two countries with pyramids of intermediate nature. The pyramids shown here are drawn using the generalized structural characteristics. At times, their characteristics would change according to the social and economic conditions. Some of the likely changes are given below:

1. In the developing countries, children acquire a working potential at the age of 10 years. On the contrary, in the developed countries, even at 16 years, they are not normally in the work force or with working potential. Also, students of higher education with working potential do not enter as yet into the work force. It is necessary to indicate that, beyond their teens, a considerable number of the student population in the developed countries contribute to the economic development through part time employment.
2. The elders of the developed countries, once retired from active service, are without working potential. On the other hand, in the developing countries, with low opportunities for retired life, even the people of more than 60 years of age have high working potential. Work is an economic necessity for survival.
3. Migration or human movements could change the shape of the pyramids. People of ages 15-45 migrate from their places of birth or residence to other places for various reasons. As such, a country which receives such migrants will have a pyramid with a bulge in the middle representing the middle ages. On the other hand, a country which has a high out-migration will have a pyramid with a concavity in the middle.
4. Even population growth will create changes in the age pyramids. Declining growth rates result in increasing elderly population while increasing growth rates result in increasing child population.

Some of the above characteristics will also depend on the growth or decline in the population. Thus, the shape of the pyramid of a country shows clearly the nature of the human potential for the future. They are helpful in measuring, controlling and developing ideas about the growth in population numbers and growth rate

We can now understand how population numbers and the social and economic declines have close relations. Even in the historical times, the need for optimal population existed as an idea. But there were differences in ideas as to the means of controlling population numbers.

## **Malthusian Theory of Population**

The most well-known theory of population is the Malthusian theory. Thomas Robert Malthus wrote his essay on “Principle of Population” in 1798. The rapidly increasing population of England encouraged by a misguided Poor Law distressed him very deeply. His theory is very simple. To use his own words: “By nature human food increases in a slow arithmetical ratio; man, himself increases in a quick geometrical ratio unless want and vice stop him. The increase in numbers is necessarily limited by the means of subsistence, population invariably increases when the means of subsistence increase, unless prevented by powerful and obvious checks.”

Malthus based his reasoning on the biological fact that every living organism tends to multiply to an unimaginable extent. Such is the prolific nature of every specie. The power of procreation is inherent and insistent, and must find expression. Malthus concluded that population tended to outstrip the food supply. If preventive checks, like avoidance of marriage, later marriage or less children per marriage, are not exercised, then positive checks, like war, famine and disease, will operate.

**The theory propounded by Malthus can be summed up in the following propositions:**

- (1) Food is necessary to the life of man and, therefore, exercises a strong check on population. In other words, population is necessarily limited by the means of subsistence (i.e., food).
- (2) Population increases faster than food production. Whereas population increases in geometric progression, food production increases in arithmetic progression.
- (3) Population always increases when the means of subsistence increase, unless prevented by some powerful checks.
- (4) There are two types of checks which can keep population on a level with the means of subsistence. They are the preventive and a positive check.

The first proposition is that the population of a country is limited by the means of subsistence. In other words, the size of population is determined by the availability of food. The greater the food production, the greater the size of the population which can be sustained. The check of deaths caused by want of food and poverty would limit the maximum possible population.

The second proposition states that the growth of population will out-run the increase in food production. Malthus thought that man's sexual urge to bear offspring knows no bounds. He seemed to think that there was no limit to the fertility of man. But the power of land to produce food is limited. Malthus thought that the law of diminishing returns operated in the field of agriculture and that the operation of this law prevented food production from increasing in proportion to labour and capital invested in land.

In fact, Malthus observed that population would tend to increase at a geometric rate (2, 4, 8, 16, 32, 64, etc.), but food supply would tend to increase at an arithmetic rate (2, 4, 6, 8, 10,

12). Thus, at the end of two hundred years “population would be to the means of subsistence as 259 to 9; in three centuries as 4,096 to 13, and in two thousand years the difference would be incalculable.” Therefore, Malthus asserted that population would ultimately outstrip food supply.

According to the third proposition, as the food supply in a country increases, the people will produce more children and would have larger families. This would increase the demand for food and food per person will again diminish. Therefore, according to Malthus, the standard of living of the people cannot rise permanently. As regards the fourth proposition, Malthus pointed out that there were two possible checks which could limit the growth of population: (a) Preventive checks, and (b) Positive checks.

### **Preventive Checks:**

Preventive checks exercise their influence on the growth of population by bringing down the birth rate. Preventive checks are those checks which are applied by man. Preventive checks arise from man's fore-sight which enables him to see distant consequences.

He thinks that with a large number of children, the standard of living of the family is bound to be lowered. He may think that if he has to support a large family, he will have to subject himself to greater hardships and more strenuous labour than that in his present state. He may not be able to give proper education to his children if they are more in number.

Further, he may not like exposing his children to poverty or charity by his inability to provide for them. These considerations may force man to limit his family. Late marriage and self-restraint during married life are the examples of preventive checks applied by man to limit the family.

### **Positive Checks:**

Positive checks exercise their influence on the growth of population by increasing the death rate. They are applied by nature. The positive checks to population are various and include every cause, whether arising from vice or misery, which in any degree contributes to shorten the natural duration of human life.

The unhealthy occupations, hard labour, exposure to the seasons, extreme poverty, bad nursing of children, common diseases, wars, plagues and famines are some of the examples of positive checks. They all shorten human life and increase the death rate.

Malthus recommended the use of preventive checks if mankind was to escape from the impending misery. If preventive checks were not effectively used, positive checks like diseases, wars and famines would come into operation. As a result, the population would be reduced to the level which can be sustained by the available quantity of food supply.

### **Criticism of Malthusian Theory:**

The Malthusian theory of population has been a subject of keen controversy.

The following are some of the grounds on which it has been criticized:



(i) It is pointed out that Malthus's pessimistic conclusions have not been borne out by the history of Western European countries. Gloomy forecast made by Malthus about the economic conditions of future generations of mankind has been falsified in the Western world. Population has not increased as rapidly as predicted by Malthus; on the other hand, production has increased tremendously because of the rapid advances in technology. As a result, living standards of the people have risen instead of falling as was predicted by Malthus.

(ii) Malthus asserted that food production would not keep pace with population growth owing to the operation of the law of diminishing returns in agriculture. But by making rapid advances in technology and accumulating capital in larger quantity, advanced countries have been able to postpone the stage of diminishing returns. By making use of fertilizers, pesticide better seeds, tractors and other agricultural machinery, they have been able to increase their production greatly.

In fact, in most of the advanced countries the rate of increase of food production has been much greater than the rate of population growth. Even in India now, thanks to the Green Revolution, the increase in food production is greater than the increase in population. Thus, inventions and improvements in the methods of production have belied the gloomy forecast of Malthus by holding the law of diminishing returns in check almost indefinitely.

(iii) Malthus compared the population growth with the increase in food production alone. Malthus held that because land was available in limited quantity, food production could not rise faster than population. But he should have considered all types of production in considering the question of optimum size of population. England did feel the shortage of land and food.

If England had been forced to support her population entirely from her own soil, there can be little doubt that England would have experienced a series of famines by which her growth of population would have been checked. But England did not experience such a disaster. It is because England industrialized itself by developing her natural resources other than land like coal and iron, and accumulating man-made capital equipment like factories, tools, machinery, mines, ships and railways, this enabled her to produce plenty of industrial and manufacturing goods which she then exported in exchange for food-stuffs from foreign countries.

There is no food problem in Great Britain. Therefore, Malthus made a mistake in taking agricultural land and food production alone into account when discussing the population question. As already said, he should have rather considered all types of production.

(iv) Malthus held that the increase in the means of subsistence or food supplies would cause population to grow rapidly so that ultimately means of subsistence or food supply would be in level with population, and everyone would get only bare minimum subsistence. In other words, according to Malthus, living standards of the people cannot rise in the long run above

the level of minimum subsistence. But, as already pointed out, living standards of the people in the Western world have risen greatly and stand much above the minimum subsistence level.

There is no evidence of birth-rate rising with the increases in the standard of living. Instead, there is evidence that birth-rates fall as the economy grows. In Western countries, attitude towards children changed as they developed economically. Parents began to feel that it was their duty to do as much as they could for each child.

Therefore, they preferred not to have more children than they could attend to properly. People now began to care more for maintaining a higher standard of living rather than for bearing more children. The wide use of contraceptives in the Western world brought down the birth rates. This change in the attitude towards children and the wide use of contraceptives in the Western world has falsified Malthusian doctrine.

(v) Malthus gave no proof of his assertion that population increased exactly in geometric progression and food production increased exactly in arithmetic progression. It has been rightly pointed out that population and food supply do not change in accordance with these mathematical series. Growth of population and food supply cannot be expected to show the precision or accuracy of such series.

However, Malthus, in later editions of his book, did not insist on these mathematical terms and only held that there was an inherent tendency in population to outrun the means of subsistence. We have seen above that even this is far from true.

There is no doubt that the civilized world has kept the population in check. It is, however, to be regretted that population has been increasing at the wrong end. The poor people, who can ill-afford to bring up and educate children, are multiplying, whereas the rich are applying breaks on the increase of the size of their families.

## **Punjab Population Policy 2017**

Family planning is the sole responsibility of the provincial government after transfer of the federally controlled Population Welfare Programme to the provinces in the wake of the 18<sup>th</sup> Constitutional Amendment in 2010. This has provided Punjab with an opportunity to introduce a focused Population Policy specific to the province. The latter was especially essential as the rapidly urbanizing province of Punjab with a land mass of 25.6% of Pakistan, and housing 50% of the population of the country is currently estimated to have a population of over 100 million that would double in the next 34 years if the recent growth rate of 2.05% continues. Poverty conditions are being aggravated and consequently neutralizing the progress made in various sectors. Government of the Punjab recognizes the cross-cutting effect and influence of population factor on the overall development, hence imperative to adopt a focused Population Policy within the provincial development framework. The aim is to strike a balance between population and resources to be consistent with development goals.

The process for formulating Punjab Population Policy-2017 was initiated under the guidance of Minister for Population Welfare. Consultative meetings were held with all stakeholders, including Parliamentarians, representatives from Government Departments, Ulema, Media and NGOs/ development partners. A core group of 07 experts on population and demographic matters was identified and notified and their able advice was sought.

The Punjab Population Policy-2017 takes forward the following Vision, Goals and Objectives:  
Vision:

Promoting prosperous, healthy, educated and knowledge-based society where every family is planned, every member nurtured and all citizens are provided with the opportunity and choice to attain improvement in the quality of their lives.

Goals:

- a. Stabilize population growth as an essential requirement for promoting sustainable development with equitable distribution through vigorous implementation of inter-sectoral strategies.
- b. Reduce fertility to contain population momentum by improving access to quality of reproductive health care through integrated service delivery.
- c. Facilitate and guide relevant sectors to achieve SDG objectives related to universal access to reproductive health care services aimed at promoting general welfare of population.

## Objectives:

### Short Term till 2020:

- Lower wanted family size to 2.5 by 2020 through an effective communication and education programme focusing on small family size and its relationship with human welfare and environmental security.
- Actively promote the three messages related to Healthy Timing and Spacing of Pregnancy (HTSP) to reach out all women by 2020.
- Ensure necessary contraceptive security at all service delivery outlets for 2015-20.
- Achieve a fertility level of 3.3 births per woman by 2020.

### Long Term till 2030

- Ensure universal coverage and improve access to safe and quality family planning and reproductive health services to the most remote and far flung areas of the Province by 2025.
- Raise contraceptive prevalence rate to 60 per cent by 2030.
- Strive to attain replacement level fertility of 2.1 births by 2030.

The Policy document provides a framework for advancing goals and prioritizing strategies to meet reproductive and child health needs to achieve replacement fertility levels. This framework is based upon to address issues of contraception, child survival, and maternal health, while simultaneously increasing outreach and coverage of a package of reproductive, maternal and child health by all stakeholders. Population Welfare Department has been entrusted a leading role in promoting family planning and taking along all key stakeholders to support its goals and objectives as well as meeting critical targets.

The Policy adheres to four basic principles to achieve its goals: equity, efficiency, volunteerism, and sustainability. The following major areas requiring priority attention have been identified in the Policy document:

1. Converging Service Availability at Community Level
  - Attend couples with unmet need for contraception
  - Supportive role of Government Departments and Development Partners, and
  - Adhering to quality of services
2. Contraceptive Commodity Security
3. Advocacy, Demand Generation and Social Mobilization
4. Human Resource Development

5. Enlisting Support of NGOs/ development partners and private entities.
6. Monitoring and Evaluation
7. Research and Metrics
8. Attending Special Areas i.e. Men, Adolescent and Youth, and Infertility
9. Departmental Restructuring
10. Inter-Departmental Coordination for Consolidation of Services
11. Funding Population Welfare Department
12. Governance of Population and Development

## Social Determinants of Fertility

### Age at Marriage

Marriage, the legal and cultural institution that sanctions childbearing, is one of the most important determinants of fertility. Age at first marriage has a major effect on childbearing because women who marry early have, on average, a longer period of exposure to the risk of becoming pregnant and a greater number of lifetime births. It is widely acknowledged that age at marriage has a significant influence on fertility, particularly in countries where childbearing occurs within marriage. Therefore, in societies where child bearing prior to marriage is not socially acceptable, postponement of marriage contributes significantly towards a reduction in the level of fertility by shortening the total reproductive span of women. This in turn reduces the number of children a woman is likely to have and has a negative impact on the population growth rate of a country. Age pattern of marriage was discovered as an important factor for reducing marital fertility rate due to late marriage and a higher proportion of celibacy in developed countries. Western Europe responded to the Malthusian challenge of over population in the nineteenth century with an increase in the marriage age, which significantly cut fertility. In the developing countries, some drop in fertility is occurring because of a rise in the marriage age due to increasing education and employment, and a legal attempt through legislation to prohibit early marriages. In few developing countries in Asia and Africa, where the use of effective contraceptive methods are low, delayed marriage has played an important role to engrave the fertility level.

, despite the changing pattern towards later marriage, Asian countries display considerable variations in marriage patterns. Interestingly, one pattern is shared in all Asian countries: 95 per cent or more of women ultimately marry. Social and economic forces are transforming traditional marriage pattern in Asia. In the near future marriage behavior in Asia will reflect the paths of key modernization process: educational development, urbanization, and the expansion of non-agricultural employment. It is quite likely that each of these processes will encourage continued marriage delay and perhaps even the greater prevalence of celibacy in the coming decades.

Education, type of residence, wealth, age, region, and ethnicity is strongly related to age at first marriage. Furthermore, there were significant proportion of women who get married during adolescent especially among rural; minority; and less educated women. Similarly, education and age at first marriage are strongly associated both at the individual level and at the societal level: a woman who has attended secondary school is considerably less likely to

marry during adolescence, and with higher proportion of women with a secondary education, the proportion of women who marry as adolescents is lower.

Marriage change plays a considerable role in the recent fertility declines in a number of Asian countries. Both delay in marriage and postponement of childbearing by married couples held down fertility. Among the many factors lowering desired childbearing among married couples in Pacific Asia, prominent possibilities are uncertainty of continued employment, conflict of work and family responsibilities, lack of appropriate policies to support child-rearing, the ideology of the “quality” child, financial costs of child-rearing, gender ideologies on housework, and difficulties of the urban environment. Possibly rising individualism also plays a part.

Unlike in Western countries where marriage is not a pre-condition for child bearing, in most Asian countries child bearing prior to marriage is not socially acceptable and is therefore extremely uncommon. Postponement of marriage therefore contributes significantly towards a reduction in the level of fertility by shortening the total reproductive span of women, which in turn reduces the number of children a woman is likely to have and hence reduces the population growth rate of a country. The age at marriage indeed has a significant effect on the fertility of women—an increase in the age at marriage significantly reduces total fertility of women. Further, the higher the education level of the woman the stronger is the effect of education on the age at marriage and total fertility. So women’s education not only has a direct effect in fertility reduction, it also has an indirect effect through the effect on the age at marriage.

### **Contraception**

Large fertility decline in the developing world occurred due to a major change in reproductive behaviour of couples in the childbearing ages. More specifically, contraceptive practice has been considered as the interventions of choice for slowing population growth. In less developed countries there was a wide gap in contraceptive prevalence rate between the highest and lowest wealth quintiles. This gap between the rich and poor in the use of contraception has persisted despite general global improvements in socio-economic status and the expansion of family planning services. Health disparities between the rich and poor remain a persistent challenge.

It is proven that significant decrease in fertility happens due to social and economic development, and had nothing to do with promotion of family planning. Moreover, the universal provision of effective and low-cost contraceptives to eligible couples helped the contraceptive practice rate to rise very quickly. These actions enabled couples to control

their fertility to the declining level of ideal number of children. Contraceptive knowledge significantly reduces fertility. Besides, mass media exposure and social networks play important roles in obtaining knowledge of modern contraceptive techniques. Women, who regularly watch TV, listen to the radio, or read newspapers and magazines are more likely to be exposed to contraceptive-related information and hence have more knowledge of contraceptives. Similarly, women who participate in women's organizations are more likely to obtain contraceptive information through word-of-mouth communication.

It is well known that countries with high social and economic development had high contraceptive prevalence. Studies have also shown that countries in which all couples have easy access to a wide range of contraceptive methods have a more balanced methods mix and higher levels of overall contraceptive prevalence than countries with limited access to various contraceptives. Another study found that the easier the accessibility of contraceptive services to women in a community, the higher the rate of contraceptive use. Total fertility in Vietnam had fallen dramatically due to high rates of contraceptive use and of induced abortion.

While women's education continues to be strongly associated with lower fertility in India, an important feature of India's current fertility transition is the spread of contraceptive use among uneducated women. Indeed, changes in their fertility are now making the major contribution to the country's overall fertility decline. In Indian context, the women who have received family planning messages from health care workers are more likely to use contraceptives as compared to other women. Most of the increase in propensity has been explained by the increase in use rate among women of urban areas and rural women who had access to health facilities. Education continues to have a significant positive influence on contraceptive use however; the differential by educational groups has become much smaller. This change reflects an increase in use rate among women with no education. Therefore, the change in the fertility level of uneducated women is the major factor, which, contributed to a decline in the overall fertility level.

Choice of contraceptive depends a lot on the socio-economic and cultural set up of the country. Experience showed that as the contraceptive prevalence increased and people started opting for small family size, use of sterilization increased. The only exception is India where sterilization has dominated the scene right from the beginning, may be more because of programme effort than people choice.



## Induced abortion

Induced abortion has long been recognized as one of the principal determinants of fertility levels and is thought to be practiced throughout the world, regardless of its legal status. However, the demographic impact of abortion in developing countries remains uncertain. Without proper estimates of abortion, demographers cannot accurately quantify fertility trends nor can they thoroughly understand the relationships between the determinants of fertility and the fertility level. Data quality is an important consideration in studying the effects of abortion on fertility. Direct measures can be used only where termination of pregnancy is accurately reported. Abortion, however, is generally stigmatized and thus subject to considerable underreporting.

Even in the countries with high rates of legal induced abortion, contraceptive use and marital patterns nearly always had a greater impact on fertility levels than abortion. As a rule, extremely high rates of abortion—three or more abortions per woman of childbearing age during the reproductive years—are required for the fertility-inhibiting effect of abortion to rival that of contraceptive use. Nevertheless, the absolute effect of abortion on fertility is often substantial.

Unsafe abortion is a leading cause of reproductive morbidity and mortality in countries where abortion is illegal or severely restricted. Although in many countries law permits induced abortion only to save a woman's life, many women obtained abortions, often under unsafe conditions and in response to an unintended pregnancy. Another study in India found that a cultural preference for sons may be a factor driving recourse to abortion in especially South Asia. Rising educational attainment among women may lead to an increase in the demand for abortion. The increase in the level of induced abortion seen in some areas in Philippines reflected the difficulties women experience in obtaining modern contraceptives as a result of social and political constraints that affect care provision.

The legal status and the availability of induced abortion are highly variable in Asia. Rising contraceptive use results in reduced abortion incidence in settings where fertility itself is constant. The parallel in abortion and contraception in some countries occurred because increased contraceptive use alone was unable to meet the growing need for fertility regulation in situations where fertility was falling rapidly.

## Postpartum insusceptibility

A woman's exposure to the risk of pregnancy is influenced by postpartum factors: postpartum amenorrhea, which is largely determined by the duration and intensity of breastfeeding and postpartum abstinence, are the two determinants of the duration of

postpartum insusceptibility to becoming pregnant. A conception may not always result in a live birth. The outcome of a pregnancy may end in a spontaneous abortion, in an induced abortion, or in a still birth. Postpartum amenorrhea is a biological variable associated with each conception regardless of its outcome. It depends on a number of factors which may vary from woman to woman in a population and for a woman depending on age, marital duration, number of pregnancies, nutritional status, and practice of breast feeding etc.

Average birth interval may increase due to longer duration of breastfeeding which in turn reduce fertility particularly in societies where contraceptive use is limited. Similarly, lactation increases the duration of postpartum amenorrhea and that long-term breastfeeding is consistently associated with long periods of postpartum amenorrhea, ovarian inactivity, and reduced fertility. In the absence of breastfeeding the average amenorrhoeic period may last between one and three months; but when nursing is initiated just after childbirth, the duration of amenorrhea increases systematically with the duration of breastfeeding though at progressively slower rates. Studies also found that the factors responsible for resumption of menstruation are weaning, infant mortality and breastfeeding pattern.

## Social Determinants of Mortality

It is increasingly being recognized that health outcomes are a result not only of biological and individual risk factors but also of other factors like wealth, ethnic background, gender, education and so on. Inequalities in people's access to information, decision making, and life opportunities contribute to their ill health and levels of well-being. Political choices and social organization that distribute power and resources unequally across populations reproduce unequal health outcomes.

Together, the structural determinants and conditions of daily life constitute the social determinants of health and are responsible for a major part of health inequities between and within countries. Just as these social determinants shape unequal health outcomes and produce health inequities, it is being recognized that it is possible to improve health outcomes by analysing and acting upon salient social determinants.

It isn't that people now breed like rabbits, it's that we no longer die like flies; declining mortality, not rising fertility, is the root cause of the revolutionary increase in the world's population size and growth over the past two centuries. Only within that time has mortality been brought under control to the point that most of us are now able to take a long life pretty much for granted. Human triumph over disease and early death represents one of the most significant improvements ever made in the condition of human life and is tightly bound up in all other aspects of the vastly higher standard of living that we now enjoy.

Nevertheless, an important unintended by-product of declining mortality is the mushrooming of the human population from just one billion two hundred years ago to an expected nine billion by the middle of this century. This increase has literally changed everything in the world, and you cannot fully understand the world in which you live without knowing how the health and mortality transition came about and what this means for the future.

Health and death are really two sides of the same coin—morbidity and mortality, respectively—with **morbidity** referring to the prevalence of disease in a population and **mortality** the pattern of death. The link is a familiar one to most people—the healthier you are, the longer you are likely to live. At the societal level, this means that populations with high mortality are those with high morbidity; therefore, as health levels improve, so does life expectancy. Most of us in the richer countries take our long-life expectancy for granted. Yet scarcely a century ago, and for virtually all of human history before that, death rates were

very high and early death was commonplace. Within the past 200 years, and especially during the twentieth century,

Demographers define **life span** as referring to the oldest age to which human beings can survive; whereas **longevity** refers to the ability to remain alive from one year to the next—the ability to resist death. Longevity is usually measured by life expectancy, the statistically average length of life (or average expected age at death

The social world influences the risk of death in a variety of ways that can be reasonably reduced to two broad categories: (1) the social, economic, and political infrastructure (how much control we exercise over nature) and (2) lifestyle (how much control we exercise over ourselves). The infrastructure of society refers to the way in which wealth is generated and distributed, reflecting the extent to which water and milk are purified, diseases are vaccinated against, rodents and other pests controlled, waste eliminated, and food, shelter, clothing, and acute medical care and long term assistance are made available to members of society. Within any particular social setting, however, death rates may also be influenced by lifestyle. An increasing body of evidence has implicated smoking, drug use, excessive alcohol use, fatty food, and too little exercise as lifestyle factors that may shorten longevity. Although one key to a long life may be your “choice” of long-lived parents, prescriptions for a long life are most often a brew of lifestyle choices. A typical list of ways to maximize longevity includes regular exercise, daily breakfast, normal weight, no smoking, only moderate drinking, seven to eight hours of sleep daily, regular meal-taking, and an optimistic outlook on life. These suggestions, by the way, are not unique to the Western world, nor are they particularly modern. A group of medical workers studying older people in southern China concluded that the important factors for long life are fresh air, moderate drinking and eating, regular exercise, and an optimistic attitude. Similarly, note the words of Dr. Weber, who was 83 in 1904 when he published an article in the *British Medical Journal* outlining his prescriptions for a long life:

Be moderate in food and drink and in all physical pleasures; take exercise daily, regardless of the weather; go to bed early, rise early, sleep for no more than 6-7 hours; bathe daily; work and occupy yourself mentally on a regular basis—stimulate the enjoyment of life so that the mind may be tranquil and full of hope; control the passions; be resolute about preserving health; and avoid alcohol, narcotics, and soothing drugs. (quoted in Metchnikoff 1908).

### **Age Differentials in Mortality**

Disease and death are not randomly distributed across the life cycle. Humans are like most other animals with respect to the general pattern of death by age—the very young and the old are most vulnerable, whereas young adults are least likely to die.

### **Sex and Gender Differentials in Mortality**

Although the age pattern of death is the most obvious way in which biology affects our lives, it is also true that at every age there are differences between males and females in the likelihood of death. Some of these differentials seem to be strictly biological in origin (the “sex” differences) whereas others are induced by society (the “gender” differences), although it is not always easy to tell the difference between the biological and social influences.

The most basic health difference between males and females is that women generally live longer than men do, and the gap had been widening until recently. The difference in life expectancy between males and females has attracted curiosity for a long time, and it has been suggested facetiously that the early death of men is nature’s way of repaying those women who have spent a lifetime with demanding, difficult husbands. However, the situation has been more thoroughly investigated by a variety of researchers. It is possible, perhaps even probable, that a real biological superiority exists for women in the form of an immune function, perhaps imparted by the hormone estrogen, but it is very difficult to measure this biological advantage. Nonetheless, a biological interpretation of the difference is supported by studies showing that throughout the animal kingdom females survive longer than males, suggesting some kind of basic biological superiority in the ability of females to survive relative to males.

### **Social Status Differentials in Mortality**

Differences in the mortality by social status are among the most pervasive inequalities in the modern society. The connection between income and health has been obvious for centuries, and whatever characteristics lower your status in society may therefore put you at greatest risk of death. Marx attributed the higher death rate in the working classes to the evils of the capitalism and argued that mortality differentials would disappear in the socialist society. That may have been overly optimistic, but data do clearly suggest that by nearly every index of status, the higher your position in society, the longer you are likely to live.

### **Occupation**

The whole family is affected by the social status of the household head. Fertility surveys have consistently showed an inverse relationship between infant mortality and childhood mortality and father’s occupation. The most important aspects of occupation and social class

that relate to mortality are undoubtedly income and education...income to buy protection against and cures of diseases, and education to know the means whereby disease risks can be minimized. The people having blue-collar job are more likely to die earlier than with white collar. Because nature of the job of the former involves more risks than latter.

### **Income and Education**

There is striking relationship between income and mortality rate. The data shows as income goes up, mortality goes down. As with income, there is marked decline in the risk of death as education increases. Based on data from USA, virtually every major cause of death, white males with at least 1 year of education had lower risks of death than those with less education. The differences appear to be least for the degenerative chronic diseases and greatest for accidental deaths. This is consistent with the way you might theorize that education would affect mortality, since it should enhance an individual's ability to avoid dangerous high-risk situations.

### **Race and Ethnicity**

In most societies in which more than one racial or ethnic group exists, one group tends to dominate to dominate others. This generally leads to social and economic disadvantages for the subordinate groups, and such disadvantages frequently result in lower life expectancies for the racial or ethnic majority group members. Taking Israel as case in point, the mortality gap between Jews and Muslims within this country has narrowed considerably, but Jews continue to have a slightly higher life expectancy.

### **Marital Status**

It has long been observed that married people tend to live longer than unmarried people. A long standing explanation for this phenomenon is that marriage selective of healthy people, that is, people who are physically handicapped or in ill health may have both a lower chance of marrying and higher risk of death. At least some of the differences in mortality by marital status is certainly due to this.

Another explanation is that marriage is good for your health. The differences in mortality of the married and unmarried people are particularly marked among those types of mortality where one's psychological state would appear to affect one's chances.

## Migration as Demographic Process

Migration is a global phenomenon caused not only by economic factors, but also by social, political, cultural, environmental, health, education and transportation factors. It commonly takes place because of the push factor of less opportunities in the socio-economic situation and also because of pull factors that exist in more developed areas. Migration is the movement of people from one location to another and widely associated with change of permanent place of residence. Reasons of Migration are inter-regional and intraregional disparities at macro level and fundamentally lack of employment opportunities resulting low standard of living conditions among different socio-economic groups at micro level. There are three components of population change. They are mortality, fertility and migration. There are two types of migration: internal migration and international migration. Internal migration is the movement of people from one place to other place in a given country. International migration is the movement of people from one country to another in order to take up employment or to establish residence or to increase in living standard. Various scholars study the migration for different purposes. Sociologists have emphasized social and cultural consequences of migration. While geographers have laid stress on the time and distance significance of migration, economists emphasize on the economic aspect of migration.

### Push Factors

Push factors are those that force the individual to move voluntarily, and in many cases, they are forced because the individual risks something if they stay. Push factors may include conflict, drought, famine, or extreme religious activity.

Poor economic activity and lack of job opportunities are also strong push factors for migration. Other strong push factors include race and discriminating cultures, political intolerance and persecution of people who question the status quo.

### Pull Factors

Pull factors are those factors in the destination country that attract the individual or group to leave their home. Those factors are known as *place utility*, which is the desirability of a place that attracts people. Better economic opportunities, more jobs, and the promise of a better life often pull people into new locations.

Sometimes individuals have ideas and perceptions about places that are not necessarily correct, but are strong pull factors for that individual. As people grow older and retire, many look for places with warm weather, peaceful and comfortable locations to spend their

retirement after a lifetime of hard work and savings. Such ideal places are pull factors too. Very often, people consider and prefer opportunities closer to their location than similar opportunities farther away. In the same vein, people often like to move to places with better cultural, political, climatic and general terrain in closer locations than locations farther away. It is rare to find people move over very long distances to settle in places that they have little knowledge of.

### **Factors of Migration**

The important factors which motivate people to move can be classified into five categories. They are economic factors, demographic factors, socio-cultural factors, political factors and miscellaneous factors.

#### **(i) Economic Factors**

Most of the studies indicate that migration is primarily motivated by economic factors. In developing countries, low agricultural income, agricultural unemployment and underemployment are considered basic factors pushing the migrants towards developed area with greater job opportunities. Thus, almost all studies concur that most of migrants have moved in search of better economic opportunities. The basic economic factors which motivate migration may be further classified as 'Push Factors' and 'Pull Factors'.

The push factors are factors that compel a person, due to different reasons, to leave that place and go to some other place. The common push factors are low productivity, unemployment and underdevelopment, poor economic conditions, lack of opportunities for advancement, exhaustion of natural resources and natural calamities. Introduction of capital intensive methods of production into agricultural sector, and mechanization of certain processes reduce labour requirement in rural areas. The non-availability of alternative sources of income in rural area is also important factor for migration.

The Pull Factors are factors which attract the migrants to an area. Opportunities for better employment, higher wages, facilities, better working conditions and attractive amenities are pull factors of an area.

#### **(ii) Demographic Factor**

The differences in the population growth rates of the different regions of a nation have been found to be a determinant in the internal migration. Fertility and the natural increase in population are generally higher in rural areas which drift the population towards the city. Other important demographic factor in internal migration is marriage because females are used to follow their spouses.



### **(iii) Socio-cultural Factors**

Social and cultural factors also an important role in migration. Sometimes family conflicts, the quest for independence, also cause migration especially, of those in the younger generation. Improved communication facilities, such as, transportation, impact of television, good network communication, the cinema, the urban oriented education and resultant change in attitudes and values also promote migration.

### **(iv) Political Factors**

Sometimes even political factors encourage or discourage migration from region to another. After 1948, most of rural people migrated to urban because of safety in Myanmar. Hence, the political background, attitudes and individual viewpoint of the people influenced on the migration of people.

### **(v) Miscellaneous Factors**

Other factors such as the presence of relatives and friends in urban areas, desire to receive education which is available only in urban areas are factors responsible for migration. Closeness of cultural contacts, cultural diversity, great vitality, individual attitudes are also associated with migration.

## **The Effect of Fertility, Mortality and Migration on Population Structure**

Fertility, mortality and migration are principal determinants of population growth (or its inverse). In the absence of technological intervention, one might say almost the sole determinants, but improvements in contraceptive techniques, increasing acceptance of abortion, and slackening of some traditional religious and cultural traditions has in many parts of the world reduced the role of fertility.

### **Fertility**

The human female is generally fertile from early teens to about mid-forties. The human male generally remains fertile throughout adulthood, though sperm count and quality diminish from middle-age onward. In the absence of a conscious effort to control the size of families, the larger the fraction of the population who are in the fertile age range the more rapid will be the population growth, and this will influence the average age of the population structure towards the younger end of the spectrum. In terms of populations rather than individuals, fertility is usually expressed using the proxy measure of birth rate, either crude or standardized for age and sex. Worldwide, there are significant differences between birth rates. A major study in the 1980s, carried out by the Population Division of the Department of International Economic and Social Affairs of the UN Secretariat, studied the relationship between population age and sex distribution and crude fertility rates for twenty-one countries in the developing world. They concluded

*The higher the birthrate the more markedly the birthrate is depressed by the age structure. ... All other things being equal, fertility should decline more rapidly in the countries where it is currently lowest since the age structure appears to favor such a course.* The mean number of children ever born also ranged widely among the twenty-one countries. Differences in completed family size range from 8.6 children in Jordan to 5.2 children in Indonesia.<sup>1</sup> In the developed world, though, there is a global tendency for family sizes on average to be smaller than the replacement level. This is true of every country in the European Union.

### **Mortality**

The effect of mortality on population structures is to reduce the component of the population in which the mortality occurs. Historically, the most dangerous ages were infancy and old age (variously reckoned accord to circumstances). In addition, some epidemics of infectious diseases (eg Spanish 'flu) had their highest mortality among young adults, whose immune systems were presumably insufficiently primed. It is expected that the forecast bird 'flu epidemic will behave similarly. War differentially reduces the proportion of younger men. The majority of infectious diseases of early childhood have been conquered by

immunisation, and improved nutrition and hygiene have rendered childhood safer. Antibiotics, welfare state, and improvements in medical, surgical, and palliative care have resulted in great increases in life expectancy in the developed world, where life expectancy is now in the middle to upper 70s or lower 80s, and rising every year. The effect of this is to raise the population in the upper age groups substantially. Women have high life expectancy than men wherever they live. The tendency of people to retire to particular resorts means that in some parts of the South Coast of England the average (arithmetic mean) age of the population is only just below retirement age.

The down side of this is that the extended lives are often lived in bad health, as the treatments people receive may keep them alive but do little to ameliorate the underlying pain or disability brought on by the diseases, and virtually nothing for the various forms of senile dementia that are increasingly encountered.

### **Migration**

This has been less studied. In areas where natural disasters or politico-military concerns lead to entire populations being displaced the initial population structure will be unchanged, though post-migration the population will have altered to reflect those who have survived the process, typically showing increases in older children and younger adults. Opportunistic migration tends to occur mostly among younger adults, and may be permanent or temporary. Some studies have shown increased fertility levels in migrants, so the effect of migration on population structure is to deplete the population emigrated from in the young adult groups, to augment this group in the immigrated-to population, and to increase the fertility/birthrate in the new population.

Demographic events and processes across the globe have resulted in evolving population dynamics. Migration routes and patterns of migration have become more diverse. Forced migration, human trafficking/smuggling and displacement of populations have become problems of today's world due to geopolitical factors, wars and political instability. Security threats and global exposure to diseases have become serious concerns due to human mobility. There are also global variations in fertility. While many other countries in sub-Saharan Africa have high fertility rates, others in Europe have their fertility reaching below replacement level. Some countries are implementing policies such as maternity protection to increase fertility while others are promoting contraception as a means of reducing fertility. The Population Dynamics (Fertility, Mortality & Migration) sees its mission as an important wing of Population Studies that focuses on training and research into the components of population change namely fertility, mortality and migration issues and the associated health

and social interrelationships. The aim of this unit is to equip students with the knowledge and understanding of the core areas of Demography. The main responsibility of this unit is to promote teaching, learning and research in the components of population change and how they relate to population health including sexual and reproductive health both nationally and globally.

The fertility component seeks to strengthen the capacity of students to understand the processes of providing accurate information, helping people to manage their fertility by leading healthy sexual and reproductive lives and its contribution to population change in Ghana and the developing world at large. It also strives to equip students with the skills to be able to critically debate the concepts and importance of reproductive health in contemporary demography. Students focusing on this dimension of population studies will gain understanding on the various factors that influence poor reproductive health outcomes and examine the successes and failures of some intervention strategies to improve reproductive health and invariably fertility.

Similarly, the mortality and migration components focus on both the traditional estimations, factors that influence these components and the conduct of research into emerging trends and issues. The focus is to train population scientists in the theory and methods of demography to expose students to cutting edge research in mortality and migration related issues. This will help with the necessary grounding and contribute to future developments in demography. The Population Dynamics Unit by this development will collaborate with the various MMDAs, non-governmental organizations and development partners in the provision of accurate information on patterns, current fertility, mortality and migration trends and their influence on family health for development planning purposes.

Nuptiality- the impact of nuptiality on developing countries' population growth, issues such as the changing patterns of marriage. This includes frequency, incidence of marriage and their relationship with poverty and migration. In Europe, nuptiality patterns played a significant role in the development of low fertility. These include late marriage, celibacy, methodological problems, demographic response to economic crises. How do these apply in developing countries? Other components of interest of the Institute's agenda is the direction of change and causes of shifts in age at first marriage in demographic transitions and assessing the role of nuptiality in altering demographic transitions among others.